

Writing a training loop from scratch

https://www.tensorflow.org/guide/keras/writing_a_training_loop_from_scratch
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Import libraries

```
In [1]: # Python libraries
import os
import sys
import pandas as pd # for data manipulation
import numpy as np # for data manipulation
import tensorflow as tf
from sklearn.model_selection import train_test_split
from datetime import datetime
import time

# Plotting
import matplotlib.pyplot as plt

# To enable LaTeX and select a font
plt.rcParams.update({
    "text.usetex": True,
    "font.family": "sans-serif",
    "font.sans-serif": "Helvetica",
})

# Using ipynb import functions defined in other nb
sys.path.append("myfun/")
from ipynb.fs.defs.myfun_load_dataset import *
from ipynb.fs.full.myfun_models import *
from ipynb.fs.full.myfun_nn import *
from ipynb.fs.defs.myfun_plot import *
```

2023-09-08 00:09:13.489786: I tensorflow/core/platform/cpu_feature_guard.cc:193] This TensorFlow binary is optimized with oneAPI Deep Neural Network Library (oneDNN) to use the following CPU instructions in performance-critical operations: SSE4.1 SSE4.2 AVX AVX2 FMA To enable them in other operations, rebuild TensorFlow with the appropriate compiler flags.

Tensorflow/Keras: 2.11.0
sklearn: 1.3.0

Data Acquisition

```
In [2]: # Load the dataset
par_dir = os.path.dirname(os.getcwd()) # parent dir
dir_name = par_dir + "/NN-interaction"
processed_flag = 'post'
merged_df, dflist = load_dataset(dir_name, processed_flag)
```

Get v_0 mean over each df looping on dflist

```
In [3]: # params
v0_guess = 30
NUM_ITER = 500
LEARNING_RATE_v0 = 0.5
flag_save = True
```

```
In [4]: # Create the model NN
DOE = [[1,2,1], [1,4,1], [1,10,1]] #Design of experiment

# Create the dataset
dataset = dflist
```

```
In [5]: info_alldataset = []

start_time1 = time.time()
for DOE_struct in DOE:

    print("\n")
    print("=="*30)

    s = '-'.join(str(x) for x in DOE_struct)
    print(f"NN structure: {s}")

    start_time2 = time.time()

    # Create the model
    model = create_model(DOE_struct)

    info_dataset = solve_nn_dataset(model, v0_guess, dataset, NUM_ITE

    # Store info about the NN structure
    nrow = info_dataset.shape[0]
    info_dataset['DOE'] = [DOE_struct]*nrow
    info_dataset['processed'] = [processed_flag]*nrow

    # Append info_dflist
    info_alldataset.append(info_dataset)

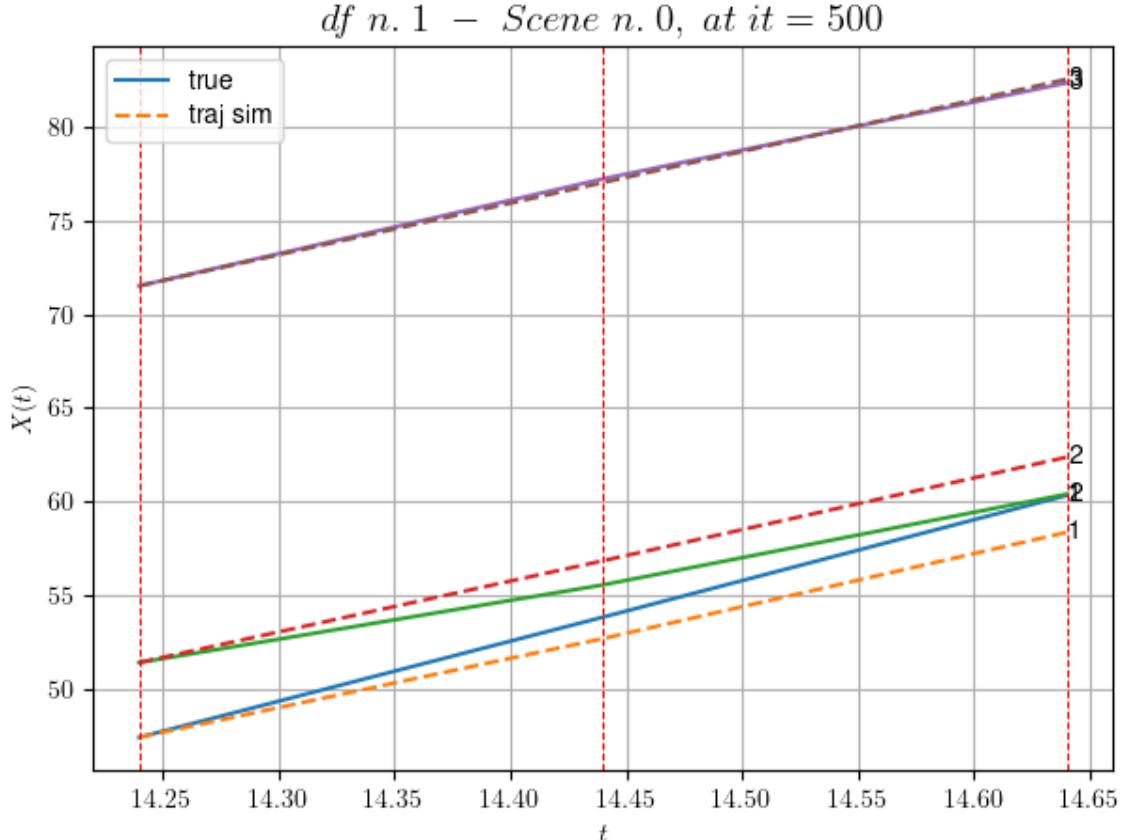
    time_taken=time.time() - start_time2
    print(f"\nTime taken using {s} NN structure: {'{0:.02f}'.format(tim

time_taken=time.time() - start_time1
print(f"\nTime taken for the computation: {'{0:.02f}'.format(time_tak
```

```
=====
NN structure: 1-2-1
=====
*****
***** In df n.1/10 we have 28 scenes *****
***** - Time interval n.0: [14.24, 14.44]
      * y_true: [32.1443344 20.77111865]
      * v_ann: [26.408241271972656, 27.229249954223633, 2
7.63627828527225]

-----
----- - Time interval n.1: [14.44, 14.64]
      * y_true: [32.5721373 24.27162308]
      * v_ann: [28.423446655273438, 27.7088623046875, 27.
63627828527225]

-----
----- * err= 1.2097951836552274
      * Learning rate NN = 0.0007289999630302191
      * diff = 0.00016452646151243755
```



For scene 0/28

```
* use LR_NN=0.001 with err=18.111818498831354 at it=19
* v0_scn_mean = 27.77810148202991
* MAE = 1.1957231680869196
```

```
- Time interval n.0: [23.64, 23.84]
* y_true: [26.6509107 26.65125804]
* v_ann: [25.73638153076172, 24.309038162231445, 3
1.184420565840107]
```

```
- Time interval n.1: [23.84, 24.04]
* y_true: [29.05143519 29.47691739]
* v_ann: [26.697303771972656, 26.079418182373047, 3
1.184420565840107]
```

```
- Time interval n.2: [24.04, 24.24]
* y_true: [29.05143519 29.47691739]
* v_ann: [28.653587341308594, 28.355106353759766, 3
1.184420565840107]
```

```
- Time interval n.3: [24.24, 24.44]
* y_true: [27.07699139 24.80226709]
* v_ann: [29.17074203491211, 30.254499435424805, 3
```

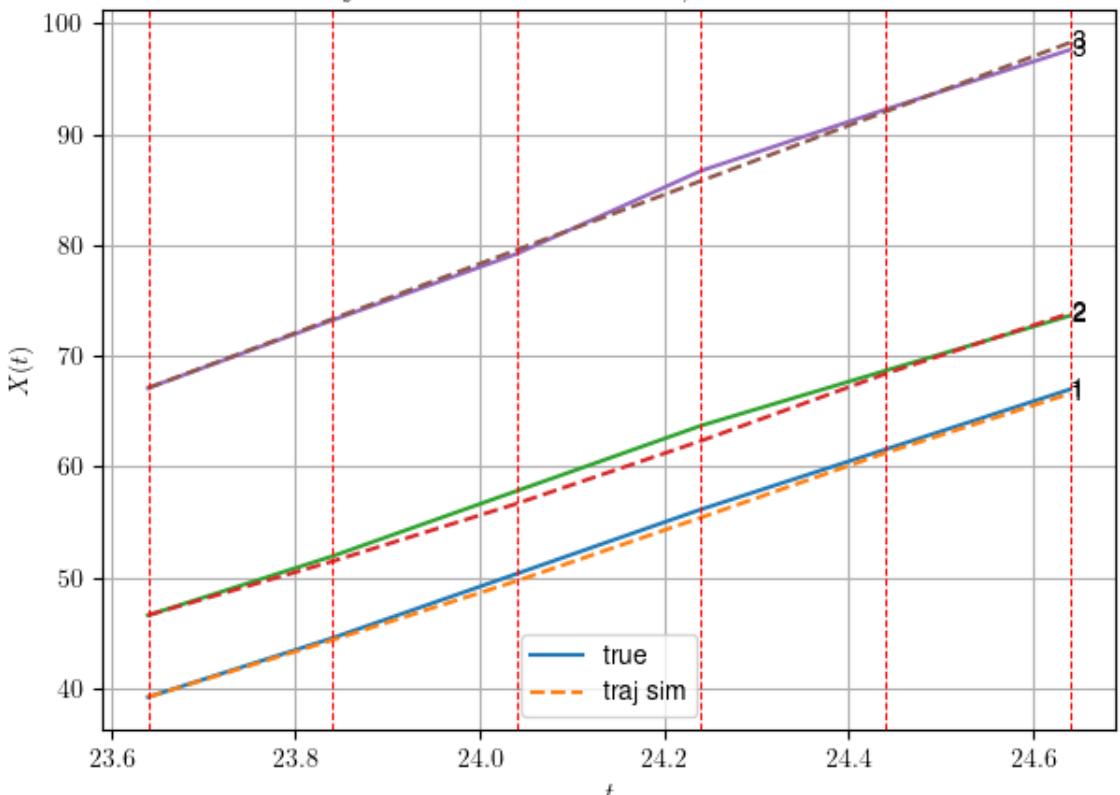
1.184420565840107]

- Time interval n.4: [24.44, 24.64]
 - * y_true: [27.07699139 24.80226709]
 - * v_ann: [26.721614837646484, 27.321008682250977, 3]

1.184420565840107]

- * err= 0.3454835720480404
- * Learning rate NN = 0.0003874204121530056
- * diff = 6.474142484547141e-05

df n. 1 – Scene n. 1, at it = 500



For scene 1/28

- * use LR_NN=0.001 with err=32.58032718540722 at it=19
- * v0_scn_mean = 31.113355385067624
- * MAE = 0.15722963785630995

- Time interval n.0: [72.44, 72.64]
 - * y_true: [25.85001228 31.10049693]
 - * v_ann: [27.543533325195312, 28.439647674560547, 2]

8.250920573908317]

- Time interval n.1: [72.64, 72.84]
 - * y_true: [30.00006309 33.82077482]
 - * v_ann: [27.50495147705078, 28.576900482177734, 2]

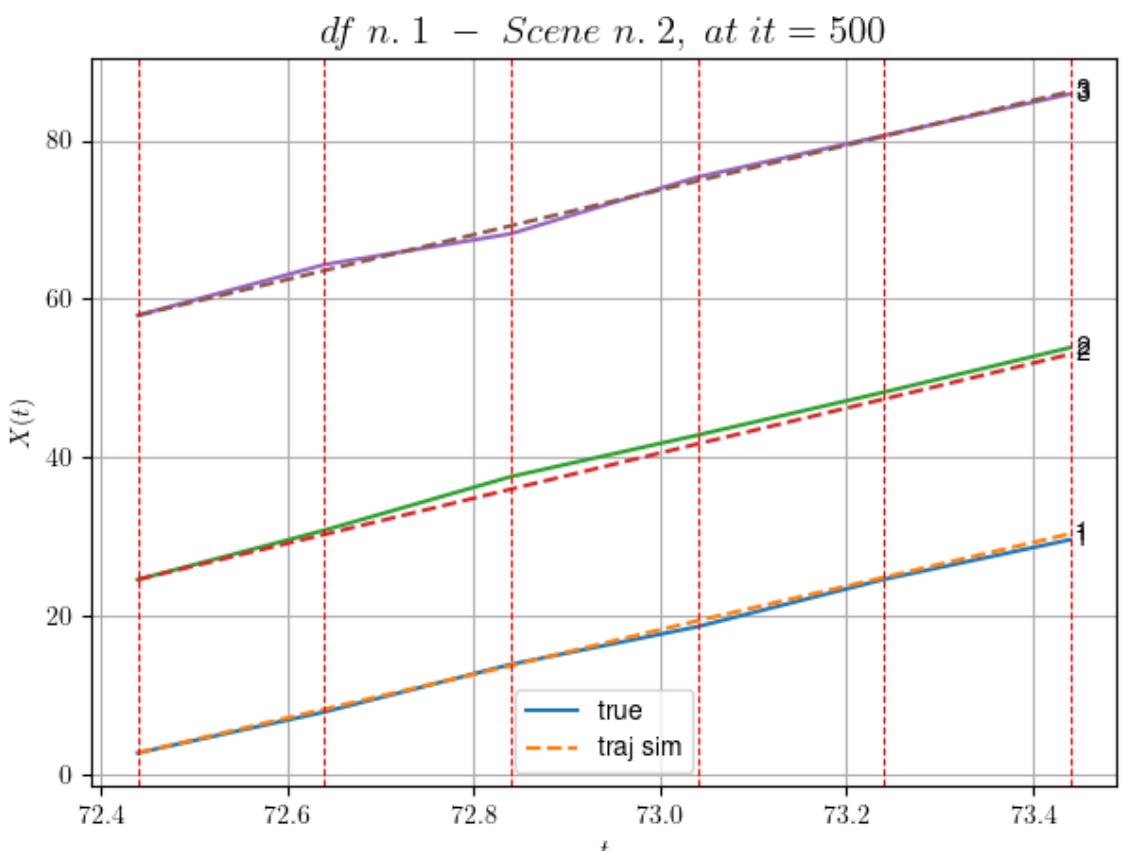
8.250920573908317]

```
- Time interval n.2: [72.84, 73.04]
  * y_true: [23.75011307 26.19081077]
  * v_ann: [28.302776336669922, 28.534242630004883, 2
8.250920573908317]
```

```
- Time interval n.3: [73.04, 73.24]
  * y_true: [29.90025591 27.11111625]
  * v_ann: [27.366830825805664, 28.304962158203125, 2
8.250920573908317]
```

```
- Time interval n.4: [73.24, 73.44]
  * y_true: [25.05033948 28.161422 ]
  * v_ann: [27.587566375732422, 28.372617721557617, 2
8.250920573908317]
```

```
* err= 0.4851129839615525
* Learning rate NN = 1.9371018424862996e-05
* diff = 0.00047974699604058646
```



For scene 2/28

```
* use LR_NN=5e-05 with err=3.3261424613677875 at it=19
* v0_scn_mean = 28.355865260943943
* MAE = 0.2507343546186323
```

For scene 3/28

- * use LR_NN=5e-05 with err=25.11524553821329 at it=19
- * v0_scn_mean = 29.574075298542386
- * MAE = 0.34940208320953875

- Time interval n.0: [131.64, 131.84]

- * y_true: [30.80073929 29.11067519]

- * v_ann: [29.297382354736328, 28.994184494018555, 2

8.44289270224743]

- Time interval n.1: [131.84, 132.04]

- * y_true: [30.16079766 28.07097758]

- * v_ann: [29.825267791748047, 30.055984497070312, 2

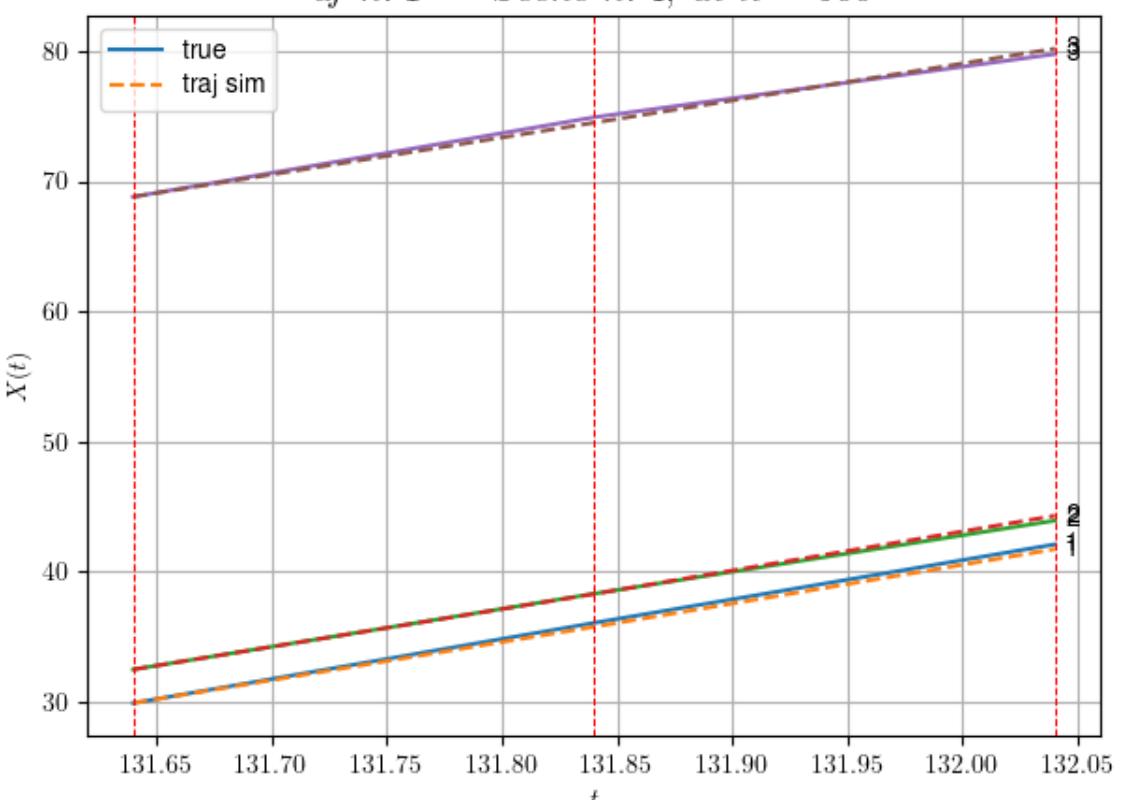
8.44289270224743]

* err= 0.07929729753521464

* Learning rate NN = 0.00036449998151510954

* diff = 1.8243948266882803e-05

df n. 1 – Scene n. 4, at it = 500



For scene 4/28

- * use LR_NN=0.0005 with err=16.831375421865292 at it=19

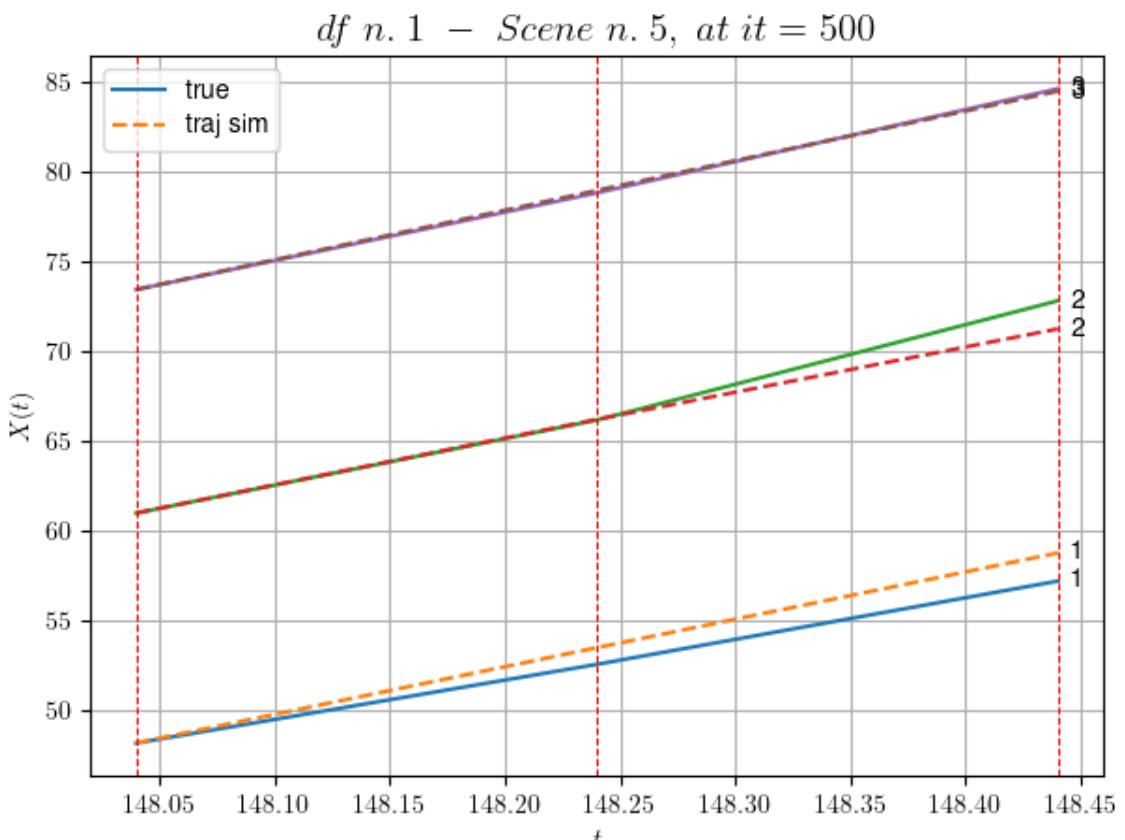
- * v0_scn_mean = 28.536319070201493

* MAE = 0.0791029501066891

- Time interval n.0: [148.04, 148.24]
 * y_true: [21.93113488 25.90203153]
 * v_ann: [26.56429672241211, 26.093772888183594, 2
 7.621656721217306]

- Time interval n.1: [148.24, 148.44]
 * y_true: [23.17638158 33.20310746]
 * v_ann: [26.36560821533203, 25.18958282470703, 27.
 621656721217306]

* err= 0.6438350719290368
 * Learning rate NN = 0.00036449998151510954
 * diff = 6.103639291676899e-05



For scene 5/28

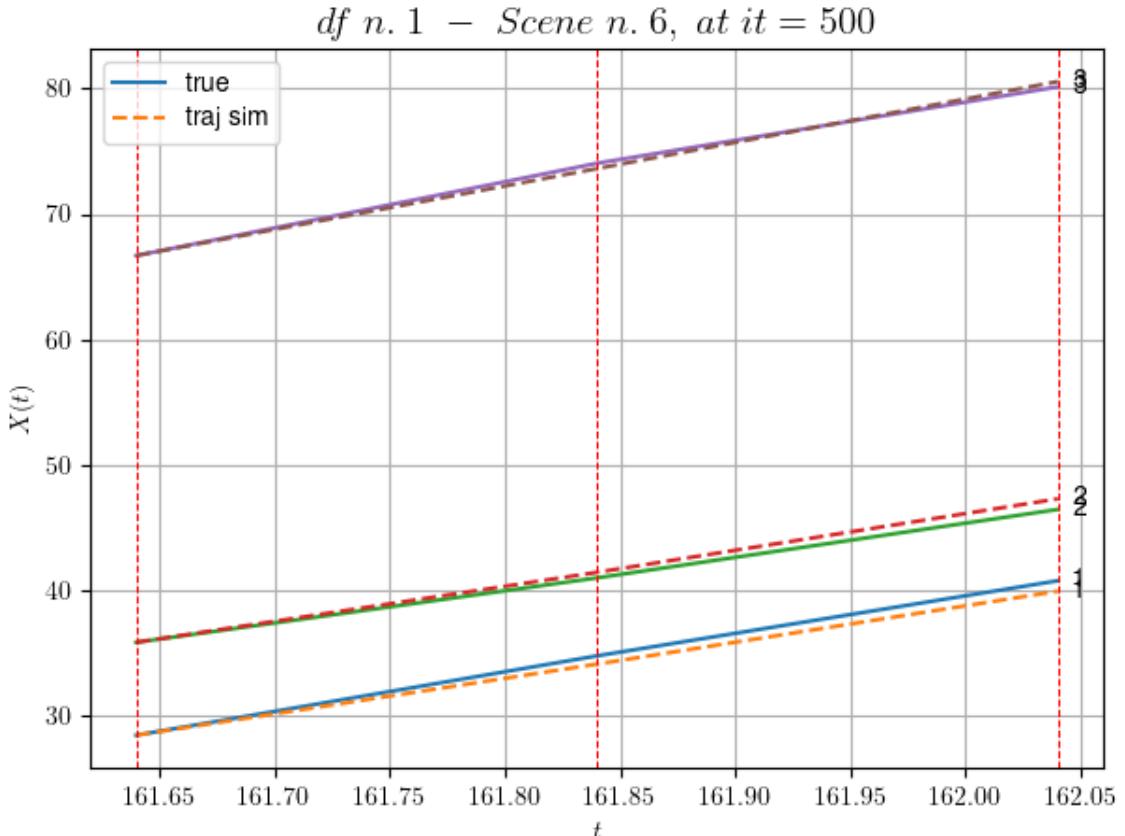
* use LR_NN=0.0005 with err=0.8323456833467437 at it=19
 * v0_scn_mean = 27.764357211160757
 * MAE = 0.6406737269133901

- Time interval n.0: [161.64, 161.84]

```
* y_true: [31.66062591 25.70084842]
* v_ann: [28.38007354736328, 27.910541534423828, 3
4.7118151980368]
```

```
- Time interval n.1: [161.84, 162.04]
* y_true: [29.96082912 27.30094687]
* v_ann: [29.076332092285156, 29.3255672454834, 34.
7118151980368]
```

```
* err= 0.26614881221241854
* Learning rate NN = 7.289998757187277e-05
* diff = 2.65467060067551e-05
```



For scene 6/28

```
* use LR_NN=0.0001 with err=13.3331385752572 at it=19
* v0_scn_mean = 34.429106497704446
* MAE = 0.26316766533564667
```

For scene 7/28

```
* use LR_NN=0.0005 with err=1.57799748351348 at it=19
* v0_scn_mean = 32.14096981011883
* MAE = 0.9206552456524028
```

For scene 8/28

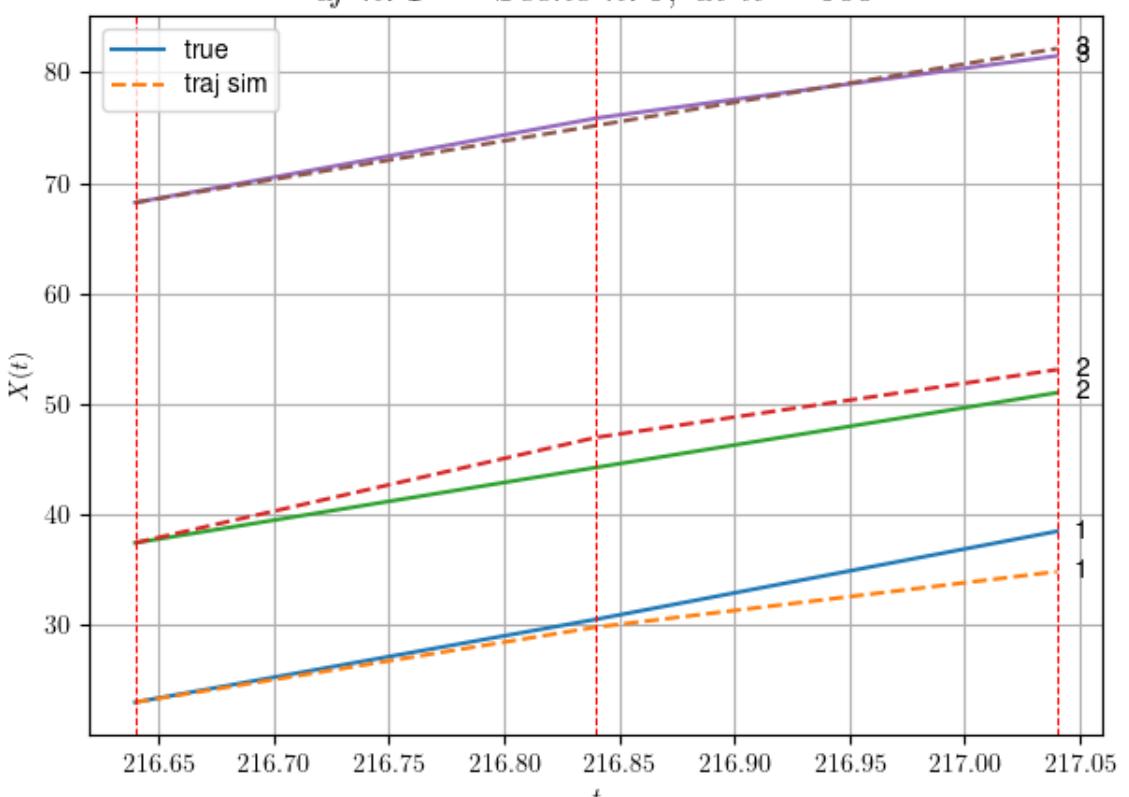
- * use LR_NN=0.0001 with err=1.3510182050617778 at it=19
- * v0_scn_mean = 36.54858026783424
- * MAE = 45.219049591045426

- Time interval n.0: [216.64, 216.84]
- * y_true: [37.52054047 34.13112536]
- * v_ann: [33.975608825683594, 47.7243537902832, 34.851825110754575]

- Time interval n.1: [216.84, 217.04]
- * y_true: [39.83095433 33.81148861]
- * v_ann: [25.138324737548828, 30.66370964050293, 34.851825110754575]

- * err= 2.938637380341115
- * Learning rate NN = 0.00036449998151510954
- * diff = 0.021259840671008945

df n. 1 – Scene n. 9, at it = 500



For scene 9/28

- * use LR_NN=0.0005 with err=9.576170733363591 at it=19
- * v0_scn_mean = 34.560715821946125
- * MAE = 2.9339093900472286

```

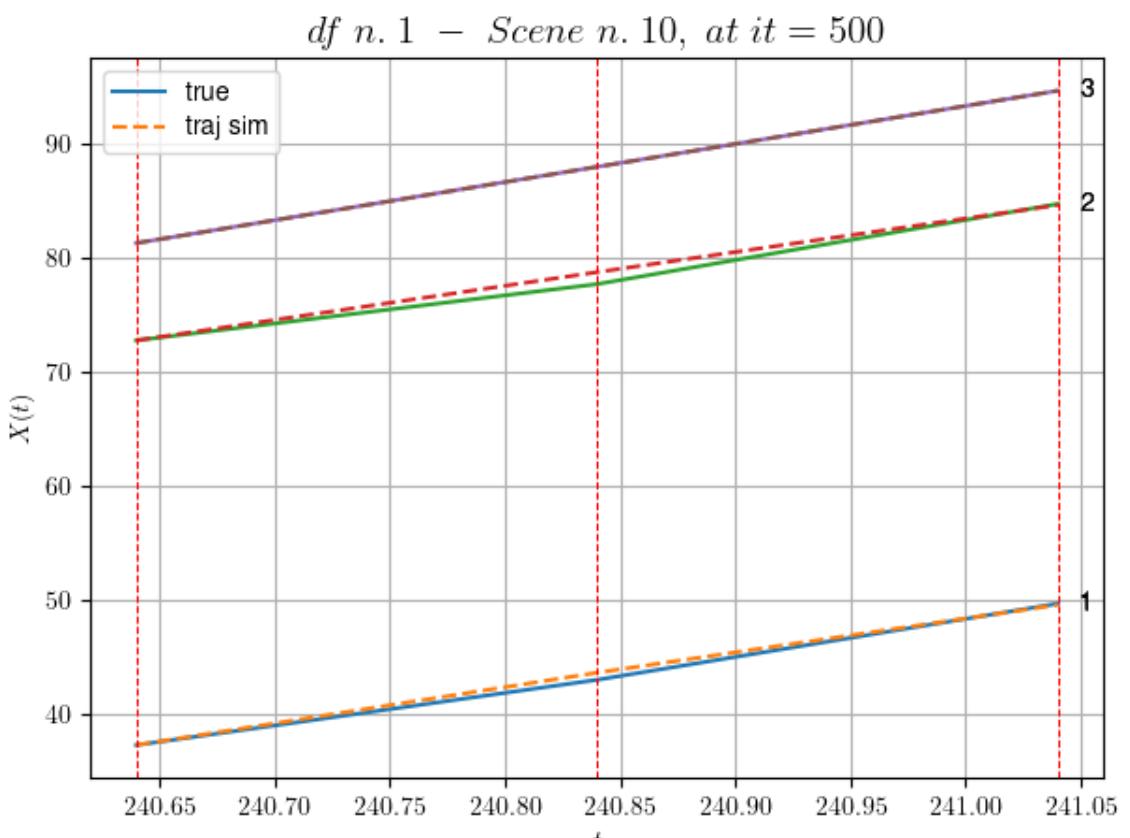
    - Time interval n.0: [240.64, 240.84]
      * y_true: [28.54090912 24.62265201]
      * v_ann: [31.653947830200195, 29.84722137451172, 3
3.34476984108637]
```

```

    - Time interval n.1: [240.84, 241.04]
      * y_true: [33.36143299 35.0745887 ]
      * v_ann: [29.67120933532715, 29.36441421508789, 33.
34476984108637]
```

```

      * err= 0.16692670678065546
      * Learning rate NN = 3.6449993785936385e-05
      * diff = 0.0007562109045426146
```



For scene 10/28

```

* use LR_NN=5e-05 with err=9.243001163888446 at it=19
* v0_scn_mean = 33.1440838007939
* MAE = 0.1540101492852699
```

For scene 11/28

```

* use LR_NN=5e-05 with err=1.719470616935164 at it=19
* v0_scn_mean = 28.09535941386288
* MAE = 0.16496364205540032
```

```
=====
=====

For scene 12/28
* use LR_NN=0.001 with err=29.791163560575455 at it=19
* v0_scn_mean = 35.422721465050216
* MAE = 1.0619841096483997
```

```
=====
=====
```

```
=====
=====

For scene 13/28
* use LR_NN=0.0005 with err=21.38731623463863 at it=19
* v0_scn_mean = 30.84204471189291
* MAE = 2.6601594646884648
```

```
=====
=====
```

```
-----
-----
```

```
- Time interval n.0: [325.24, 325.44]
* y_true: [29.06068603 28.85087529]
* v_ann: [29.157489776611328, 28.56772232055664, 2
9.804033810069072]
```

```
-----
-----
```

```
- Time interval n.1: [325.44, 325.64]
* y_true: [28.37089255 31.80128105]
* v_ann: [29.195505142211914, 28.487016677856445, 2
9.804033810069072]
```

```
-----
-----
```

```
- Time interval n.2: [325.64, 325.84]
* y_true: [30.70143178 22.60113815]
* v_ann: [29.43621253967285, 29.03754997253418, 29.
804033810069072]
```

```
-----
-----
```

```
- Time interval n.3: [325.84, 326.04]
* y_true: [31.42655806 32.52725213]
* v_ann: [29.043867111206055, 28.206531524658203, 2
9.804033810069072]
```

```
-----
-----
```

```
- Time interval n.4: [326.04, 326.24]
* y_true: [27.9669351 32.52725213]
* v_ann: [29.752925872802734, 29.35245132446289, 2
9.804033810069072]
```

```
-----
-----
```

```
- Time interval n.5: [326.24, 326.44]
* y_true: [27.10202936 26.72764736]
* v_ann: [29.8238582611084, 29.439510345458984, 29.
```

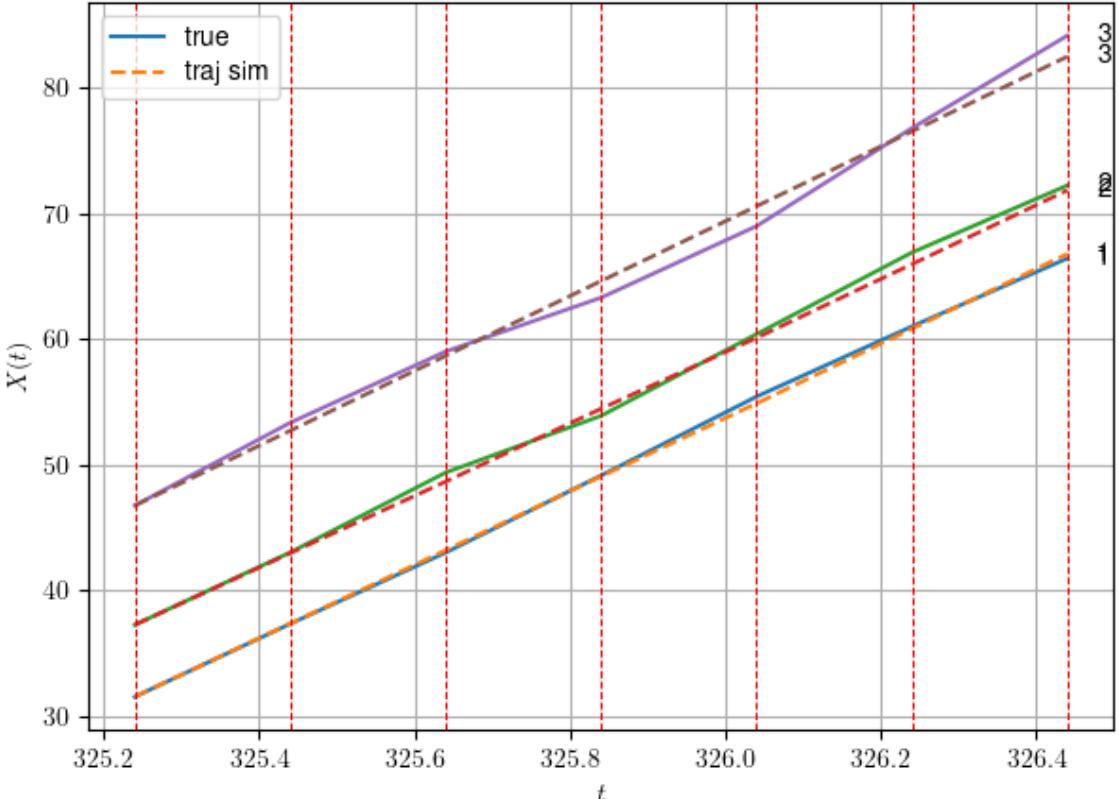
804033810069072]

```

* err= 0.4812759465258763
* Learning rate NN = 0.00031381050939671695
* v0_scn_mean = 29.81579177266636

```

df n. 1 – Scene n. 14, at it = 500



For scene 14/28

```

* use LR_NN=0.001 with err=17.50737500753131 at it=19
* v0_scn_mean = 29.81579177266636
* MAE = 0.4810133008115871

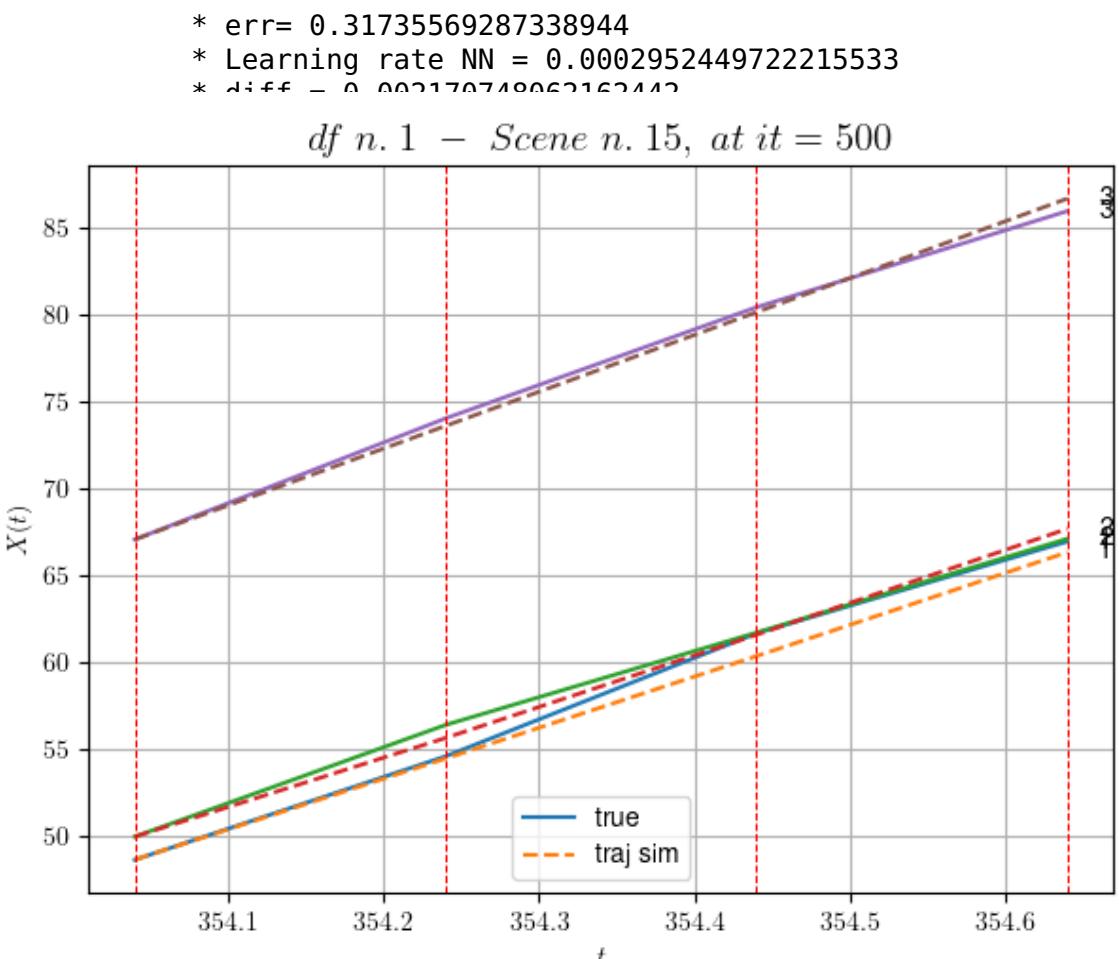
```

- Time interval n.0: [354.04, 354.24]
 * y_true: [29.77169216 32.15176545]
 * v_ann: [29.130067825317383, 28.400299072265625, 3
 2.69352217293489]

- Time interval n.1: [354.24, 354.44]
 * y_true: [35.38251939 26.55179403]
 * v_ann: [29.467548370361328, 29.6824951171875, 32.
 69352217293489]

- Time interval n.2: [354.44, 354.64]
 * y_true: [26.40441101 27.01000163]
 * v_ann: [29.882179260253906, 30.489192962646484, 3

2.69352217293489]



For scene 15/28

```
* use LR_NN=0.0005 with err=27.50591010648527 at it=19
* v0_scn_mean = 32.531910963492244
* MAE = 0.31735569287338944
```

For scene 16/28

```
* use LR_NN=0.0005 with err=23.27930865692892 at it=19
* v0_scn_mean = 38.05995438235532
* MAE = 3.5013126579565745
```

- Time interval n.0: [386.64, 386.84]
 - * y_true: [28.15052447 34.1607672]
 - * v_ann: [34.179195404052734, 35.4741096496582, 39.346100167622666]

- Time interval n.1: [386.84, 387.04]

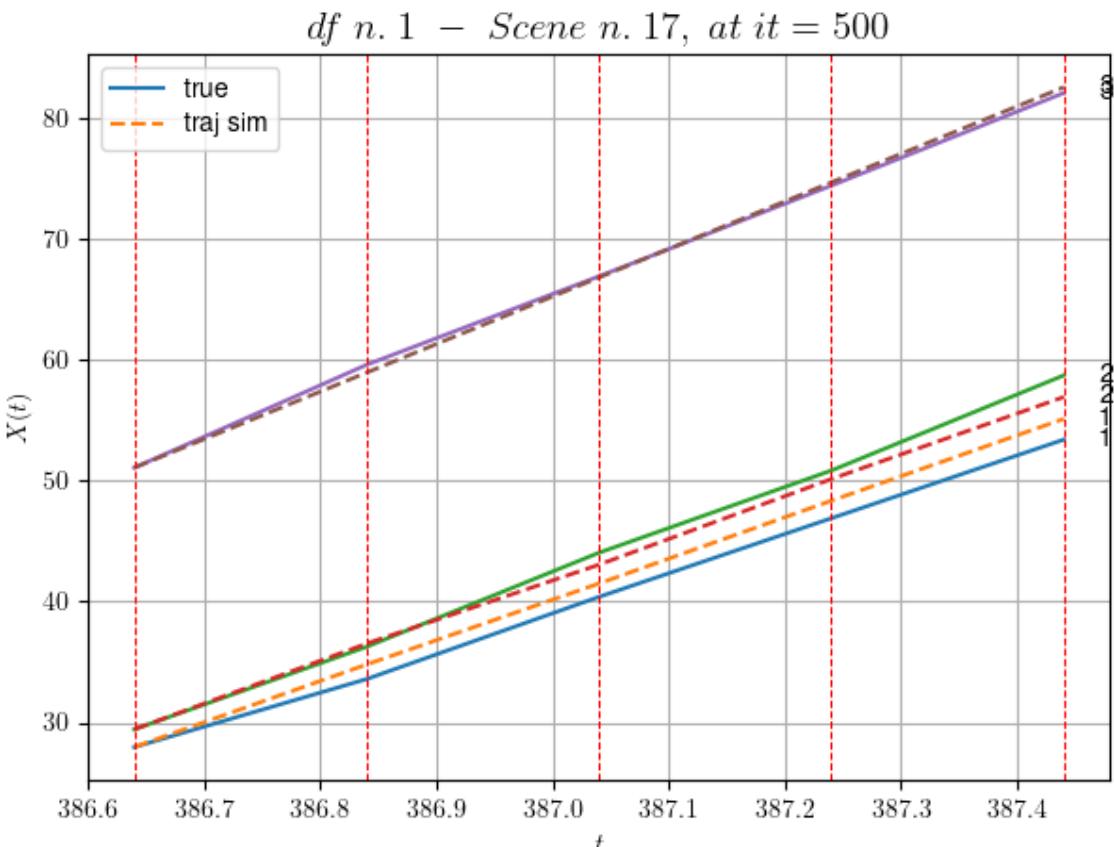
```
* y_true: [34.00091123 38.91120777]
* v_ann: [33.503700256347656, 32.6512451171875, 39.
346100167622666]
```

```
- Time interval n.2: [387.04, 387.24]
* y_true: [32.52639997 34.00151192]
* v_ann: [34.252044677734375, 35.431312561035156, 3
9.346100167622666]
```



```
- Time interval n.3: [387.24, 387.44]
* y_true: [32.52639997 39.36234046]
* v_ann: [33.840675354003906, 33.91779327392578, 3
9.346100167622666]
```

```
* err= 0.8803012494586743
* Learning rate NN = 0.000239148415857926
* diff = 1 28000181830385110-05
```



For scene 17/28

```
* use LR_NN=0.0005 with err=50.67221291284482 at it=19
* v0_scn_mean = 38.78533457718457
* MAE = 0.6628221891058106
```

- Time interval n.0: [431.84, 432.04]

```

* y_true: [30.8908033 31.49166882]
* v_ann: [32.27869415283203, 32.16936492919922, 30.
084161636187435]

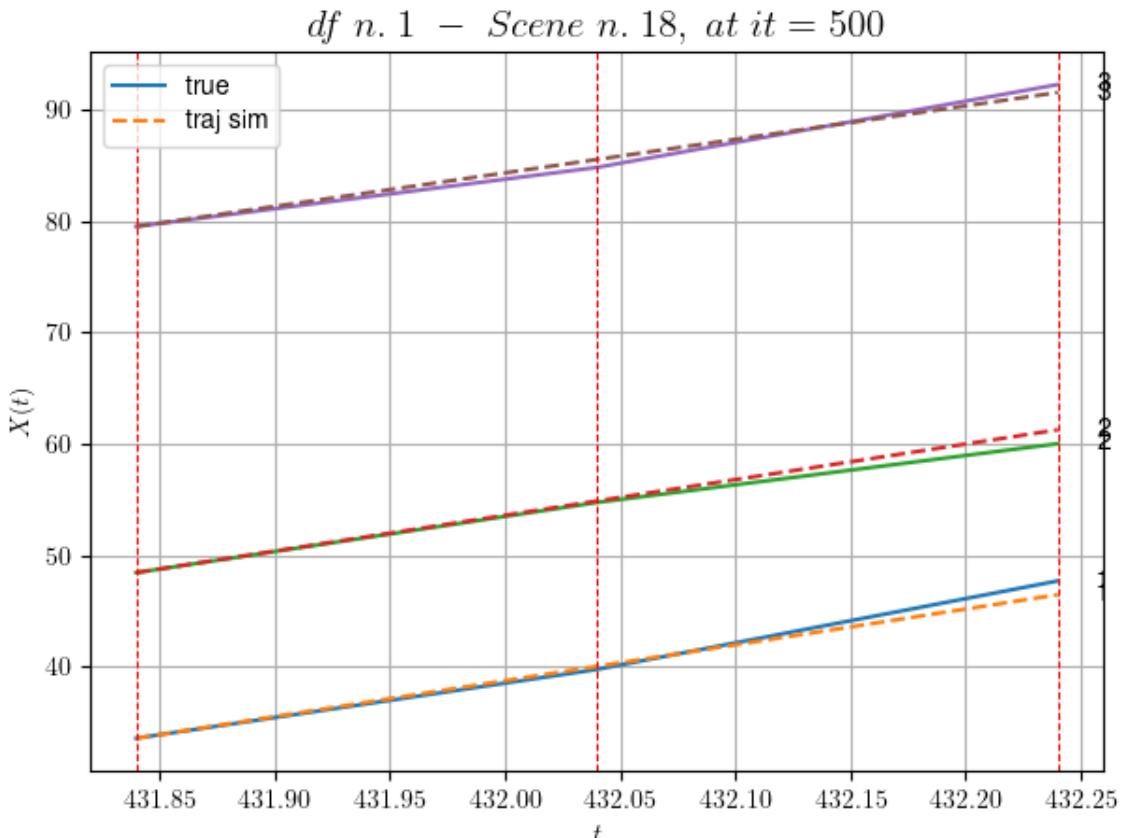
-----
- Time interval n.1: [432.04, 432.24]
* y_true: [39.73151551 26.376716 ]
* v_ann: [32.15437316894531, 31.94780731201172, 30.
084161636187435]

```

```

* err= 0.46678367768391776
* Learning rate NN = 3.6449993785936385e-05
* diff = 0.00030137001088220

```



For scene 18/28

```

* use LR_NN=5e-05 with err=7.150675526078927 at it=19
* v0_scn_mean = 30.079111941794974
* MAE = 0.39201163100764874

```

```

=====
=====
- Time interval n.0: [446.24, 446.44]
* y_true: [25.89017971 23.30046083]
* v_ann: [26.625398635864258, 27.408912658691406, 2
9.554429209125708]

```

```

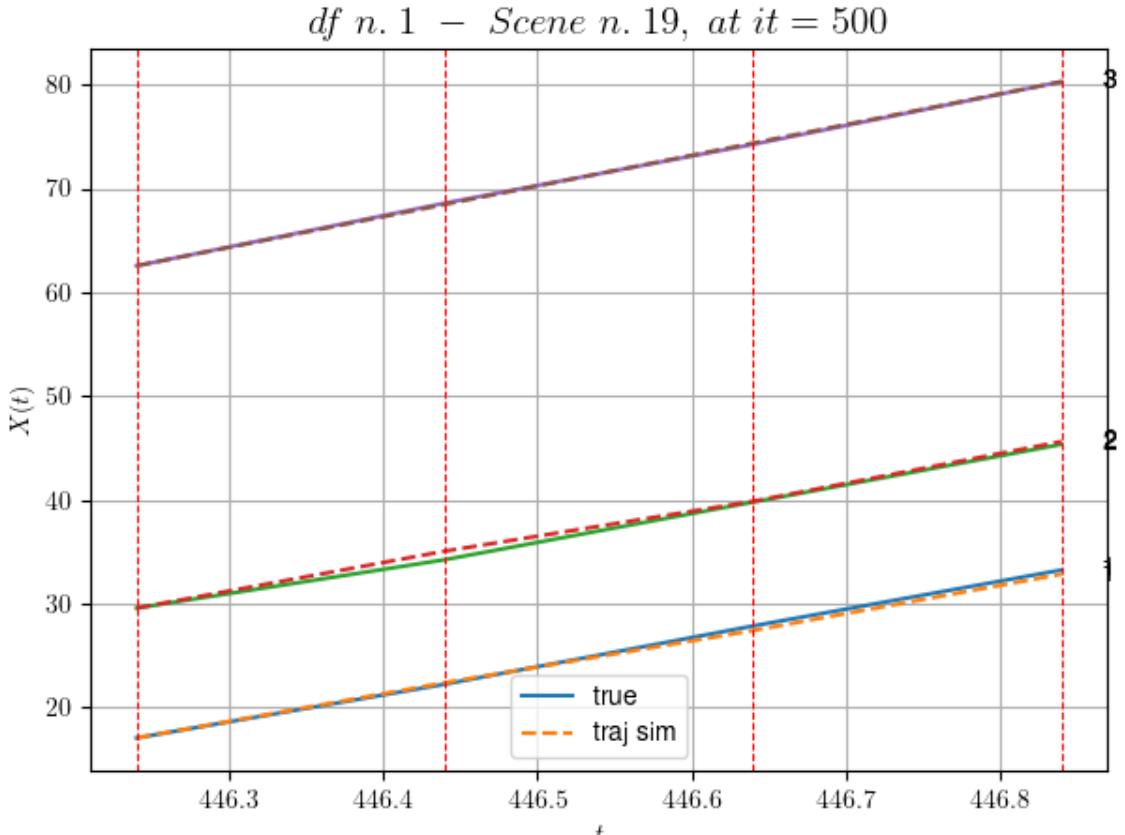
=====
=====
- Time interval n.1: [446.44, 446.64]
* y_true: [28.05031625 27.72075411]

```

```
* v_ann: [25.139083862304688, 23.99930763244629, 2
9.554429209125708]
```

```
- Time interval n.2: [446.64, 446.84]
* y_true: [26.94045507 27.8009832 ]
* v_ann: [27.124286651611328, 28.77948760986328, 2
9.554429209125708]
```

```
* err= 0.0966175810114197
* Learning rate NN = 0.0002952449722215533
* diff = 7.745262701627786e-06
```



For scene 19/28

```
* use LR_NN=0.0005 with err=11.996992259630668 at it=19
* v0_scn_mean = 29.581163436573362
* MAE = 0.09003837856750767
```

For scene 20/28

```
* use LR_NN=0.001 with err=24.344074991094512 at it=19
* v0_scn_mean = 32.38602512452966
* MAE = 1.56343414642781
```

```

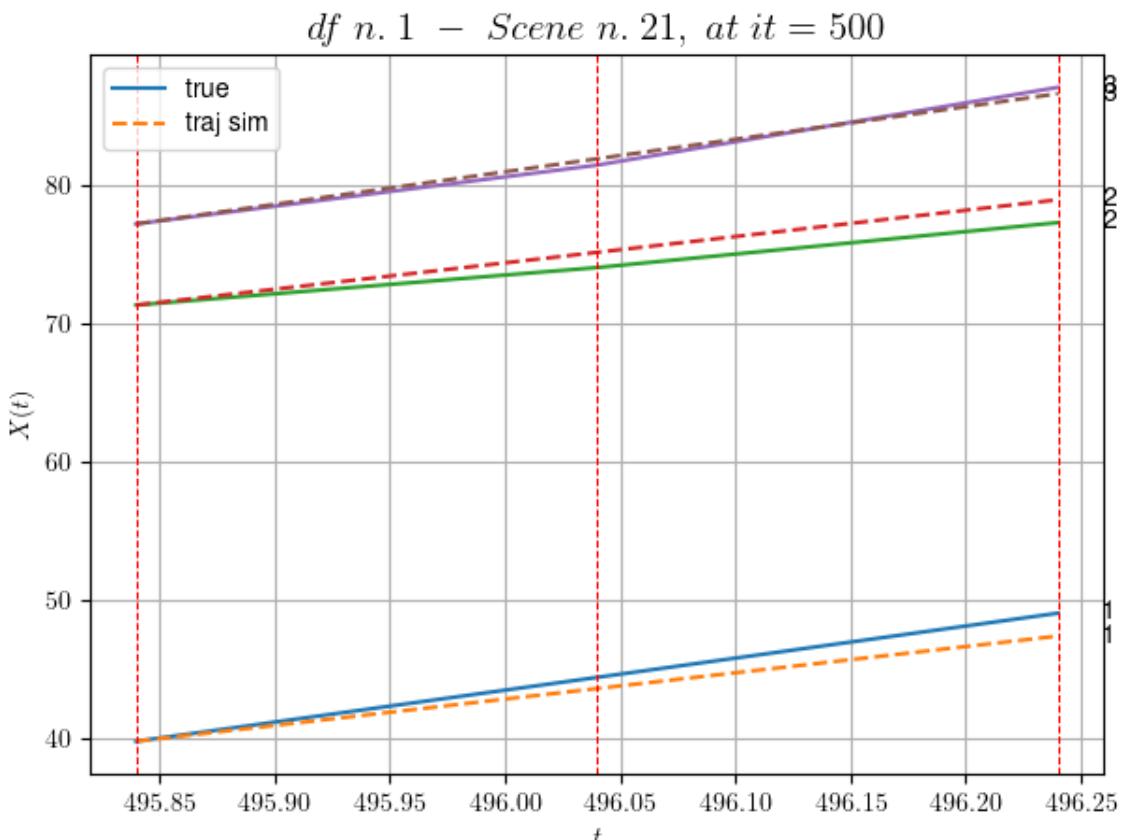
- Time interval n.0: [495.84, 496.04]
  * y_true: [23.1307843 13.57637571]
  * v_ann: [19.098987579345703, 19.079282760620117, 2
3.56309349087288]
```

```

- Time interval n.1: [496.04, 496.24]
  * y_true: [23.23098731 16.2618474 ]
  * v_ann: [18.986526489257812, 19.031293869018555, 2
3.56309349087288]
```

```

* err= 0.8622376691547619
* Learning rate NN = 7.289998757187277e-05
* diff = 6.7203029358031685e-06
```



For scene 21/28

```

* use LR_NN=0.0001 with err=2.8593978913721467 at it=19
* v0_scn_mean = 23.949307592416773
* MAE = 0.8622376691547619
```

```

- Time interval n.0: [496.84, 497.04]
  * y_true: [19.47545433 17.05100655]
  * v_ann: [18.250444412231445, 18.111425399780273, 2
3.671022130117933]
```

```

    - Time interval n.1: [497.04, 497.24]
      * y_true: [13.44536038 20.12642582]
      * v_ann: [18.247623443603516, 18.134708404541016, 2
3.671022130117933]
```

```

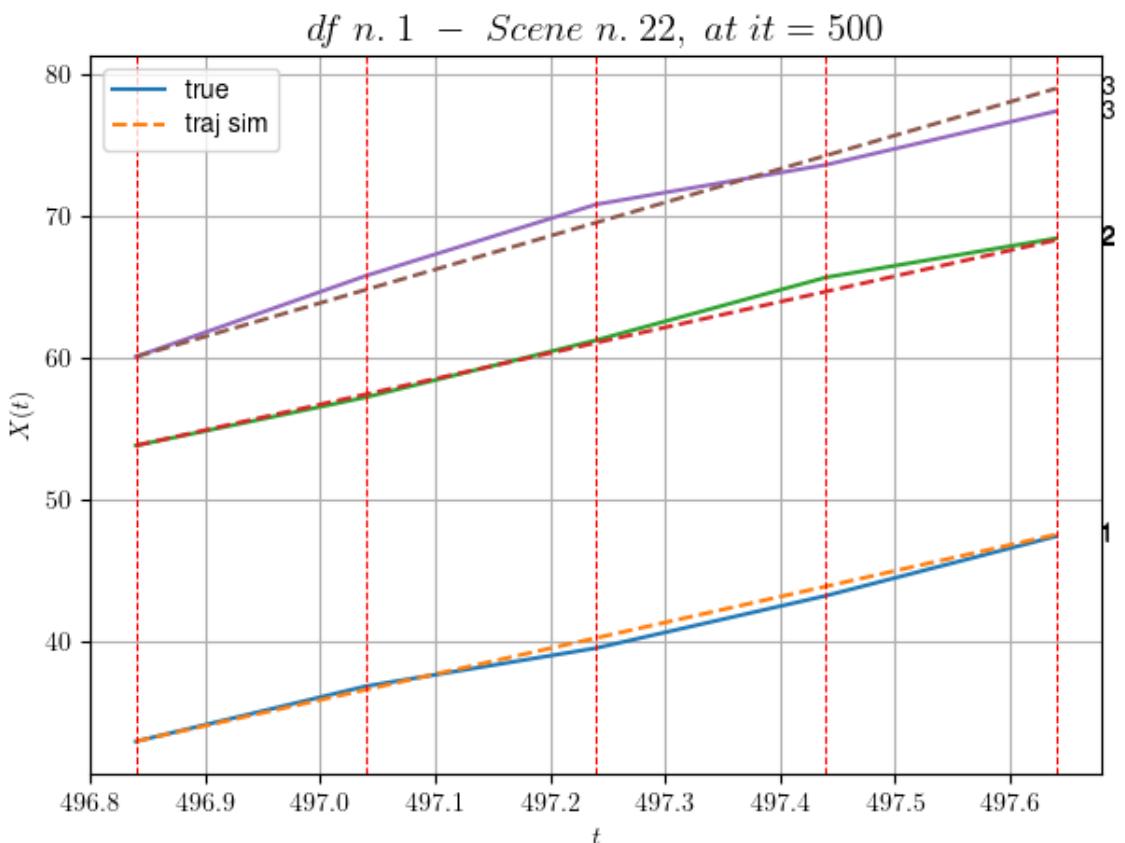
    - Time interval n.2: [497.24, 497.44]
      * y_true: [18.49565962 22.17670532]
      * v_ann: [18.21571922302246, 18.11458396911621, 23.
671022130117933]
```

```

    - Time interval n.3: [497.44, 497.64]
      * y_true: [20.96085077 13.7761341 ]
      * v_ann: [18.294490814208984, 18.14461898803711, 2
3.671022130117933]
```

```

* err= 0.5148171163945999
* Learning rate NN = 2.3914839403005317e-05
* diff = 5.3178111547147466e-05
```



For scene 22/28

```

* use LR_NN=5e-05 with err=15.027683279320824 at it=19
* v0_scn_mean = 24.05076051815332
* MAE = 0.5094846124505589
```

```

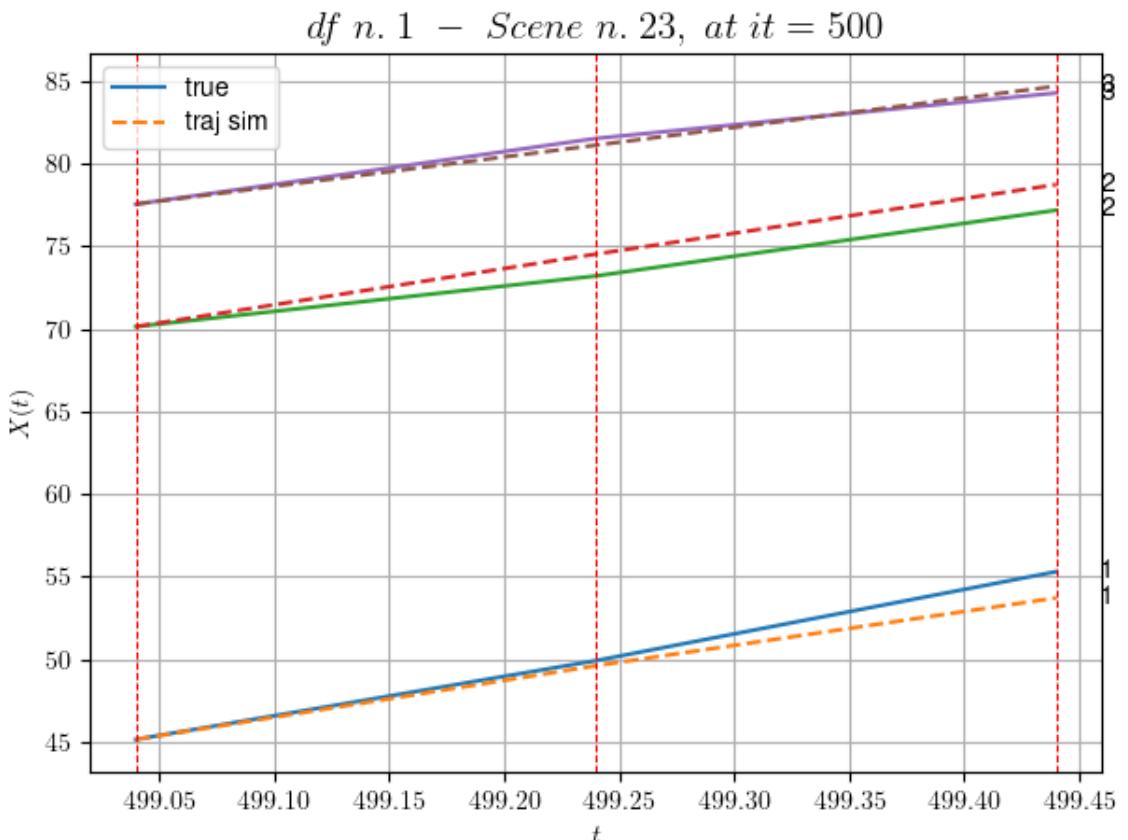
- Time interval n.0: [499.04, 499.24]
  * y_true: [23.84103851 15.32650765]
  * v_ann: [22.31243133544922, 21.94381332397461, 17.
832163517131235]
```

```

- Time interval n.1: [499.24, 499.44]
  * y_true: [26.92142921 19.88726092]
  * v_ann: [20.496597290039062, 21.001632690429688, 1
7.832163517131235]
```

```

* err= 0.7888263757036449
* Learning rate NN = 0.00036449998151510954
* diff = 4.26688859056501e-06
```



For scene 23/28

```

* use LR_NN=0.0005 with err=5.301149000538891 at it=19
* v0_scn_mean = 18.56223315979349
* MAE = 0.7814763193196232
```

For scene 24/28

```

* use LR_NN=0.0001 with err=10.910502053767752 at it=19
* v0_scn_mean = 14.565552900106105
* MAE = 0.026529141448542636
```

For scene 25/28

- * use LR_NN=0.001 with err=37.679118419473845 at it=19
- * v0_scn_mean = 16.586991227534646
- * MAE = 1.0977878333393252

- Time interval n.0: [534.84, 535.04]

- * y_true: [8.93323515 20.37071651]

- * v_ann: [17.192216873168945, 17.752885818481445, 2
9.753482357833004]

- Time interval n.1: [535.04, 535.24]

- * y_true: [8.47527286 31.64140498]

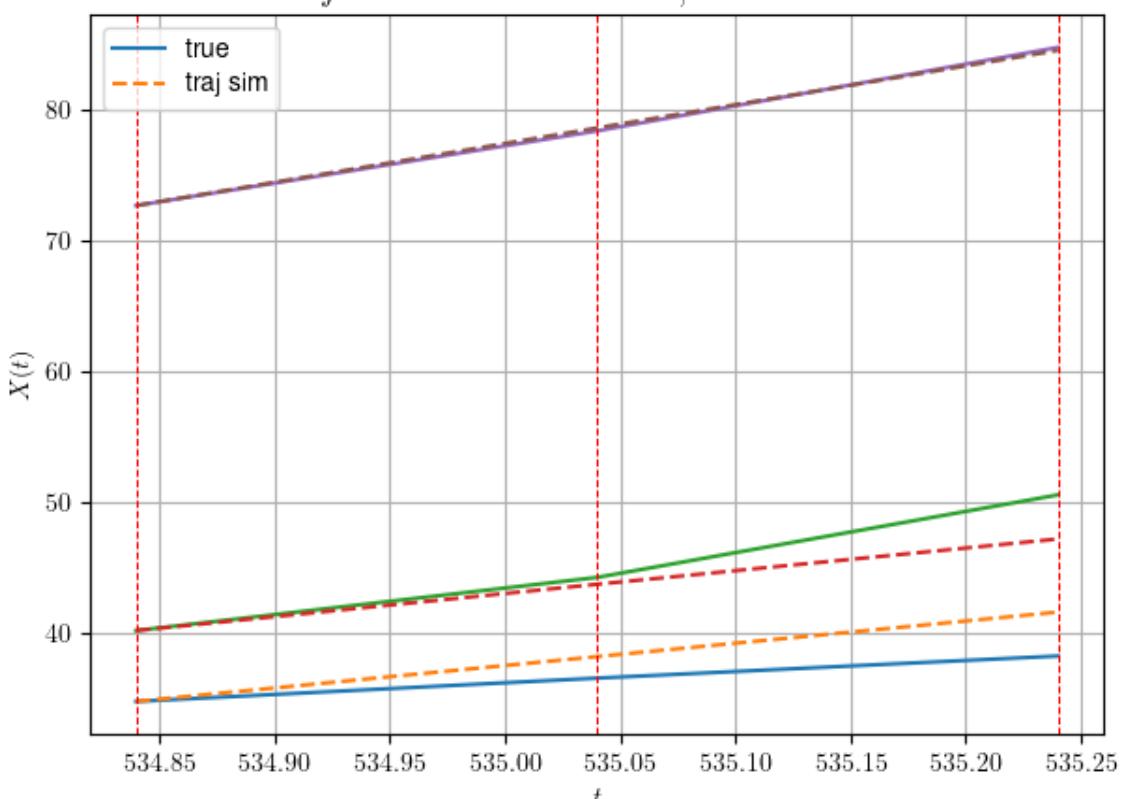
- * v_ann: [17.05530548095703, 17.35872459411621, 29.
753482357833004]

* err= 2.8750665828115807

* Learning rate NN = 7.289998757187277e-05

* diff = 4.272426011416351e-05

df n. 1 – Scene n. 26, at it = 500



For scene 26/28

- * use LR_NN=0.0001 with err=1.105429277281844 at it=19
- * v0_scn_mean = 29.768273405296522
- * MAE = 2.867628946997941

```

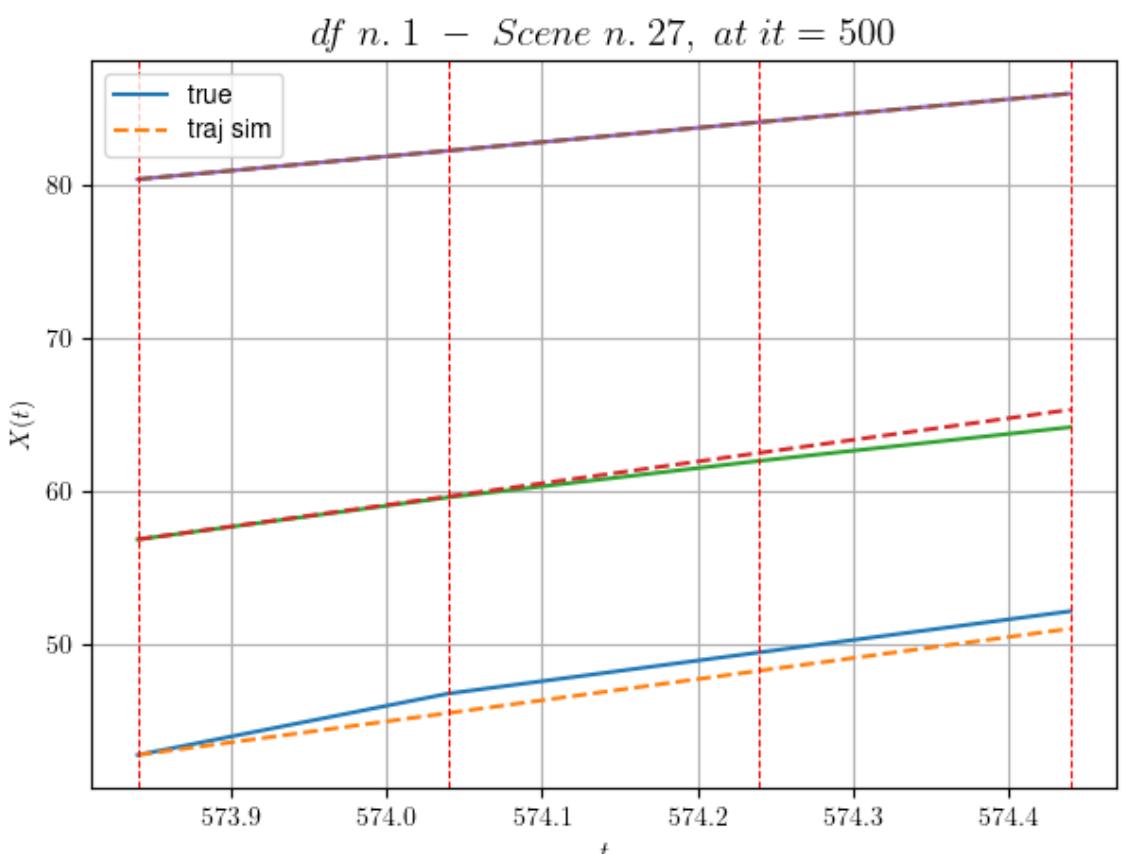
=====
- Time interval n.0: [573.84, 574.04]
  * y_true: [20.07571717 13.74586409]
  * v_ann: [13.711809158325195, 14.055623054504395,
  9.338719660907481]

-----
- Time interval n.1: [574.04, 574.24]
  * y_true: [13.45064024 11.92582032]
  * v_ann: [13.82572555419922, 14.229129791259766,
  9.338719660907481]

-----
- Time interval n.2: [574.24, 574.44]
  * y_true: [13.45064024 11.00083908]
  * v_ann: [13.742607116699219, 14.117398262023926,
  9.338719660907481]

-----
* err= 0.4952406613206835
* Learning rate NN = 5.904899080633186e-05
* diff = 0.00079610623443227

```

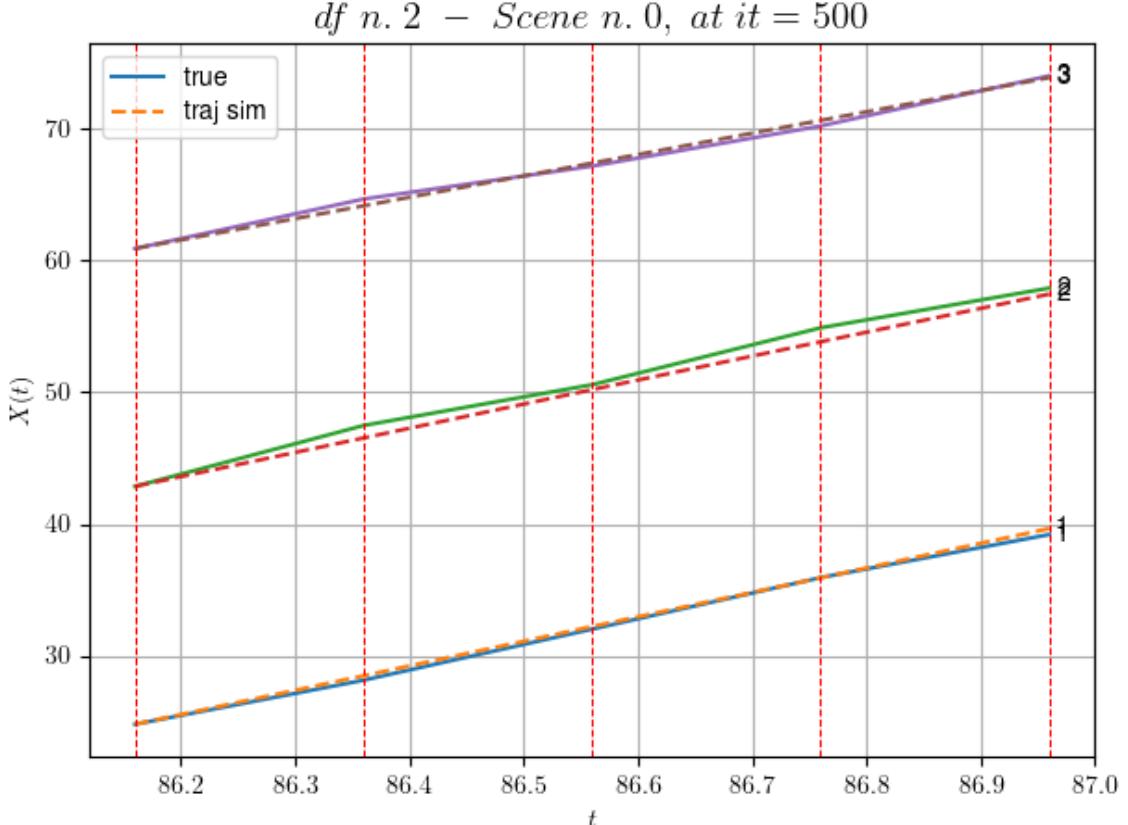


For scene 27/28

- * use LR_NN=0.0001 with err=22.841086588294996 at it=19
- * v0_scn_mean = 10.578395553606354
- * MAE = 0.4118191673070238

```
=====
For df=1 with 28 scenes, time taken:      315.09
=====

-----
=====
*****  
*****  
In df n.2/10 we have 18 scenes  
*****  
*****  
-----  
- Time interval n.0: [86.16, 86.36]  
  * y_true: [16.74023073 23.1409288 ]  
  * v_ann: [18.407161712646484, 18.407114028930664, 1  
6.23533006014579]  
-----  
- Time interval n.1: [86.36, 86.56]  
  * y_true: [19.40034801 15.51071286]  
  * v_ann: [18.718528747558594, 18.36194610595703, 1  
6.23533006014579]  
-----  
- Time interval n.2: [86.56, 86.76]  
  * y_true: [19.59044325 21.61118084]  
  * v_ann: [18.51744270324707, 18.194185256958008, 1  
6.23533006014579]  
-----  
- Time interval n.3: [86.76, 86.96]  
  * y_true: [16.37044892 15.10091945]  
  * v_ann: [18.729921340942383, 18.117042541503906, 1  
6.23533006014579]  
-----  
* err= 0.21654346215167478  
* Learning rate NN = 4.7829678806010634e-05  
* diff = 7.67664805789714e-06
```



For scene 0/18

* use LR_NN=0.0001 with err=15.89528566007147 at it=19
 * v0_scn_mean = 17.061209638533207
 * MAE = 0.2162703075940903

- Time interval n.0: [109.36, 109.56]
 * y_true: [28.77160952 15.03115545]
 * v_ann: [22.27755355834961, 22.717588424682617, 2
 0.033858704331585]

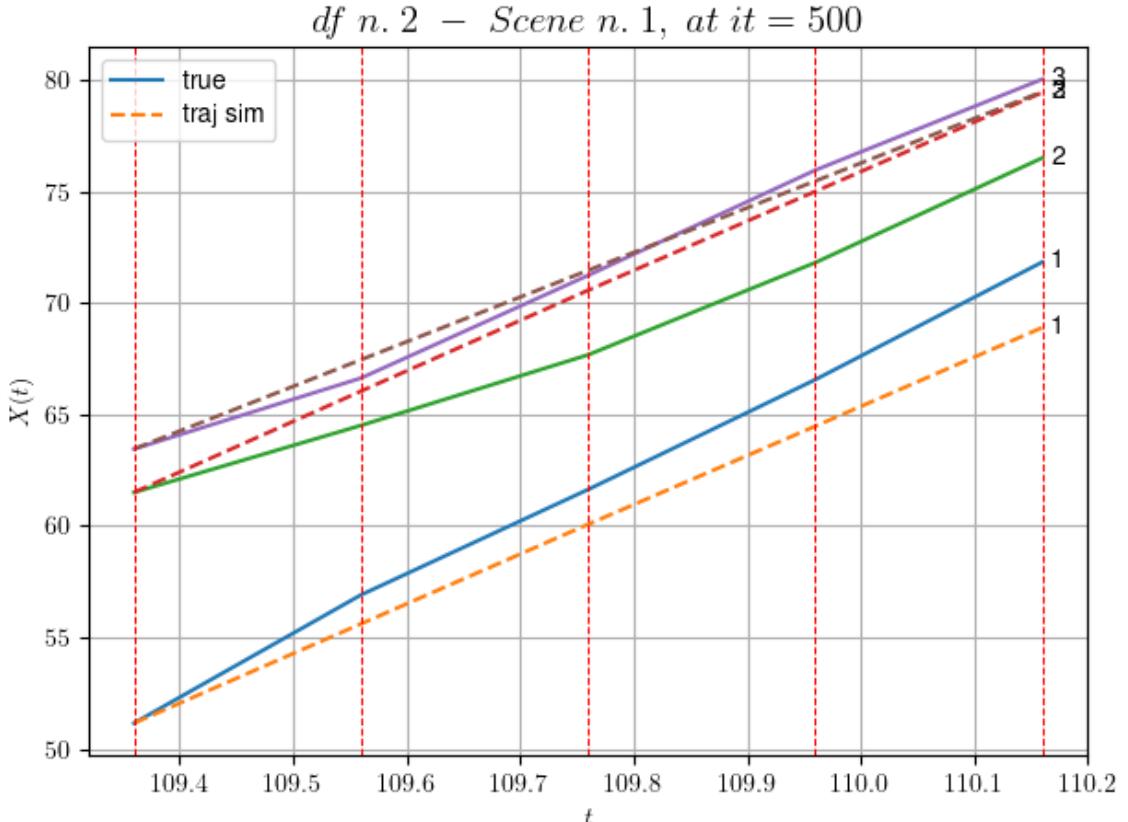
- Time interval n.1: [109.56, 109.76]
 * y_true: [23.64157457 15.83133823]
 * v_ann: [22.327428817749023, 22.62726402282715, 2
 0.033858704331585]

- Time interval n.2: [109.76, 109.96]
 * y_true: [24.63196009 20.68195399]
 * v_ann: [21.998069763183594, 22.160614013671875, 2
 0.033858704331585]

- Time interval n.3: [109.96, 110.16]
 * y_true: [26.38241903 23.49250056]
 * v_ann: [22.13564682006836, 22.205467224121094, 2

0.033858704331585]

```
* err= 3.1971662983922253
* Learning rate NN = 0.000239148415857926
* diff = 0.0007013727113722021
```



For scene 1/18

```
* use LR_NN=0.0005 with err=12.357547408271316 at it=19
* v0_scn_mean = 20.631826734613455
* MAE = 3.1971662983922253
```

- Time interval n.0: [170.36, 170.56]
* y_true: [25.3307413 19.52081588]
* v_ann: [25.404918670654297, 25.92192268371582, 1
6.151609391477642]

- Time interval n.1: [170.56, 170.76]
* y_true: [29.74113537 17.1608437]
* v_ann: [23.647218704223633, 22.528545379638672, 1
6.151609391477642]

- Time interval n.2: [170.76, 170.96]
* y_true: [24.43113316 23.6413756]
* v_ann: [24.01685333251953, 23.093873977661133, 1
6.151609391477642]

```

-----  

-----  

    - Time interval n.3: [170.96, 171.16]  

      * y_true: [22.71130298 30.41206279]  

      * v_ann: [24.24818992614746, 23.7358455657959, 16.1  

51609391477642]  

-----  

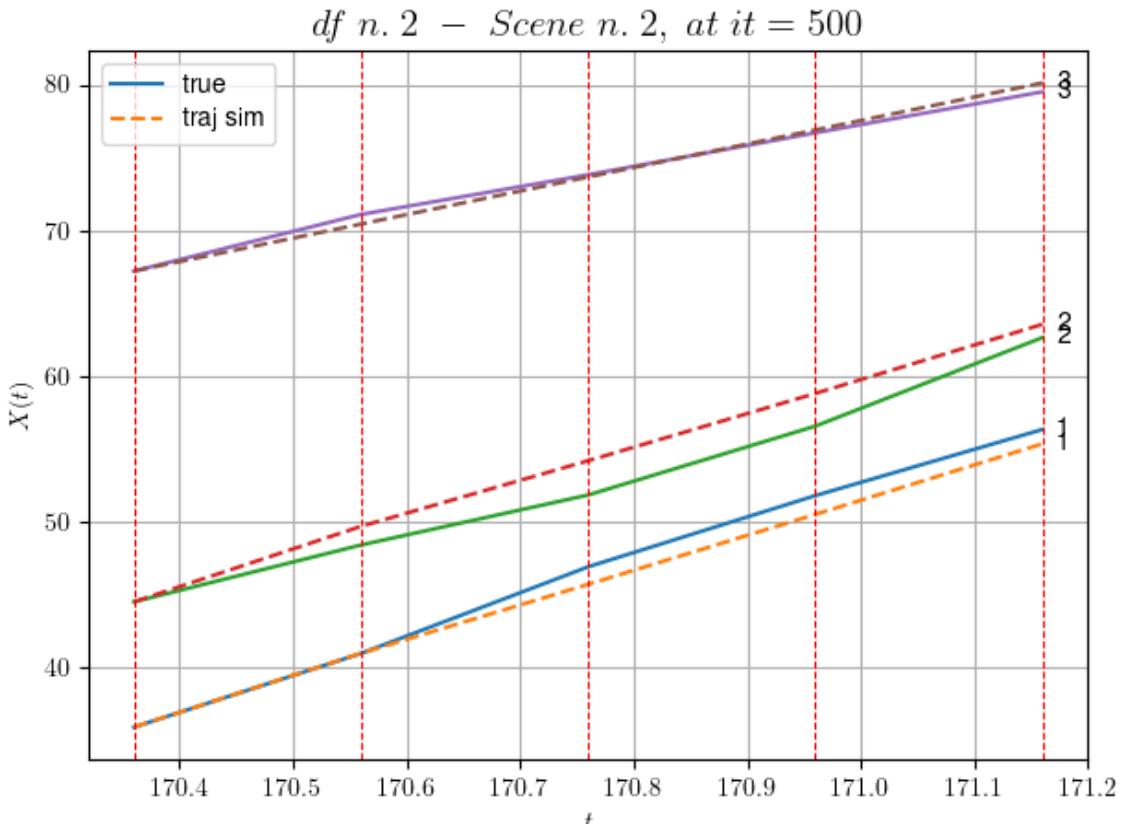
-----
```

```

* err= 1.198689568739678  

* Learning rate NN = 0.000478296831715852  

* diff = 1.5445689412585395e-05
```



For scene 2/18

```

* use LR_NN=0.001 with err=42.8971159030613 at it=19  

* v0_scn_mean = 16.98251220622636  

* MAE = 1.198689568739678
```

```

=====  

=====  

-----  

-----  

    - Time interval n.0: [179.36, 179.56]  

      * y_true: [10.36002857 23.43048282]  

      * v_ann: [18.057491302490234, 17.191030502319336, 2  

2.081999529879027]  

-----  

-----
```

```

-----  

-----  

    - Time interval n.1: [179.56, 179.76]  

      * y_true: [10.37004005 22.87060641]  

      * v_ann: [17.83000373840332, 17.22637367248535, 22.  

081999529879027]
```

```

-----  

-----  

- Time interval n.2: [179.76, 179.96]  

* y_true: [15.39008451 20.81068862]  

* v_ann: [17.5936279296875, 17.149377822875977, 22.  

081999529879027]  

-----  

-----
```

```

-----  

-----  

- Time interval n.3: [179.96, 180.16]  

* y_true: [12.44008929 23.53096892]  

* v_ann: [17.552284240722656, 17.103071212768555, 2  

2.081999529879027]  

-----  

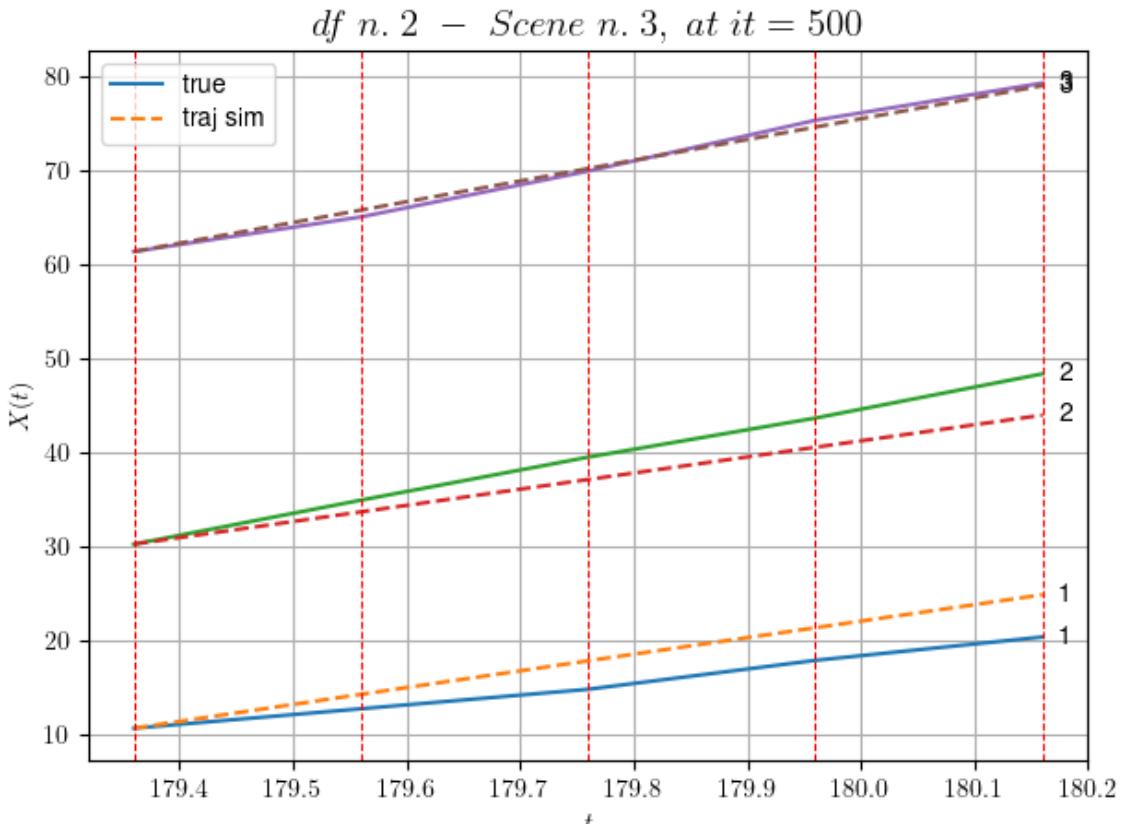
-----
```

```

* err= 5.4134003678059335  

* Learning rate NN = 2.3914839403005317e-05  

* diff = 0.00000005750225454
```



For scene 3/18
* use LR_NN=5e-05 with err=5.941624526055527 at it=19
* v0_scn_mean = 22.557079202585157
* MAE = 5.4134003678059335

For scene 4/18
* use LR_NN=0.0005 with err=11.070755918131175 at it=19
* v0_scn_mean = 16.23934230670903
* MAE = 0.008742437000116206

```
=====
=====

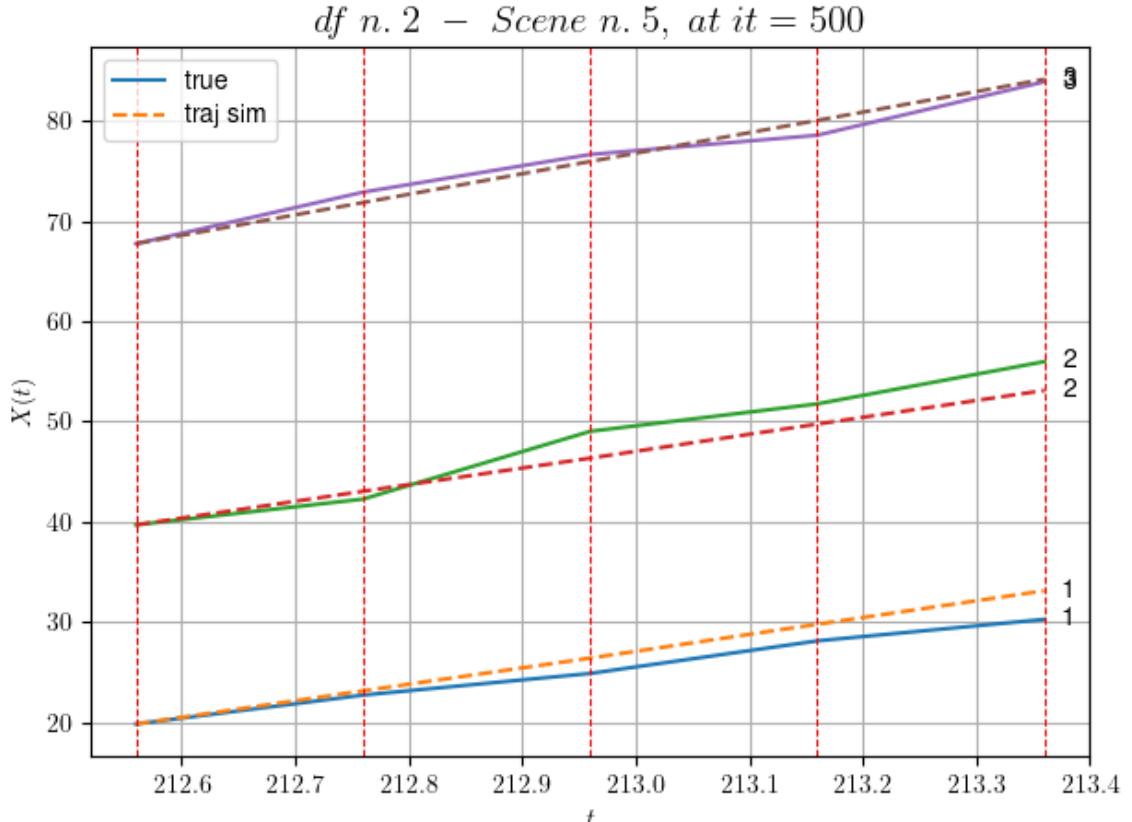
    - Time interval n.0: [212.56, 212.76]
      * y_true: [14.43013055 12.85042103]
      * v_ann: [16.549179077148438, 16.751785278320312, 2
0.507135320916426]

-----
    - Time interval n.1: [212.76, 212.96]
      * y_true: [10.79011916 33.80137312]
      * v_ann: [16.330589294433594, 16.532705307006836, 2
0.507135320916426]

-----
    - Time interval n.2: [212.96, 213.16]
      * y_true: [16.24022861 13.70067627]
      * v_ann: [16.893169403076172, 17.00196647644043, 2
0.507135320916426]

-----
    - Time interval n.3: [213.16, 213.36]
      * y_true: [10.73017559 21.10118973]
      * v_ann: [16.711286544799805, 16.795578002929688, 2
0.507135320916426]

-----
* err= 2.490972505480786
* Learning rate NN = 4.7829678806010634e-05
* diff = 0.0015995751517521306
```



For scene 5/18

* use LR_NN=0.0001 with err=8.773715219451132 at it=19

* v0_scn_mean = 21.0767067754524

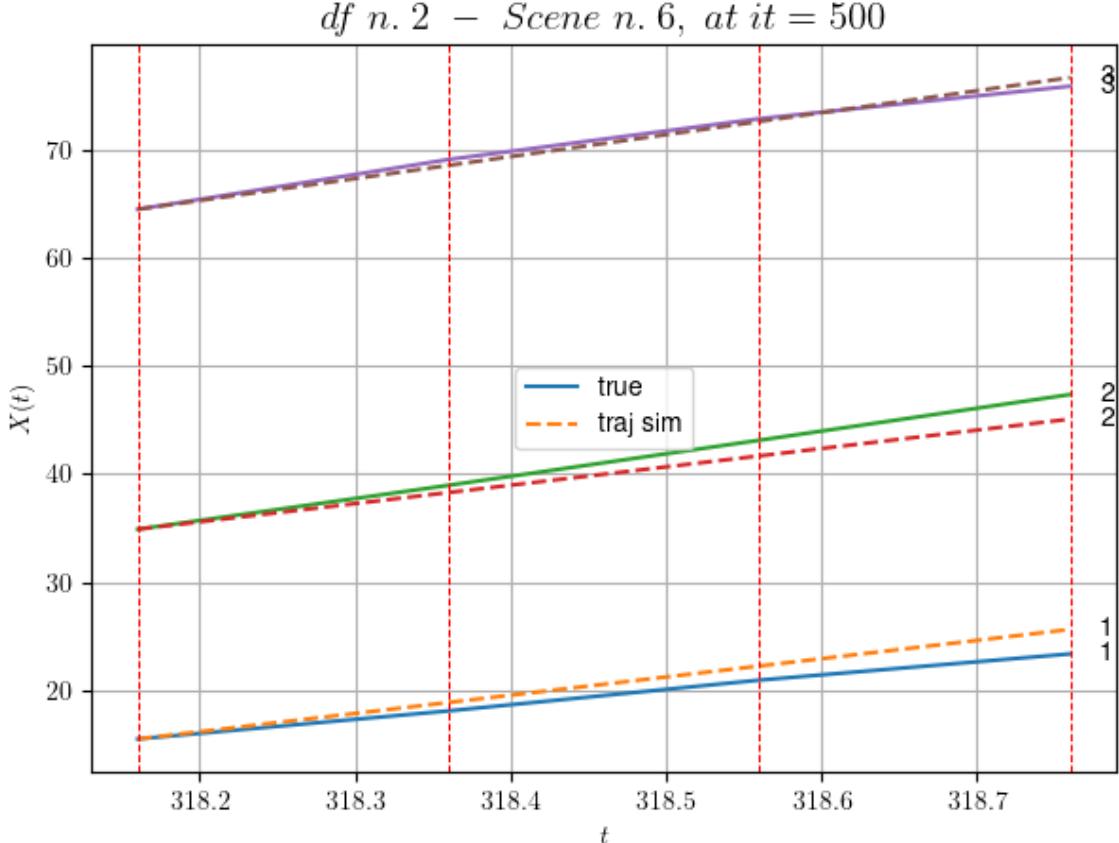
* MAE = 2.490972505480786

- Time interval n.0: [318.16, 318.36]
 * y_true: [13.01007537 20.36054455]
 * v_ann: [16.91771125793457, 17.015987396240234, 2
 0.35519762916338]

- Time interval n.1: [318.36, 318.56]
 * y_true: [14.27010639 20.89068863]
 * v_ann: [16.904573440551758, 16.986026763916016, 2
 0.35519762916338]

- Time interval n.2: [318.56, 318.76]
 * y_true: [12.16011799 21.20084683]
 * v_ann: [16.979948043823242, 17.060791015625, 20.3
 5519762916338]

* err= 1.3529511346564804
 * Learning rate NN = 5.904899080633186e-05
 * diff = 0.00045325664930206955



For scene 6/18

```
* use LR_NN=0.0001 with err=4.968317619896631 at it=19
* v0_scn_mean = 20.933885338383
* MAE = 1.322030705008962
```

```
- Time interval n.0: [430.16, 430.36]
  * y_true: [15.83005748 20.27065425]
  * v_ann: [17.972074508666992, 17.8432559967041, 21.
236902740721646]
```

```
- Time interval n.1: [430.36, 430.56]
  * y_true: [19.99011659 24.33092793]
  * v_ann: [18.241968154907227, 18.19575309753418, 2
1.236902740721646]
```

```
- Time interval n.2: [430.56, 430.76]
  * y_true: [14.67011767 20.05093433]
  * v_ann: [22.282466888427734, 21.557878494262695, 2
1.236902740721646]
```

```
- Time interval n.3: [430.76, 430.96]
  * y_true: [14.38015429 21.97121967]
  * v_ann: [17.576086044311523, 16.876384735107422, 2
```

1.236902740721646]

```

-----  

-----  

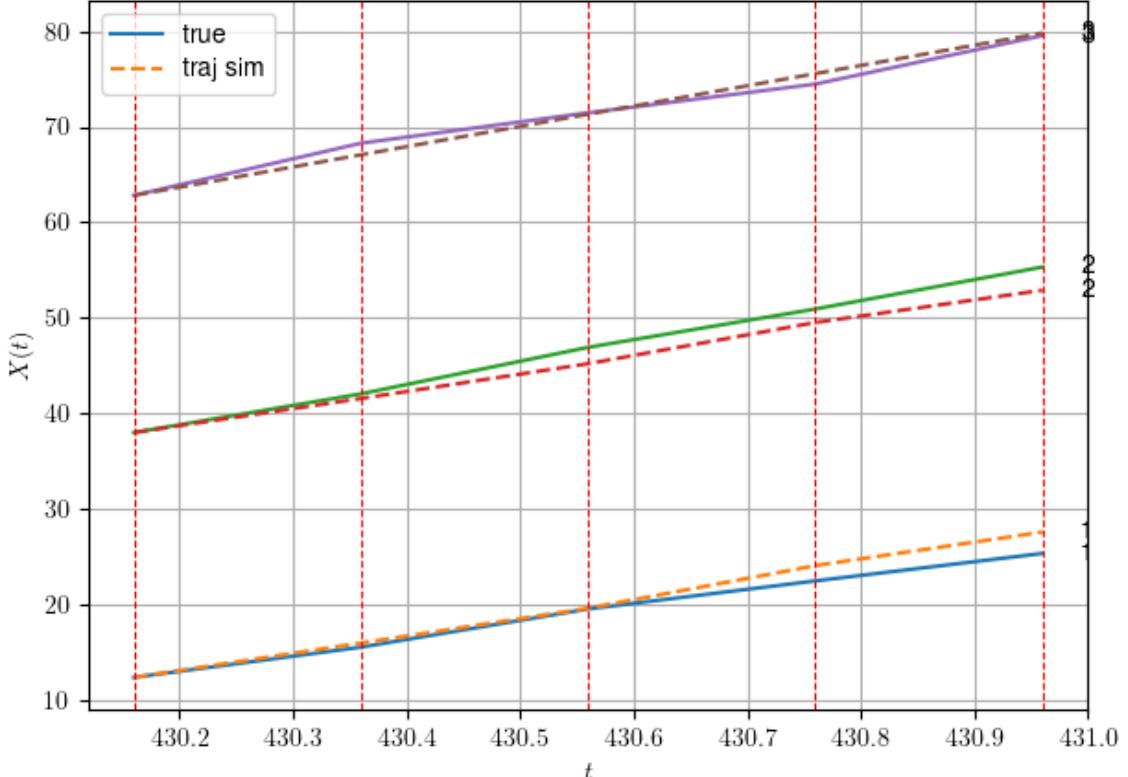
* err= 1.4402201682642797  

* Learning rate NN = 0.000478296831715852  

* diff = 1.0081745948298249e-05

```

df n. 2 - Scene n. 7, at it = 500



For scene 7/18

```

* use LR_NN=0.001 with err=8.864177629780968 at it=19
* v0_scn_mean = 21.76268818283426
* MAE = 1.4385678222960008

```

```

=====
=====

- Time interval n.0: [435.96, 436.16]
* y_true: [15.85107698 23.95169404]
* v_ann: [19.898183822631836, 22.027206420898438, 2
1.4587154925083]

```

```

=====
=====

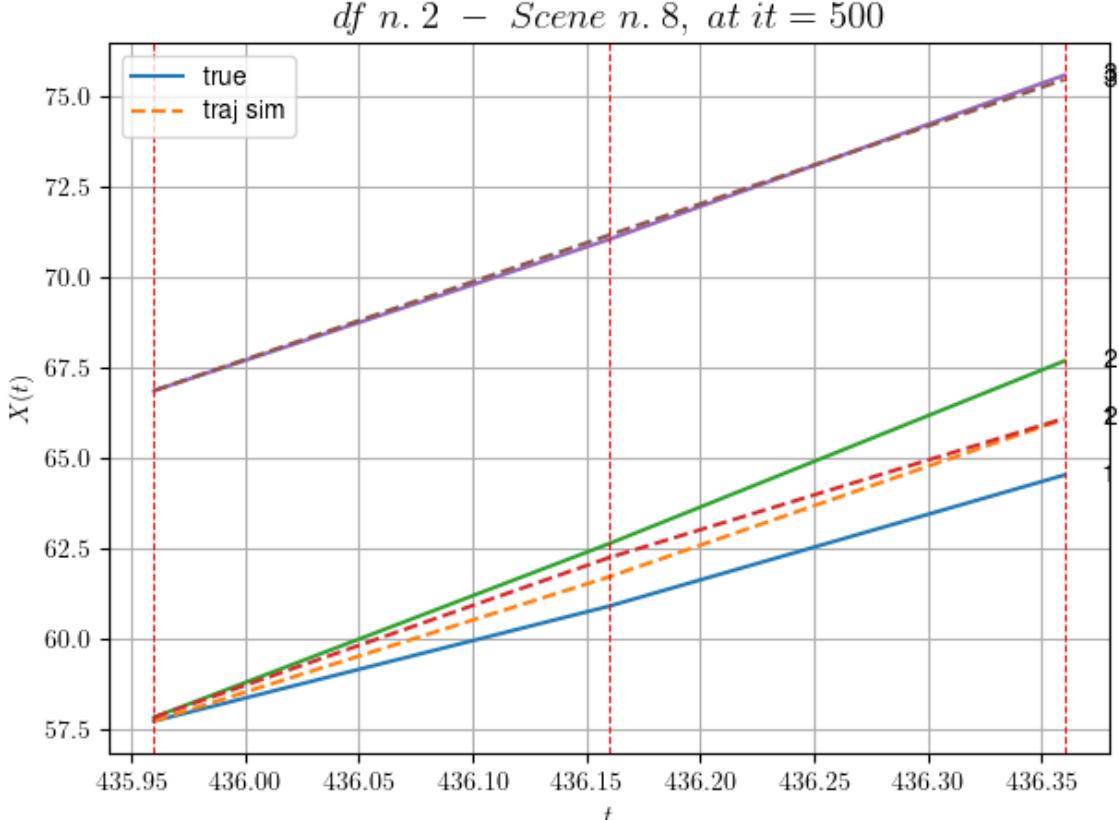
- Time interval n.1: [436.16, 436.36]
* y_true: [18.0813972 25.19206379]
* v_ann: [21.76211166381836, 19.194929122924805, 2
1.4587154925083]

```

```

* err= 0.6367396209396988
* Learning rate NN = 0.0036449995823204517
* diff = 3.410948864801533e-05

```



For scene 8/18

* use LR_NN=0.005 with err=2.5206559199173024 at it=19

* v0_scn_mean = 21.971192179472688

* MAE = 0.6135998298502473

- Time interval n.0: [442.76, 442.96]
 * y_true: [18.06141662 13.31057742]
 * v_ann: [19.080852508544922, 18.975215911865234, 2
 2.77589680250508]

- Time interval n.1: [442.96, 443.16]
 * y_true: [20.34015276 11.01053508]
 * v_ann: [18.877561569213867, 18.892295837402344, 2
 2.77589680250508]

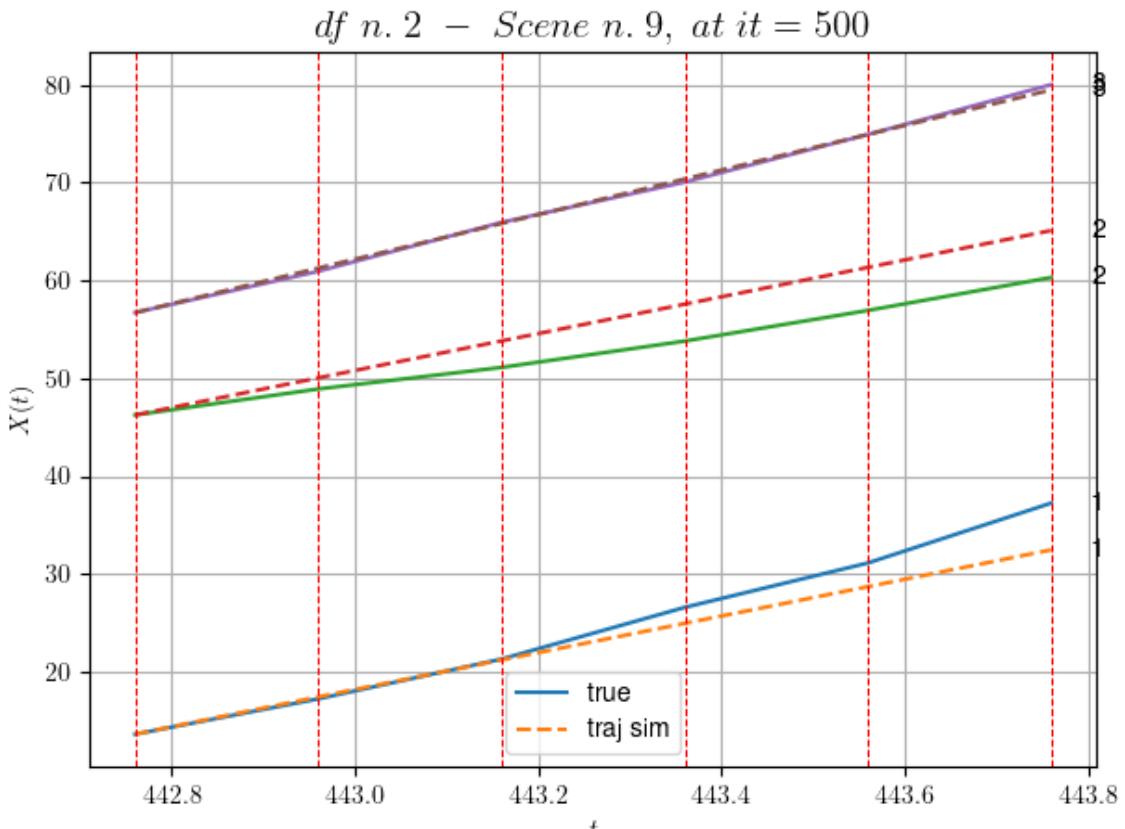
- Time interval n.2: [443.16, 443.36]
 * y_true: [26.42894929 13.47072378]
 * v_ann: [18.69790267944336, 18.788619995117188, 2
 2.77589680250508]

- Time interval n.3: [443.36, 443.56]
 * y_true: [22.70036274 15.67093348]
 * v_ann: [18.778242111206055, 18.822067260742188, 2

2.77589680250508]

```
- Time interval n.4: [443.56, 443.76]
  * y_true: [30.60068675 16.84112333]
  * v_ann: [18.803194046020508, 18.829423904418945, 2
2.77589680250508]
```

```
* err= 5.400988218467955
* Learning rate NN = 1.9371018424862996e-05
* diff = 0.0051022001203420004
```



For scene 9/18

```
* use LR_NN=5e-05 with err=7.8692396697817175 at it=19
* v0_scn_mean = 23.20934267000815
* MAE = 5.400988218467955
```

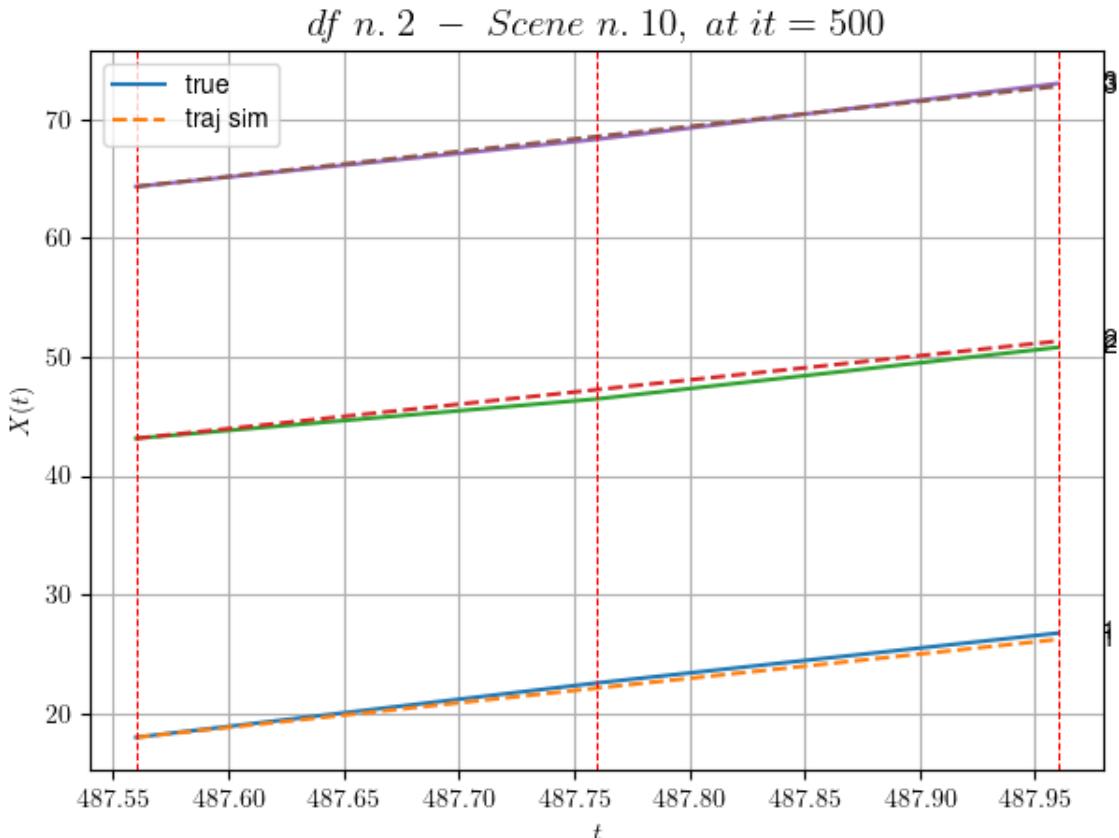
```
=====
=====
- Time interval n.0: [487.56, 487.76]
  * y_true: [22.90018755 16.61065196]
  * v_ann: [20.742822647094727, 20.53143310546875, 2
1.111900247991187]
```

```
=====
=====
- Time interval n.1: [487.76, 487.96]
  * y_true: [21.00025249 21.71102285]
  * v_ann: [20.50079345703125, 20.40427017211914, 21.
111900247991187]
```

```

* err= 0.16376785361971383
* Learning rate NN = 7.289998757187277e-05
* diff = 3.8697330005055264e-05

```



For scene 10/18

```

* use LR_NN=0.0001 with err=1.6961867640144919 at it=19
* v0_scn_mean = 21.64518583405616
* MAE = 0.1609262964946857

```

- Time interval n.0: [531.76, 531.96]
 - * y_true: [23.26110286 19.80102444]
 - * v_ann: [21.427244186401367, 21.863170623779297, 1
7.911731328079306]

- Time interval n.1: [531.96, 532.16]
 - * y_true: [19.37730225 14.13461647]
 - * v_ann: [21.35039710998535, 21.70709228515625, 17.
911731328079306]

- Time interval n.2: [532.16, 532.36]
 - * y_true: [16.15104075 20.18132342]
 - * v_ann: [18.697795867919922, 20.219425201416016, 1
7.911731328079306]

```

-----  

- Time interval n.3: [532.36, 532.56]  

* y_true: [21.60157988 27.91216632]  

* v_ann: [20.308115005493164, 19.656763076782227, 1  

7.911731328079306]
-----
```

```

-----  

- Time interval n.4: [532.56, 532.76]  

* y_true: [19.65163525 25.90233391]  

* v_ann: [21.166229248046875, 21.30914306640625, 1  

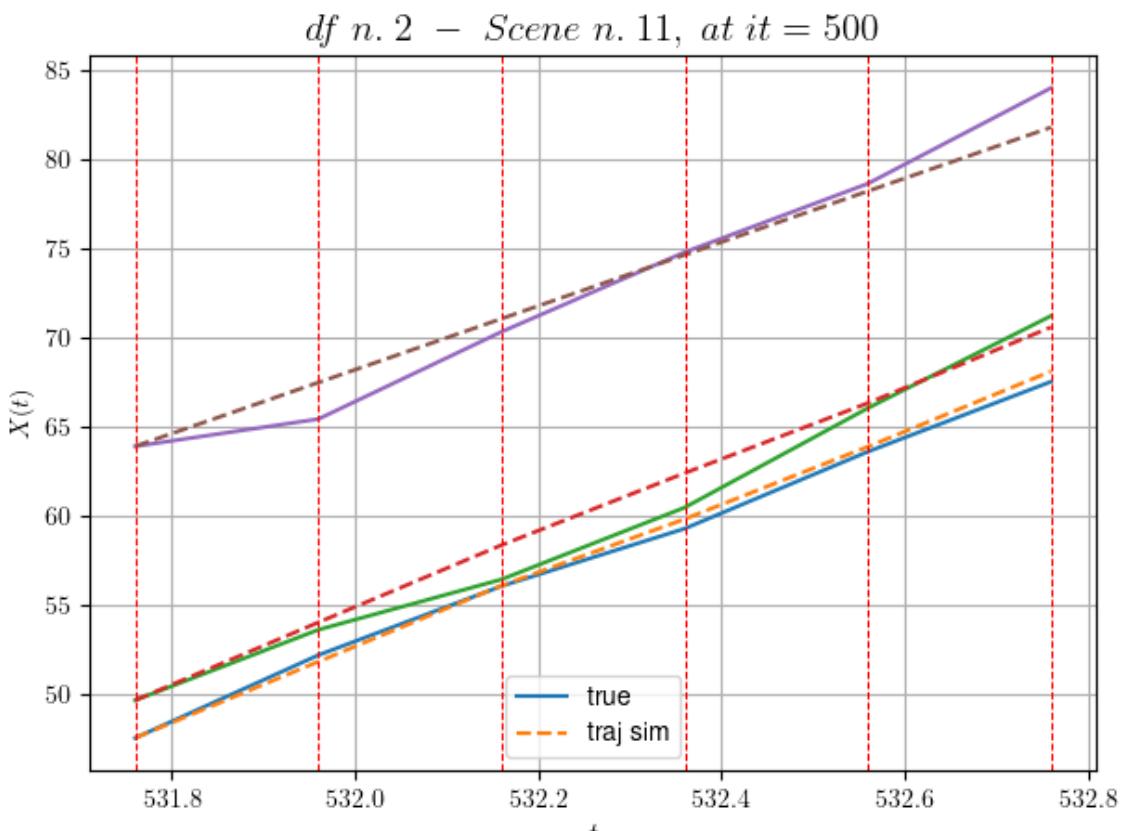
7.911731328079306]
-----
```

```

* err= 1.0437245075413042  

* Learning rate NN = 0.0003874204121530056  

* diff = 4.061593046600365e-05
```



For scene 11/18

```

* use LR_NN=0.001 with err=35.687403110056295 at it=19  

* v0_scn_mean = 18.637026905658175  

* MAE = 1.0045450167308185
=====
```

For scene 12/18

```

* use LR_NN=0.001 with err=23.574133311312682 at it=19  

* v0_scn_mean = 22.124663640262394  

* MAE = 0.4408360104925349
=====
```

```
=====
=====
- Time interval n.0: [541.16, 541.36]
  * y_true: [22.67086863 28.23390149]
  * v_ann: [23.271835327148438, 22.982328414916992, 2
0.48999097546783]

-----
- Time interval n.1: [541.36, 541.56]
  * y_true: [19.45088023 23.11862329]
  * v_ann: [23.656587600708008, 23.86900520324707, 2
0.48999097546783]

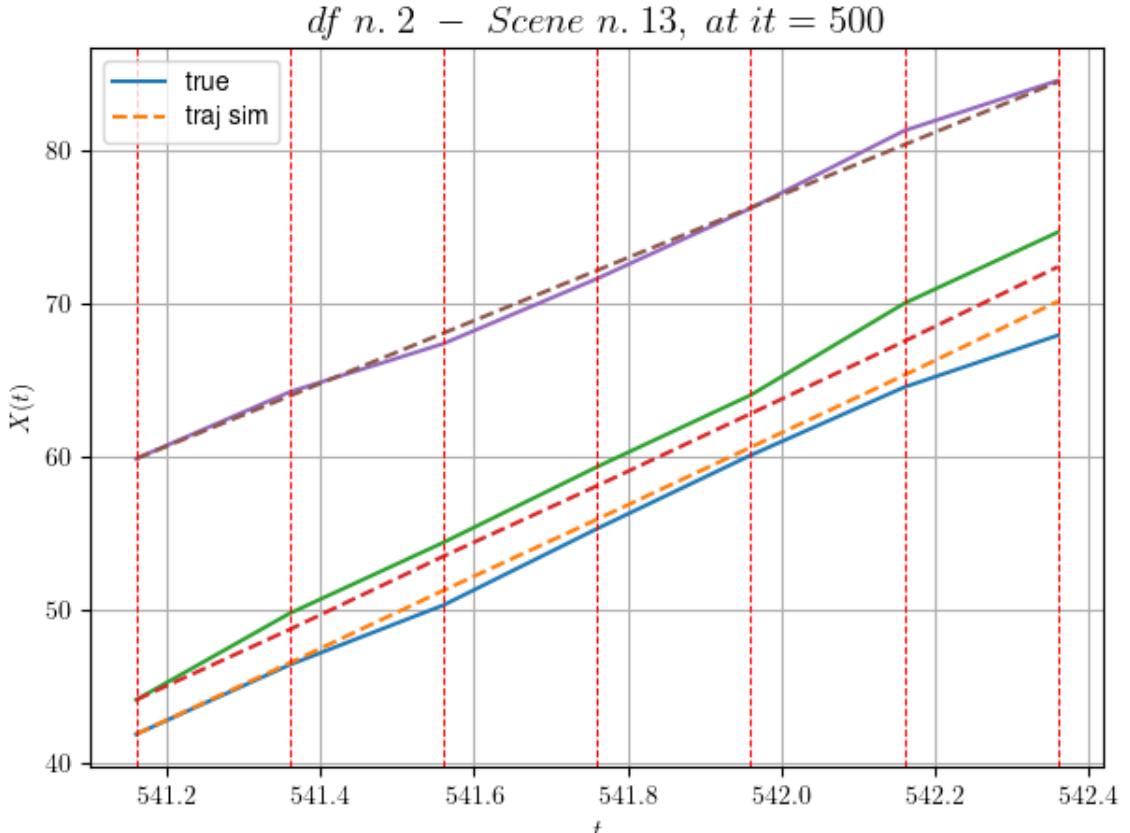
-----
- Time interval n.2: [541.56, 541.76]
  * y_true: [24.96136667 24.68114114]
  * v_ann: [23.202516555786133, 22.994699478149414, 2
0.48999097546783]

-----
- Time interval n.3: [541.76, 541.96]
  * y_true: [23.96154506 23.41644837]
  * v_ann: [23.517940521240234, 23.556018829345703, 2
0.48999097546783]

-----
- Time interval n.4: [541.96, 542.16]
  * y_true: [22.22167267 29.9460798 ]
  * v_ann: [23.54395294189453, 23.60015296936035, 20.
48999097546783]

-----
- Time interval n.5: [542.16, 542.36]
  * y_true: [16.91142821 23.23526684]
  * v_ann: [24.060983657836914, 24.322874069213867, 2
0.48999097546783]

-----
* err= 1.1888826966604042
* Learning rate NN = 0.00031381050939671695
* diff = 0.00010510557040127067
```



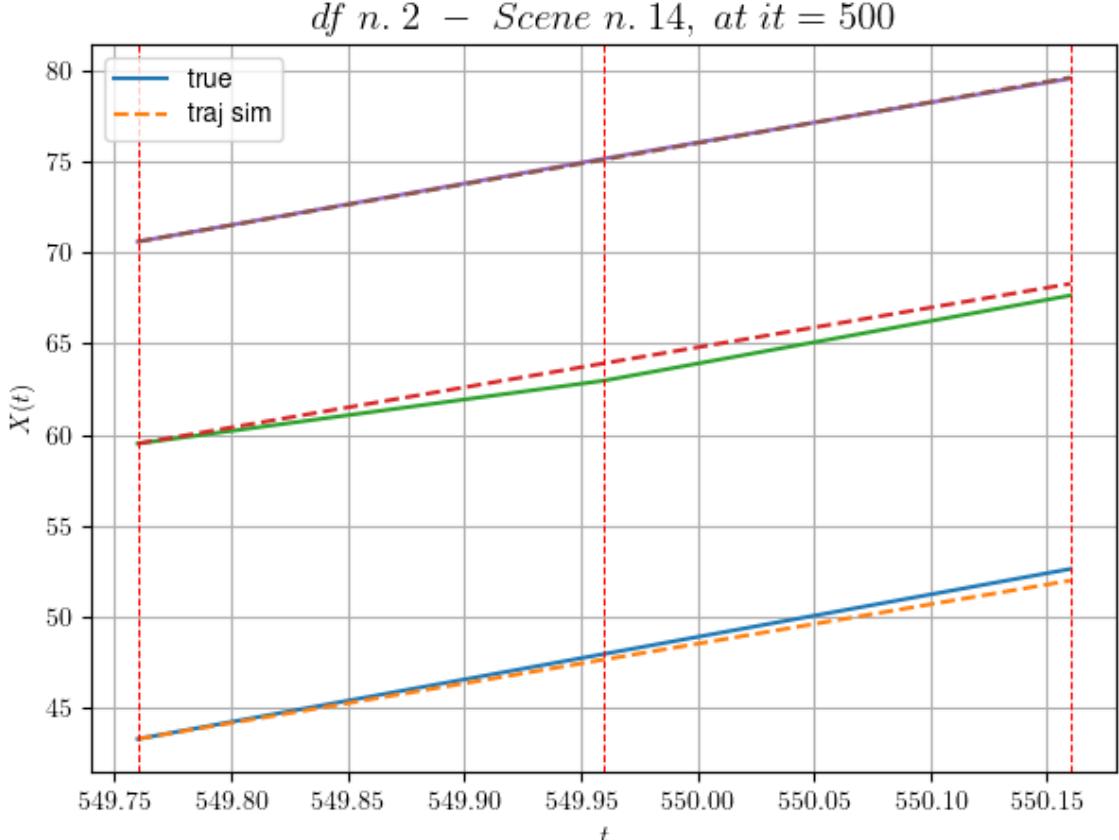
For scene 13/18

```
* use LR_NN=0.001 with err=34.31608876433718 at it=19
* v0_scn_mean = 21.060591089960408
* MAE = 1.1791978367552038
```

```
- Time interval n.0: [549.76, 549.96]
* y_true: [23.30098965 17.25125335]
* v_ann: [21.765348434448242, 22.007892608642578, 2
2.495719525409402]
```

```
- Time interval n.1: [549.96, 550.16]
* y_true: [23.30098965 23.35192881]
* v_ann: [21.651382446289062, 21.808401107788086, 2
2.495719525409402]
```

```
* err= 0.20274662933764165
* Learning rate NN = 7.289998757187277e-05
* diff = 0.00015132075762250285
```



For scene 14/18

- * use LR_NN=0.0001 with err=1.4190080472361952 at it=19
- * v0_scn_mean = 22.94597601695845
- * MAE = 0.20274662933764165

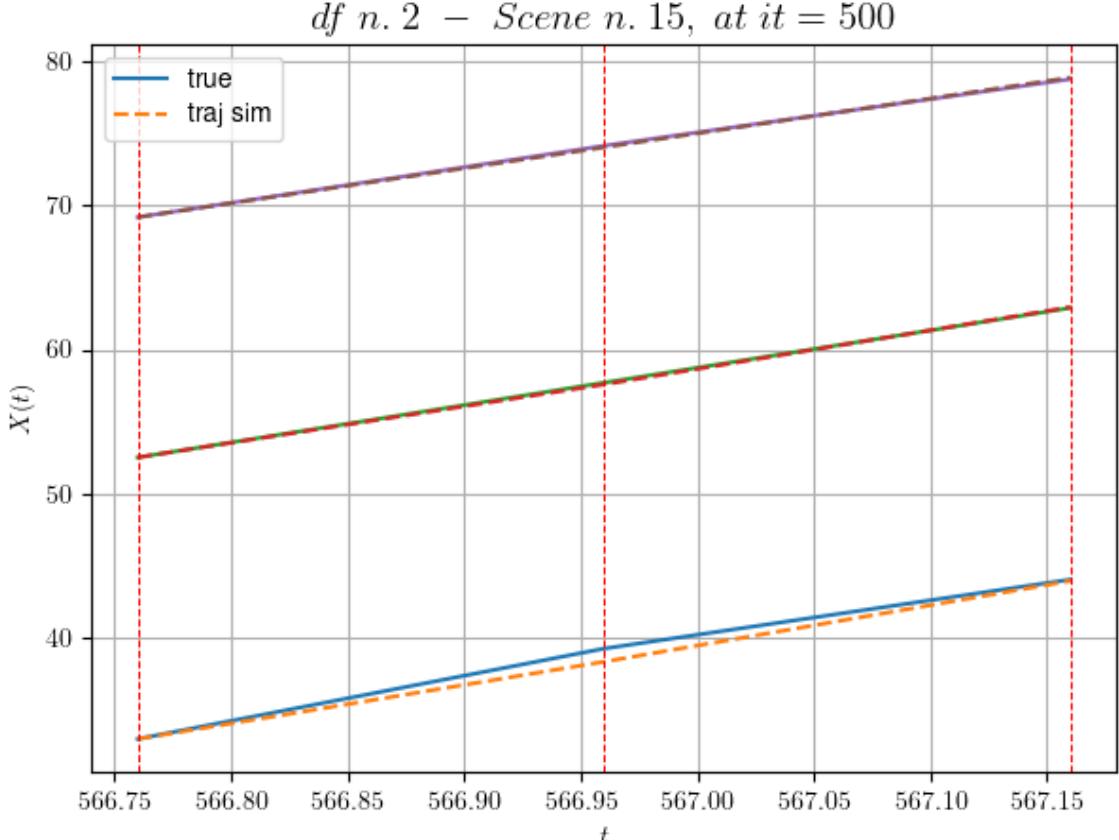
- Time interval n.0: [566.76, 566.96]
- * y_true: [31.35080123 25.9264585]
- * v_ANN: [26.78536033630371, 25.30377769470215, 24.

222520391152223]

- Time interval n.1: [566.96, 567.16]
- * y_true: [23.95081051 25.9264585]
- * v_ANN: [28.03786277770996, 26.861665725708008, 2

4.222520391152223]

- * err= 0.09869882802930006
- * Learning rate NN = 0.00036449998151510954
- * diff = 3.4312928163651724e-05

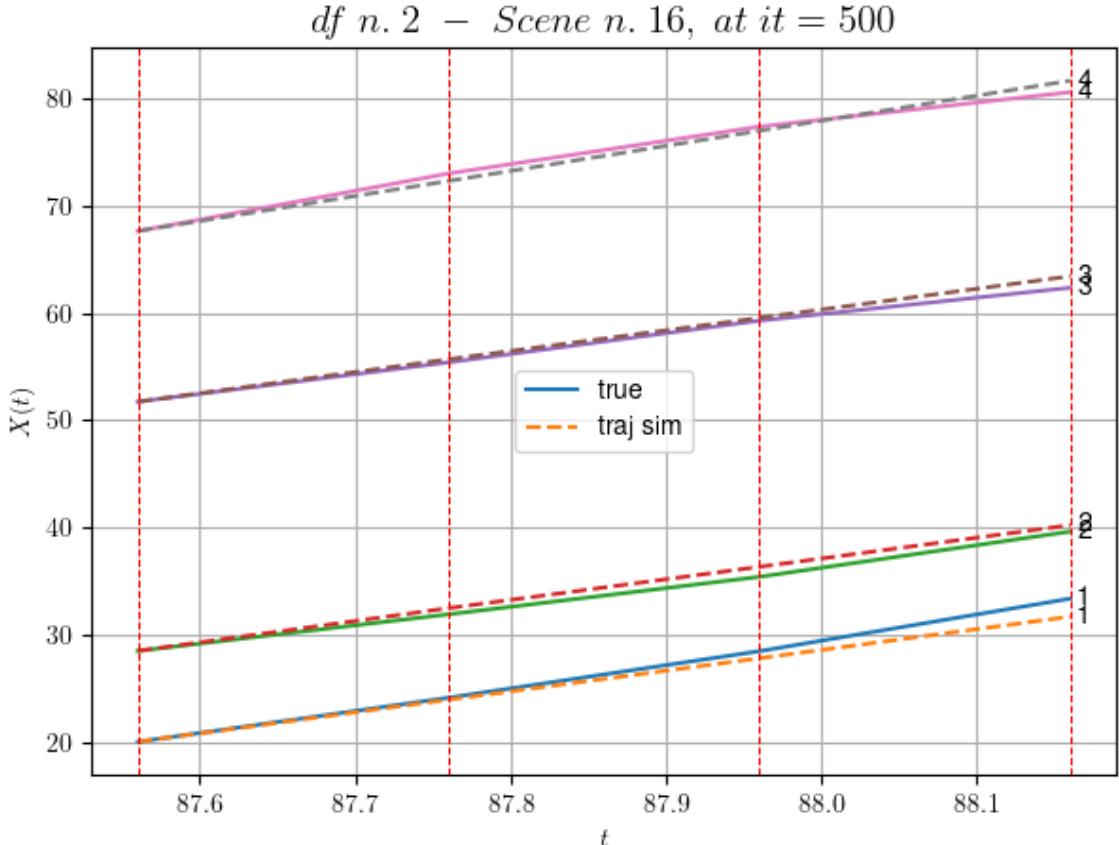


For scene 15/18

- * use LR_NN=0.0005 with err=0.8857415925958169 at it=19
- * v0_scn_mean = 24.569168908286162
- * MAE = 0.09729881578800074

- Time interval n.0: [87.56, 87.76]
 - * y_true: [20.56019483 17.07029985 18.3510221]
 - * v_ann: [19.655385971069336, 19.946392059326172, 19.801982879638672, 23.399103331764564]
- Time interval n.1: [87.76, 87.96]
 - * y_true: [21.72029145 17.49039467 19.46124504]
 - * v_ann: [19.336219787597656, 19.28870391845703, 19.306482315063477, 23.399103331764564]
- Time interval n.2: [87.96, 88.16]
 - * y_true: [24.51045762 21.12058621 15.36109554]
 - * v_ann: [19.40040397644043, 19.433122634887695, 19.421947479248047, 23.399103331764564]

* err= 0.4965398435711123
 * Learning rate NN = 0.0002952449722215533
 * diff = 2.260022261357797e-05



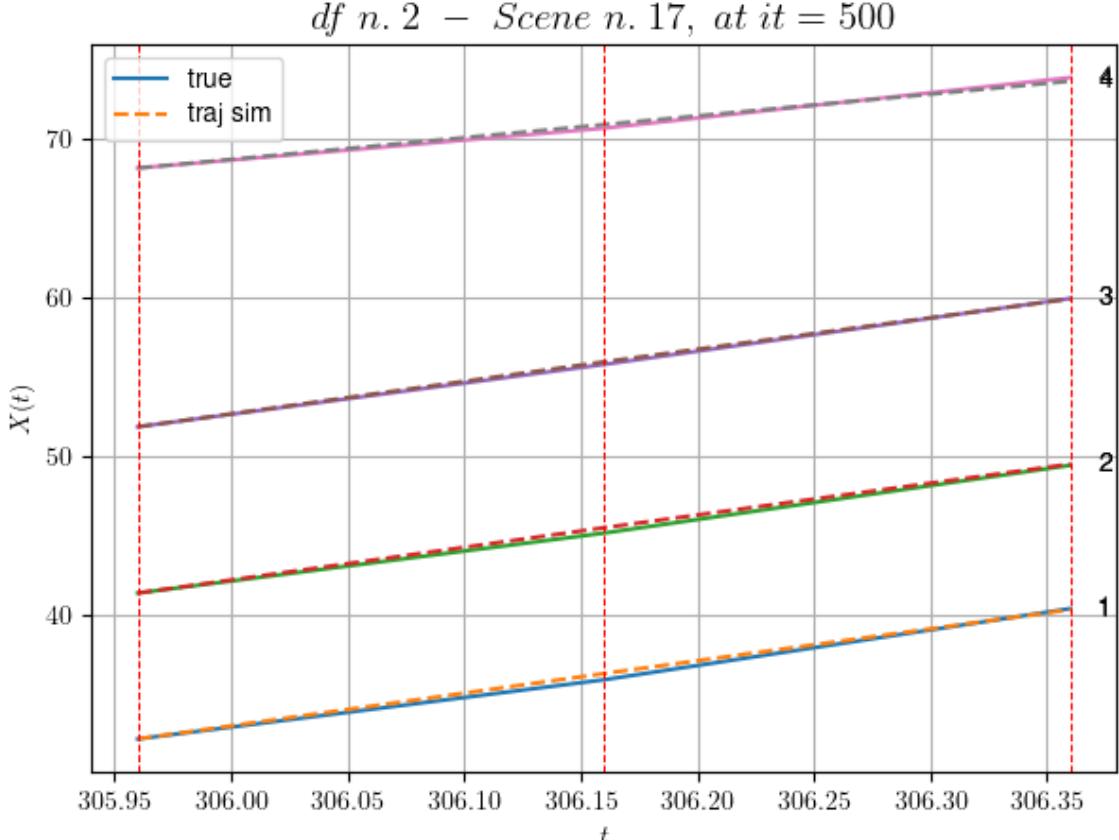
For scene 16/18

```
* use LR_NN=0.0005 with err=9.247479407535359 at it=19
* v0_scn_mean = 23.927153585033068
* MAE = 0.49652716169441025
```

```
- Time interval n.0: [305.96, 306.16]
* y_true: [18.64270885 18.88070057 19.63111636]
* v_ann: [20.59186363220215, 20.56641960144043, 20.
450742721557617, 13.681341801173792]
```

```
- Time interval n.1: [306.16, 306.36]
* y_true: [22.41204338 21.34093202 20.7913521 ]
* v_ann: [20.1190185546875, 20.051063537597656, 19.
842023849487305, 13.681341801173792]
```

```
* err= 0.03401403608028461
* Learning rate NN = 0.00036449998151510954
* diff = 1.1814088610034856e-06
```



For scene 17/18

- * use LR_NN=0.0005 with err=5.35236803375739 at it=19
- * v0_scn_mean = 14.98678135400896
- * MAE = 0.03326169668566691

For df=2 with 18 scenes, time taken: 262.16

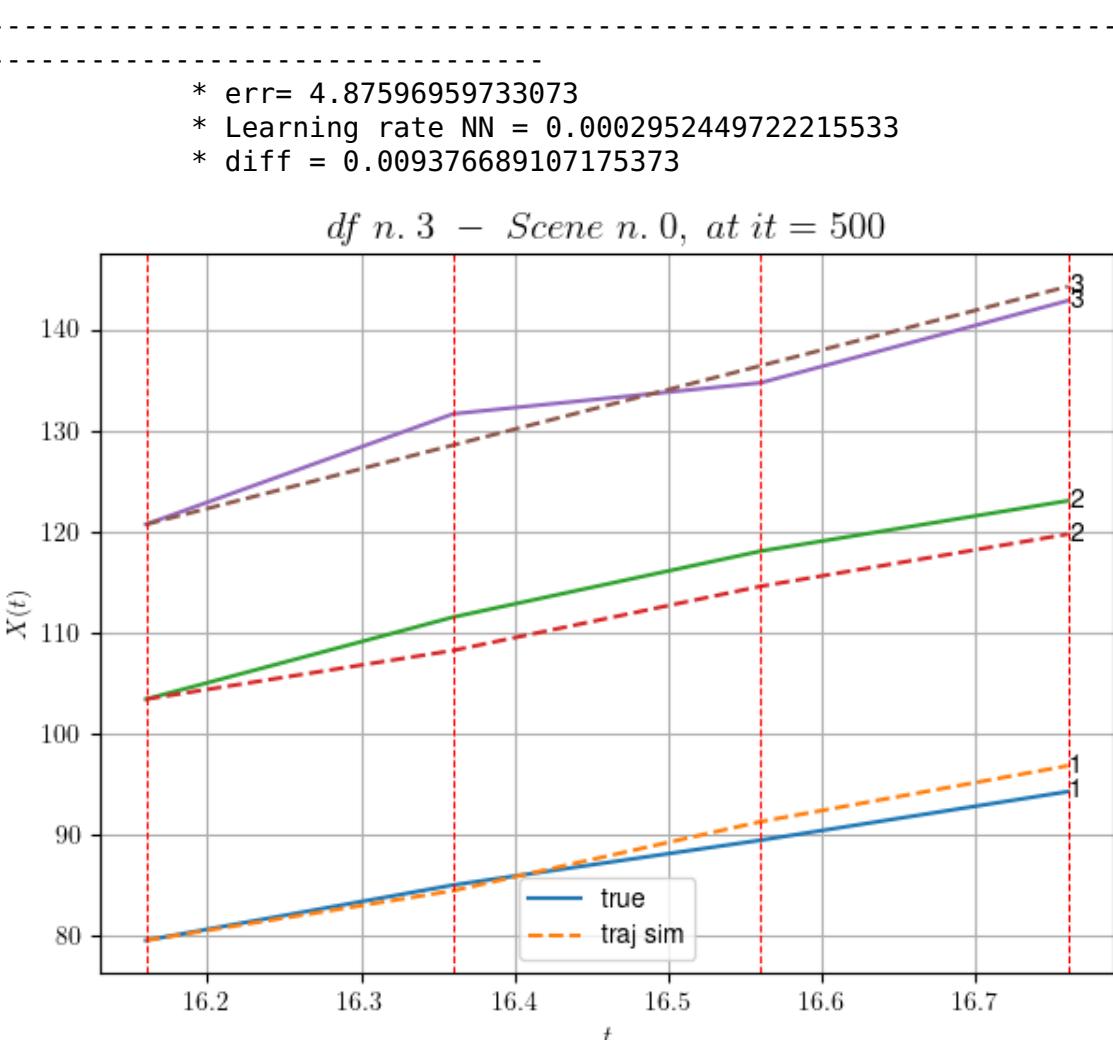
In df n.3/10 we have 55 scenes

- Time interval n.0: [16.16, 16.36]
- * y_true: [27.36596872 40.6089382]
- * v_ann: [24.569549560546875, 24.099576950073242, 3 9.22728178683311]

- Time interval n.1: [16.36, 16.56]
- * y_true: [22.16572117 32.62072047]
- * v_ann: [34.143043518066406, 31.738466262817383, 3 9.22728178683311]

- Time interval n.2: [16.56, 16.76]

```
* y_true: [24.04131334 24.91936545]
* v_ann: [27.659948348999023, 25.79833221435547, 3
9.22728178683311]
```



For scene 0/55

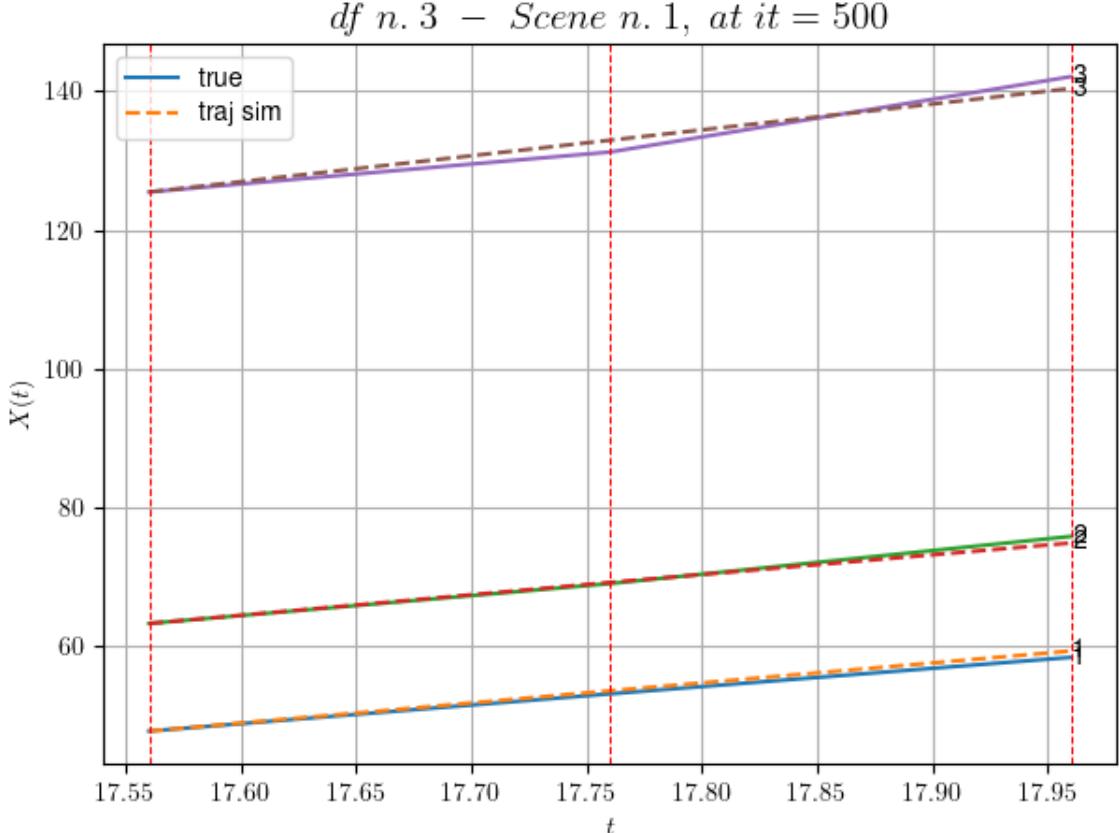
```
* use LR_NN=0.0005 with err=13.022702268599843 at it=19
* v0_scn_mean = 38.673645293908145
* MAE = 4.87596959733073
```

```
- Time interval n.0: [17.56, 17.76]
* y_true: [26.87631442 28.75240293]
* v_ann: [29.061628341674805, 29.61821937561035, 3
7.34160894188889]
```

```
- Time interval n.1: [17.76, 17.96]
* y_true: [26.32655772 34.05345458]
* v_ann: [28.747344970703125, 28.44312286376953, 3
7.34160894188889]
```

```
* err= 0.8641504673833396
```

* Learning rate NN = 3.6449993785936385e-05
 * diff = 0.00035830505646750055



For scene 1/55

* use LR_NN=5e-05 with err=9.62789808226148 at it=19
 * v0_scn_mean = 36.90111273499794
 * MAE = 0.7655050882020138

-
-
- Time interval n.0: [23.96, 24.16]
 - * y_true: [31.9527567 21.95230333]
 - * v_ann: [25.60072135925293, 27.46601104736328, 27.016664353697227]

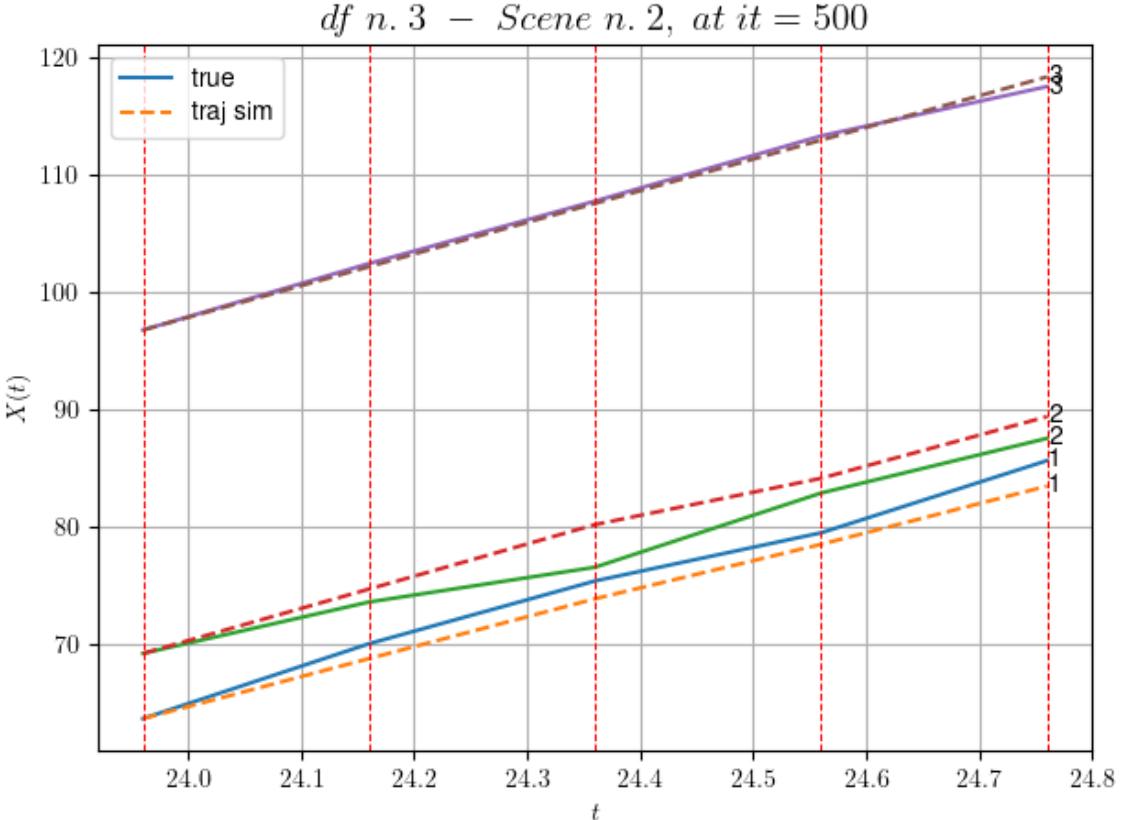
 - Time interval n.1: [24.16, 24.36]
 - * y_true: [26.79271708 14.85171745]
 - * v_ann: [25.5328369140625, 27.522890090942383, 27.016664353697227]

 - Time interval n.2: [24.36, 24.56]
 - * y_true: [20.5424093 31.65411216]
 - * v_ann: [23.238208770751953, 19.76431655883789, 27.016664353697227]

 - Time interval n.3: [24.56, 24.76]

```
* y_true: [30.8240747 23.35345154]
* v_ann: [24.853843688964844, 26.3272762298584, 27.
016664353697227]
```

```
-----  
-----  
* err= 2.0024529759303964  
* Learning rate NN = 0.000478296831715852  
* diff = 0.0002378260219120243
```



For scene 2/55

```
* use LR_NN=0.001 with err=42.40914033257414 at it=19
* v0_scn_mean = 27.19566435853007
* MAE = 1.9961708838454166
```

- Time interval n.0: [42.96, 43.16]
* y_true: [34.44093898 36.40531345]
* v_ann: [25.447277069091797, 25.648683547973633, 27.350673440922353]

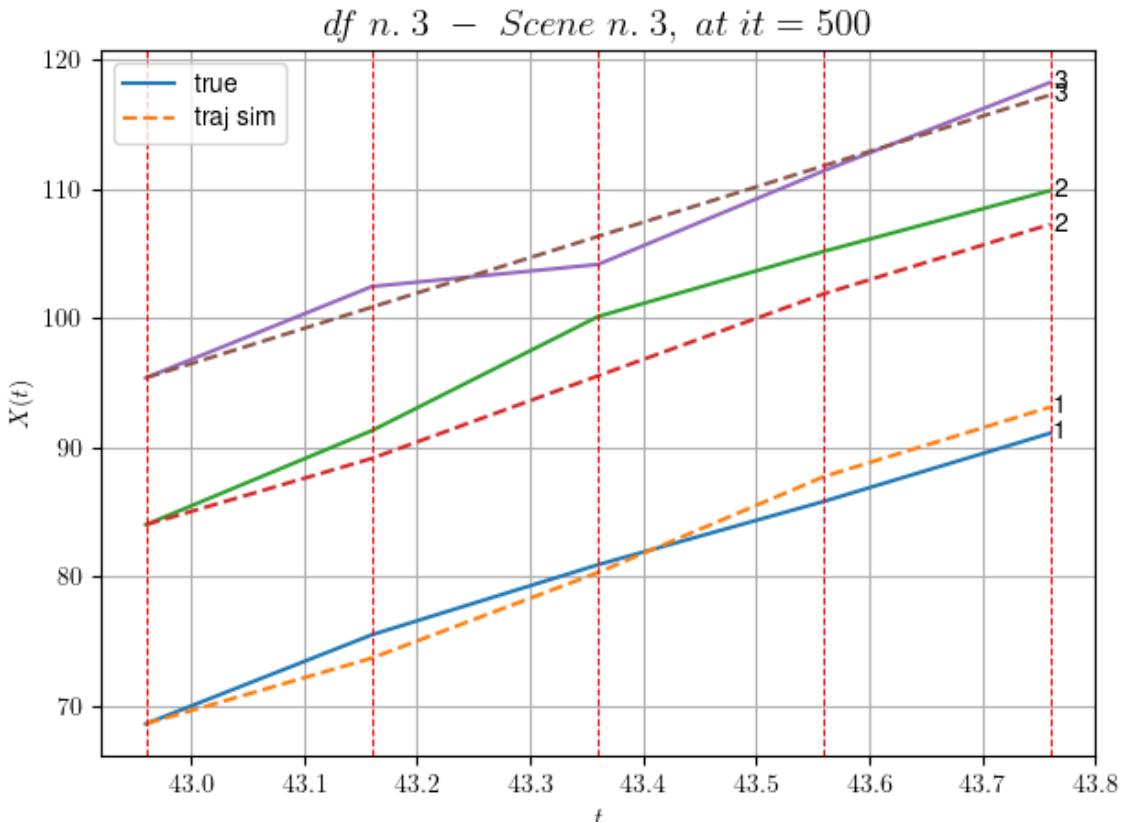
- Time interval n.1: [43.16, 43.36]
* y_true: [27.09071898 44.10770887]
* v_ann: [33.05220413208008, 31.93326187133789, 27.350673440922353]

- Time interval n.2: [43.36, 43.56]
* y_true: [24.51583897 25.2301032]

```
* v_ann: [37.14373016357422, 31.764049530029297, 2  
7.350673440922353]
```

```
- Time interval n.3: [43.56, 43.76]  
* y_true: [26.35394512 23.45522926]  
* v_ann: [26.846328735351562, 26.83234214782715, 2  
7.350673440922353]
```

```
* err= 4.192961422827187  
* Learning rate NN = 0.000478296831715852  
* diff = 0.0005400449926726836
```



For scene 3/55

```
* use LR_NN=0.001 with err=23.95094927761193 at it=19  
* v0_scn_mean = 27.509632915518054  
* MAE = 3.377825565023908
```

```
- Time interval n.0: [61.76, 61.96]  
* y_true: [28.79377133 7.10177762]  
* v_ann: [31.76960563659668, 30.897233963012695, 2  
7.83009041676702]
```

```
- Time interval n.1: [61.96, 62.16]  
* y_true: [41.29768472 31.64601894]  
* v_ann: [20.632814407348633, 20.8236026763916, 27.
```

83009041676702]

```

-----  

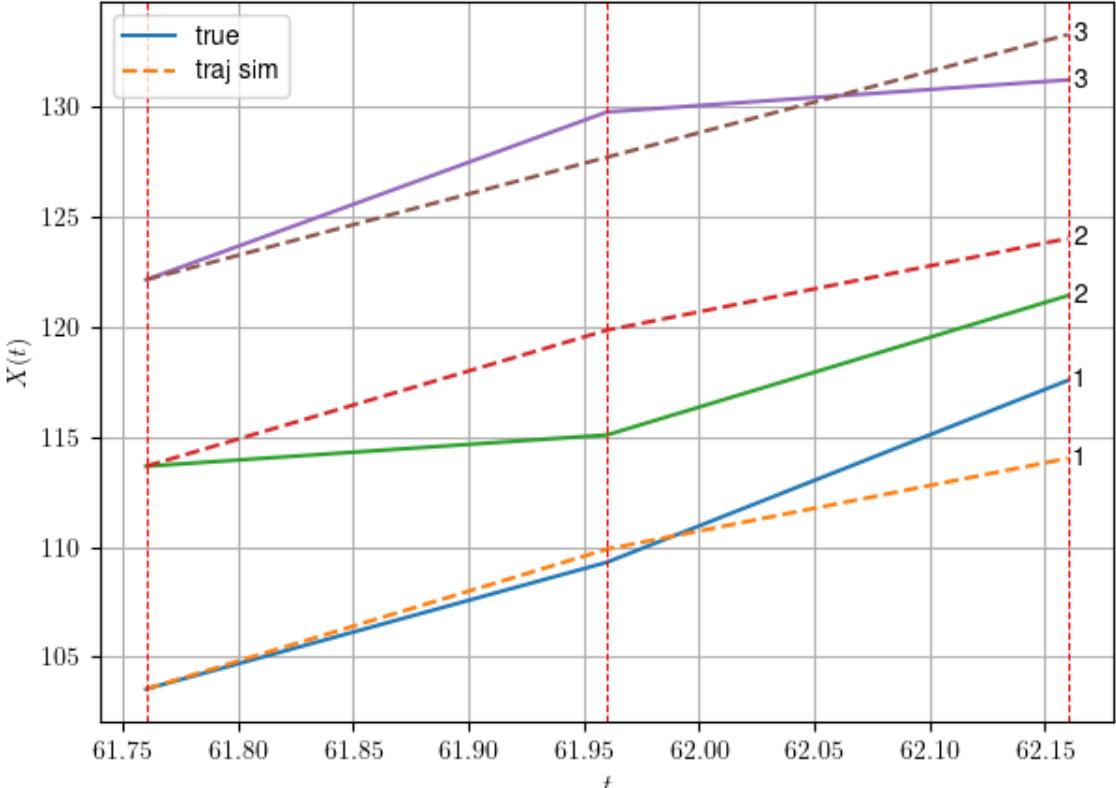
* err= 5.633289405717307  

* Learning rate NN = 0.0007289999630302191  

* diff = 0.0007357269152414858

```

df n. 3 – Scene n. 4, at it = 500



For scene 4/55

```

* use LR_NN=0.001 with err=7.2867830891006475 at it=19
* v0_scn_mean = 27.96028489433688
* MAE = 5.471117177840337

```

```

=====
=====
- Time interval n.0: [63.76, 63.96]
* y_true: [39.33120973 30.97229006]
* v_ann: [30.399662017822266, 29.534692764282227, 3
3.83988267438119]

```

```

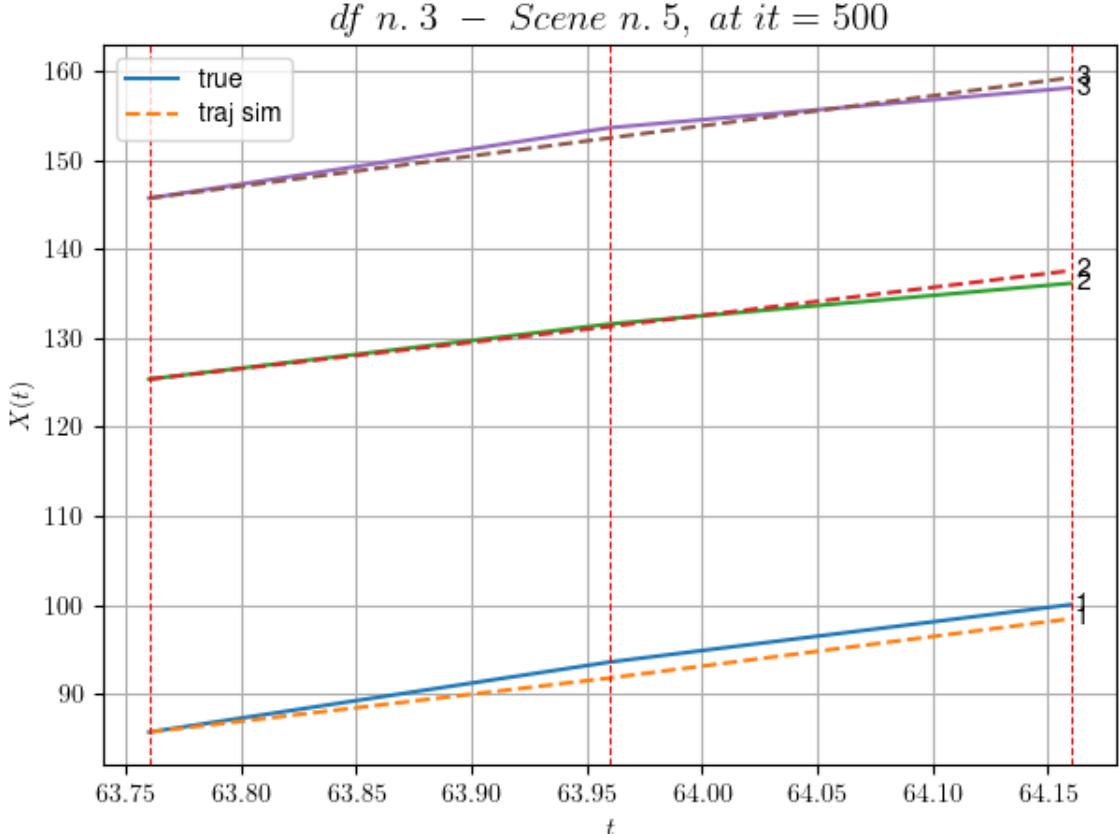
=====
=====
- Time interval n.1: [63.96, 64.16]
* y_true: [32.2308074 22.86038312]
* v_ann: [33.23530197143555, 31.387304306030273, 3
3.83988267438119]

```

```

* err= 1.1579328779377176
* Learning rate NN = 7.289998757187277e-05
* diff = 0.0018004875751791438

```



For scene 5/55

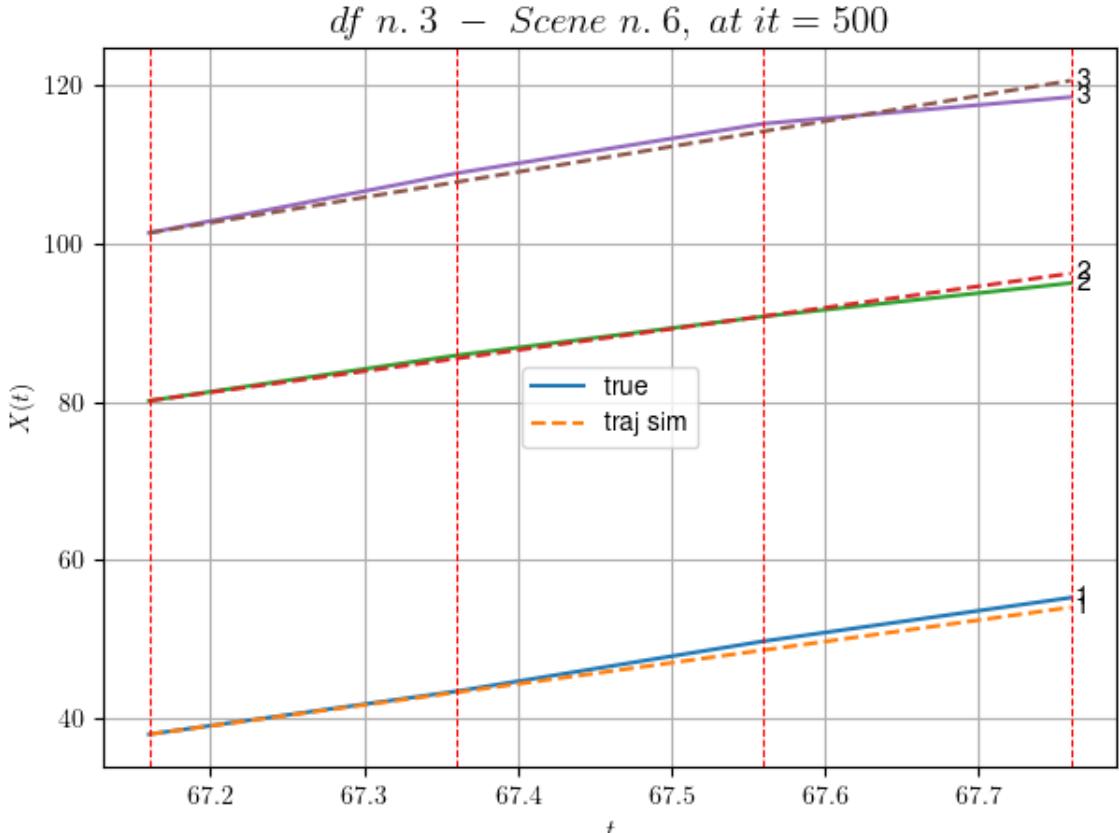
* use LR_NN=0.0001 with err=1.7943356570185418 at it=19
 * v0_scn_mean = 33.609489886320794
 * MAE = 0.8130969903967863

- Time interval n.0: [67.16, 67.36]
 * y_true: [27.17586615 28.72375126]
 * v_ann: [26.450124740600586, 26.678972244262695, 3
 2.13932154245634]

- Time interval n.1: [67.36, 67.56]
 * y_true: [31.70635664 24.62373081]
 * v_ann: [26.787996292114258, 26.853891372680664, 3
 2.13932154245634]

- Time interval n.2: [67.56, 67.76]
 * y_true: [27.5714436 21.15852297]
 * v_ann: [27.11837387084961, 27.050949096679688, 3
 2.13932154245634]

* err= 0.914422407556747
 * Learning rate NN = 2.952449540316593e-05
 * diff = 0.0003051111517923255



For scene 6/55

* use LR_NN=5e-05 with err=4.466888853847058 at it=19
 * v0_scn_mean = 32.01096234595999
 * MAE = 0.914422407556747

- Time interval n.0: [72.76, 72.96]
 * y_true: [28.501496 30.93407752]
 * v_ann: [31.243379592895508, 31.290420532226562, 2
 8.121240263140248]

- Time interval n.1: [72.96, 73.16]
 * y_true: [36.65243351 31.9148258]
 * v_ann: [30.196989059448242, 30.708574295043945, 2
 8.121240263140248]

- Time interval n.2: [73.16, 73.36]
 * y_true: [27.70226144 28.33497935]
 * v_ann: [32.72432327270508, 32.06523132324219, 28.
 121240263140248]

- Time interval n.3: [73.36, 73.56]
 * y_true: [34.7534691 39.55781959]
 * v_ann: [29.98672103881836, 30.682086944580078, 2

8.121240263140248]

```
- Time interval n.4: [73.56, 73.76]
  * y_true: [35.21414381 29.47666535]
  * v_ann: [34.1879768371582, 32.58938217163086, 28.1
```

21240263140248]

```
- Time interval n.5: [73.76, 73.96]
  * y_true: [30.89430642 26.20657024]
  * v_ann: [33.26304244995117, 32.51396179199219, 28.
```

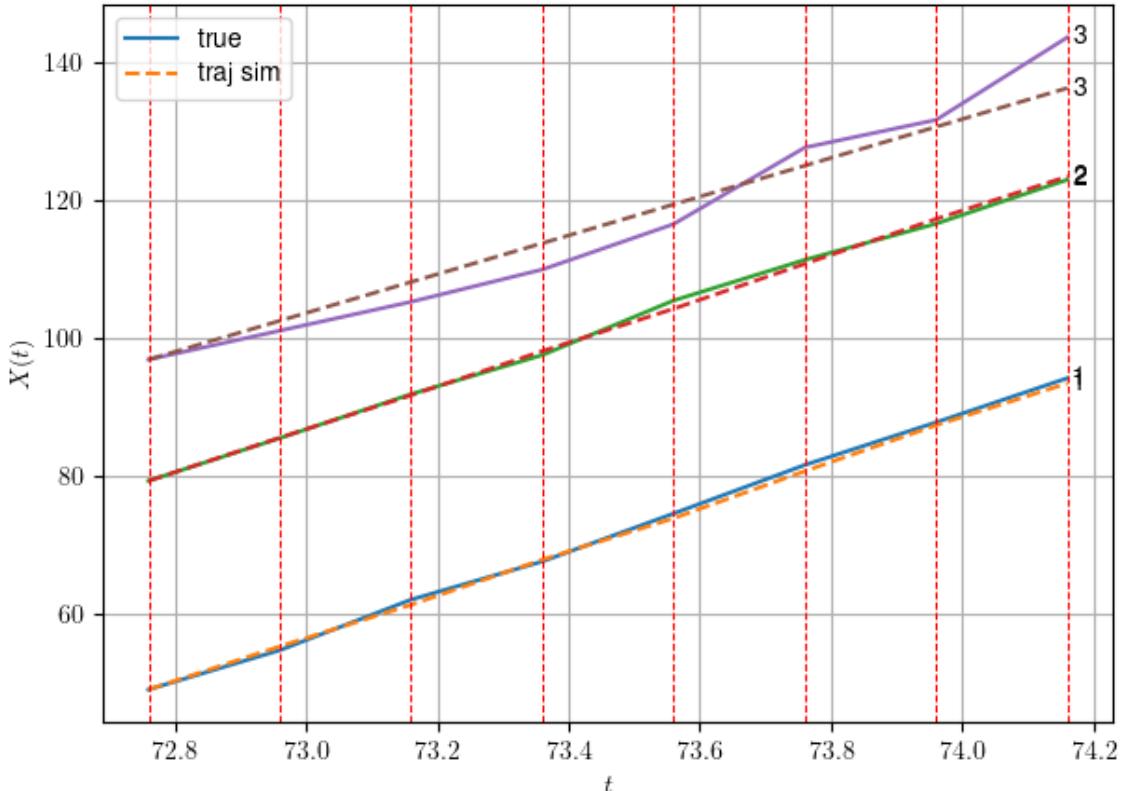
121240263140248]

```
- Time interval n.6: [73.96, 74.16]
  * y_true: [32.05509091 31.88895952]
  * v_ann: [30.418468475341797, 30.816787719726562, 2
```

8.121240263140248]

```
* err= 4.202089512846444
* Learning rate NN = 0.00012709324073512107
* diff = 0.0008527636107693581
```

df n. 3 – Scene n. 7, at it = 500



For scene 7/55

```
* use LR_NN=0.0005 with err=49.344113438323774 at it=19
* v0_scn_mean = 28.233965762999592
* MAE = 4.181829734539865
```

```

=====
=====

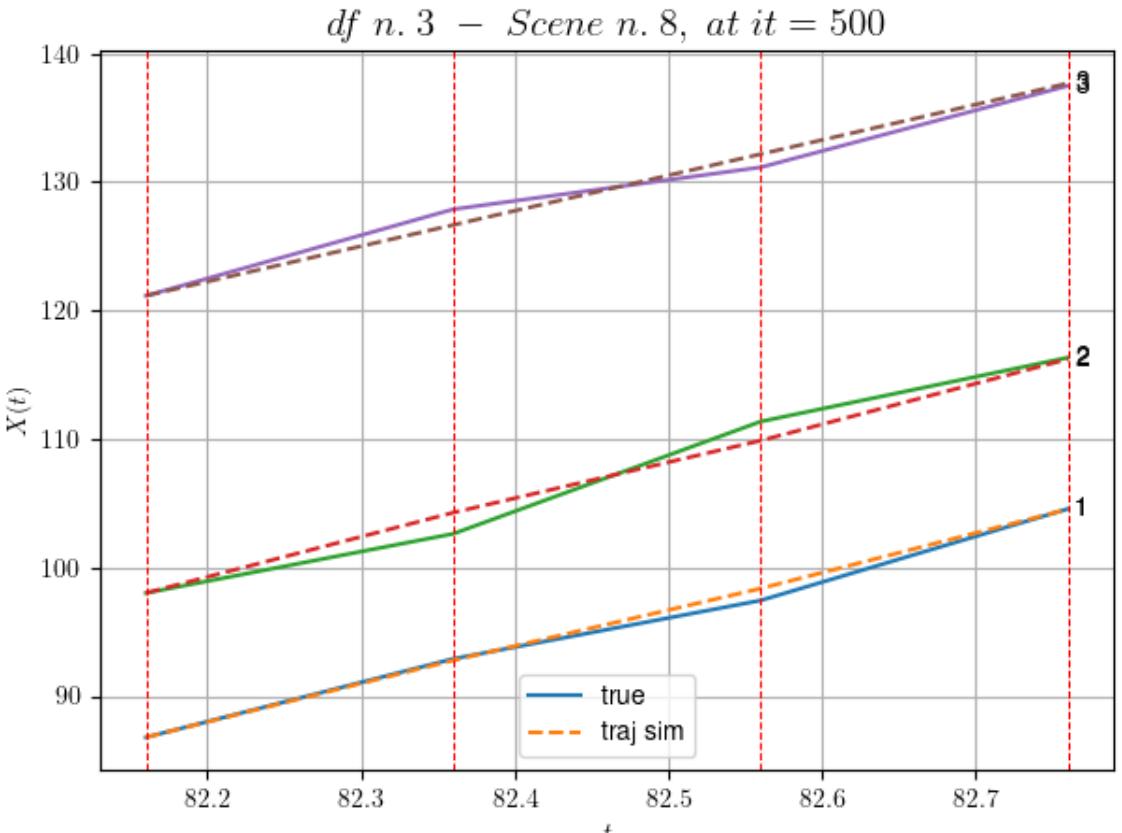
    - Time interval n.0: [82.16, 82.36]
      * y_true: [30.54468004 23.04450554]
      * v_ann: [29.935792922973633, 31.272472381591797, 2
7.550237413707407]

-----
    - Time interval n.1: [82.36, 82.56]
      * y_true: [22.71402344 43.65971655]
      * v_ann: [27.958189010620117, 28.02631950378418, 2
7.550237413707407]

-----
    - Time interval n.2: [82.56, 82.76]
      * y_true: [35.61686857 24.88594316]
      * v_ann: [30.8680362701416, 31.7039737701416, 27.55
0237413707407]

-----
* err= 0.6972594789664344
* Learning rate NN = 0.0002952449722215533
* diff = 0.00011202626234520044

```



For scene 8/55
* use LR_NN=0.0005 with err=8.5575881523382 at it=19
* v0_scn_mean = 27.697223058895837
* MAE = 0.6868933260789353

```

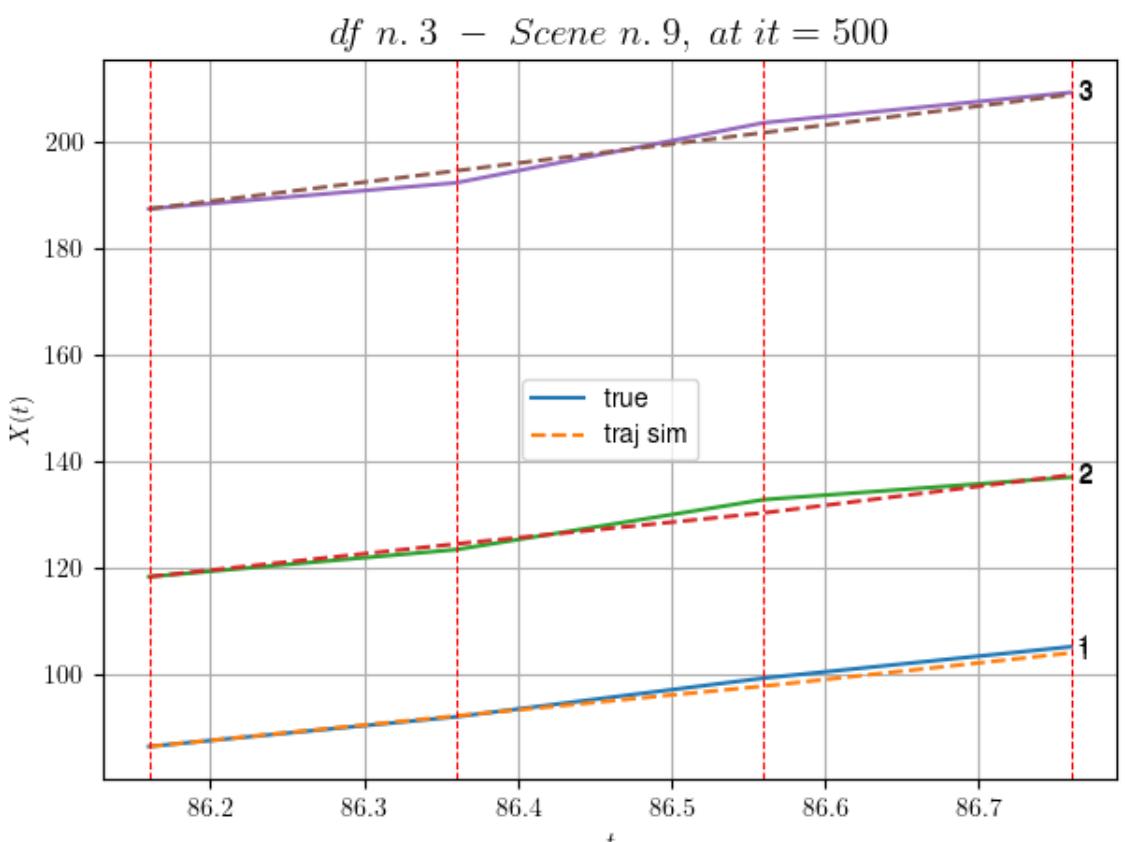
=====
- Time interval n.0: [86.16, 86.36]
  * y_true: [27.89181051 25.45740923]
  * v_ann: [28.742116928100586, 30.812957763671875, 3
  5.76473661345426]

-----
- Time interval n.1: [86.36, 86.56]
  * y_true: [36.25627338 46.92477715]
  * v_ann: [27.89954376220703, 29.09040641784668, 35.
  76473661345426]

-----
- Time interval n.2: [86.56, 86.76]
  * y_true: [29.50579063 21.07714474]
  * v_ann: [31.183082580566406, 35.64893341064453, 3
  5.76473661345426]

-----
* err= 1.659836615625719
* Learning rate NN = 2.952449540316593e-05
* diff = 0.0019342546410185957

```



For scene 9/55
 * use LR_NN=5e-05 with err=13.946035186469222 at it=19
 * v0_scn_mean = 35.41885267547115
 * MAE = 1.659836615625719

```
=====
- Time interval n.0: [130.96, 131.16]
  * y_true: [15.85249734 39.95916833]
  * v_ann: [32.86293029785156, 31.482666015625, 31.75
233788512425]

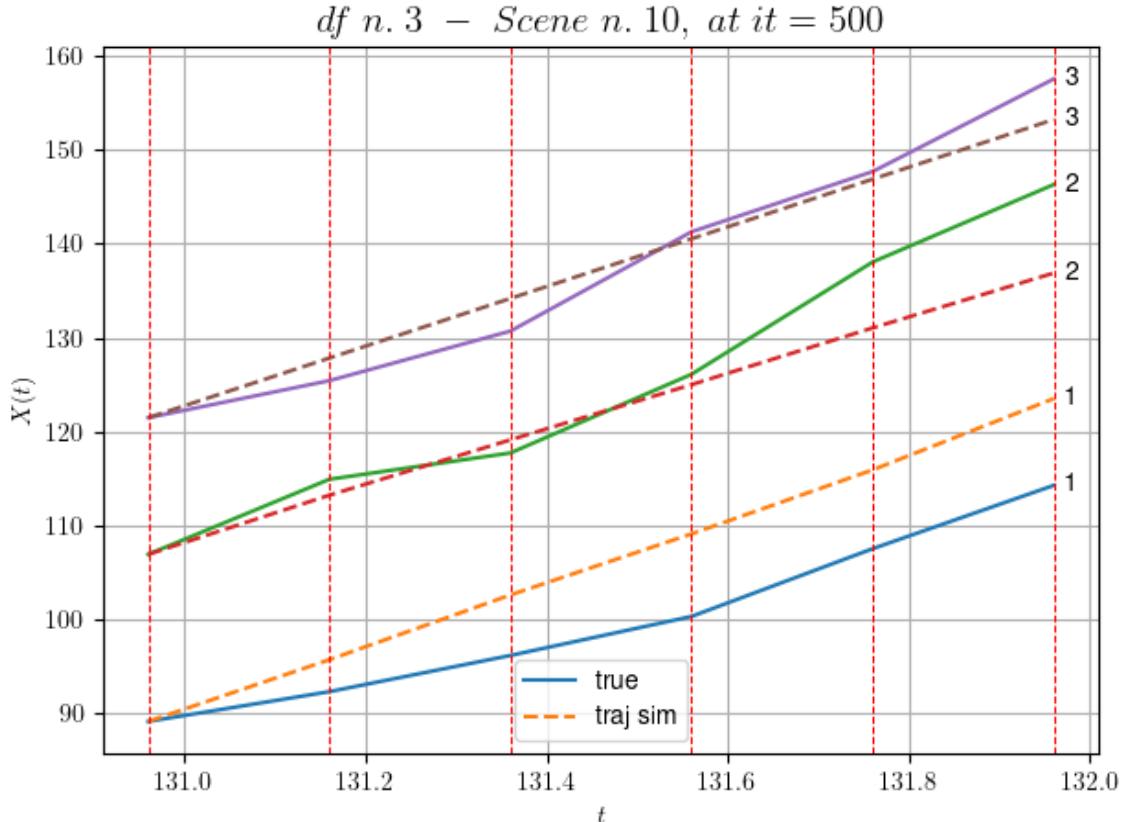
-----
- Time interval n.1: [131.16, 131.36]
  * y_true: [19.2732587 14.0236874]
  * v_ann: [34.48320388793945, 29.488449096679688, 3
1.75233788512425]

-----
- Time interval n.2: [131.36, 131.56]
  * y_true: [20.77382027 41.90201833]
  * v_ann: [32.51162338256836, 29.388151168823242, 3
1.75233788512425]

-----
- Time interval n.3: [131.56, 131.76]
  * y_true: [36.06757222 59.75967406]
  * v_ann: [34.062042236328125, 30.198518753051758, 3
1.75233788512425]

-----
- Time interval n.4: [131.76, 131.96]
  * y_true: [33.71775213 41.23564164]
  * v_ann: [37.96512985229492, 29.214427947998047, 3
1.75233788512425]

-----
* err= 25.99882929745488
* Learning rate NN = 3.874203684972599e-05
* diff = 0.0029843411272238995
```



For scene 10/55

* use LR_NN=0.0001 with err=60.4664616288023 at it=19

* v0_scn_mean = 31.64719769069286

* MAE = 20.845615289410688

- Time interval n.0: [139.16, 139.36]
 * y_true: [22.50033849 31.62238978]
 * v_ann: [27.89549446105957, 27.604198455810547, 2
 8.144630567259107]

- Time interval n.1: [139.36, 139.56]
 * y_true: [29.90063418 17.15160439]
 * v_ann: [27.787973403930664, 27.57719612121582, 2
 8.144630567259107]

- Time interval n.2: [139.56, 139.76]
 * y_true: [27.10078793 37.57385655]
 * v_ann: [27.09752655029297, 27.35844612121582, 28.
 144630567259107]

- Time interval n.3: [139.76, 139.96]
 * y_true: [25.40095052 21.65266443]
 * v_ann: [27.88831329345703, 27.603456497192383, 2
 8.144630567259107]

```
- Time interval n.4: [139.96, 140.16]
  * y_true: [21.40097883 32.03445568]
  * v_ann: [27.199947357177734, 27.391403198242188, 2
8.144630567259107]

-----
- Time interval n.5: [140.16, 140.36]
  * y_true: [21.7011754 31.91506312]
  * v_ann: [27.098657608032227, 27.369632720947266, 2
8.144630567259107]

-----
- Time interval n.6: [140.36, 140.56]
  * y_true: [30.50199276 23.65435061]
  * v_ann: [27.02718162536621, 27.30848503112793, 28.
144630567259107]

-----
- Time interval n.7: [140.56, 140.76]
  * y_true: [27.90220498 42.04863469]
  * v_ann: [27.042537689208984, 27.358871459960938, 2
8.144630567259107]

-----
- Time interval n.8: [140.76, 140.96]
  * y_true: [45.30444602 33.92792147]
  * v_ann: [28.463417053222656, 27.707189559936523, 2
8.144630567259107]

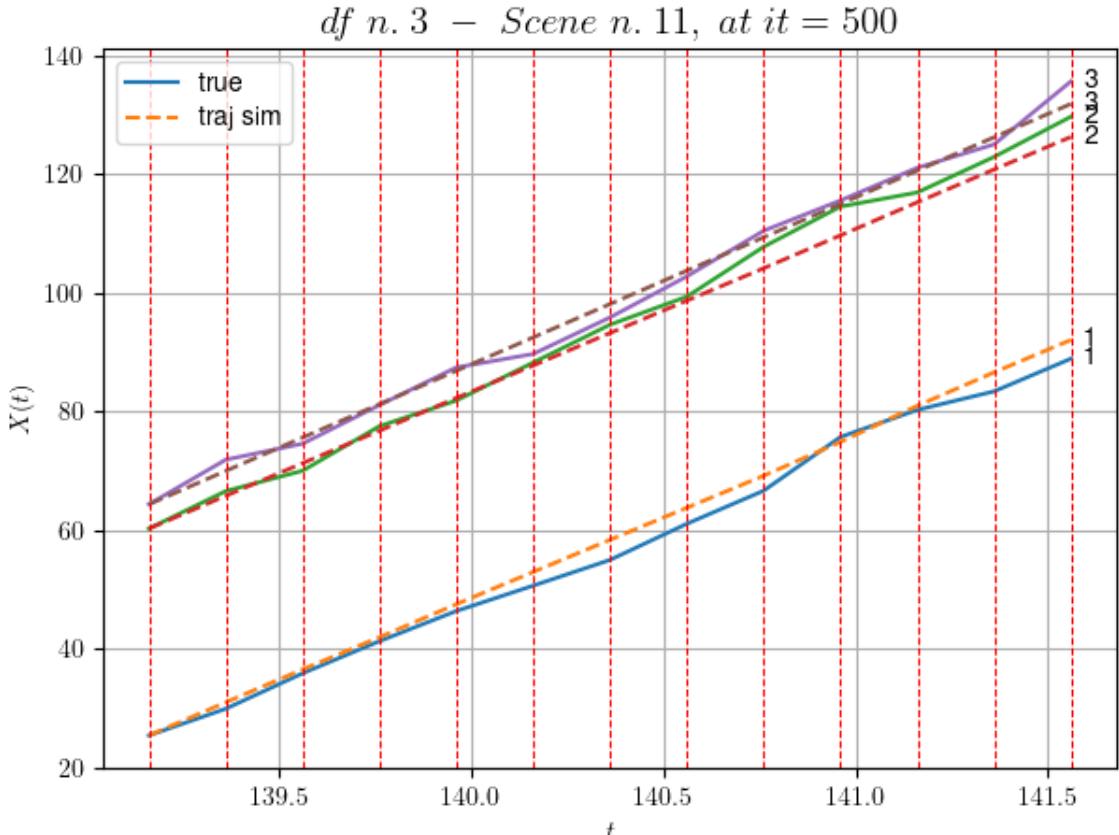
-----
- Time interval n.9: [140.96, 141.16]
  * y_true: [22.85268623 11.9131035 ]
  * v_ann: [30.53804588317871, 27.945287704467773, 2
8.144630567259107]

-----
- Time interval n.10: [141.16, 141.36]
  * y_true: [15.65202595 30.01833255]
  * v_ann: [28.224451065063477, 27.696043014526367, 2
8.144630567259107]

-----
- Time interval n.11: [141.36, 141.56]
  * y_true: [27.55395105 33.94025545]
  * v_ann: [27.335548400878906, 27.44358253479004, 2
8.144630567259107]

-----
* err= 3.9290681578970137
```

* Learning rate NN = 4.431466732057743e-05
 * diff = 0.0024954119182969414



For scene 11/55

* use LR_NN=0.0005 with err=270.2478970843391 at it=19
 * v0_scn_mean = 28.2559526499215
 * MAE = 3.8514069120050642

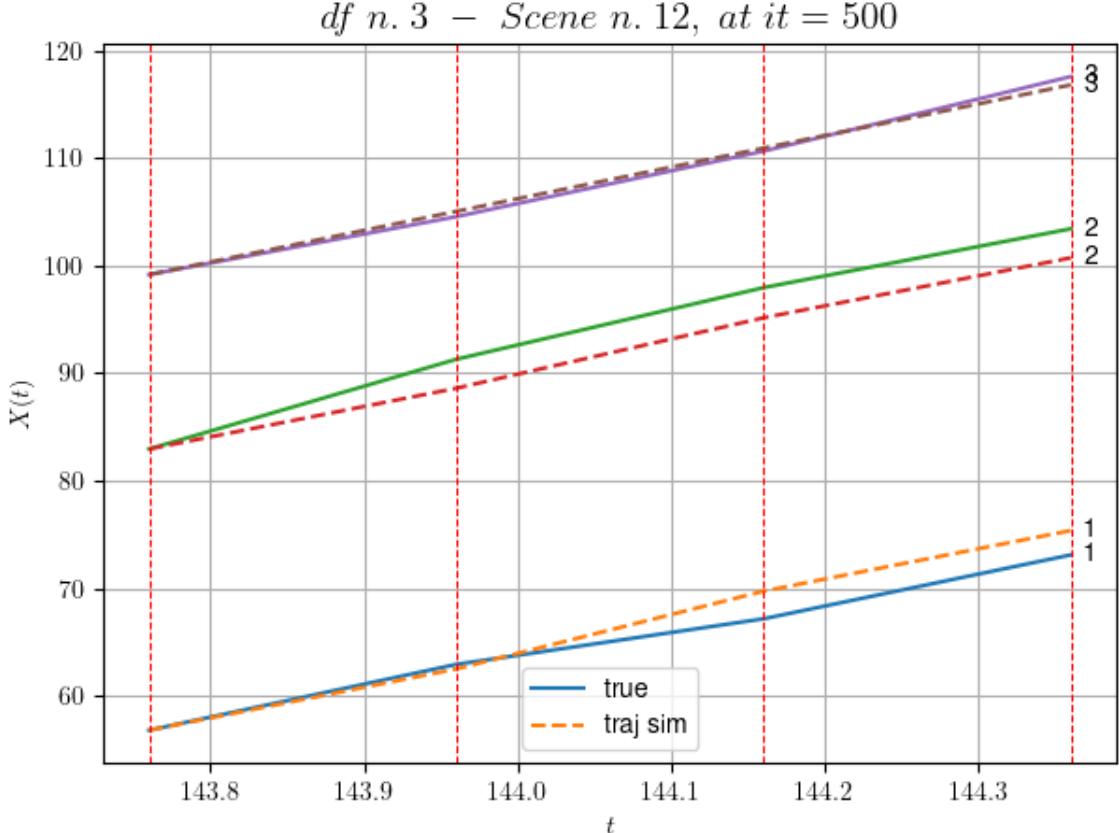
- Time interval n.0: [143.76, 143.96]
 * y_true: [30.62207823 41.7261053]
 * v_ann: [28.5179443359375, 28.261693954467773, 29.
 41474446324662]

- Time interval n.1: [143.96, 144.16]
 * y_true: [21.21173425 33.31570327]
 * v_ann: [36.174102783203125, 32.749053955078125, 2
 9.41474446324662]

- Time interval n.2: [144.16, 144.36]
 * y_true: [29.72284222 27.36558717]
 * v_ann: [28.18107795715332, 27.91209602355957, 29.
 41474446324662]

* err= 2.936346418214969

* Learning rate NN = 0.0002952449722215533
 * diff = 0.000914473305273944



For scene 12/55

* use LR_NN=0.0005 with err=17.369127846241707 at it=19
 * v0_scn_mean = 29.449859769175422
 * MAE = 2.936346418214969

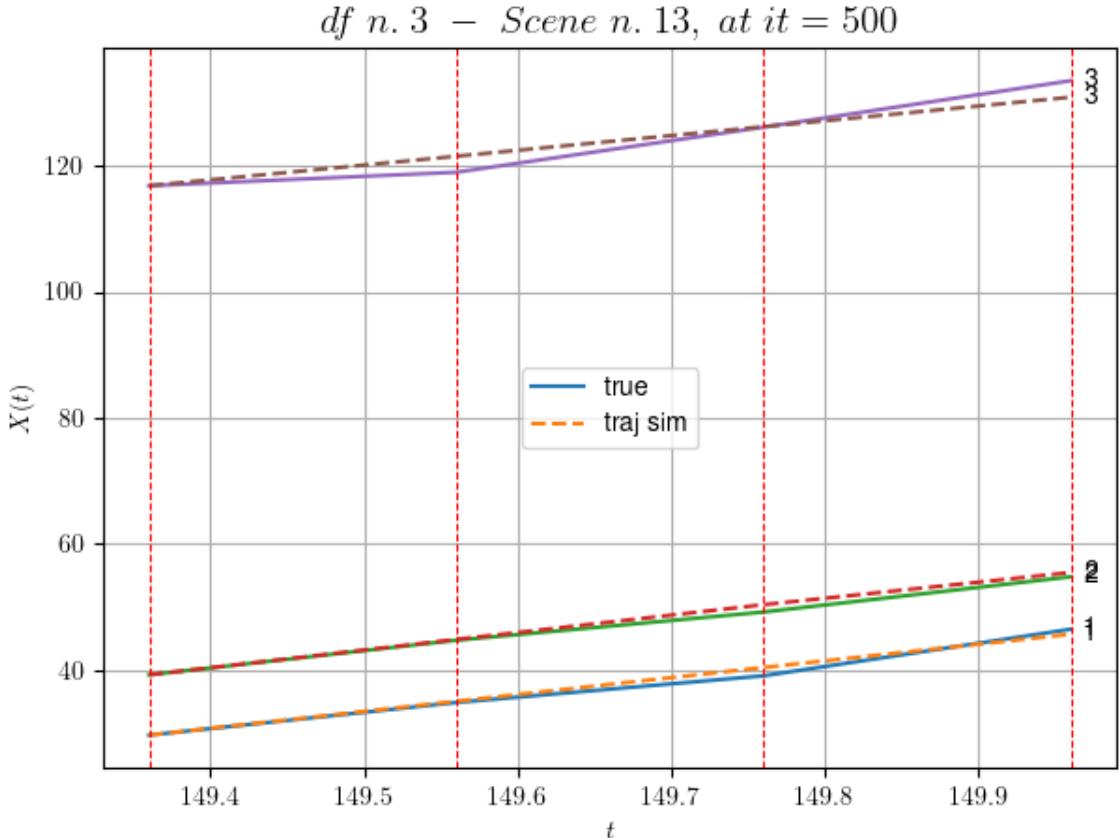
- Time interval n.0: [149.36, 149.56]
 * y_true: [25.90049539 27.45094024]
 * v_ann: [26.87832260131836, 28.10363006591797, 23.
 443555328521235]

- Time interval n.1: [149.56, 149.76]
 * y_true: [21.18057417 22.42095425]
 * v_ann: [26.80525779724121, 27.585317611694336, 2
 3.443555328521235]

- Time interval n.2: [149.76, 149.96]
 * y_true: [37.02126181 27.98148311]
 * v_ann: [26.42436408996582, 25.5708065032959, 23.4
 43555328521235]

* err= 1.470321815652057

* Learning rate NN = 2.952449540316593e-05
 * diff = 4.075855365659464e-06



For scene 13/55

* use LR_NN=5e-05 with err=26.34891619198133 at it=19
 * v0_scn_mean = 23.836941714439597
 * MAE = 1.3857714581974498

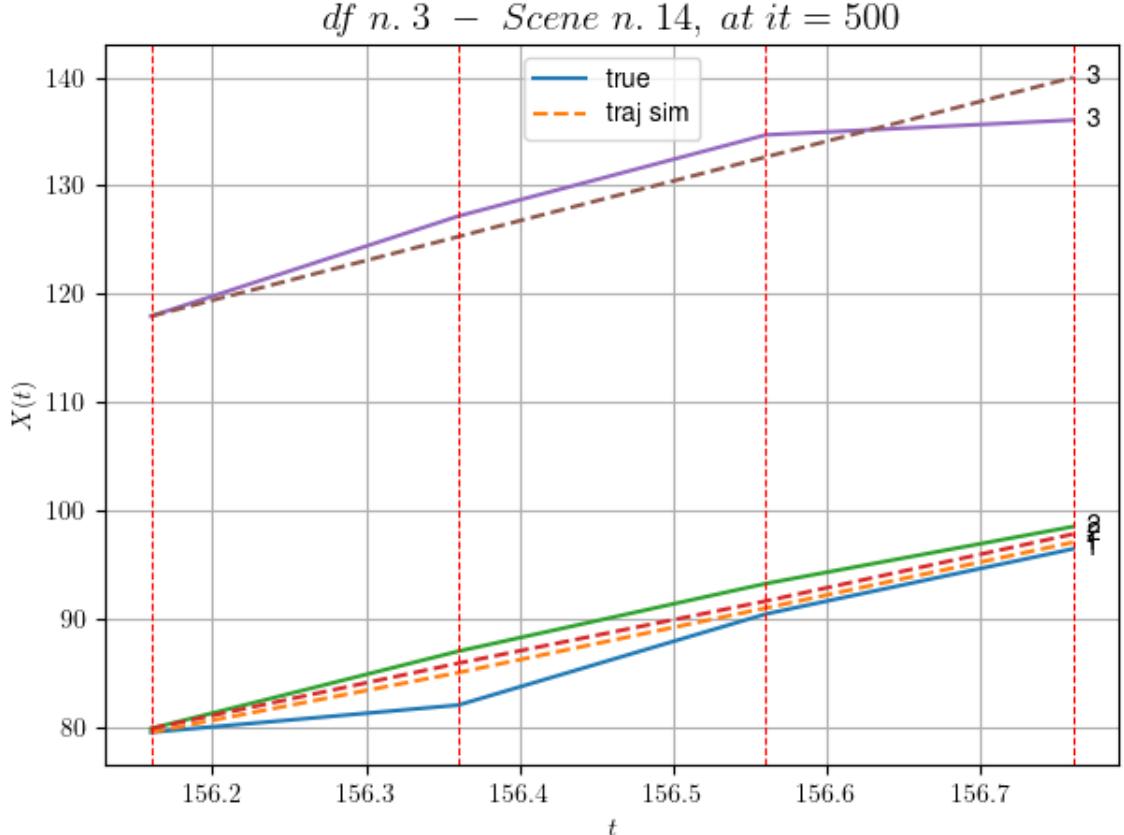
- Time interval n.0: [156.16, 156.36]
 * y_true: [12.56997445 35.72646923]
 * v_ann: [27.579456329345703, 30.179962158203125, 3
 6.77961690674208]

- Time interval n.1: [156.36, 156.56]
 * y_true: [42.07610638 31.26485338]
 * v_ann: [29.830684661865234, 28.725271224975586, 3
 6.77961690674208]

- Time interval n.2: [156.56, 156.76]
 * y_true: [30.09491831 26.35466702]
 * v_ann: [30.37635040283203, 30.959096908569336, 3
 6.77961690674208]

* err= 3.1058174704083523
 * Learning rate NN = 5.904899080633186e-05

* diff = 0.0005152383103657066



For scene 14/55

* use LR_NN=0.0001 with err=32.43078738344757 at it=19
 * v0_scn_mean = 36.37284019672811
 * MAE = 2.9453752596275264

- Time interval n.0: [207.96, 208.16]
 * y_true: [30.12104774 28.85226703]
 * v_ann: [31.470613479614258, 30.98283576965332, 3
 1.124909645190847]

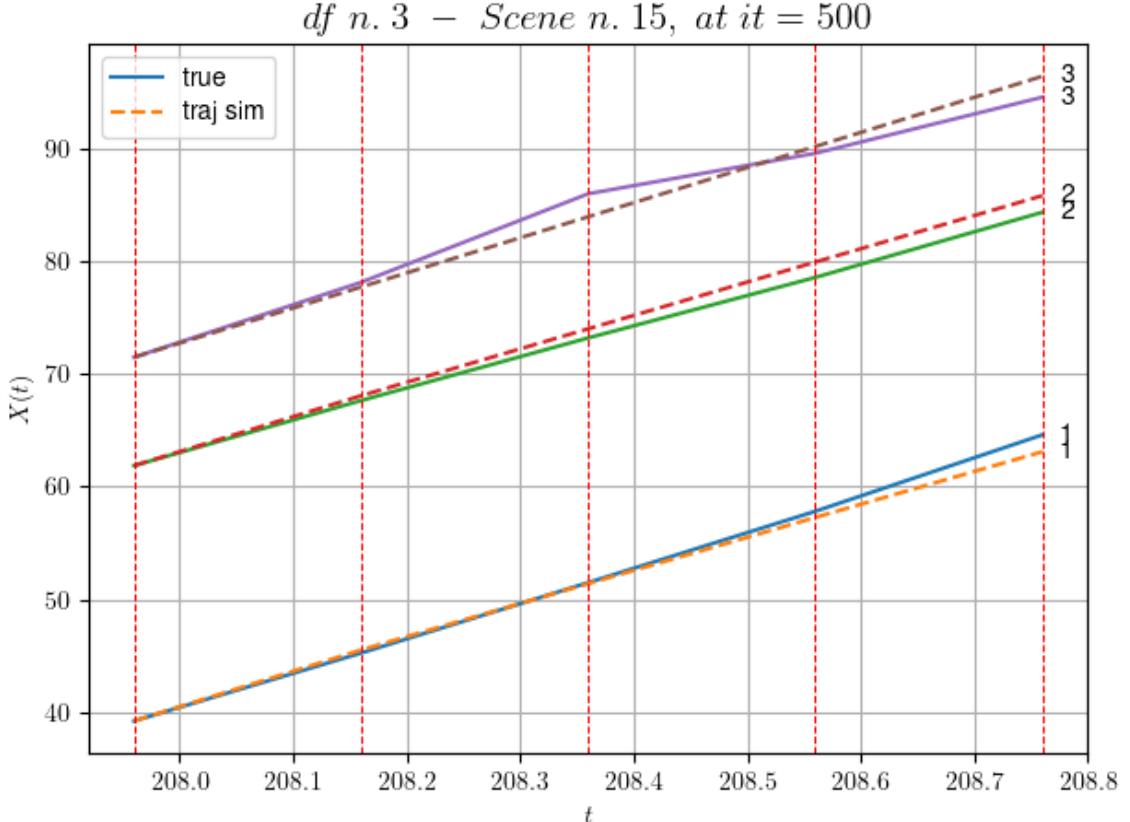
- Time interval n.1: [208.16, 208.36]
 * y_true: [31.19139939 27.73265496]
 * v_ann: [29.34368133544922, 29.641582489013672, 3
 1.124909645190847]

- Time interval n.2: [208.36, 208.56]
 * y_true: [31.59181924 26.81292648]
 * v_ann: [29.365591049194336, 29.58156394958496, 3
 1.124909645190847]

- Time interval n.3: [208.56, 208.76]
 * y_true: [33.88244728 28.87369213]

```
* v_ann: [29.106529235839844, 29.424055099487305, 3
1.124909645190847]
```

```
* err= 1.0404867427575206
* Learning rate NN = 0.000478296831715852
* diff = 7.864880551045061e-06
```



For scene 15/55

```
* use LR_NN=0.001 with err=10.727007818456956 at it=19
* v0_scn_mean = 31.05741511698524
* MAE = 1.0056972671002715
```

```
- Time interval n.0: [218.16, 218.36]
  * y_true: [26.47083003 31.40159485]
  * v_ann: [31.782773971557617, 33.04755783081055, 3
1.946925583263642]
```

```
- Time interval n.1: [218.36, 218.56]
  * y_true: [32.09751616 29.50187244]
  * v_ann: [30.45367431640625, 30.58112144470215, 31.
946925583263642]
```

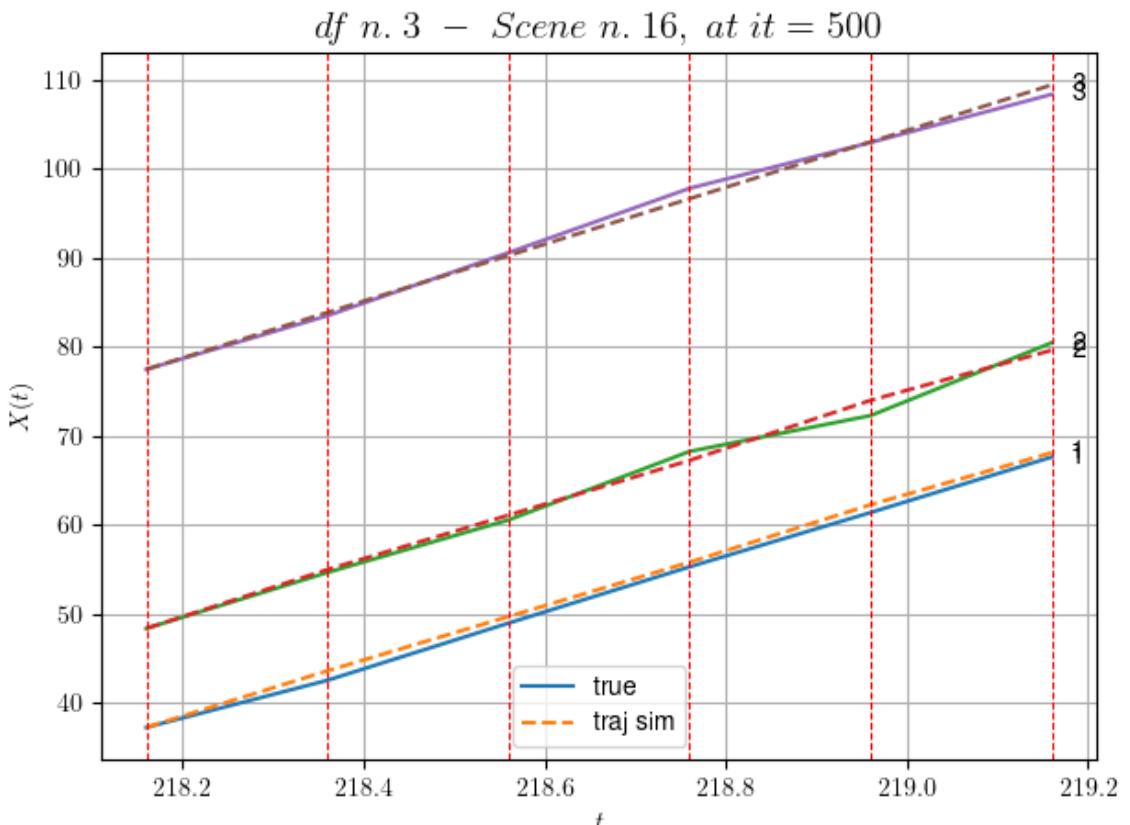
```
- Time interval n.2: [218.56, 218.76]
  * y_true: [31.61167285 38.50305628]
```

```
* v_ann: [30.547828674316406, 30.765371322631836, 3
1.946925583263642]
```

```
- Time interval n.3: [218.76, 218.96]
* y_true: [30.522016 20.15190279]
* v_ann: [32.30307388305664, 33.72995376586914, 31.
946925583263642]
```

```
- Time interval n.4: [218.96, 219.16]
* y_true: [31.13252968 40.9045659 ]
* v_ann: [29.183908462524414, 28.134326934814453, 3
1.946925583263642]
```

```
* err= 0.5953647506437937
* Learning rate NN = 0.0001937102060765028
* diff = 0.0001542706100195072
```



For scene 16/55

```
* use LR_NN=0.0005 with err=30.690977120410178 at it=19
* v0_scn_mean = 31.830110135680524
* MAE = 0.560235152970188
```

```
- Time interval n.0: [222.96, 223.16]
* y_true: [37.21103813 39.71315438]
* v_ann: [35.15991973876953, 34.41585159301758, 31.
```

279750687417305]

```
- Time interval n.1: [223.16, 223.36]
  * y_true: [31.35126998 28.99272163]
  * v_ann: [35.5407829284668, 34.32182312011719, 31.2
```

79750687417305]

```
- Time interval n.2: [223.36, 223.56]
  * y_true: [33.72173898 31.78369531]
  * v_ann: [35.071346282958984, 34.138301849365234, 3
```

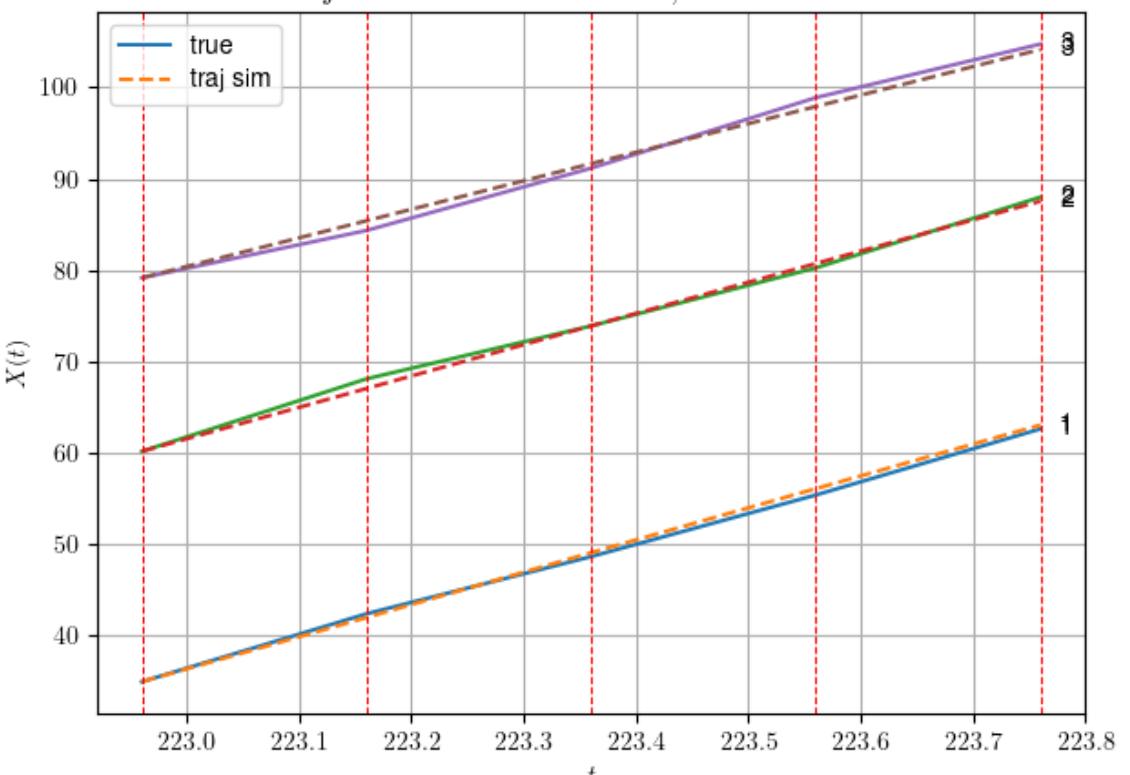
1.279750687417305]

```
- Time interval n.3: [223.56, 223.76]
  * y_true: [36.23248355 38.79526469]
  * v_ann: [34.86650085449219, 34.16830825805664, 31.
```

279750687417305]

```
* err= 0.3502385594040993
* Learning rate NN = 2.3914839403005317e-05
* diff = 9.232816157539459e-05
```

df n. 3 – Scene n. 17, at it = 500



For scene 17/55

```
* use LR_NN=5e-05 with err=6.329819115233726 at it=19
* v0_scn_mean = 31.202965703630696
* MAE = 0.3502385594040993
```

```
=====
- Time interval n.0: [247.36, 247.56]
  * y_true: [24.34113117 25.37248976]
  * v_ann: [29.77213478088379, 26.191871643066406, 2
9.19954509278794]

-----
- Time interval n.1: [247.56, 247.76]
  * y_true: [20.86113385 27.00305492]
  * v_ann: [28.533245086669922, 25.224910736083984, 2
9.19954509278794]

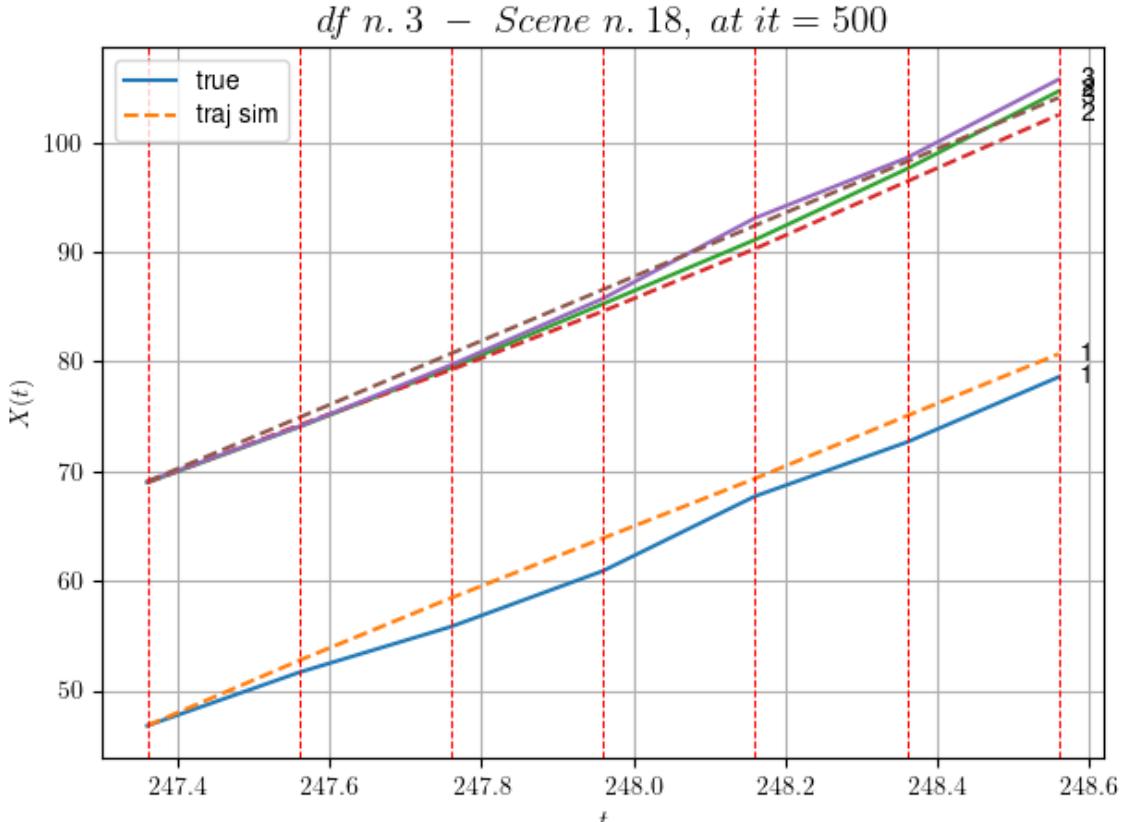
-----
- Time interval n.2: [247.76, 247.96]
  * y_true: [25.44173909 29.15378269]
  * v_ann: [27.253355026245117, 26.764625549316406, 2
9.19954509278794]

-----
- Time interval n.3: [247.96, 248.16]
  * y_true: [34.05263307 29.24437105]
  * v_ann: [27.200946807861328, 28.479406356811523, 2
9.19954509278794]

-----
- Time interval n.4: [248.16, 248.36]
  * y_true: [24.6823336 32.34552948]
  * v_ann: [28.626108169555664, 30.727842330932617, 2
9.19954509278794]

-----
- Time interval n.5: [248.36, 248.56]
  * y_true: [29.77329807 35.48696999]
  * v_ann: [28.266813278198242, 30.449857711791992, 2
9.19954509278794]

-----
* err= 2.030537859854166
* Learning rate NN = 0.00015690525469835848
* diff = 0.00034921533577270125
```



For scene 18/55

- * use LR_NN=0.0005 with err=68.96273779771676 at it=19
- * v0_scn_mean = 29.247572351281974
- * MAE = 1.8760447668343962

- Time interval n.0: [269.56, 269.76]
 - * y_true: [27.75027124 32.18076388]
 - * v_ann: [29.272541046142578, 29.18442153930664, 30.53917566971193]

- Time interval n.1: [269.76, 269.96]
 - * y_true: [33.80053503 32.77104018]
 - * v_ann: [29.44134521484375, 29.411643981933594, 30.53917566971193]

- Time interval n.2: [269.96, 270.16]
 - * y_true: [22.10049768 29.95131945]
 - * v_ann: [30.38125991821289, 30.50774383544922, 30.53917566971193]

- Time interval n.3: [270.16, 270.36]
 - * y_true: [32.40098084 29.70158012]
 - * v_ann: [29.261032104492188, 29.21289825439453, 30.53917566971193]

0.53917566971193]

```
- Time interval n.4: [270.36, 270.56]
  * y_true: [29.55119411 25.63174114]
  * v_ann: [29.73749351501465, 29.754837036132812, 3
```

0.53917566971193]

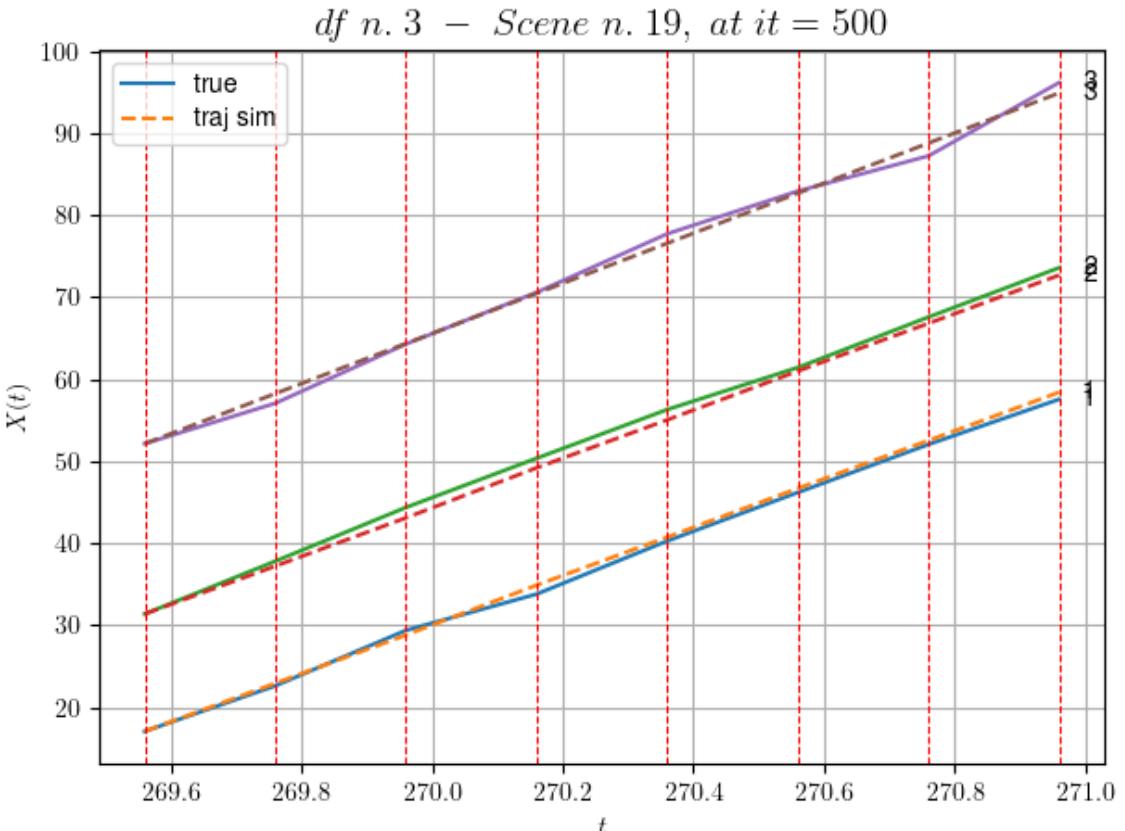
```
- Time interval n.5: [270.56, 270.76]
  * y_true: [29.3015063 30.75243246]
  * v_ann: [29.18346405029297, 29.079238891601562, 3
```

0.53917566971193]

```
- Time interval n.6: [270.76, 270.96]
  * y_true: [27.50174001 30.06304641]
  * v_ann: [29.40605354309082, 29.3707218170166, 30.5
```

3917566971193]

```
* err= 0.6815651967209243
* Learning rate NN = 0.00012709324073512107
* diff = 0.0012100370618532122
```



For scene 19/55

```
* use LR_NN=0.0005 with err=5.967921537126351 at it=19
* v0_scn_mean = 30.506825153737257
* MAE = 0.5833562047372618
```

=====

For scene 20/55

* use LR_NN=0.0005 with err=3.7948355076136813 at it=19
* v0_scn_mean = 31.02375505868539
* MAE = 0.737893764373894

=====

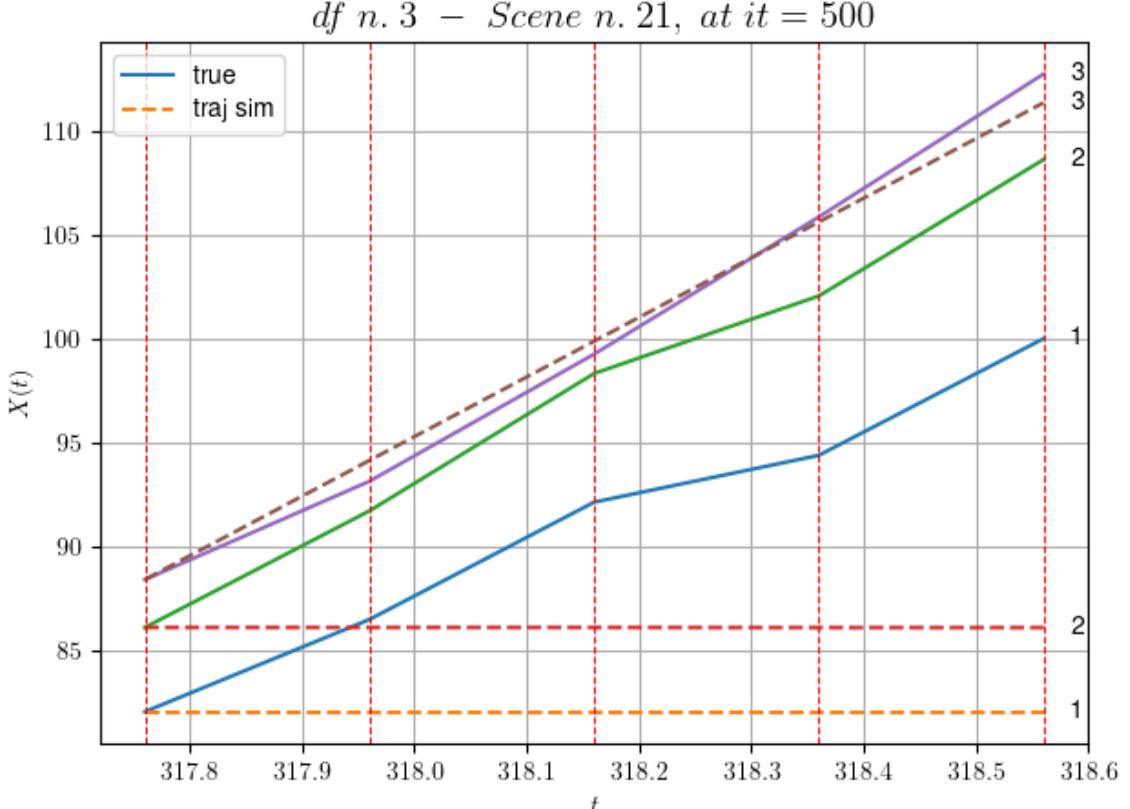
- Time interval n.0: [317.76, 317.96]
* y_true: [22.24301013 28.10582296]
* v_ann: [-2.6627798924150348e-11, -2.0072798179171
514e-06, 28.72960650253458]

- Time interval n.1: [317.96, 318.16]
* y_true: [28.26433817 33.10585656]
* v_ann: [-1.461030020653408e-14, -0.00055956054711
71439, 28.72960650253458]

- Time interval n.2: [318.16, 318.36]
* y_true: [11.28182915 18.67354228]
* v_ann: [-2.9634675195720726e-17, -0.0328698940575
1228, 28.72960650253458]

- Time interval n.3: [318.36, 318.56]
* y_true: [28.12514655 32.86712293]
* v_ann: [-2.2852215456518107e-21, -1.3169335066898
213e-10, 28.72960650253458]

* err= 103.13830355577711
* Learning rate NN = 0.002391484100371599
* diff = 0.00043300877561591733



For scene 21/55

- * use LR_NN=0.005 with err=17.217302334330054 at it=19
 - * v0_scn_mean = 28.80583005534479
 - * MAE = 19.56673054766372
-
-

For scene 22/55

- * use LR_NN=5e-05 with err=12.021697808876558 at it=19
 - * v0_scn_mean = 32.81120238334856
 - * MAE = 258.23160792896505
-
-

For scene 23/55

- * use LR_NN=0.0001 with err=17.163415838242273 at it=19
 - * v0_scn_mean = 11.07293216070471
 - * MAE = 54.24330021527762
-
-

For scene 24/55

- * use LR_NN=5e-05 with err=7.891731596630464 at it=19
 - * v0_scn_mean = 32.315435713930356
 - * MAE = 68.51253873070232
-
-

```
For scene 25/55
* use LR_NN=0.0005 with err=17.09483325550517 at it=19
* v0_scn_mean = 32.77202306050534
* MAE = 148.3656073927177
```

```
=====
=====
```

```
For scene 26/55
* use LR_NN=0.0005 with err=1.2732310311846697 at it=19
* v0_scn_mean = 35.824741646928935
* MAE = 47.66132784125852
```

```
=====
=====
```

```
- Time interval n.0: [427.96, 428.16]
* y_true: [33.16108667 24.70091575]
* v_ann: [-4.0625764086144045e-08, 0.0, 37.34985617
547979]
```

```
-----
-----
```

```
- Time interval n.1: [428.16, 428.36]
* y_true: [36.08159054 35.68166414]
* v_ann: [-0.002382917096838355, 0.0, 37.3498561754
7979]
```

```
-----
-----
```

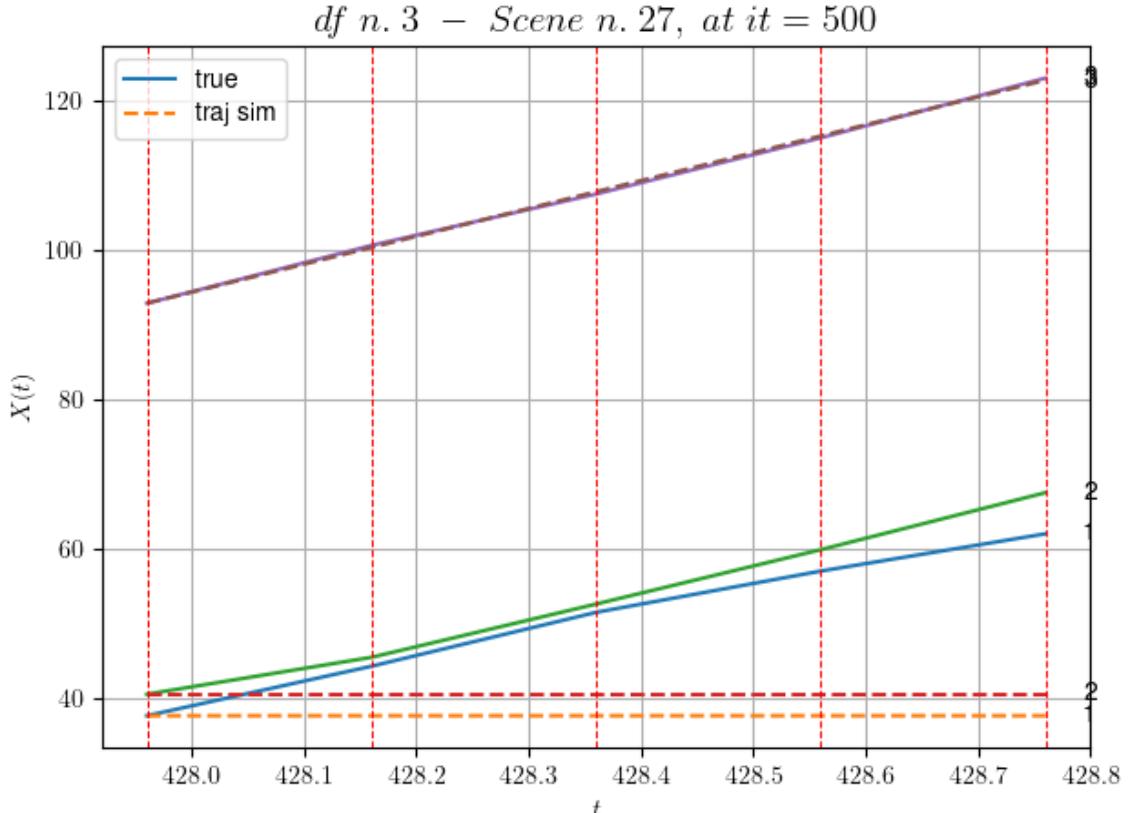
```
- Time interval n.2: [428.36, 428.56]
* y_true: [27.64533545 36.4184567 ]
* v_ann: [-0.004435949493199587, 0.0, 37.3498561754
7979]
```

```
-----
-----
```

```
- Time interval n.3: [428.56, 428.76]
* y_true: [24.96174823 38.17283814]
* v_ann: [-4.543523601796551e-08, 0.0, 37.349856175
47979]
```

```
-----
-----
```

```
* err= 165.29296585896233
* Learning rate NN = 0.000239148415857926
* diff = 1.094255887323925e-05
```



For scene 27/55

- * use LR_NN=0.0005 with err=76.00348018861607 at it=19
 - * v0_scn_mean = 36.90886513494352
 - * MAE = 165.29296585896233
-
-

For scene 28/55

- * use LR_NN=0.0005 with err=14.217128293869033 at it=19
 - * v0_scn_mean = 33.2243483924887
 - * MAE = 67.65092030967298
-
-

For scene 29/55

- * use LR_NN=0.0001 with err=0.6211813129551148 at it=19
 - * v0_scn_mean = 31.426549500193822
 - * MAE = 45.93962578052062
-
-

For scene 30/55

- * use LR_NN=0.0005 with err=64.37909984609699 at it=19
 - * v0_scn_mean = 25.12807202874388
 - * MAE = 319.76399589655534
-
-

```
For scene 31/55
* use LR_NN=0.001 with err=15.967826190305479 at it=19
* v0_scn_mean = 21.50445039420102
* MAE = 143.79566461244647
```

```
For scene 32/55
* use LR_NN=0.0001 with err=15.655202825017724 at it=19
* v0_scn_mean = 19.228140873976315
* MAE = 36.76433730569993
```

```
For scene 33/55
* use LR_NN=5e-05 with err=4.0274718239998295 at it=19
* v0_scn_mean = 23.84154634256208
* MAE = 13.01661424723134
```

```
For scene 34/55
* use LR_NN=0.0001 with err=0.84270135874945 at it=19
* v0_scn_mean = 26.741356614238356
* MAE = 13.371524224348462
```

```
For scene 35/55
* use LR_NN=0.001 with err=15.195866869723234 at it=19
* v0_scn_mean = 14.855521855353397
* MAE = 8.849278173434156
```

```
For scene 36/55
* use LR_NN=0.01 with err=21.957493588387308 at it=19
* v0_scn_mean = 18.010824523631577
* MAE = 43.84504876572685
```

```
For scene 37/55
* use LR_NN=0.0001 with err=10.902845687934208 at it=19
* v0_scn_mean = 19.023376461391656
* MAE = 37.3926120286596
```

```
=====
=====
For scene 38/55
* use LR_NN=0.0001 with err=19.32729800692021 at it=19
* v0_scn_mean = 22.24382370313914
* MAE = 185.216804762321
```

```
=====
=====
For scene 39/55
* use LR_NN=0.0001 with err=38.54426868019056 at it=19
* v0_scn_mean = 25.756252522261914
* MAE = 189.91427485840015
```

```
=====
=====
For scene 40/55
* use LR_NN=0.001 with err=17.833773263693782 at it=19
* v0_scn_mean = 25.127612566656975
* MAE = 43.46936192407472
```

```
=====
=====
For scene 41/55
* use LR_NN=1e-05 with err=14.62071137692262 at it=19
* v0_scn_mean = 29.19144096935974
* MAE = 33.12821007039225
```

- ```


```
- Time interval n.0: [31.36, 31.56]
    - \* y\_true: [24.92105739 19.11766565 26.56610692]
    - \* v\_ann: [3.74870974291515e-35, 19.303504943847656, 0.0, 30.917174059155982]
  

```

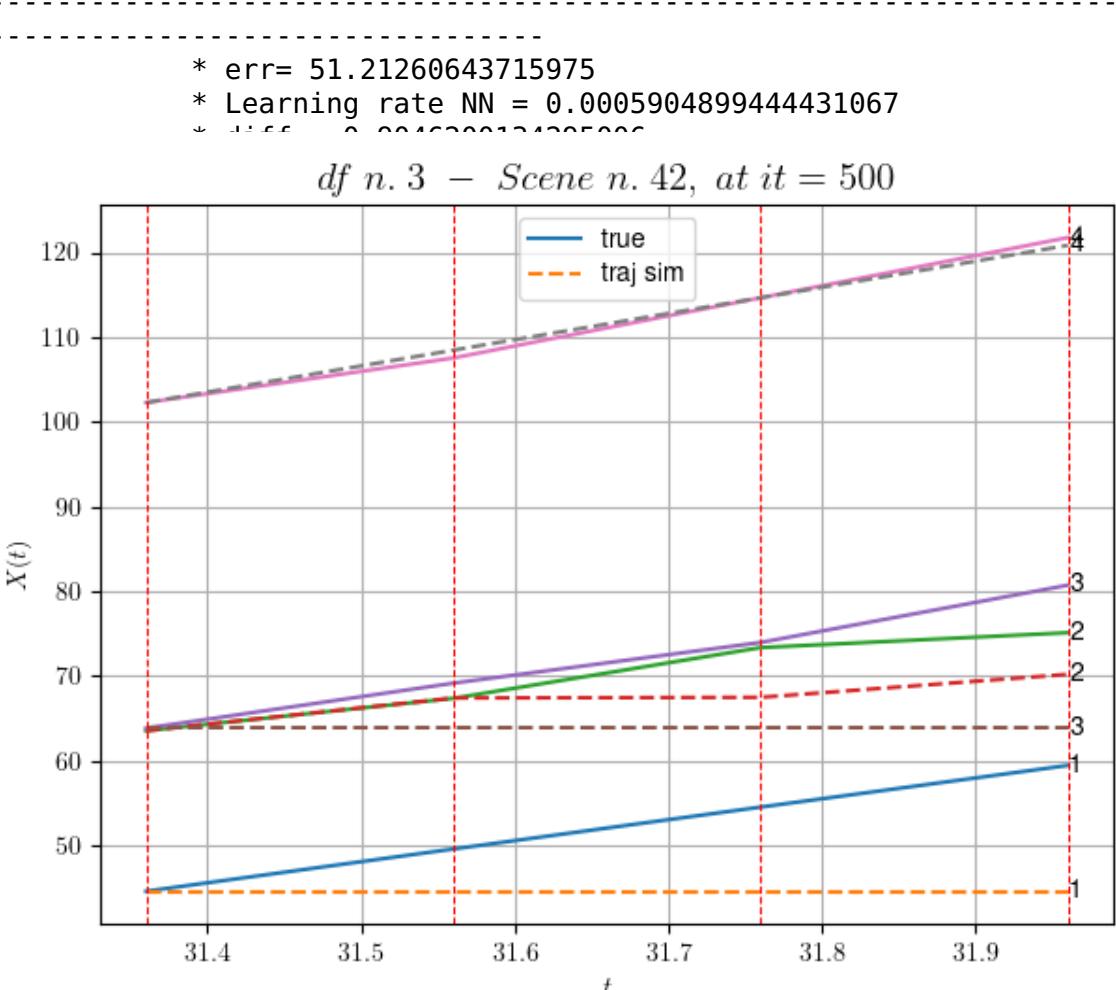
```

  - Time interval n.1: [31.56, 31.76]
    - \* y\_true: [24.72130541 29.91666352 24.00857353]
    - \* v\_ann: [7.903969648315336e-33, 0.3953640758991241 5, 0.0, 30.917174059155982]
  

```

```

  - Time interval n.2: [31.76, 31.96]
    - \* y\_true: [24.58151426 8.80091982 33.80389928]
    - \* v\_ann: [7.8430131030565e-35, 13.562440872192383, 0.0, 30.917174059155982]



For scene 42/55

\* use LR\_NN=0.001 with err=16.132820883154952 at it=19  
 \* v0\_scn\_mean = 30.843803119029175  
 \* MAE = 51.21260643715975

---



---

For scene 43/55

\* use LR\_NN=0.0005 with err=15.906535356554716 at it=19  
 \* v0\_scn\_mean = 24.856984575228964  
 \* MAE = 93.45012599877236

---



---

For scene 44/55

\* use LR\_NN=5e-05 with err=9.683458507435768 at it=19  
 \* v0\_scn\_mean = 33.4870317483745  
 \* MAE = 35.74466602103297

---



---

For scene 45/55

\* use LR\_NN=0.0001 with err=111.39983127549745 at it=19

```
* v0_scn_mean = 26.438967850391887
* MAE = 301.7113489021191
```

---



---

```
- Time interval n.0: [94.36, 94.56]
* y_true: [33.70387327 38.57908217 21.70251029]
* v_ann: [31.94378089904785, 29.95685577392578, 31.
904146194458008, 29.526156065335144]
```

---

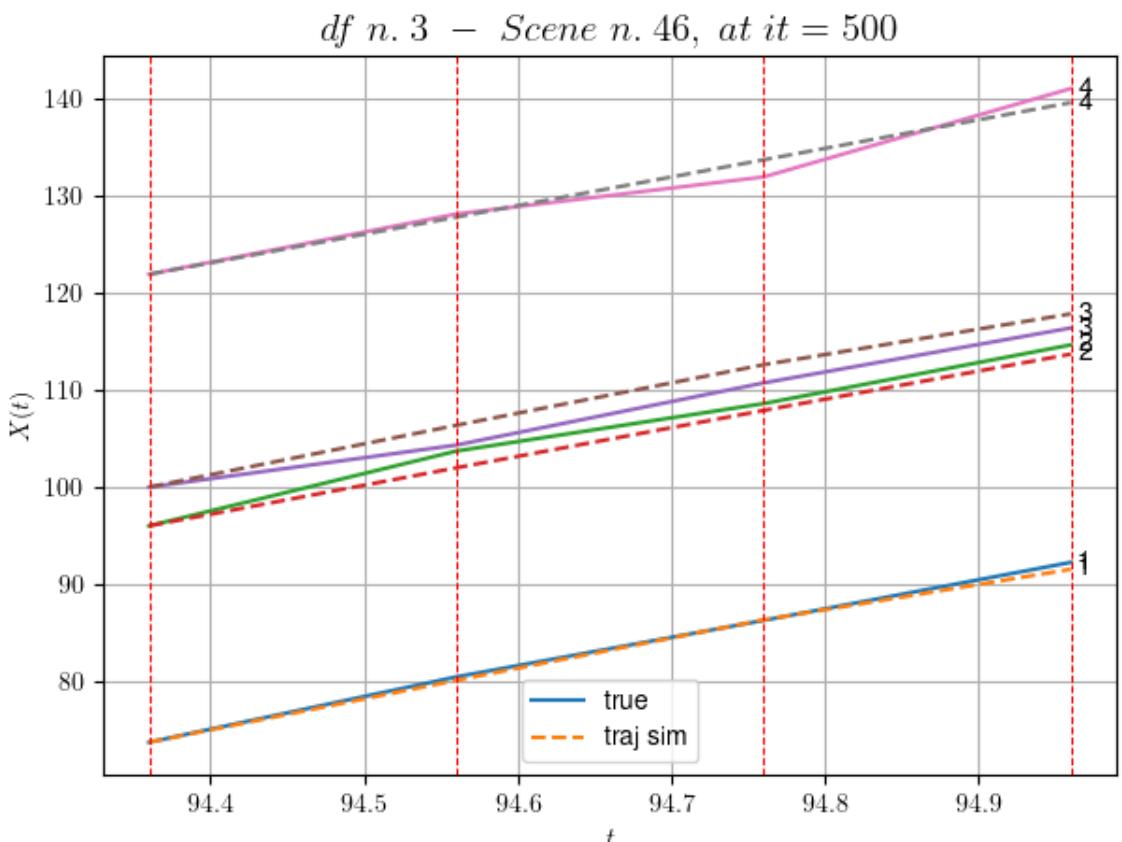
```
- Time interval n.1: [94.56, 94.76]
* y_true: [29.14386677 24.50535727 32.05702124]
* v_ann: [31.202880859375, 29.570518493652344, 31.2
41790771484375, 29.526156065335144]
```

---

```
- Time interval n.2: [94.76, 94.96]
* y_true: [29.96461386 30.28702151 28.36707369]
* v_ann: [26.106407165527344, 29.074689865112305, 2
6.270893096923828, 29.526156065335144]
```

---

```
* err= 1.2603280230053069
* Learning rate NN = 0.0002952449722215533
* diff = 0.00042365676447930767
```



For scene 46/55

\* use LR\_NN=0.0005 with err=26.74210980710923 at it=19

```
* vθ_scn_mean = 29.56406203815747
* MAE = 1.2422328875609483
```

---



---

```
- Time interval n.0: [142.16, 142.36]
 * y_true: [31.90177154 33.47450881 19.84324761]
 * v_ann: [25.70186424255371, 26.14345359802246, 25.
175575256347656, 28.12123774853792]
```

---

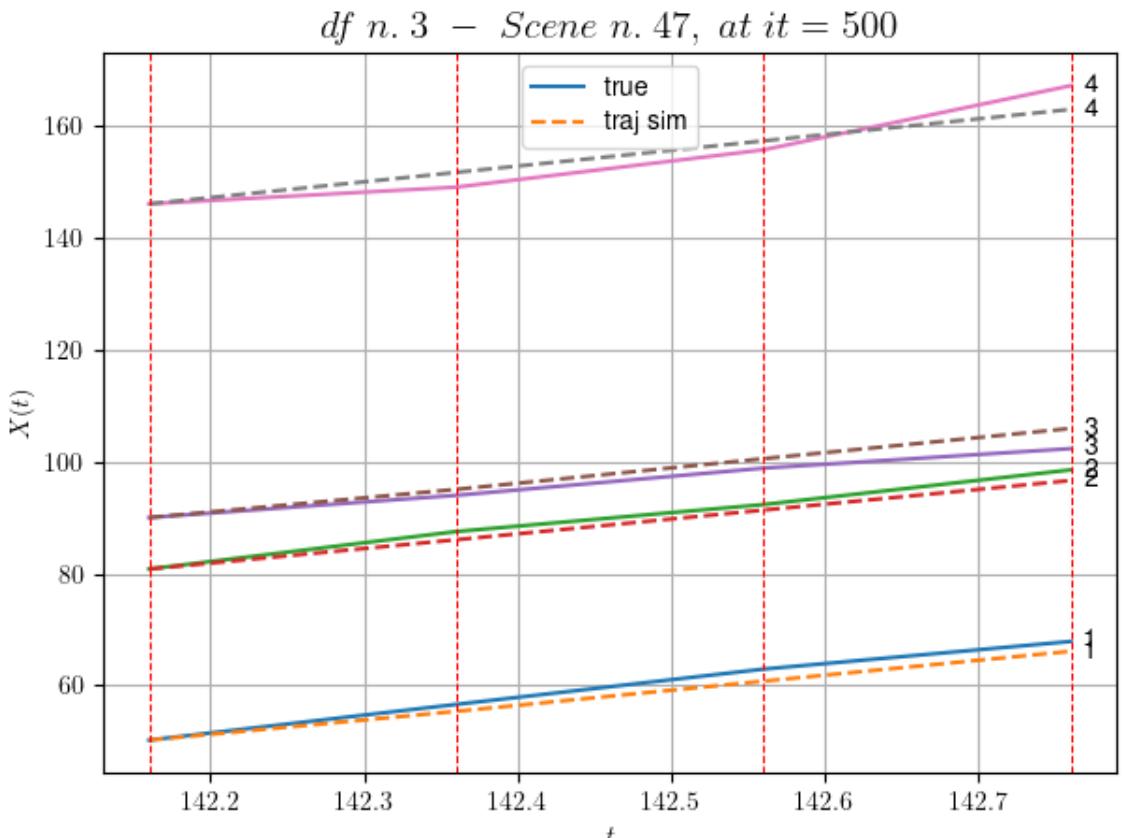
```
- Time interval n.1: [142.36, 142.56]
 * y_true: [31.50218522 24.08376432 24.27420294]
 * v_ann: [26.94508171081543, 26.474332809448242, 2
7.4112491607666, 28.12123774853792]
```

---

```
- Time interval n.2: [142.56, 142.76]
 * y_true: [24.70204715 30.9853993 17.45337402]
 * v_ann: [26.696897506713867, 26.424896240234375, 2
7.023208618164062, 28.12123774853792]
```

---

```
* err= 3.7820191049384575
* Learning rate NN = 2.952449540316593e-05
* diff = 0.0008397956707777432
```



For scene 47/55

\* use LR\_NN=5e-05 with err=32.650382134364264 at it=19

```
* v0_scn_mean = 28.27153261491403
* MAE = 2.714842347122093
```

---



---

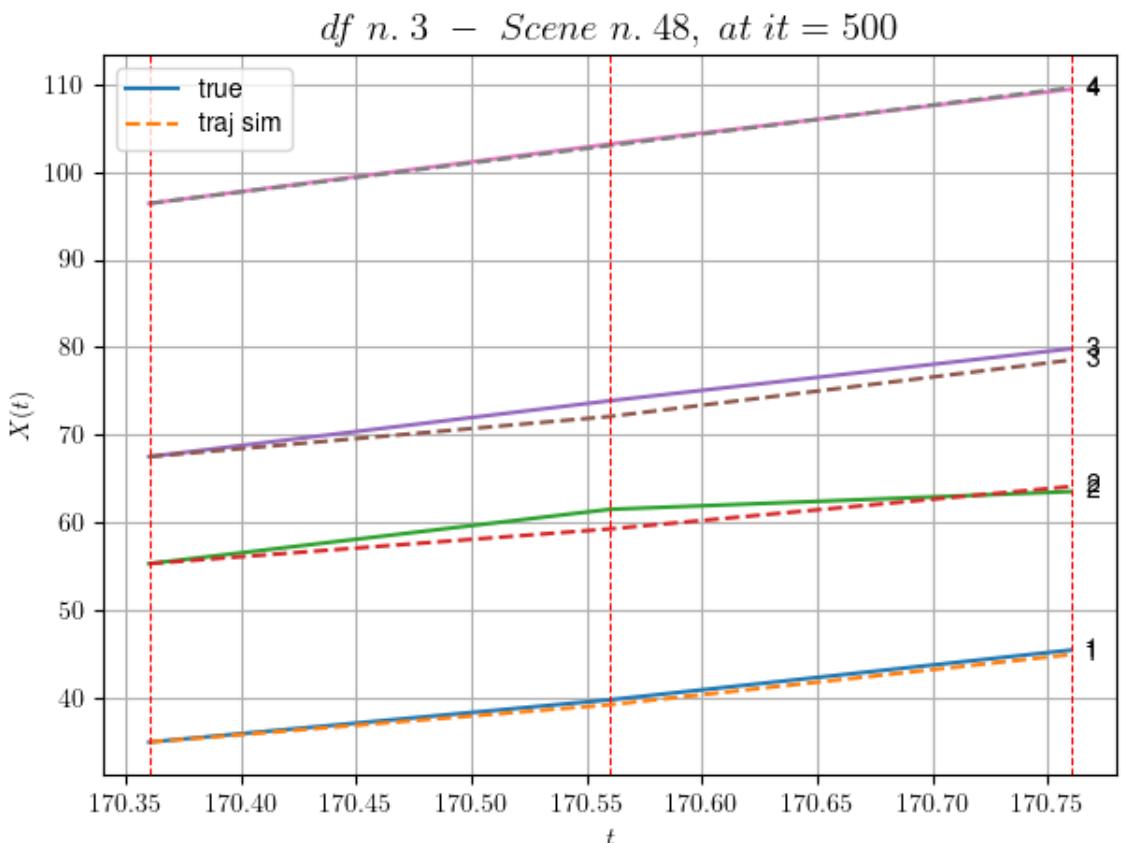
```
- Time interval n.0: [170.36, 170.56]
 * y_true: [24.1106547 30.95205085 31.86307572]
 * v_ann: [21.311050415039062, 19.779457092285156, 2
2.913122177124023, 32.99653993565768]
```

---

```
- Time interval n.1: [170.56, 170.76]
 * y_true: [28.33103197 10.10076519 29.63331411]
 * v_ann: [28.57413101196289, 24.177940368652344, 3
2.13495635986328, 32.99653993565768]
```

---

```
* err= 0.9031302698320777
* Learning rate NN = 0.00036449998151510954
* diff = 0.00016304336760153415
```



For scene 48/55

```
* use LR_NN=0.0005 with err=2.5110844011626456 at it=19
* v0_scn_mean = 32.75682649194201
* MAE = 0.8276385400905582
```

---



---

```

- Time interval n.0: [248.16, 248.36]
 * y_true: [31.21204442 24.6823336 32.34552948]
 * v_ann: [33.9021110534668, 36.775997161865234, 31.
02444839477539, 30.248970609827122]
```

---

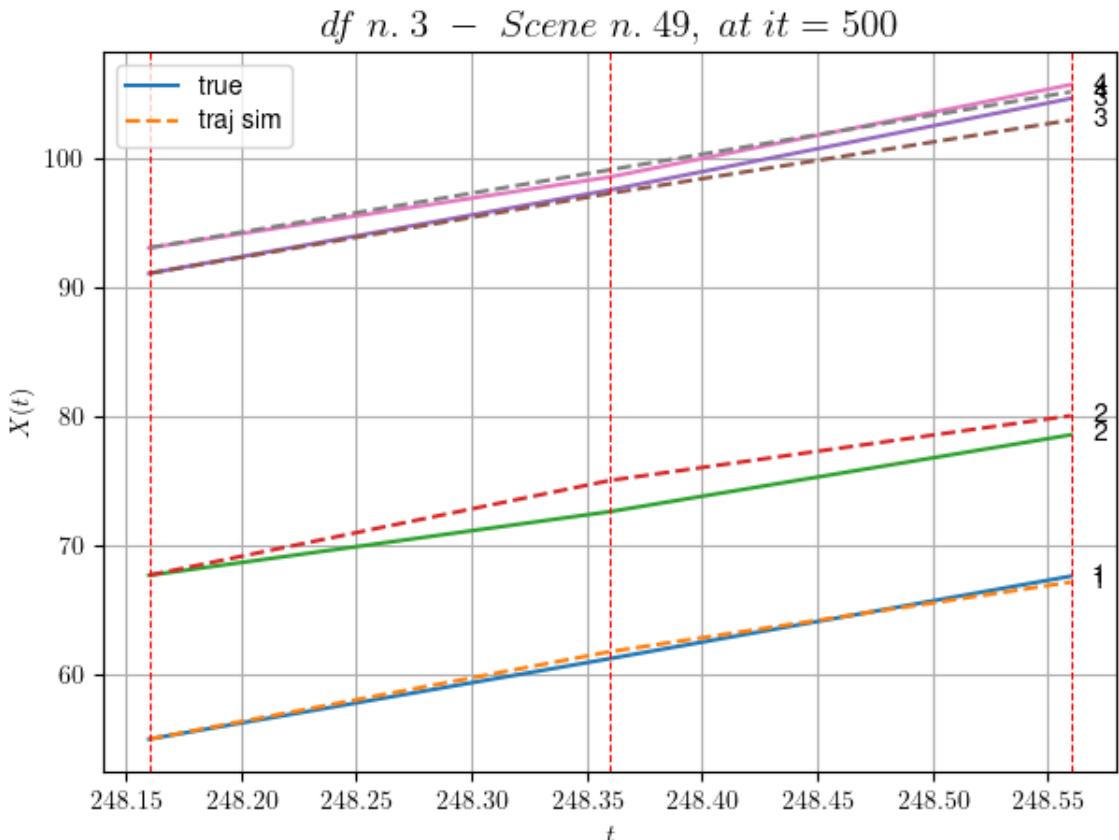
```

- Time interval n.1: [248.36, 248.56]
 * y_true: [31.9625999 29.77329807 35.48696999]
 * v_ann: [26.98538589477539, 25.104578018188477, 2
8.427913665771484, 30.248970609827122]
```

---

```

* err= 1.0040575013756377
* Learning rate NN = 0.0007289999630302191
* diff = 0.003111522605170525
```



For scene 49/55

```

* use LR_NN=0.001 with err=17.16352490726057 at it=19
* v0_scn_mean = 30.22905377122439
* MAE = 1.0040575013756377
```

---



---

```

- Time interval n.0: [320.56, 320.76]
 * y_true: [27.61038846 20.60122903 24.07186814]
 * v_ann: [29.80860710144043, 29.04783821105957, 29.
743698120117188, 28.13014094914282]
```

---

```

- Time interval n.1: [320.76, 320.96]
```

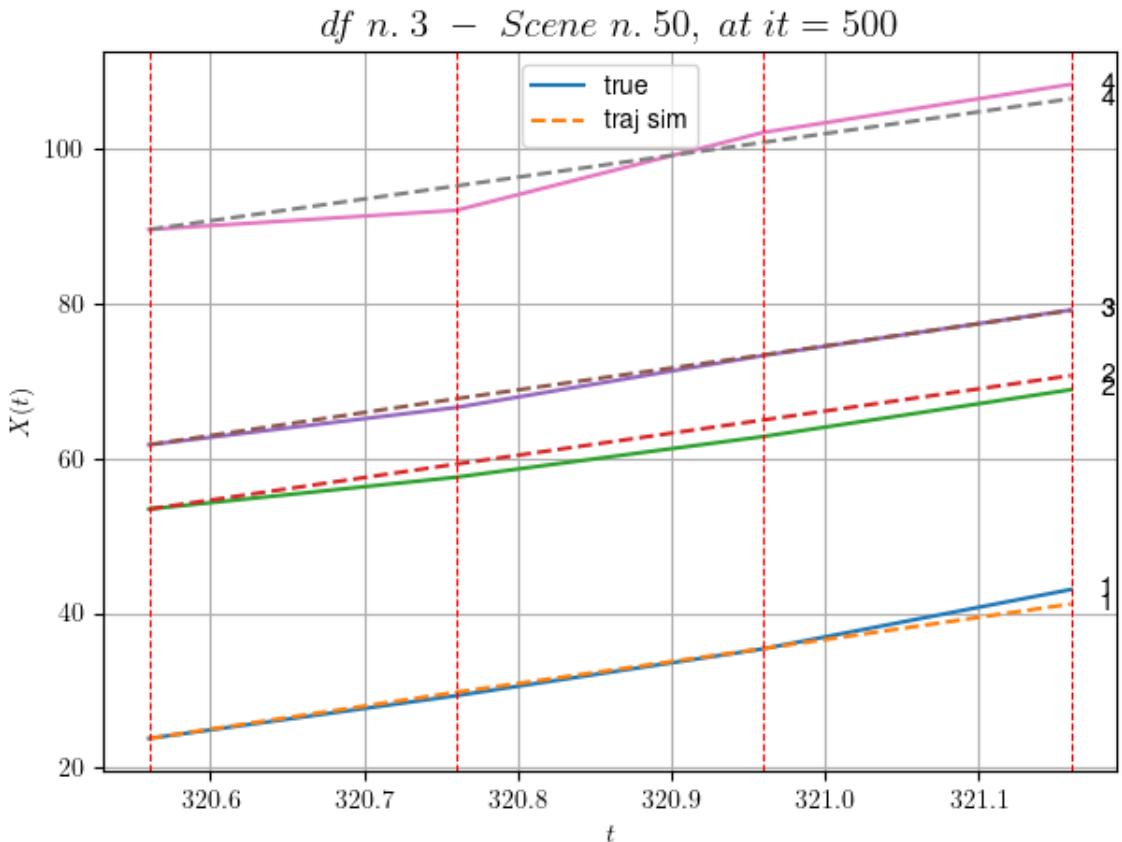
```

* y_true: [30.26064275 26.25184013 33.56317876]
* v_ann: [28.259023666381836, 28.479284286499023, 2
8.290578842163086, 28.13014094914282]

- Time interval n.2: [320.96, 321.16]
* y_true: [38.25114958 30.20253063 29.36323845]
* v_ann: [28.69455909729004, 28.656402587890625, 2
8.69770622253418, 28.13014094914282]

* err= 1.922886445606732
* Learning rate NN = 5.904899080633186e-05
* diff = 0.0004533015098140414

```



For scene 50/55

```

* use LR_NN=0.0001 with err=8.05194301656866 at it=19
* v0_scn_mean = 28.279723588442263
* MAE = 1.9126740398983362

```

```

=====
=====
- Time interval n.0: [333.96, 334.16]
* y_true: [31.40121985 21.58136302 16.05156144]
* v_ann: [29.66541862487793, 29.6600399017334, 29.6
6202163696289, 24.218775367788997]

- Time interval n.1: [334.16, 334.36]

```

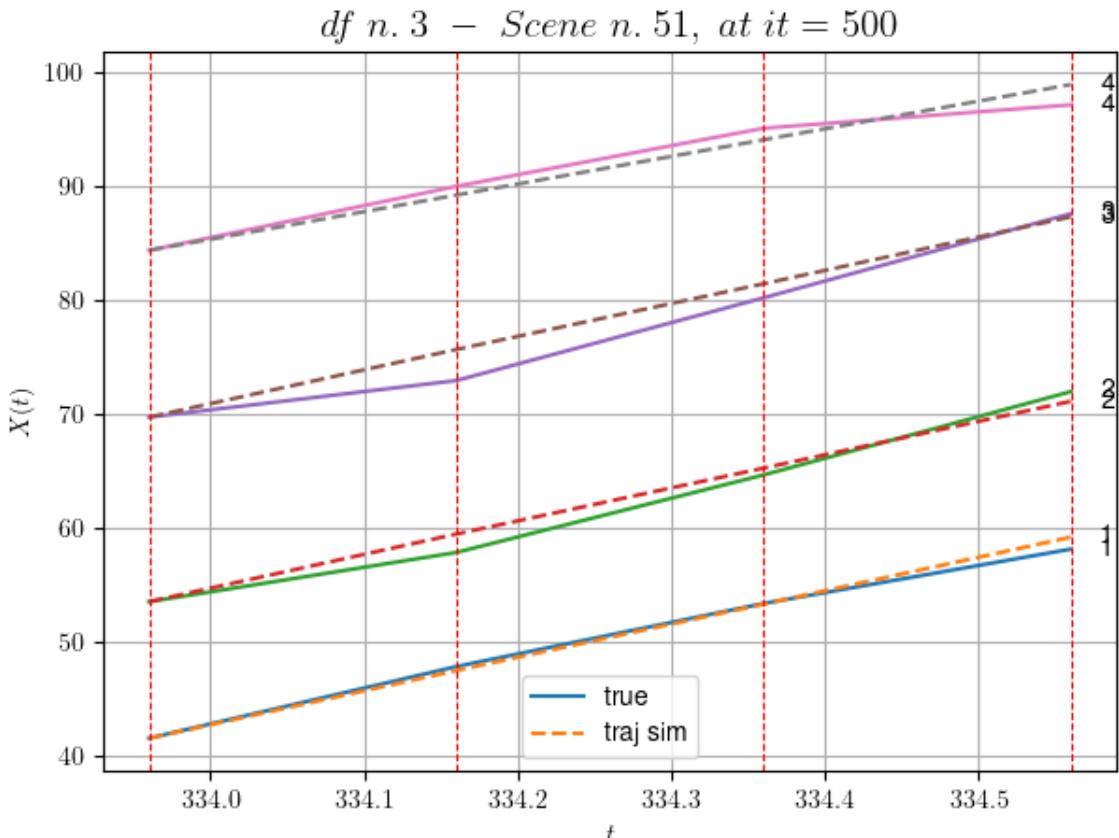
```

* y_true: [27.67132891 33.9725354 36.25406589]
* v_ann: [29.079818725585938, 28.87767791748047, 2
8.79973602294922, 24.218775367788997]

- Time interval n.2: [334.36, 334.56]
* y_true: [23.81145278 36.52334008 36.85496039]
* v_ann: [29.378433227539062, 29.29856300354004, 2
9.310928344726562, 24.218775367788997]

* err= 1.1675759381764248
* Learning rate NN = 5.904899080633186e-05
* diff = 8.13235120016298e-05

```



For scene 51/55

```

* use LR_NN=0.0001 with err=58.95899365887294 at it=19
* v0_scn_mean = 24.68125452549615
* MAE = 1.1600962560647528

```

```

=====
=====

- Time interval n.0: [393.36, 393.56]
* y_true: [28.21049617 36.91227562 35.66212709]
* v_ann: [29.56831932067871, 30.687583923339844, 2
8.34905242919922, 27.00629353640532]

=====
- Time interval n.1: [393.56, 393.76]

```

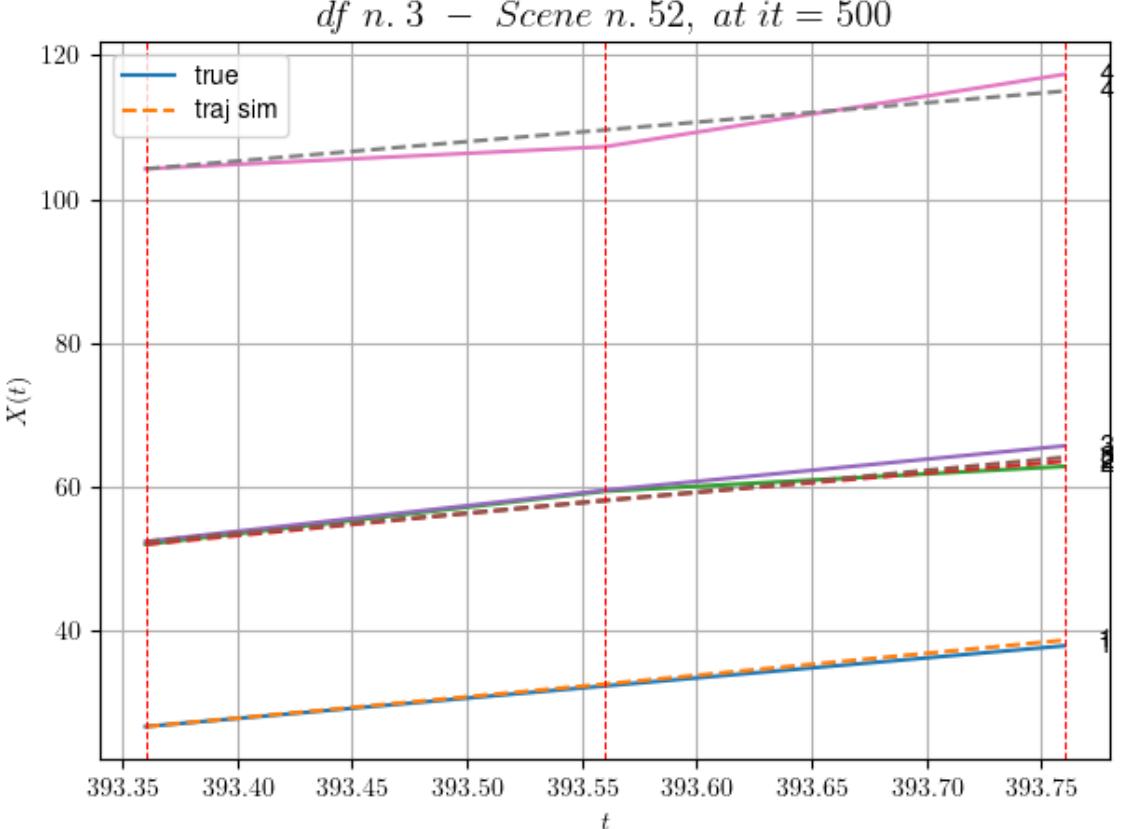
```
* y_true: [27.89067116 17.24119841 30.82238865]
* v_ann: [30.47641372680664, 26.98828887939453, 30.
223915100097656, 27.00629353640532]
```

---



---

```
* err= 1.5206884719084788
* Learning rate NN = 3.6449993785936385e-05
* diff = 6.799707711913072e-05
```



#### For scene 52/55

```
* use LR_NN=5e-05 with err=15.721293646317744 at it=19
* v0 scn_mean = 27.24578031157652
* MAE = 1.295077936039853
```

---



---

#### For scene 53/55

```
* use LR_NN=0.001 with err=29.44388394881672 at it=19
* v0 scn_mean = 18.407025061352428
* MAE = 0.7398771433615194
```

---



---

```
- Time interval n.0: [95.36, 95.56]
* y_true: [30.52238998 38.21809619 31.62683865 21.8
1676128]
* v_ann: [21.885601043701172, 25.39877700805664, 2
3.36447525024414, 25.45482635498047, 33.35137428698096]
```

```

- Time interval n.1: [95.56, 95.76]

 * y_true: [29.11270185 26.43618159 23.59563306 15.7

3527867]

 * v_ann: [32.47045135498047, 26.93470001220703, 29.

828941345214844, 27.239625930786133, 33.35137428698096]

```

```

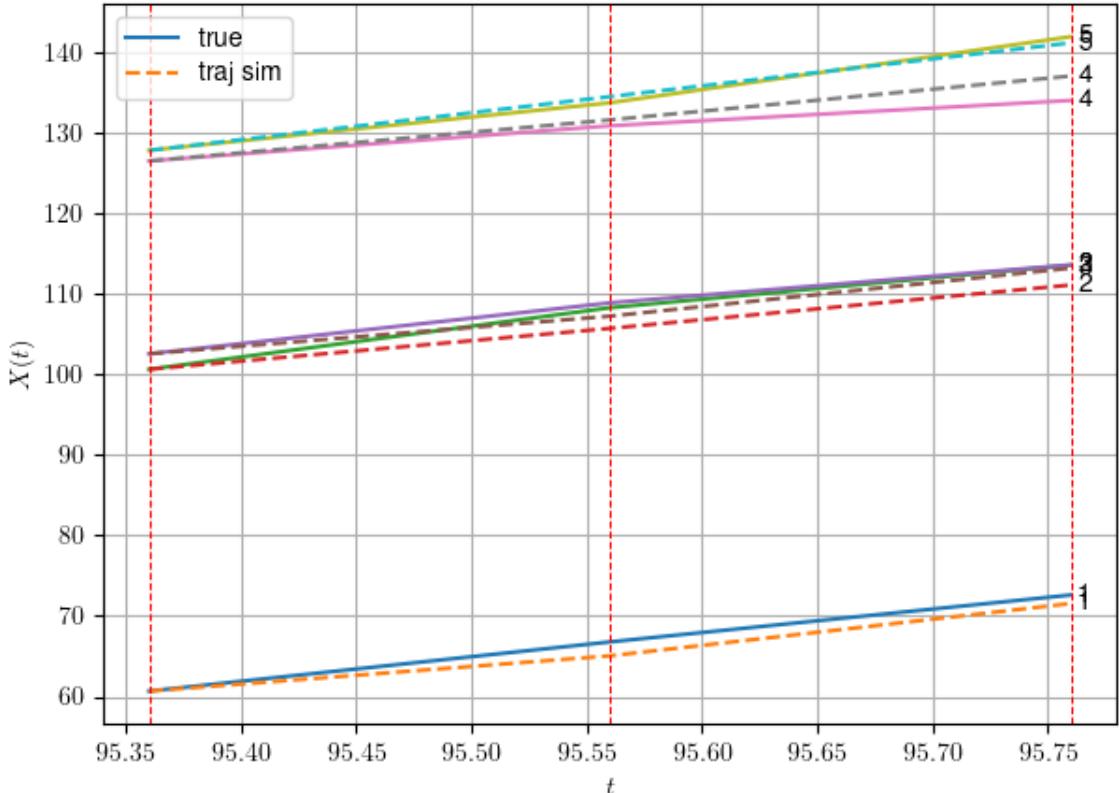
* err= 2.0351552335731613

* Learning rate NN = 0.00036449998151510954

* diff = 0.0005556760222260522

```

*df n. 3 – Scene n. 54, at it = 500*



#### For scene 54/55

```

* use LR_NN=0.0005 with err=18.450960981573708 at it=19

* v0_scn_mean = 33.01637687613969

* MAE = 2.0279071958438983
=====

=====
```

For df=3 with 55 scenes, time taken: 774.38

```

=====

=====
```

In df n.4/10 we have 30 scenes

```

```

#### For scene 0/30

```

* use LR_NN=0.0005 with err=11.889435638421181 at it=19

* v0_scn_mean = 35.611215639841234

```

\* MAE = 2.2751994199248546

---

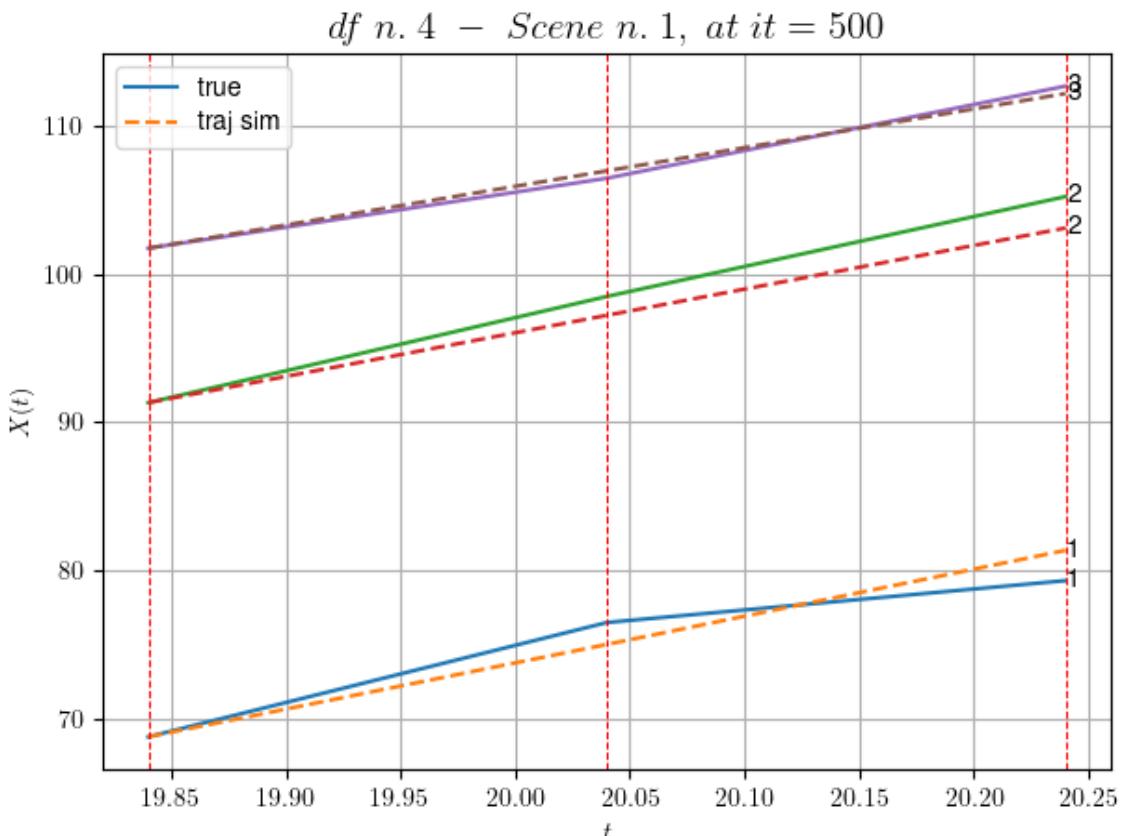


---

```
- Time interval n.0: [19.84, 20.04]
* y_true: [38.50393497 35.76621737]
* v_ann: [31.121078491210938, 29.41707420349121, 2
6.05896667057019]

- Time interval n.1: [20.04, 20.24]
* y_true: [14.10165462 33.63672046]
* v_ann: [31.688871383666992, 29.407756805419922, 2
6.05896667057019]

* err= 1.4363804009049534
* Learning rate NN = 3.6449993785936385e-05
* diff = 0.0028689365764422714
```



For scene 1/30

```
* use LR_NN=5e-05 with err=10.072409093643023 at it=19
* v0_scn_mean = 26.295428493392123
* MAE = 1.4363804009049534
```

---



---

For scene 2/30

\* use LR\_NN=0.001 with err=32.821239877339984 at it=19

\* v0\_scn\_mean = 26.421797434017595

\* MAE = 2.21457374151613

```
=====
=====
```

- Time interval n.0: [80.24, 80.44]  
\* y\_true: [20.8407888 28.56113721]  
\* v\_ann: [26.08727264404297, 26.52023696899414, 22.  
36777427387445]

```


```

- Time interval n.1: [80.44, 80.64]  
\* y\_true: [28.49133895 28.481454 ]  
\* v\_ann: [26.075769424438477, 26.3604736328125, 22.  
36777427387445]

```


```

- Time interval n.2: [80.64, 80.84]  
\* y\_true: [29.84173661 32.11200361]  
\* v\_ann: [26.129980087280273, 26.52779197692871, 2  
2.36777427387445]

```


```

- Time interval n.3: [80.84, 81.04]  
\* y\_true: [10.79069268 21.14157827]  
\* v\_ann: [26.25193977355957, 26.843856811523438, 2  
2.36777427387445]

```


```

- Time interval n.4: [81.04, 81.24]  
\* y\_true: [20.33152897 19.96178137]  
\* v\_ann: [25.99353790283203, 26.047792434692383, 2  
2.36777427387445]

```

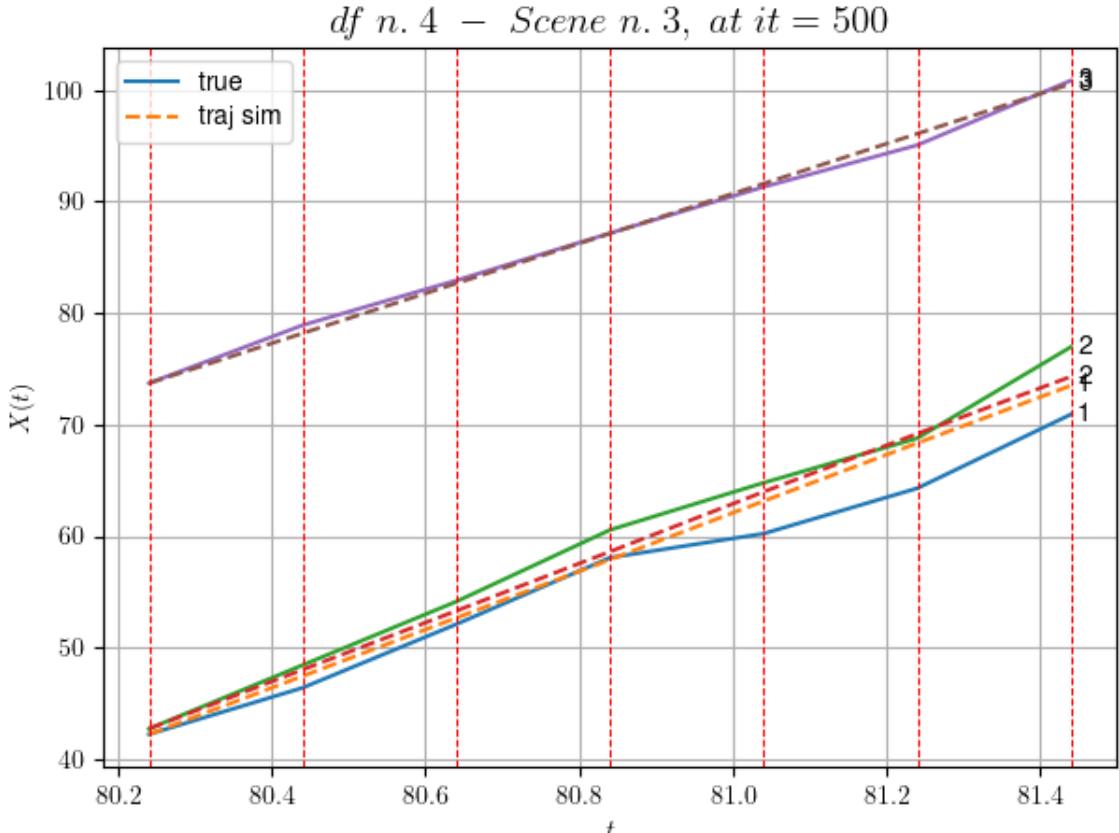

```

- Time interval n.5: [81.24, 81.44]  
\* y\_true: [33.14293198 40.94411969]  
\* v\_ann: [25.822601318359375, 25.602245330810547, 2  
2.36777427387445]

```


```

\* err= 2.25742515482623  
\* Learning rate NN = 3.138104875688441e-05  
\* diff = 0.0002490741250920081



For scene 3/30

```
* use LR_NN=0.0001 with err=82.61297850330654 at it=19
* v0_scn_mean = 22.82570747477155
* MAE = 2.2255758629115214
```

---



---

```
- Time interval n.0: [89.04, 89.24]
* y_true: [19.34082001 24.8230577]
* v_ann: [19.559751510620117, 19.901185989379883, 3
2.77543163260228]
```

---

```
- Time interval n.1: [89.24, 89.44]
* y_true: [14.120693 17.32233598]
* v_ann: [19.894428253173828, 20.21037483215332, 3
2.77543163260228]
```

---

```
- Time interval n.2: [89.44, 89.64]
* y_true: [18.19104002 31.50485669]
* v_ann: [19.088394165039062, 19.356464385986328, 3
2.77543163260228]
```

---

```
- Time interval n.3: [89.64, 89.84]
* y_true: [22.07139916 11.31182118]
* v_ann: [20.009735107421875, 20.169235229492188, 3
```

2.77543163260228]

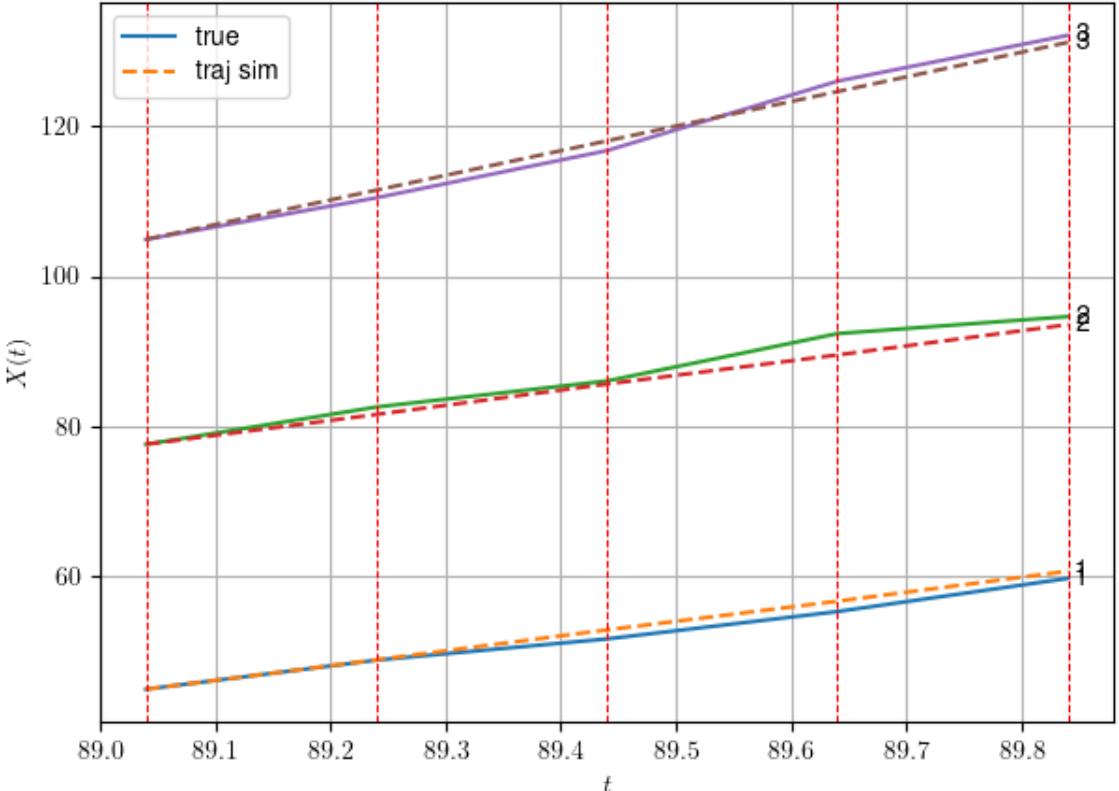
---



---

- \* err= 1.3388570625381349
- \* Learning rate NN = 4.7829678806010634e-05
- \* diff = 0.0001229914863951631

*df n. 4 – Scene n. 4, at it = 500*



For scene 4/30

- \* use LR\_NN=0.0001 with err=4.0226987199998865 at it=19
- \* v0\_scn\_mean = 32.60890585925712
- \* MAE = 1.306503080861382

---



---



---



---

- Time interval n.0: [96.44, 96.64]
- \* y\_true: [16.86045215 20.08121647]
- \* v\_ann: [19.161575317382812, 19.25700569152832, 1 8.40128060602445]

---



---

- Time interval n.1: [96.64, 96.84]
- \* y\_true: [17.24055532 8.93061591]
- \* v\_ann: [18.97953987121582, 19.034303665161133, 1 8.40128060602445]

---



---

- Time interval n.2: [96.84, 97.04]
- \* y\_true: [21.11081641 16.18118624]
- \* v\_ann: [17.529603958129883, 17.175504684448242, 1 8.40128060602445]

---



---

8.40128060602445]

---

- Time interval n.3: [97.04, 97.24]
  - \* y\_true: [26.9212791 14.46120094]
  - \* v\_ann: [17.85993194580078, 17.5897216796875, 18.4

0128060602445]

---

- Time interval n.4: [97.24, 97.44]
  - \* y\_true: [17.07093447 27.60253797]
  - \* v\_ann: [18.540002822875977, 18.49475860595703, 1

8.40128060602445]

---

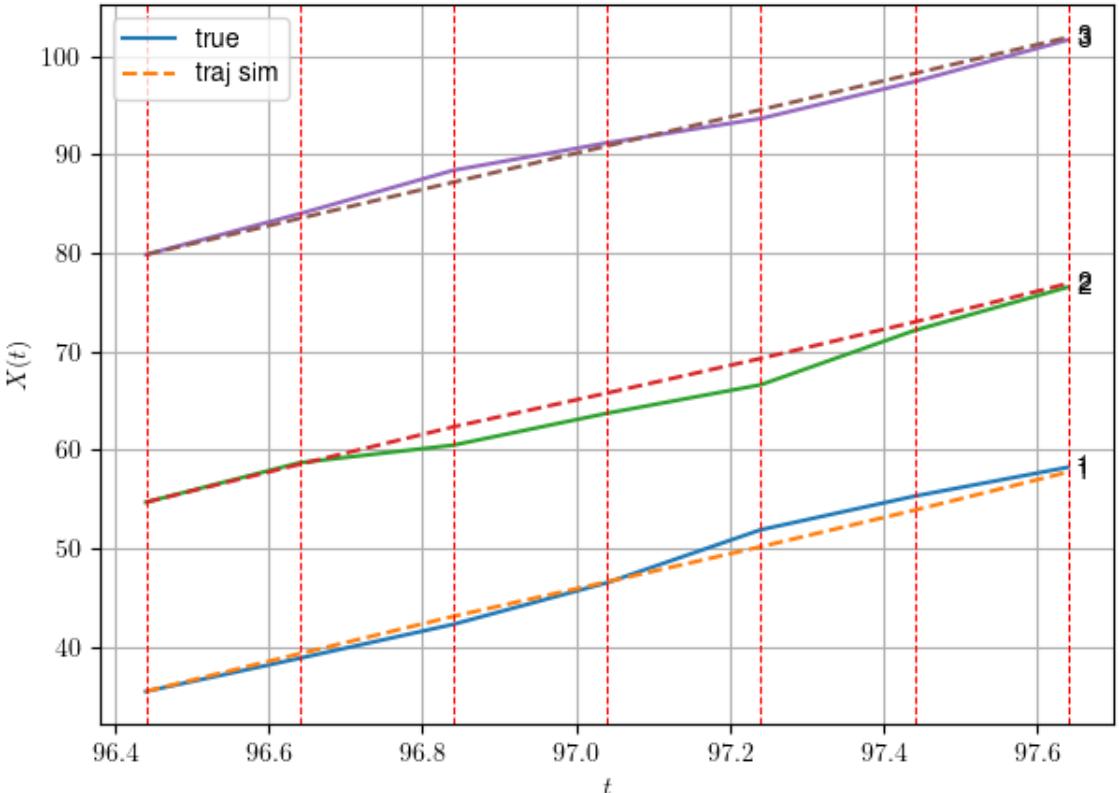
- Time interval n.5: [97.44, 97.64]
  - \* y\_true: [14.70092006 22.05229805]
  - \* v\_ann: [19.382789611816406, 19.59201431274414, 1

8.40128060602445]

---

- \* err= 1.1992560131774057
- \* Learning rate NN = 0.00015690525469835848
- \* diff = 0 0021082183146601206

*df n. 4 – Scene n. 5, at it = 500*



For scene 5/30

- \* use LR\_NN=0.0005 with err=31.77807671645503 at it=19
- \* v0\_scn\_mean = 19.097203248905636
- \* MAE = 1.1992560131774057

```
=====
- Time interval n.0: [182.24, 182.44]
 * y_true: [18.61043577 13.125309]
 * v_ann: [19.79910659790039, 19.448469161987305, 2
0.7731995672722]

- Time interval n.1: [182.44, 182.64]
 * y_true: [12.51734154 21.64870909]
 * v_ann: [15.75566291809082, 19.18486213684082, 20.
7731995672722]

- Time interval n.2: [182.64, 182.84]
 * y_true: [15.03048681 24.29091592]
 * v_ann: [19.751178741455078, 19.05120849609375, 2
0.7731995672722]

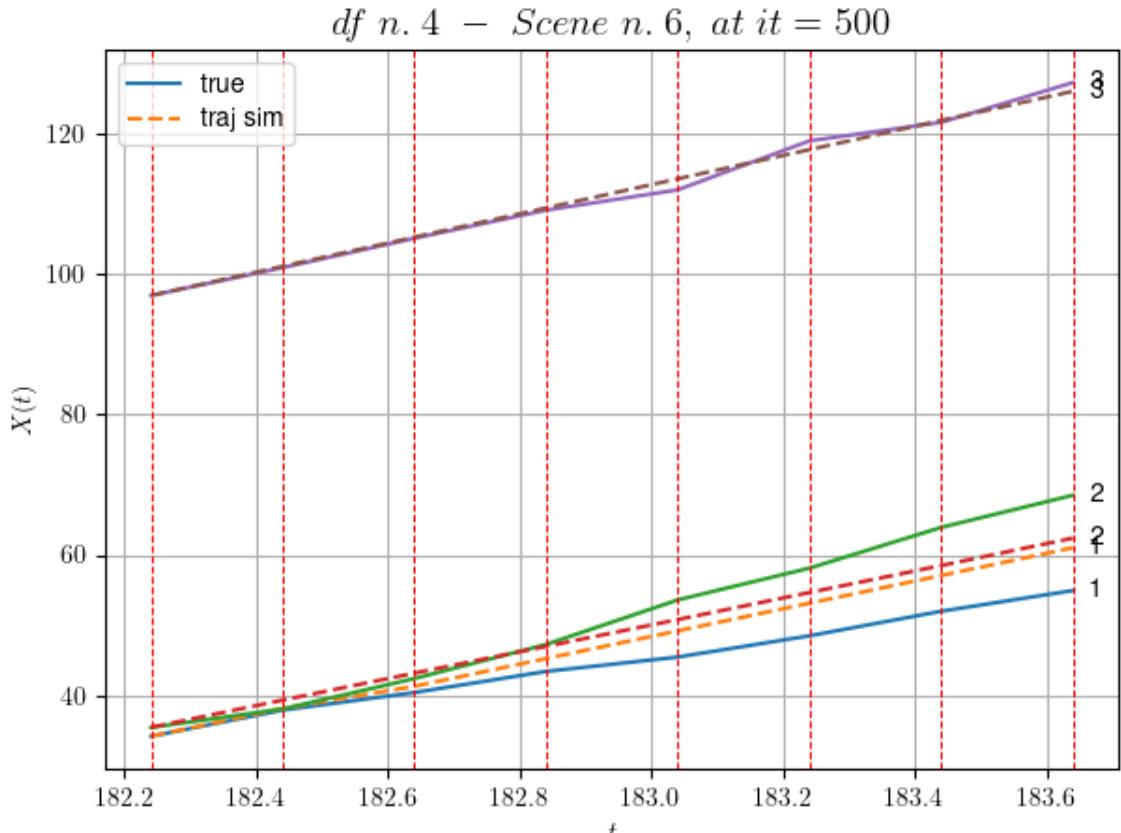
- Time interval n.3: [182.84, 183.04]
 * y_true: [10.23036632 31.71160501]
 * v_ann: [19.7341251373291, 19.100563049316406, 20.
7731995672722]

- Time interval n.4: [183.04, 183.24]
 * y_true: [15.12061978 22.63128316]
 * v_ann: [19.714887619018555, 19.26250648498535, 2
0.7731995672722]

- Time interval n.5: [183.24, 183.44]
 * y_true: [17.50081627 28.99215837]
 * v_ann: [19.69204330444336, 19.207149505615234, 2
0.7731995672722]

- Time interval n.6: [183.44, 183.64]
 * y_true: [14.74077551 22.90183379]
 * v_ann: [19.753297805786133, 19.524938583374023, 2
0.7731995672722]

* err= 8.224558706393507
* Learning rate NN = 1.2709323527815286e-05
* diff = 0.001102473308883134
```



For scene 6/30

- \* use LR\_NN=5e-05 with err=57.59950869623726 at it=19
- \* v0\_scn\_mean = 21.32680717897254
- \* MAE = 8.173995435949584

---



---

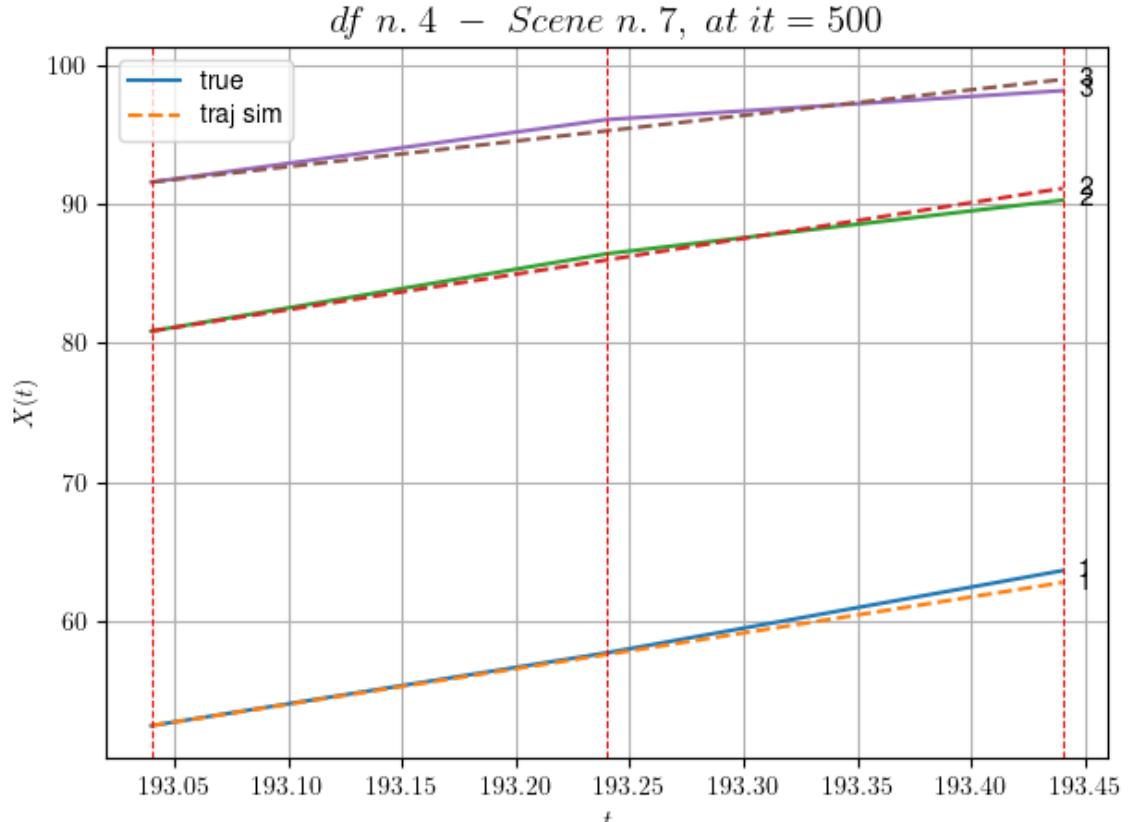
- Time interval n.0: [193.04, 193.24]
- \* y\_true: [26.28155868 27.90372348]
- \* v\_ann: [25.651626586914062, 25.66511344909668, 1 8.506528748462426]

---

- Time interval n.1: [193.24, 193.44]
- \* y\_true: [29.63205884 19.30286837]
- \* v\_ann: [25.967435836791992, 25.81566047668457, 1 8.506528748462426]

---

- \* err= 0.332089445402962
- \* Learning rate NN = 7.289998757187277e-05
- \* diff = 1.4734318859010997e-05



For scene 7/30

- \* use LR\_NN=0.0001 with err=7.357655140063879 at it=19
- \* v0\_scn\_mean = 19.196136507522823
- \* MAE = 0.3147022696145603

---



---

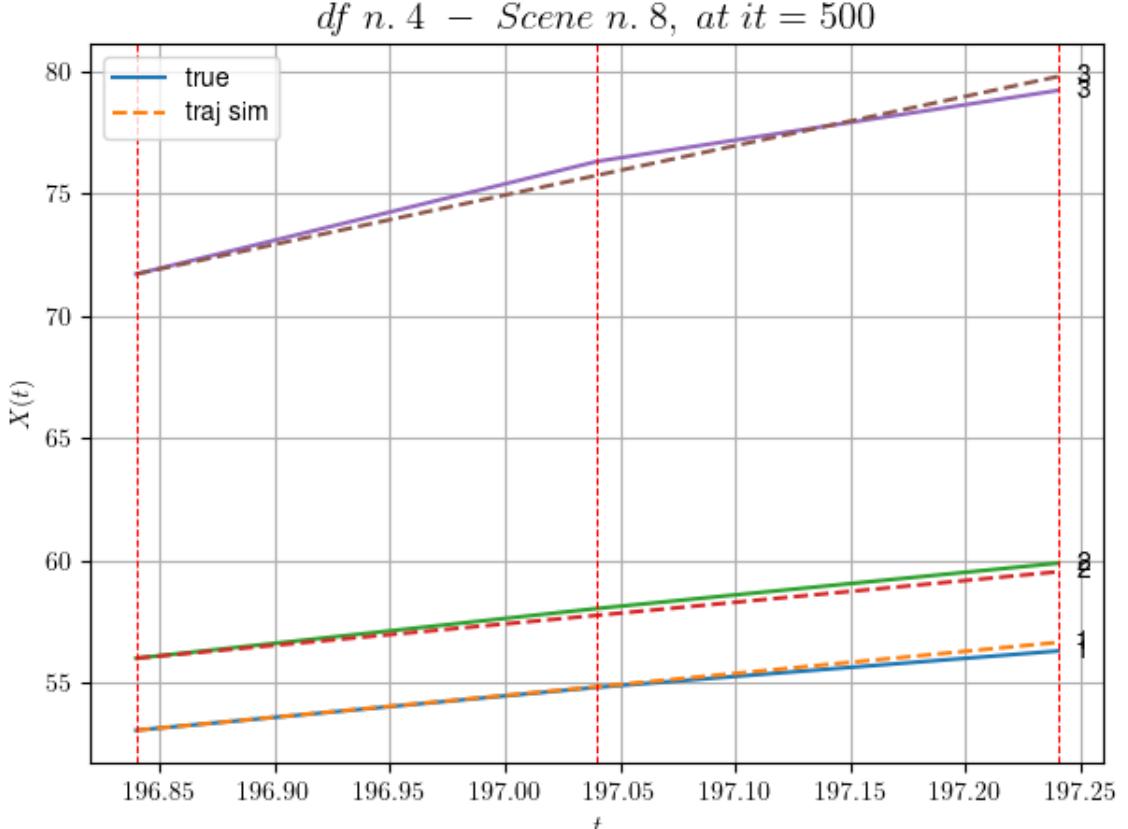
- Time interval n.0: [196.84, 197.04]
- \* y\_true: [ 8.77046468 10.16548364]
- \* v\_ann: [8.907285690307617, 8.770034790039062, 20.188773230043527]

---

- Time interval n.1: [197.04, 197.24]
- \* y\_true: [7.43042623 9.26246532]
- \* v\_ann: [9.04799747467041, 8.901659965515137, 20.188773230043527]

---

- \* err= 0.10800007148975384
- \* Learning rate NN = 0.00036449998151510954
- \* diff = 3.3364636554122917e-06



For scene 8/30

- \* use LR\_NN=0.0005 with err=3.3860310677664303 at it=19
- \* v0\_scn\_mean = 20.777446395737986
- \* MAE = 0.10800007148975384

---



---

- Time interval n.0: [222.84, 223.04]
- \* y\_true: [19.28108097 23.47419597]
- \* v\_ann: [16.777925491333008, 17.277116775512695, 3 0.107928662729947]

---

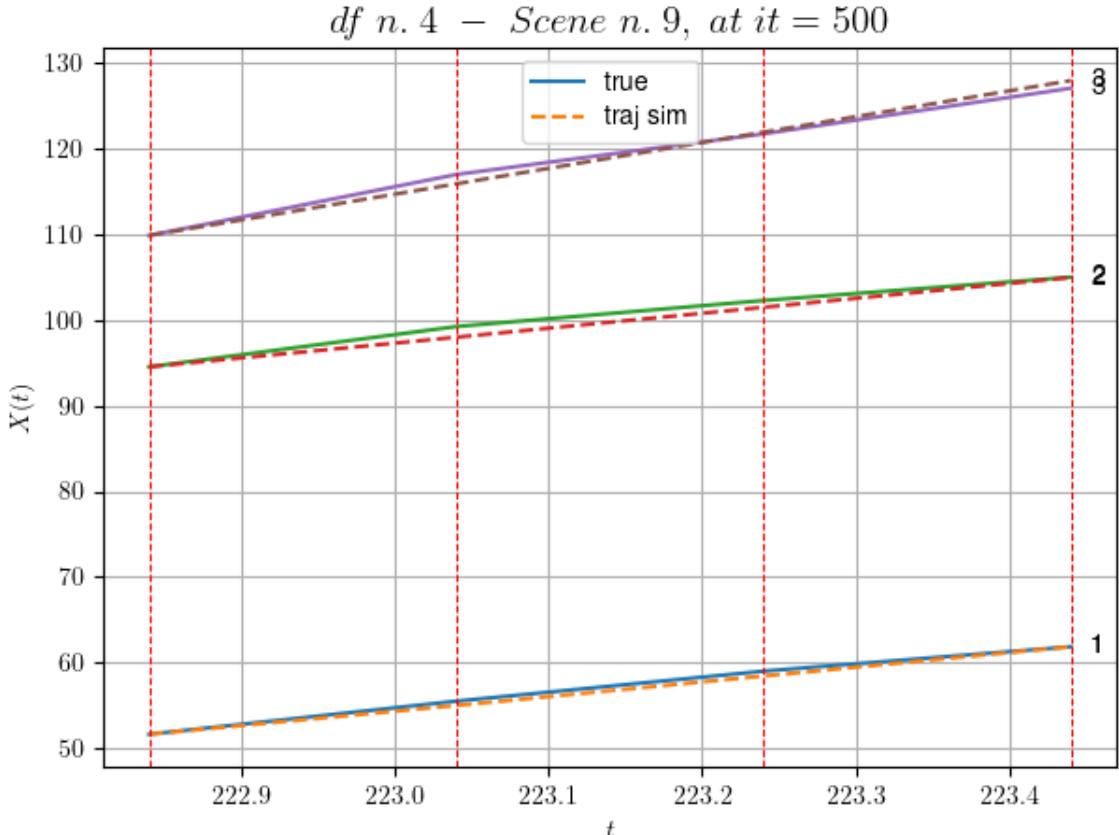
- Time interval n.1: [223.04, 223.24]
- \* y\_true: [17.49110618 15.20291758]
- \* v\_ann: [17.170955657958984, 17.445087432861328, 3 0.107928662729947]

---

- Time interval n.2: [223.24, 223.44]
- \* y\_true: [14.25100604 13.59283886]
- \* v\_ann: [17.088056564331055, 17.378097534179688, 3 0.107928662729947]

---

- \* err= 0.39571541219026446
- \* Learning rate NN = 2.952449540316593e-05
- \* diff = 0.00020290745683676503



For scene 9/30

```
* use LR_NN=5e-05 with err=5.5045510121774806 at it=19
* v0_scn_mean = 30.10145294781193
* MAE = 0.39571541219026446
```

---



---

- Time interval n.0: [224.84, 225.04]
  - \* y\_true: [17.10046829 25.29311811]
  - \* v\_ann: [18.36267852783203, 18.917903900146484, 1  
5.71367713005477]

---

- Time interval n.1: [225.04, 225.24]
  - \* y\_true: [17.70062553 10.9614656 ]
  - \* v\_ann: [19.009204864501953, 19.220916748046875, 1  
5.71367713005477]

---

- Time interval n.2: [225.24, 225.44]
  - \* y\_true: [22.57087879 26.33405568]
  - \* v\_ann: [17.8851318359375, 18.786487579345703, 15.  
71367713005477]

---

- Time interval n.3: [225.44, 225.64]
  - \* y\_true: [16.35079439 22.81365517]
  - \* v\_ann: [19.353519439697266, 19.33518409729004, 1

5.71367713005477]

- Time interval n.4: [225.64, 225.84]  
\* y\_true: [20.8811317 16.55300892]  
\* v\_ann: [19.411264419555664, 19.35563087463379, 1

5.71367713005477]

- Time interval n.5: [225.84, 226.04]  
\* y\_true: [16.52103304 29.98602504]  
\* v\_ann: [19.24085807800293, 19.299039840698242, 1

5.71367713005477]

- Time interval n.6: [226.04, 226.24]  
\* y\_true: [18.95135857 18.46388585]  
\* v\_ann: [20.247783660888672, 19.586681365966797, 1

5.71367713005477]

- Time interval n.7: [226.24, 226.44]  
\* y\_true: [20.26160248 17.75418412]  
\* v\_ann: [19.8734188079834, 19.510704040527344, 15.

71367713005477]

- Time interval n.8: [226.44, 226.64]  
\* y\_true: [16.68150299 14.60353303]  
\* v\_ann: [19.660486221313477, 19.447946548461914, 1

5.71367713005477]

- Time interval n.9: [226.64, 226.84]  
\* y\_true: [22.62228992 25.47686963]  
\* v\_ann: [18.67671012878418, 19.151304244995117, 1

5.71367713005477]

- Time interval n.10: [226.84, 227.04]  
\* y\_true: [22.04244959 23.58655245]  
\* v\_ann: [19.98728370666504, 19.54224967956543, 15.

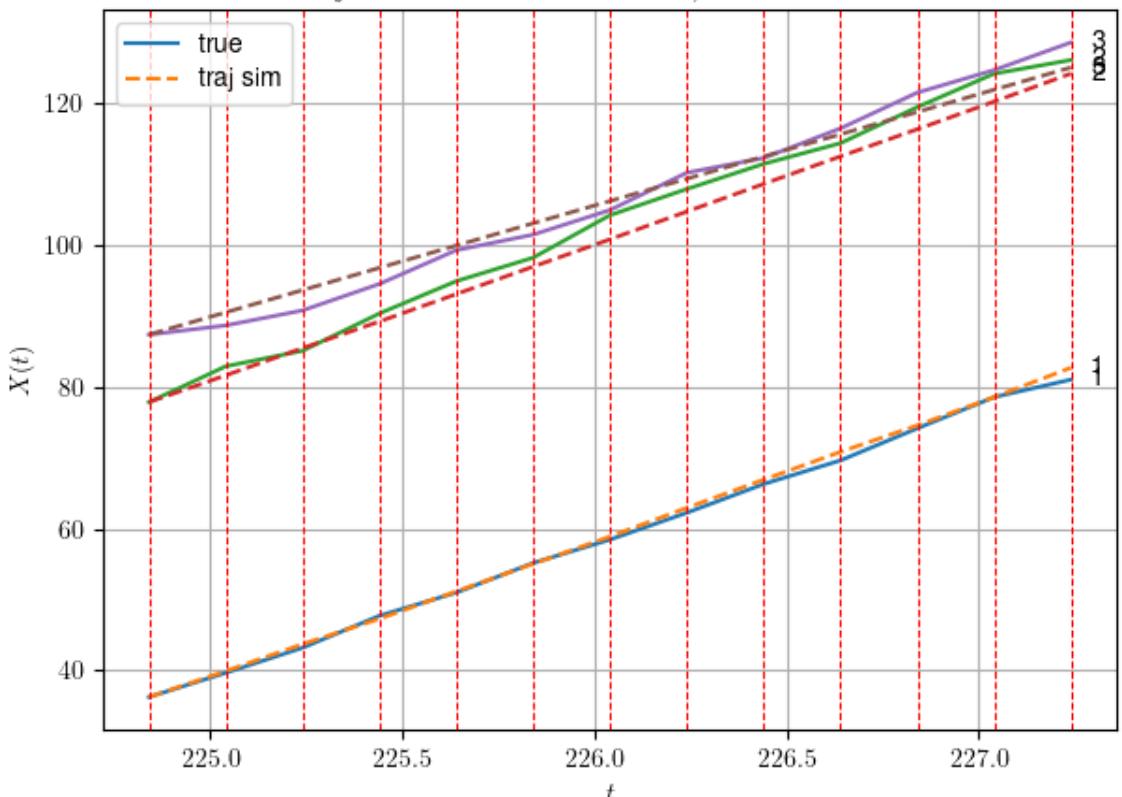
71367713005477]

- Time interval n.11: [227.04, 227.24]  
\* y\_true: [12.37151499 9.65291202]  
\* v\_ann: [20.752473831176758, 19.739961624145508, 1

5.71367713005477]

```
* err= 3.2487743786015355
* Learning rate NN = 8.862933464115486e-05
* diff= 0.0000000000000000
```

*df n. 4 – Scene n. 10, at it = 500*



For scene 10/30

```
* use LR_NN=0.001 with err=333.30780705080764 at it=19
* v0_scn_mean = 16.57085586082651
* MAE = 3.2487743786015355
```

---



---

```
- Time interval n.0: [230.84, 231.04]
 * y_true: [5.64695095 17.97864337]
 * v_ann: [11.756305694580078, 13.97296142578125, 2
3.322723002586443]
```

---

```
- Time interval n.1: [231.04, 231.24]
 * y_true: [5.72513489 21.19066695]
 * v_ann: [14.290290832519531, 13.895195960998535, 2
3.322723002586443]
```

---

```
- Time interval n.2: [231.24, 231.44]
 * y_true: [6.01015392 28.29114422]
 * v_ann: [14.2424898147583, 13.856406211853027, 23.
322723002586443]
```

---

```
- Time interval n.3: [231.44, 231.64]
```

```

* y_true: [6.20016661 18.85086271]
* v_ann: [14.272008895874023, 14.027837753295898, 2
3.322723002586443]

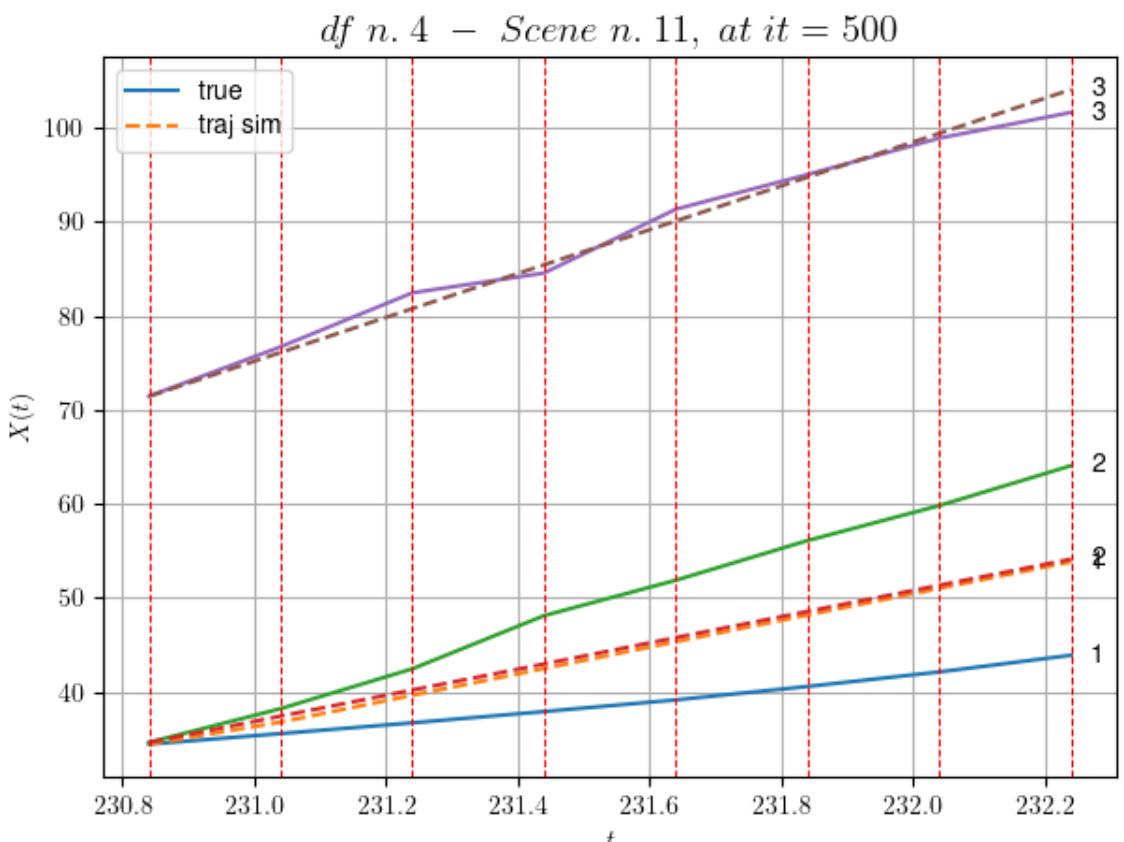
- Time interval n.4: [231.64, 231.84]
* y_true: [7.13021091 21.11121983]
* v_ann: [14.204797744750977, 13.930177688598633, 2
3.322723002586443]

- Time interval n.5: [231.84, 232.04]
* y_true: [7.75024044 18.61116554]
* v_ann: [14.178445816040039, 13.940017700195312, 2
3.322723002586443]

- Time interval n.6: [232.04, 232.24]
* y_true: [8.87530762 21.24160102]
* v_ann: [14.128830909729004, 13.898170471191406, 2
3.322723002586443]

* err= 25.618523064745204
* Learning rate NN = 2.5418647055630572e-05
* diff = 0.00011836659956543372

```



For scene 11/30

```

* use LR_NN=0.0001 with err=20.52141495247748 at it=19
* v0_scn_mean = 23.723359322636085

```

\* MAE = 25.602292947354652

```
=====
=====
- Time interval n.0: [233.84, 234.04]
* y_true: [14.14101026 12.7012637]
* v_ann: [21.259824752807617, 21.810928344726562, 2
1.46280647198825]

- Time interval n.1: [234.04, 234.24]
* y_true: [26.43219185 20.11227439]
* v_ann: [21.110807418823242, 21.658843994140625, 2
1.46280647198825]

- Time interval n.2: [234.24, 234.44]
* y_true: [22.40209801 33.22429882]
* v_ann: [21.100500106811523, 21.707223892211914, 2
1.46280647198825]

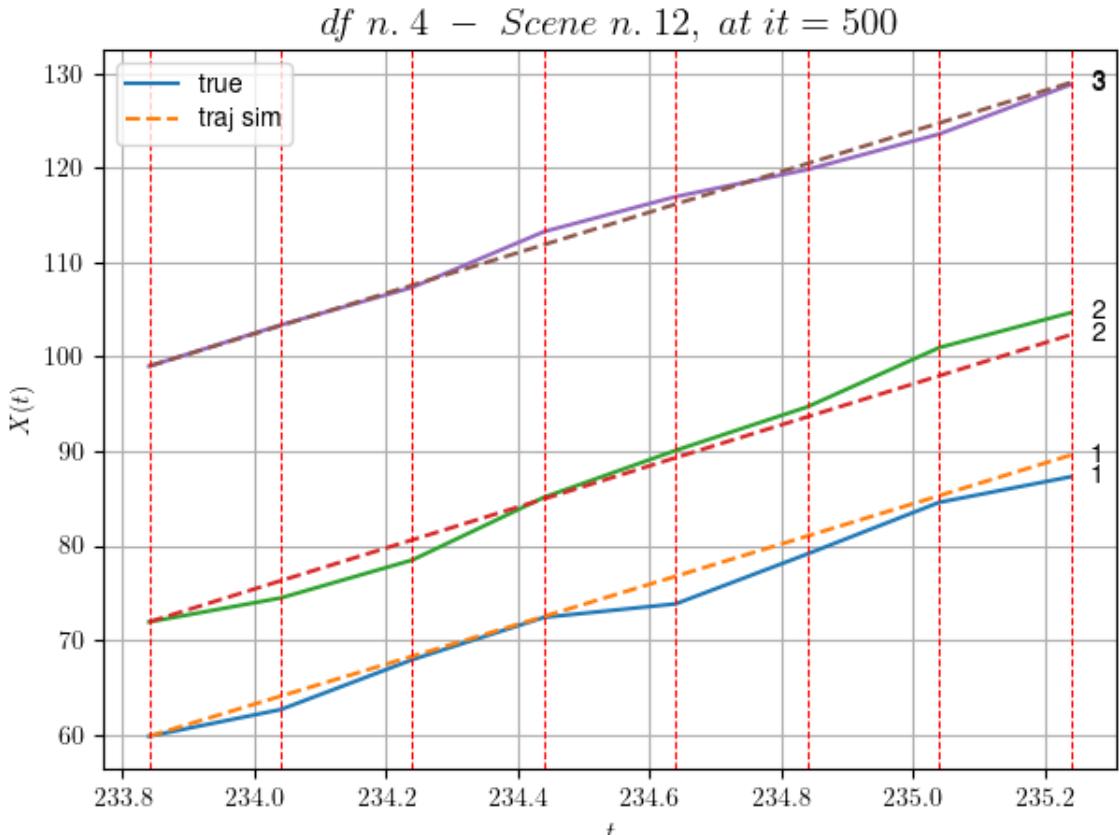
- Time interval n.3: [234.44, 234.64]
* y_true: [7.15071478 24.83361026]
* v_ann: [21.283178329467773, 21.849483489990234, 2
1.46280647198825]

- Time interval n.4: [234.64, 234.84]
* y_true: [26.44301464 23.06377261]
* v_ann: [21.300926208496094, 21.654787063598633, 2
1.46280647198825]

- Time interval n.5: [234.84, 235.04]
* y_true: [27.303494 31.34578132]
* v_ann: [21.343425750732422, 21.681285858154297, 2
1.46280647198825]

- Time interval n.6: [235.04, 235.24]
* y_true: [13.58189317 18.51369375]
* v_ann: [21.52784538269043, 21.77725601196289, 21.
46280647198825]

* err= 2.016447694150731
* Learning rate NN = 1.2709323527815286e-05
* diff = 0.0009970390577729304
```



For scene 12/30

- \* use LR\_NN=5e-05 with err=32.715942773048795 at it=19
- \* v0\_scn\_mean = 21.975037700367498
- \* MAE = 1.7928487596262916

---



---

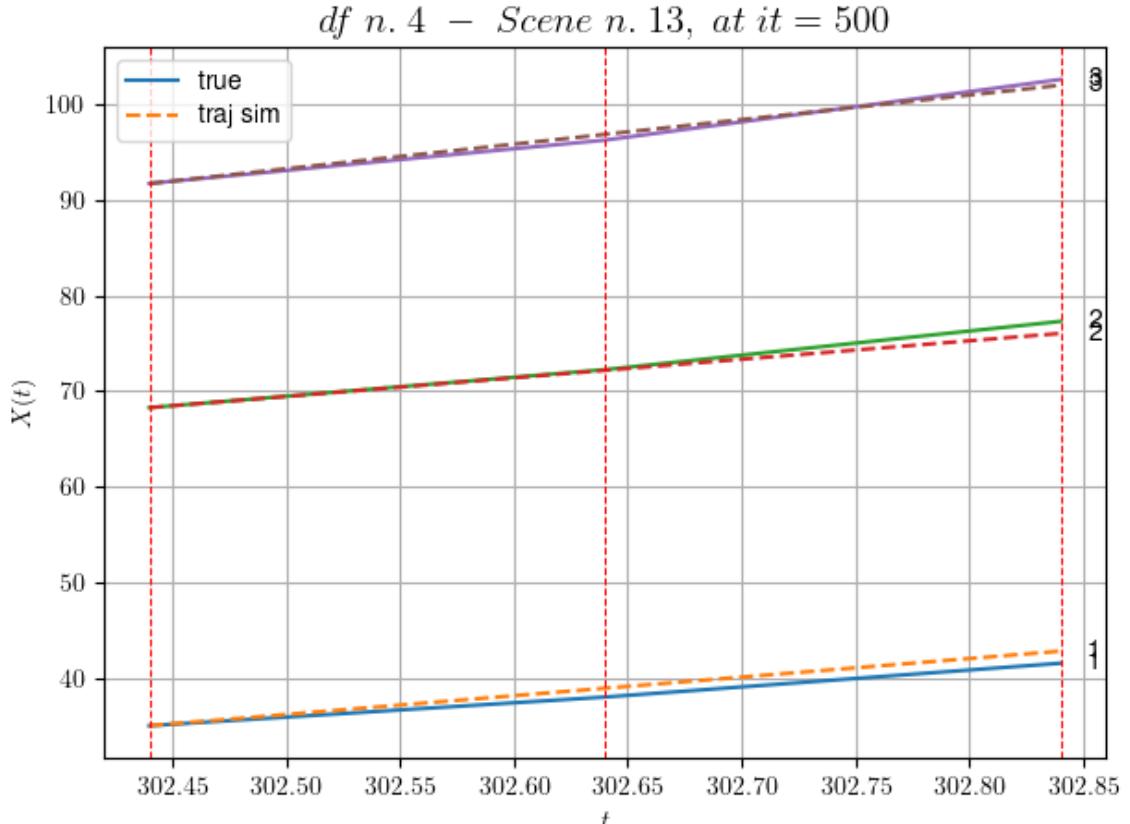
- Time interval n.0: [302.44, 302.64]
- \* y\_true: [15.00036276 19.90190261]
- \* v\_ann: [19.632898330688477, 19.530086517333984, 2  
5.744538233028518]

---

- Time interval n.1: [302.64, 302.84]
- \* y\_true: [17.72492583 25.30273749]
- \* v\_ann: [19.434993743896484, 19.371864318847656, 2  
5.744538233028518]

---

- \* err= 0.5319136735571803
- \* Learning rate NN = 3.6449993785936385e-05
- \* diff = 0.00037583880557667815



For scene 13/30

- \* use LR\_NN=5e-05 with err=2.224832382839091 at it=19
  - \* v0\_scn\_mean = 25.99986574798596
  - \* MAE = 0.4949729099210261
- 
- 

For scene 14/30

- \* use LR\_NN=0.0001 with err=1.0141136335064378 at it=19
  - \* v0\_scn\_mean = 28.343745731432374
  - \* MAE = 0.5404486798661113
- 
- 

- Time interval n.0: [422.64, 422.84]  
 \* y\_true: [18.36052369 19.91162557]  
 \* v\_ann: [25.24158477783203, 24.531373977661133, 2  
 7.545089607777]

---

- Time interval n.1: [422.84, 423.04]  
 \* y\_true: [28.40107569 15.51150308]  
 \* v\_ann: [24.67228889465332, 24.171810150146484, 2  
 7.545089607777]

---

- Time interval n.2: [423.04, 423.24]

```

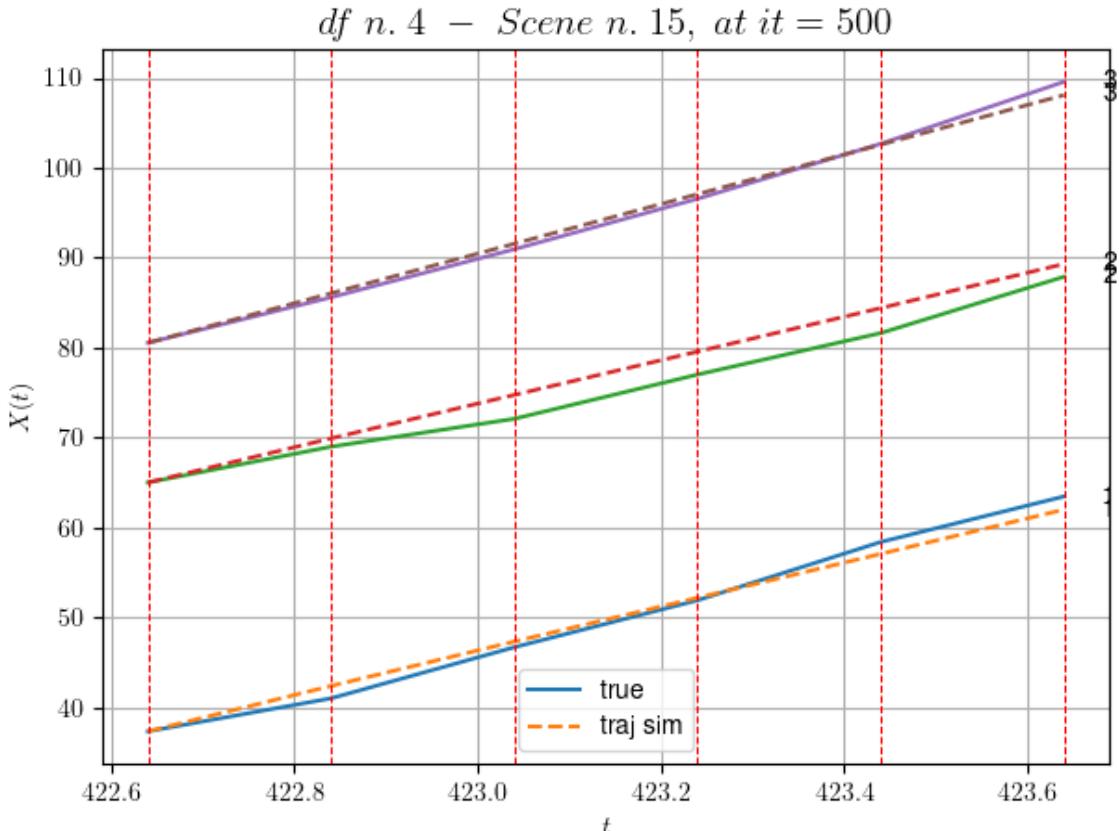
* y_true: [26.09121176 24.58263804]
* v_ann: [24.32050132751465, 24.073776245117188, 2
7.545089607777]

- Time interval n.3: [423.24, 423.44]
* y_true: [32.41191994 23.07275882]
* v_ann: [24.414306640625, 24.18951988220215, 27.54
5089607777]

- Time interval n.4: [423.44, 423.64]
* y_true: [25.31178577 31.31439465]
* v_ann: [24.646371841430664, 24.539291381835938, 2
7.545089607777]

* err= 1.8580829258239169
* Learning rate NN = 3.874203684972599e-05
* diff = 0.00050710076101800004

```



For scene 15/30  
\* use LR\_NN=0.0001 with err=2.8007840211524186 at it=19  
\* v0\_scn\_mean = 27.692384121089905  
\* MAE = 1.845673505269038

---



---



---

- Time interval n.0: [440.44, 440.64]  
\* y\_true: [23.50209477 27.05306951]

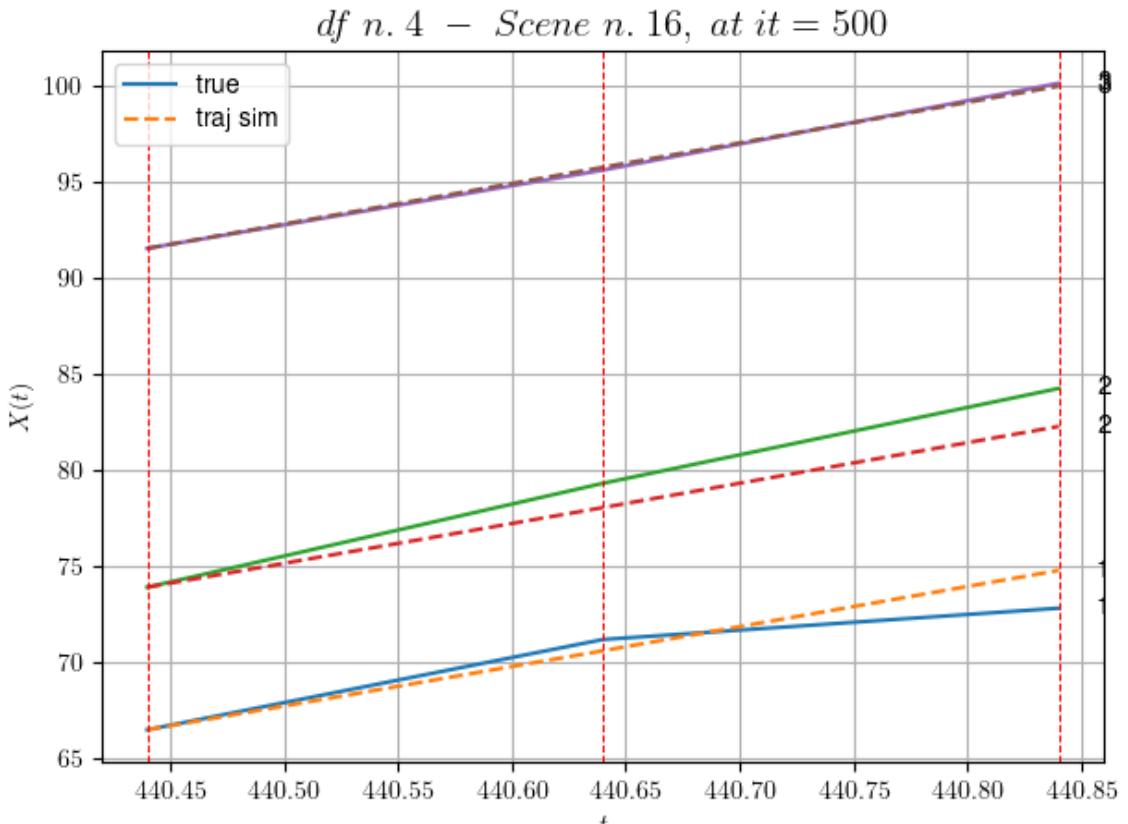
```
* v_ann: [20.574413299560547, 20.736900329589844, 2
1.12699449757165]
```

---

```
- Time interval n.1: [440.64, 440.84]
* y_true: [8.15079495 24.70319187]
* v_ann: [20.925310134887695, 21.132225036621094, 2
1.12699449757165]
```

---

```
* err= 1.0858515760951895
* Learning rate NN = 7.289998757187277e-05
* diff = 0.0003207277101813233
```



For scene 16/30

```
* use LR_NN=0.0001 with err=2.758280070105965 at it=19
* v0_scn_mean = 21.659374429339454
* MAE = 1.0858515760951895
```

---



---

```
- Time interval n.0: [459.64, 459.84]
* y_true: [8.02057991 18.30147717]
* v_ann: [17.675708770751953, 21.09091567993164, 2
1.74947760522735]
```

---



---

```
- Time interval n.1: [459.84, 460.04]
* y_true: [15.90126261 32.50305135]
```

```

* v_ann: [16.63239860534668, 19.081693649291992, 2
1.74947760522735]

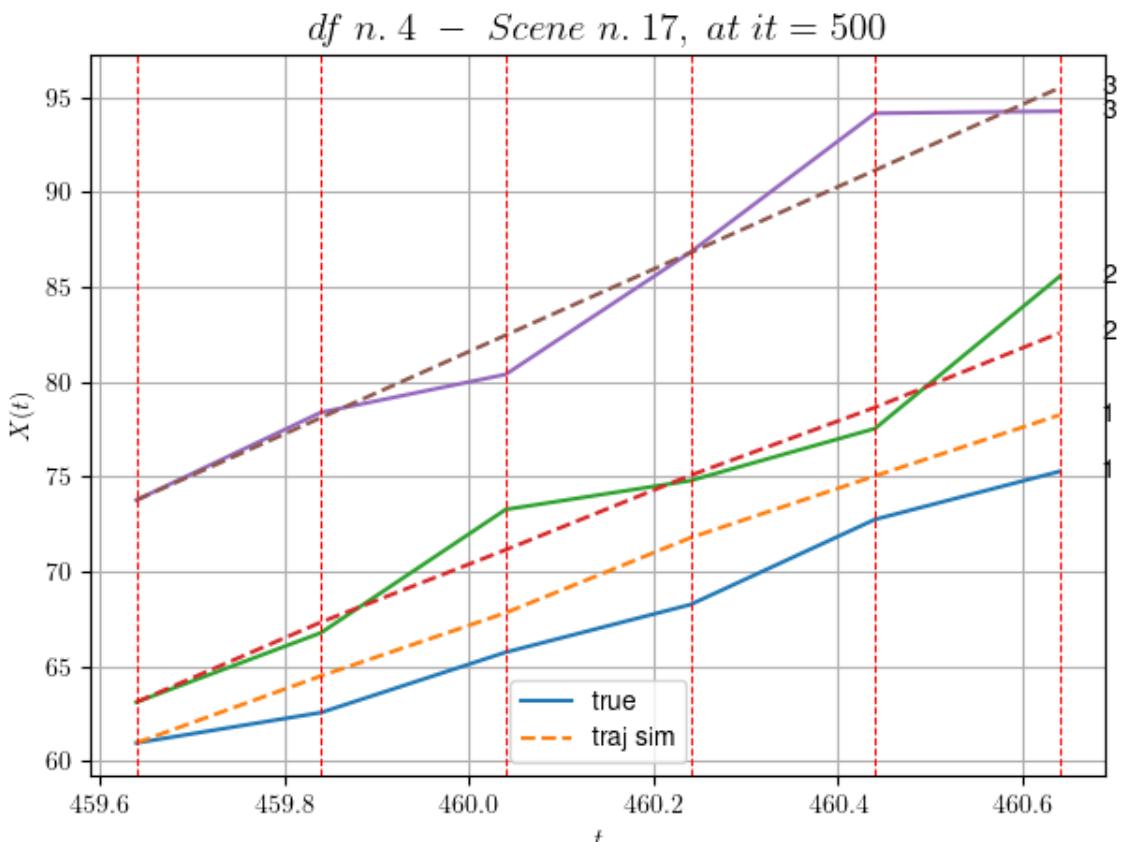
- Time interval n.2: [460.04, 460.24]
* y_true: [12.56106954 7.60079575]
* v_ann: [19.797405242919922, 19.636632919311523, 2
1.74947760522735]

- Time interval n.3: [460.24, 460.44]
* y_true: [22.47215871 13.7515264]
* v_ann: [16.303709030151367, 17.912303924560547, 2
1.74947760522735]

- Time interval n.4: [460.44, 460.64]
* y_true: [12.66130245 40.10510628]
* v_ann: [16.0831241607666, 19.647619247436523, 21.
74947760522735]

* err= 3.5831364633102365
* Learning rate NN = 0.0003874204121530056
* diff = 0 004912406624770327

```



For scene 17/30  
\* use LR\_NN=0.001 with err=10.591189439280365 at it=19  
\* v0\_scn\_mean = 22.2445085784832  
\* MAE = 3.5831364633102365

```
=====
=====
- Time interval n.0: [493.84, 494.04]
 * y_true: [22.94003108 21.75102788]
 * v_ann: [22.77135467529297, 23.051197052001953, 2
0.436941639155705]

- Time interval n.1: [494.04, 494.24]
 * y_true: [17.14085991 24.35137427]
 * v_ann: [22.71962547302246, 22.987030029296875, 2
0.436941639155705]

- Time interval n.2: [494.24, 494.44]
 * y_true: [21.88131212 25.00167951]
 * v_ann: [22.576778411865234, 22.7033748626709, 20.
436941639155705]

- Time interval n.3: [494.44, 494.64]
 * y_true: [18.45125037 31.00249487]
 * v_ann: [22.6553897857666, 22.802104949951172, 20.
436941639155705]

- Time interval n.4: [494.64, 494.84]
 * y_true: [23.98189292 7.35066295]
 * v_ann: [22.8994197845459, 22.9238224029541, 20.43
6941639155705]

- Time interval n.5: [494.84, 495.04]
 * y_true: [24.94226236 24.20238954]
 * v_ann: [22.208818435668945, 22.207122802734375, 2
0.436941639155705]

- Time interval n.6: [495.04, 495.24]
 * y_true: [23.43243252 31.70363737]
 * v_ann: [22.402299880981445, 22.464237213134766, 2
0.436941639155705]

- Time interval n.7: [495.24, 495.44]
 * y_true: [28.10335872 24.95329593]
 * v_ann: [22.8614501953125, 22.96888542175293, 20.4
36941639155705]
```

```

 - Time interval n.8: [495.44, 495.64]

 * y_true: [18.99250639 15.85230368]

 * v_ann: [23.154403686523438, 23.271020889282227, 2

0.436941639155705]

```

```

 - Time interval n.9: [495.64, 495.84]

 * y_true: [13.12188353 36.00587838]

 * v_ann: [22.657140731811523, 22.720762252807617, 2

0.436941639155705]

```

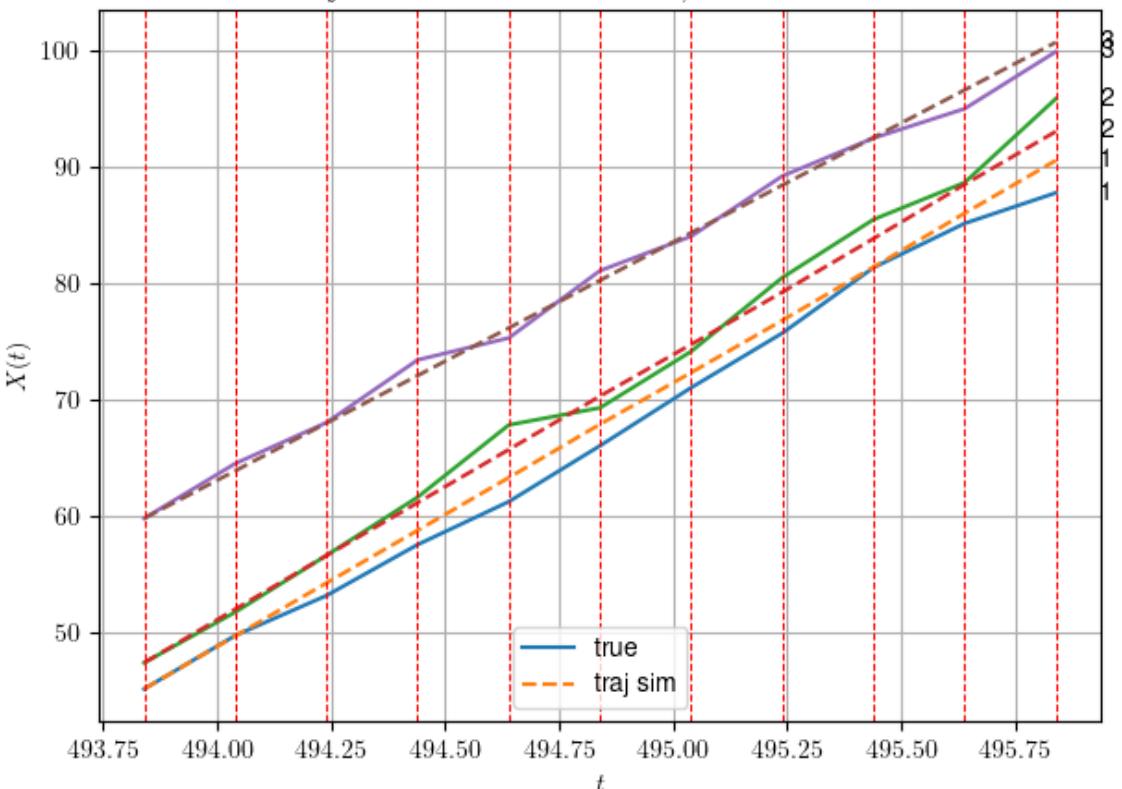
```

 * err= 1.4424794803011596

 * Learning rate NN = 0.00013508510892279446

```

*df n. 4 – Scene n. 18, at it = 500*



For scene 18/30

```

* use LR_NN=0.001 with err=95.3478171702432 at it=19

* v0_scn_mean = 21.010724711445604

* MAE = 1.440101354165081

```

```

=====

 - Time interval n.0: [520.04, 520.24]

 * y_true: [17.72000935 17.53021327]

 * v_ann: [20.779104232788086, 21.108890533447266, 2

5.962807327177057]

```

```
- Time interval n.1: [520.24, 520.44]
 * y_true: [21.19003079 20.68032877]
 * v_ann: [20.691158294677734, 20.982423782348633, 2
5.962807327177057]

- Time interval n.2: [520.44, 520.64]
 * y_true: [20.95006602 20.21041565]
 * v_ann: [20.69135284423828, 20.98406219482422, 25.
962807327177057]

- Time interval n.3: [520.64, 520.84]
 * y_true: [19.83010584 22.72061589]
 * v_ann: [20.68153953552246, 20.99690818786621, 25.
962807327177057]

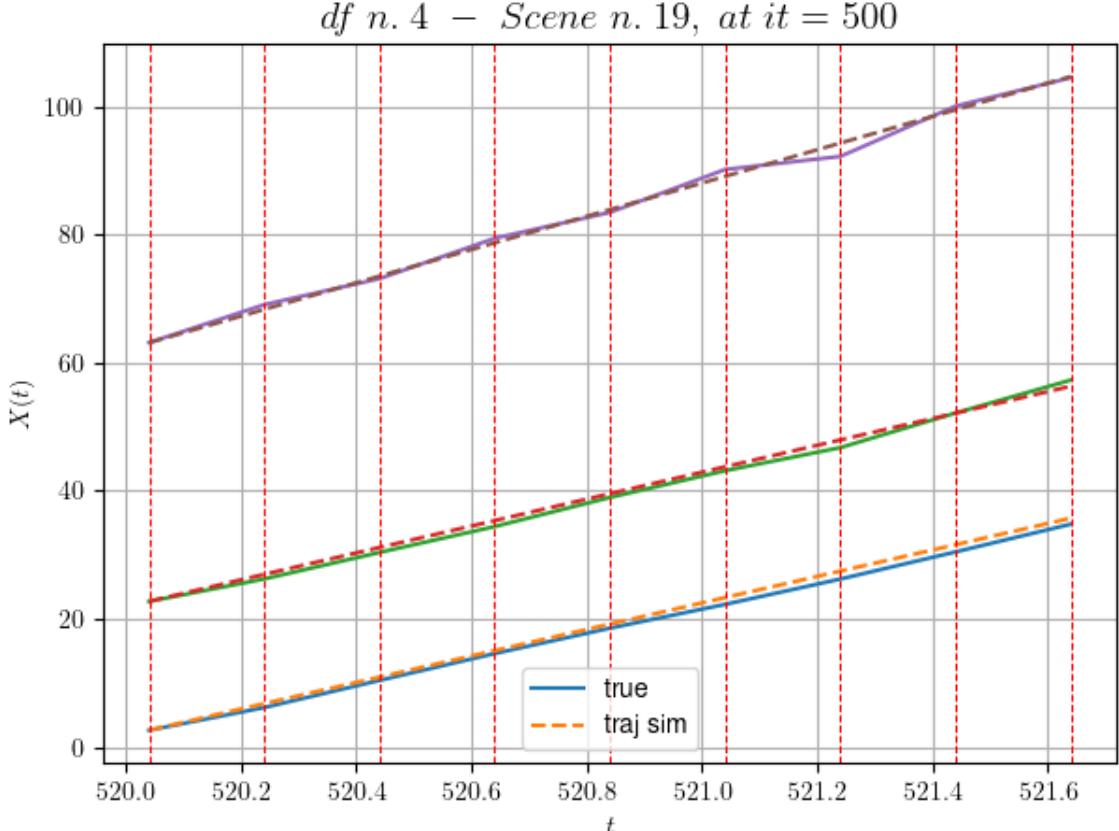
- Time interval n.4: [520.84, 521.04]
 * y_true: [18.57015207 20.87066157]
 * v_ann: [20.69950294494629, 21.01121711730957, 25.
962807327177057]

- Time interval n.5: [521.04, 521.24]
 * y_true: [19.76022757 18.03074501]
 * v_ann: [20.67205810546875, 20.976316452026367, 2
5.962807327177057]

- Time interval n.6: [521.24, 521.44]
 * y_true: [21.18033214 27.03127071]
 * v_ann: [20.610952377319336, 20.84427261352539, 2
5.962807327177057]

- Time interval n.7: [521.44, 521.64]
 * y_true: [21.65044512 25.69152055]
 * v_ann: [20.72047996520996, 21.06298828125, 25.962
807327177057]

* err= 0.6801848855925859
* Learning rate NN = 1.029455233947374e-05
* diff = 0.00020001863516272125
```



For scene 19/30

\* use LR\_NN=5e-05 with err=31.612519357563272 at it=19  
 \* v0\_scn\_mean = 26.205038706285755  
 \* MAE = 0.6777178458068427

---



---

For scene 20/30

\* use LR\_NN=0.0005 with err=15.553029852620492 at it=19  
 \* v0\_scn\_mean = 21.017647689358615  
 \* MAE = 0.31022359845711894

---



---

- Time interval n.0: [554.64, 554.84]  
 \* y\_true: [16.3871362 34.43556815]  
 \* v\_ann: [23.153263092041016, 22.460298538208008, 2  
 0.440727818766348]

---



---

- Time interval n.1: [554.84, 555.04]  
 \* y\_true: [19.58824641 23.53414882]  
 \* v\_ann: [24.13045310974121, 24.10259437561035, 20.  
 440727818766348]

---

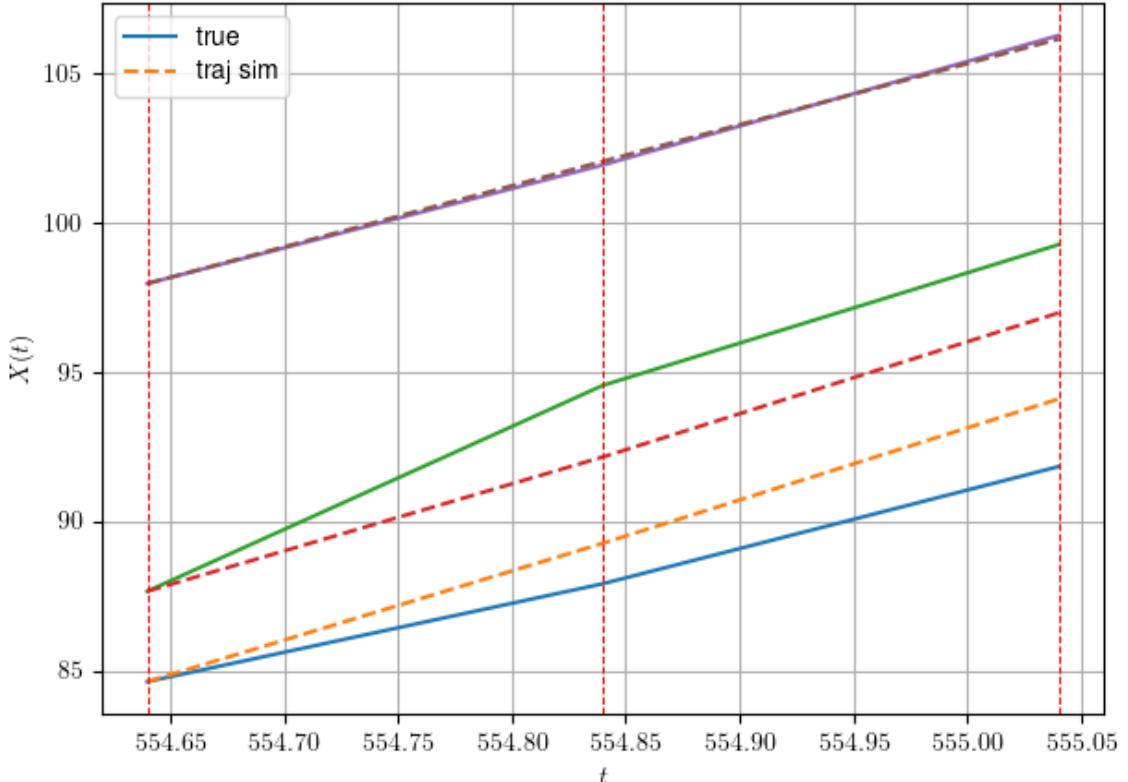


---

\* err= 1.9907478199232749

\* Learning rate NN = 0.0007289999630302191  
 \* diff = 4.540401983543774e-05

*df n. 4 – Scene n. 21, at it = 500*



For scene 21/30

\* use LR\_NN=0.001 with err=2.429799334978765 at it=19  
 \* v0\_scn\_mean = 21.01428372044814  
 \* MAE = 1.9907478199232749

---



---

For scene 22/30

\* use LR\_NN=0.001 with err=14.255892961611698 at it=19  
 \* v0\_scn\_mean = 16.441882832588615  
 \* MAE = 0.1725891970053046

---



---

- Time interval n.0: [575.04, 575.24]  
 \* y\_true: [25.50060057 18.90068968]  
 \* v\_ann: [-3.944173840864096e-06, 0.0, 24.545621507  
 40248]

---

- Time interval n.1: [575.24, 575.44]  
 \* y\_true: [27.95087423 28.65128625]  
 \* v\_ann: [-0.00017805943207349628, 0.0, 24.54562150  
 740248]

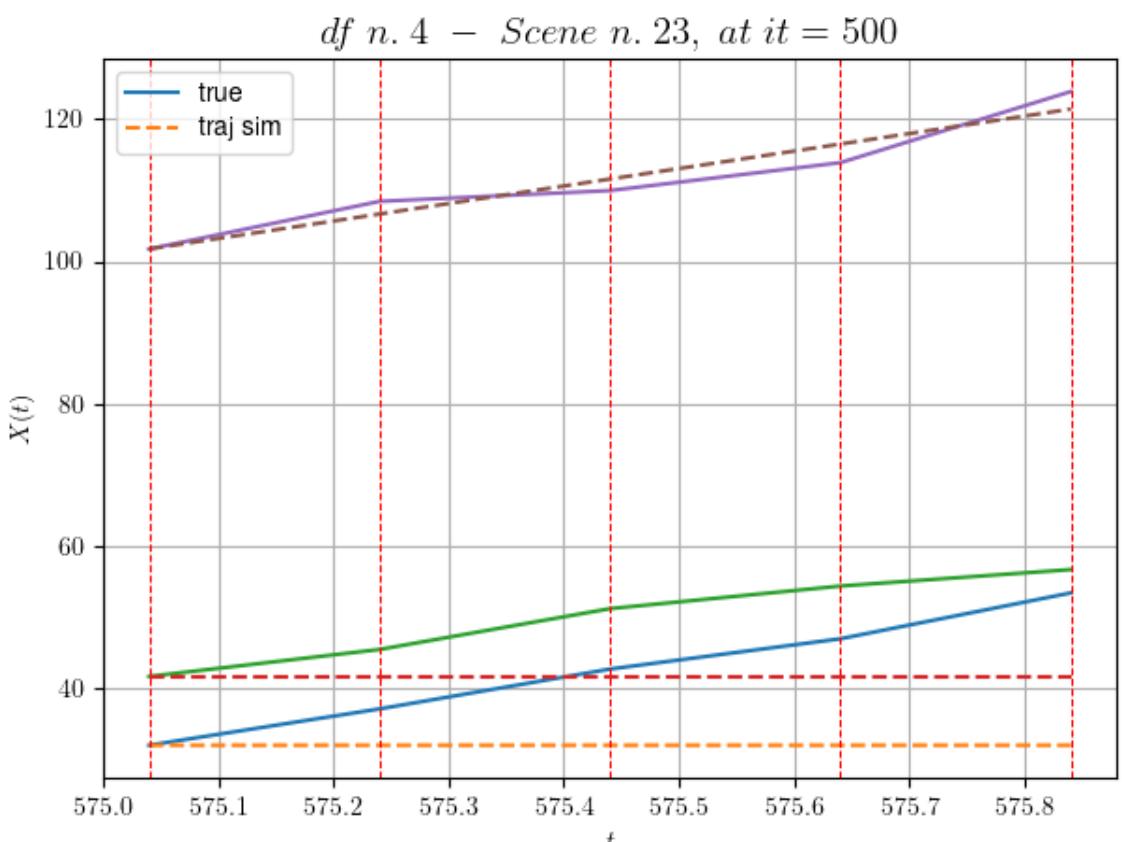
- Time interval n.2: [575.44, 575.64]  
 \* y\_true: [21.25083564 15.85084753]  
 \* v\_ann: [-0.00011883545812452212, 0.0, 24.54562150  
 740248]

---

- Time interval n.3: [575.64, 575.84]  
 \* y\_true: [32.20158375 11.5506833 ]  
 \* v\_ann: [-0.002678676974028349, 0.0, 24.5456215074  
 0248]

---

\* err= 88.63738027009747  
 \* Learning rate NN = 0.000239148415857926  
 \* diff = 1.610116785855098e-05



For scene 23/30

\* use LR\_NN=0.0005 with err=44.68879482445876 at it=19  
 \* v0\_scn\_mean = 24.872883972067715  
 \* MAE = 24.019976990350937

---



---

- Time interval n.0: [313.84, 314.04]  
 \* y\_true: [15.70108851 23.28855659 11.30165534]  
 \* v\_ann: [-0.013650167733430862, -5.008104569802609  
 e-29, -1.670226159189254e-36, 26.41552952480452]

---



---

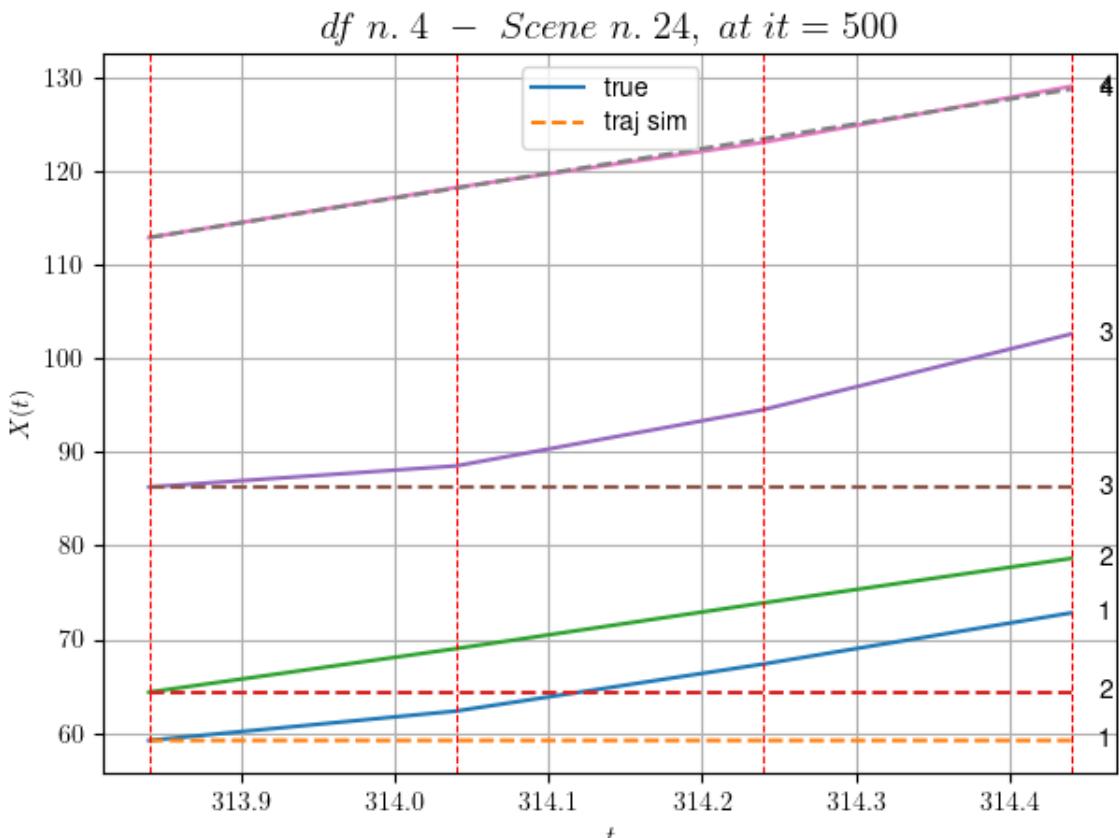
```

- Time interval n.1: [314.04, 314.24]
 * y_true: [25.15198981 24.43240479 30.10483754]
 * v_ann: [-5.639922164846212e-05, -3.00982285600864
 3e-25, 0.0, 26.41552952480452]

- Time interval n.2: [314.24, 314.44]
 * y_true: [27.30252596 23.75264682 40.35752125]
 * v_ann: [-9.511101961834356e-05, -4.88812344353553
 46e-27, 0.0, 26.41552952480452]

* err= 57.56564231522199
* Learning rate NN = 0.0002952449722215533
* diff = 0.00013966821195765533

```



For scene 24/30

```

* use LR_NN=0.0005 with err=10.00771677961397 at it=19
* v0_scn_mean = 26.70227549847877
* MAE = 57.56564231522199

```

---



---

```

- Time interval n.0: [460.84, 461.04]
 * y_true: [19.8211655 14.23151831 20.23251805]
 * v_ann: [18.849876403808594, 18.77043342590332, 1
 8.7943058013916, 26.404314529227214]

```

---



---

```

- Time interval n.1: [461.04, 461.24]
 * y_true: [19.5413591 21.77263281 16.55223683]
 * v_ann: [18.55523681640625, 18.59559440612793, 18.
58256721496582, 26.404314529227214]

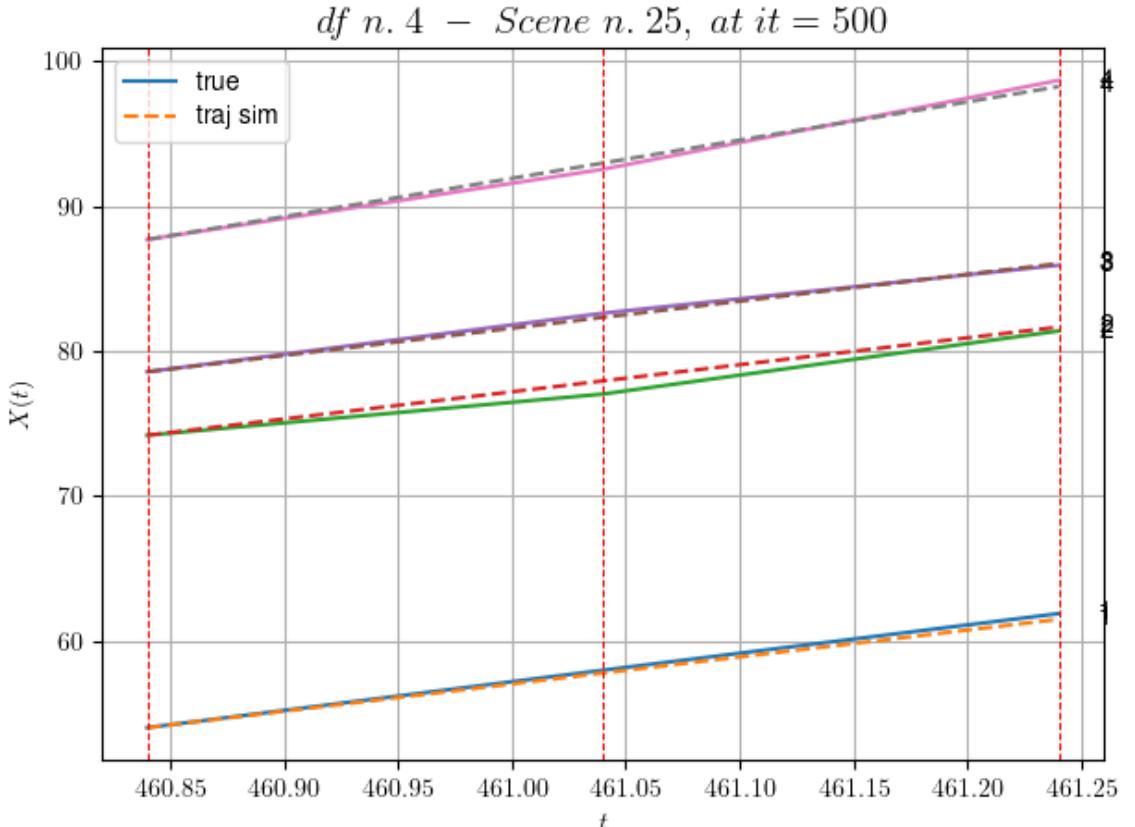
```

---

```

* err= 0.1296663709073275
* Learning rate NN = 0.00036449998151510954
* diff = 0.0002488570191488404

```



For scene 25/30

```

* use LR_NN=0.0005 with err=3.564309471809204 at it=19
* v0_scn_mean = 26.691957666053664
* MAE = 0.1296663709073275

```

---



---

For scene 26/30

```

* use LR_NN=0.0005 with err=10.701373381340774 at it=19
* v0_scn_mean = 31.19790763098814
* MAE = 0.28372231998375025

```

---



---

```

- Time interval n.0: [495.24, 495.44]
 * y_true: [12.91123632 28.10335872 24.95329593]
 * v_ann: [23.14032745361328, 23.145328521728516, 2
3.11233901977539, 16.43780548223601]

```

---

```

 - Time interval n.1: [495.44, 495.64]

 * y_true: [9.32105302 18.99250639 15.85230368]

 * v_ann: [22.637168884277344, 22.754344940185547, 2

2.676010131835938, 16.43780548223601]

```

```

 - Time interval n.2: [495.64, 495.84]

 * y_true: [38.46439916 13.12188353 36.00587838]

 * v_ann: [19.132863998413086, 20.15018081665039, 1

9.7279052734375, 16.43780548223601]

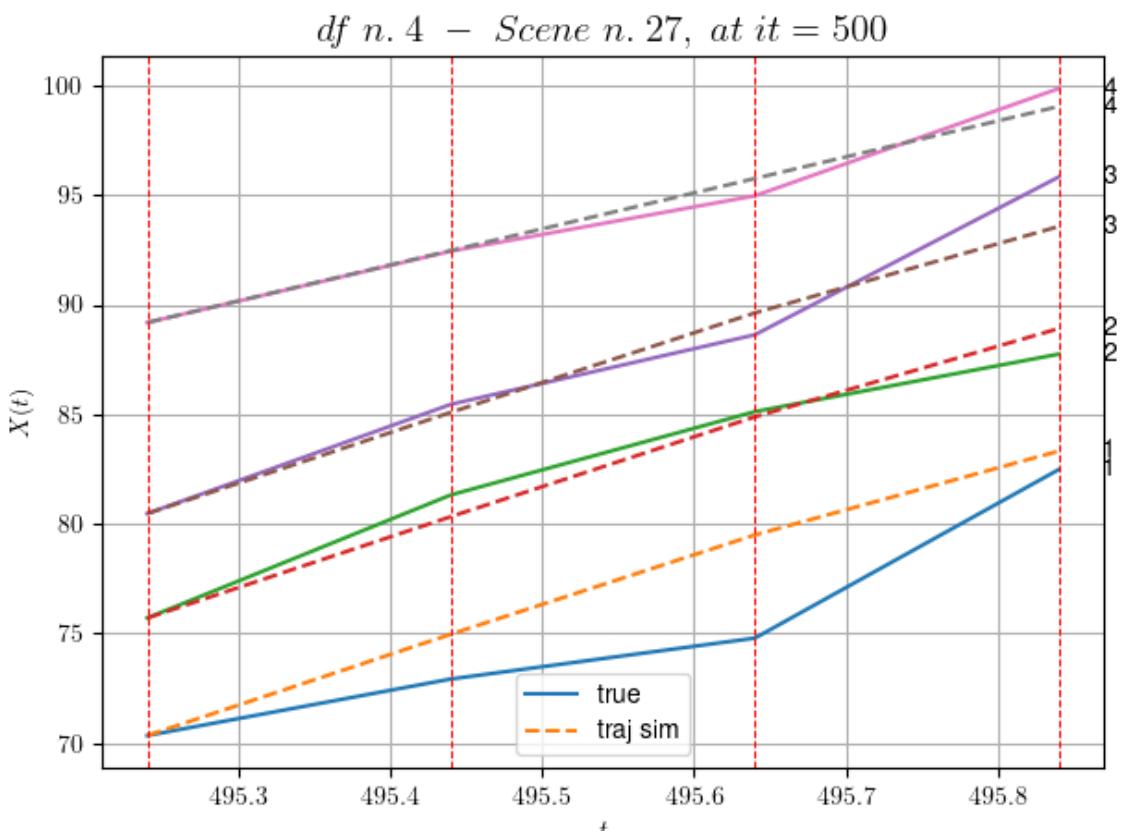
```

```

* err= 2.3122836708792276

* Learning rate NN = 0.0005904899444431067

* diff = 0.0002219652296178154
```



```

For scene 27/30

* use LR_NN=0.001 with err=10.328459098791026 at it=19

* v0_scn_mean = 17.522736910483086

* MAE = 2.3000066470883205
=====
```

```

For scene 28/30

* use LR_NN=0.001 with err=18.249678070036637 at it=19

* v0_scn_mean = 25.702276226626857

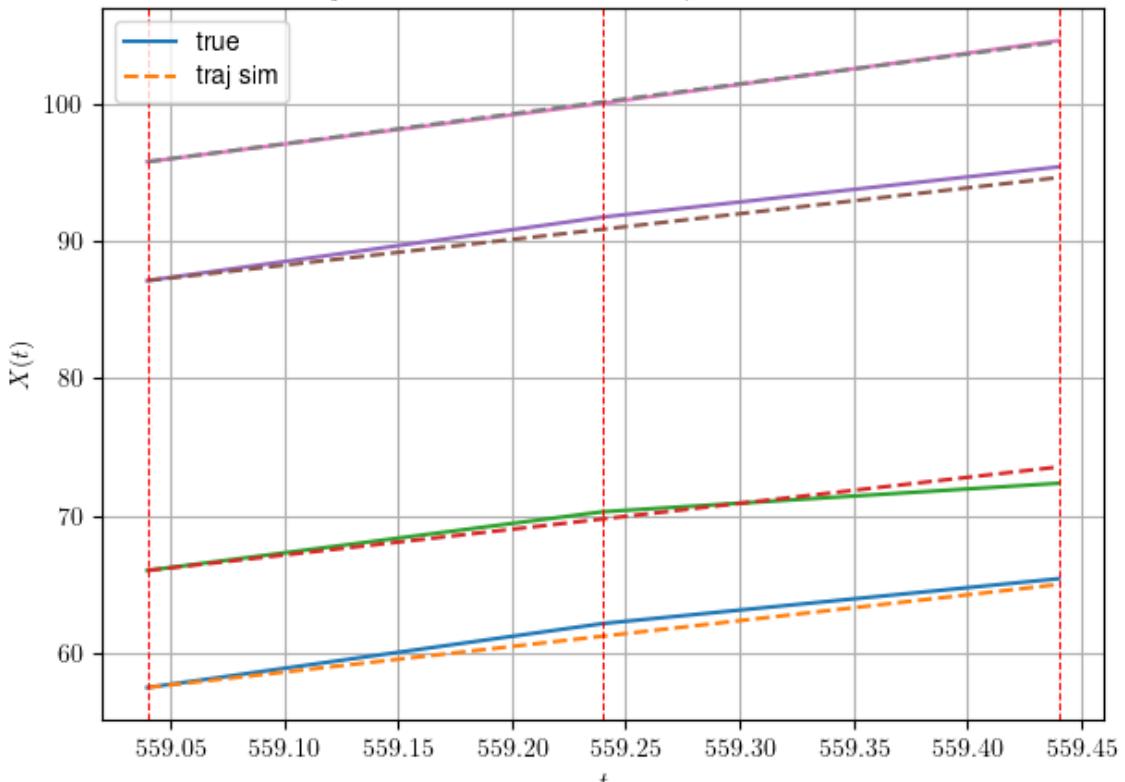
* MAE = 0.45407278876995116
=====
```

```
=====
- Time interval n.0: [559.04, 559.24]
 * y_true: [23.32160164 21.40183754 23.15354324]
 * v_ann: [18.72665786743164, 18.775997161865234, 1
 8.7271671295166, 21.820834052467667]
```

```
=====
- Time interval n.1: [559.24, 559.44]
 * y_true: [16.34126249 10.38103794 18.30306556]
 * v_ann: [18.837636947631836, 18.95779037475586, 1
 8.838937759399414, 21.820834052467667]
```

```
=====
* err= 0.3436304495681325
* Learning rate NN = 3.6449993785936385e-05
* diff = 1.0371399080333354e-05
```

*df n. 4 – Scene n. 29, at it = 500*



For scene 29/30

```
* use LR_NN=5e-05 with err=6.545696360500943 at it=19
* v0_scn_mean = 22.475140712184498
* MAE = 0.3432364206207066
```

```
=====
=====
```

For df=4 with 30 scenes, time taken: 519.86

```
=====
=====
```

```

```

```

In df n.5/10 we have 14 scenes

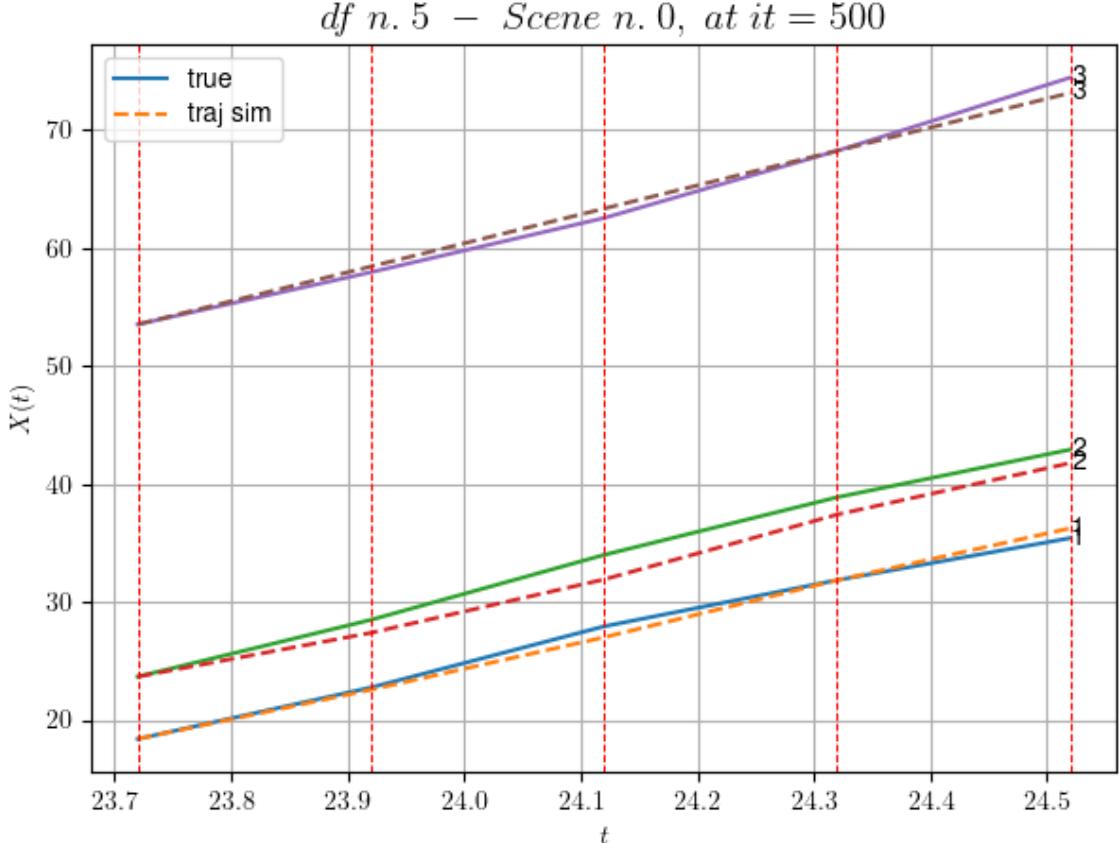
- Time interval n.0: [23.72, 23.92]
* y_true: [21.79018354 24.07032953]
* v_ann: [20.847660064697266, 18.55687713623047, 2
4.534803734519386]

- Time interval n.1: [23.92, 24.12]
* y_true: [25.91031727 27.52052784]
* v_ann: [22.227434158325195, 22.642850875854492, 2
4.534803734519386]

- Time interval n.2: [24.12, 24.32]
* y_true: [19.61033273 24.42062846]
* v_ann: [24.185462951660156, 27.483924865722656, 2
4.534803734519386]

- Time interval n.3: [24.32, 24.52]
* y_true: [17.8304062 20.21066815]
* v_ann: [22.055744171142578, 21.841053009033203, 2
4.534803734519386]

* err= 0.8744424621248993
* Learning rate NN = 0.000478296831715852
* diff = 0.0001291133952693313
```



For scene 0/14

- \* use LR\_NN=0.001 with err=19.281783927829142 at it=19
- \* v0\_scn\_mean = 24.862715265072733
- \* MAE = 0.3805905604454541

---



---

- Time interval n.0: [28.12, 28.32]
- \* y\_true: [22.39001619 28.9506918 ]
- \* v\_ann: [26.573959350585938, 26.102567672729492, 2  
5.37938379248385]

---

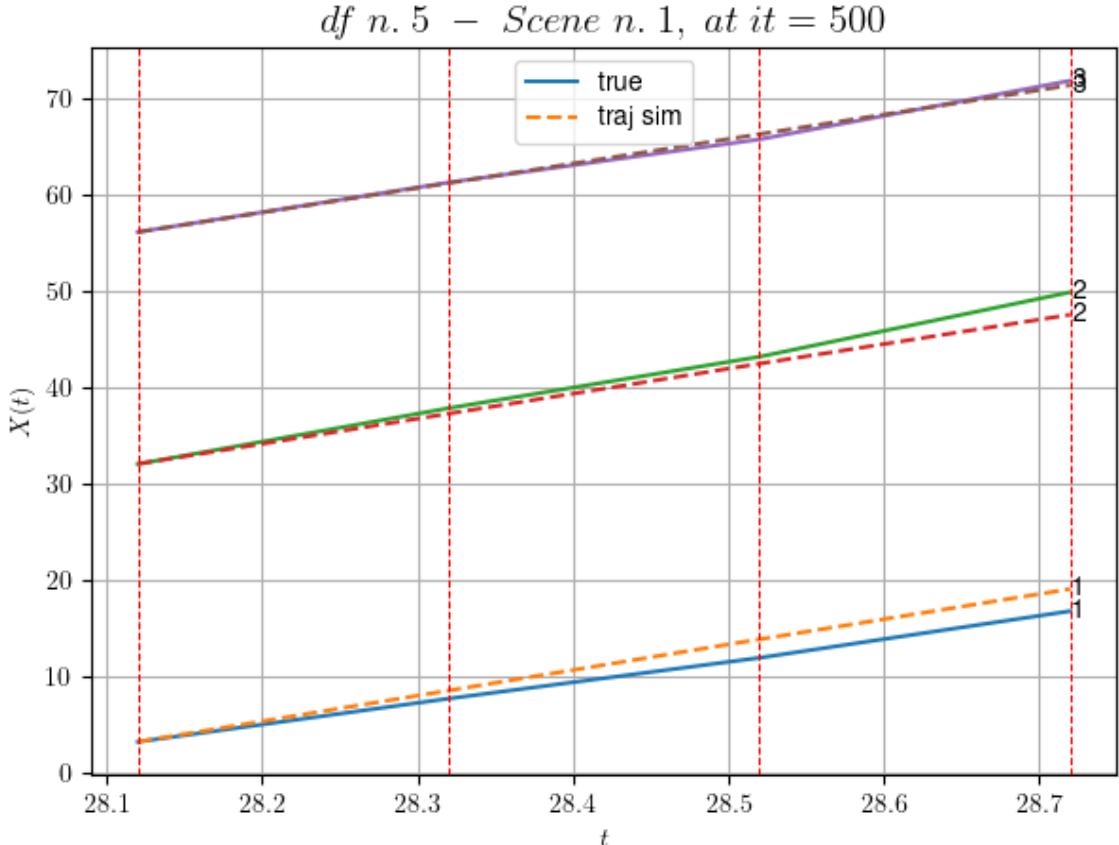
- Time interval n.1: [28.32, 28.52]
- \* y\_true: [21.14004613 26.65085251]
- \* v\_ann: [26.546472549438477, 25.910409927368164, 2  
5.37938379248385]

---

- Time interval n.2: [28.52, 28.72]
- \* y\_true: [24.23010561 33.45140848]
- \* v\_ann: [26.087358474731445, 25.39760971069336, 2  
5.37938379248385]

---

- \* err= 1.367349978943799
- \* Learning rate NN = 5.904899080633186e-05
- \* diff = 0.0010034724460143973



For scene 1/14

- \* use LR\_NN=0.0001 with err=4.9112675045681895 at it=19
- \* v0\_scn\_mean = 25.656620557479123
- \* MAE = 1.367349978943799

---



---

For scene 2/14

- \* use LR\_NN=0.001 with err=28.58521643716639 at it=19
- \* v0\_scn\_mean = 32.93295024498124
- \* MAE = 6.216531320763125

---



---

- Time interval n.0: [151.12, 151.32]
- \* y\_true: [20.88055844 29.97204611]
- \* v\_ann: [27.02951431274414, 26.595422744750977, 31.5161387379581]

---

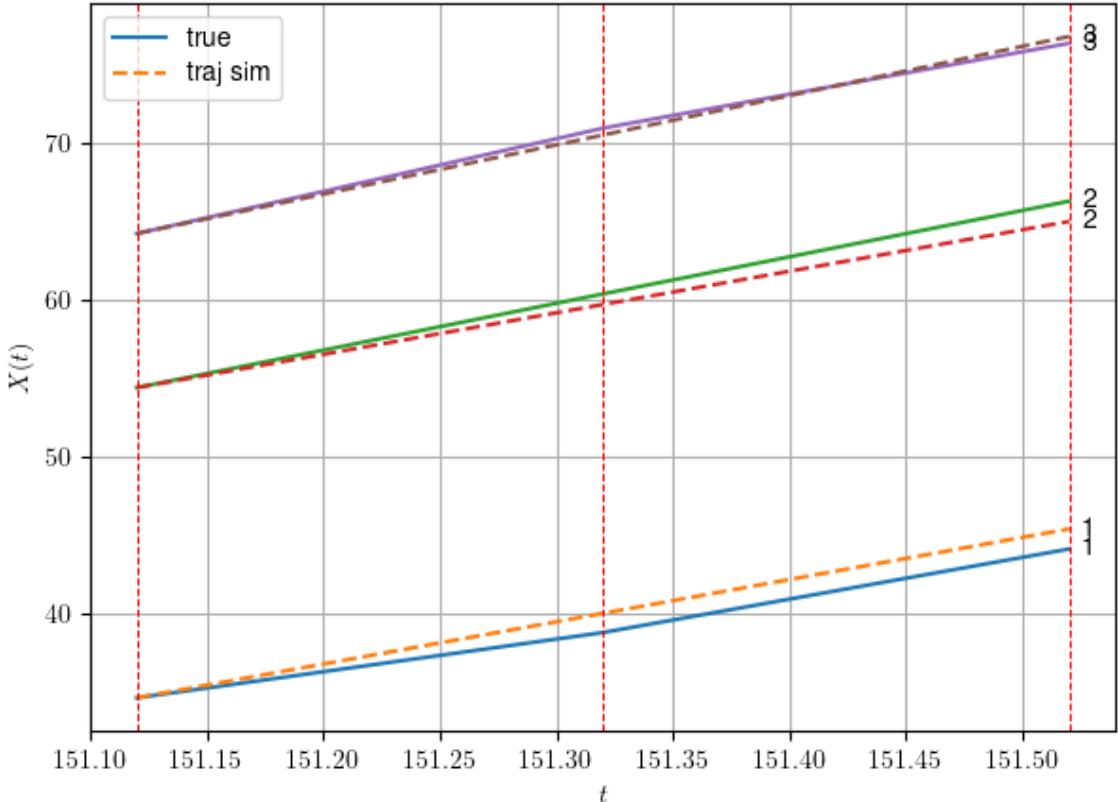
- Time interval n.1: [151.32, 151.52]
- \* y\_true: [26.72089495 29.6522691 ]
- \* v\_ann: [26.99505615234375, 26.55728530883789, 31.5161387379581]

---

\* err= 0.6307223080164658

\* Learning rate NN = 3.6449993785936385e-05  
 \* diff = 0.0003720130939056654

*df n. 5 – Scene n. 3, at it = 500*



For scene 3/14

\* use LR\_NN=5e-05 with err=5.848810391436036 at it=19  
 \* v0\_scn\_mean = 31.42517048175176  
 \* MAE = 0.6307223080164658

---



---

- Time interval n.0: [177.32, 177.52]  
 \* y\_true: [23.78017477 21.57540501]  
 \* v\_ann: [27.59009552001953, 28.360275268554688, 2  
 6.180378384786334]

---

- Time interval n.1: [177.52, 177.72]  
 \* y\_true: [28.99044664 21.37044807]  
 \* v\_ann: [25.445308685302734, 25.668941497802734, 2  
 6.180378384786334]

---

- Time interval n.2: [177.72, 177.92]  
 \* y\_true: [30.9005134 20.55062028]  
 \* v\_ann: [25.261625289916992, 25.49291229248047, 2  
 6.180378384786334]

---

- Time interval n.3: [177.92, 178.12]

```
* y_true: [25.28069635 21.9357523]
* v_ann: [25.30489730834961, 25.691410064697266, 2
6.180378384786334]
```

---

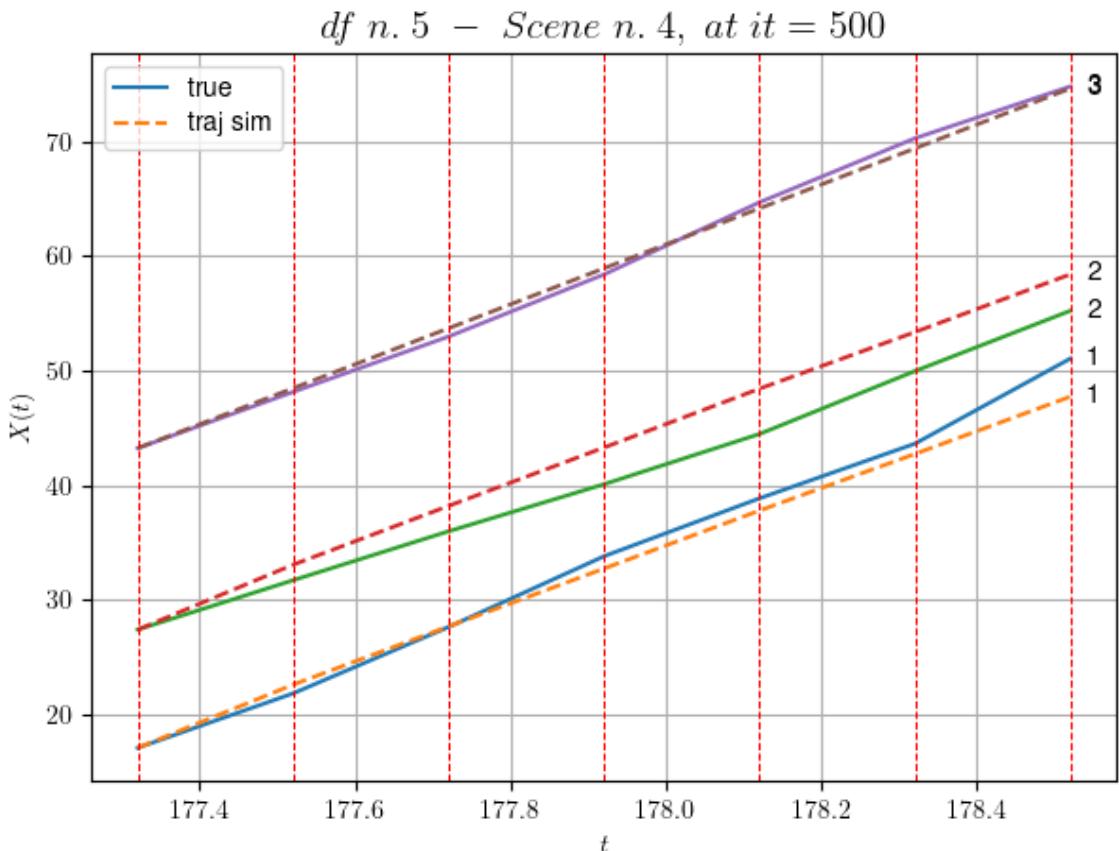
```
- Time interval n.4: [178.12, 178.32]
* y_true: [23.87574209 27.4762805]
* v_ann: [24.743877410888672, 24.7278995513916, 26.
180378384786334]
```

---

```
- Time interval n.5: [178.32, 178.52]
* y_true: [37.1766426 26.34131635]
* v_ann: [25.01874351501465, 25.230995178222656, 2
6.180378384786334]
```

---

```
* err= 3.3901119129945267
* Learning rate NN = 0.00031381050939671695
* diff = 0.000449535220337971
```



For scene 4/14

```
* use LR_NN=0.001 with err=35.40358860084549 at it=19
* v0_scn_mean = 26.409555510206506
* MAE = 3.3901119129945267
```

---



---



---

```
- Time interval n.0: [266.92, 267.12]
```

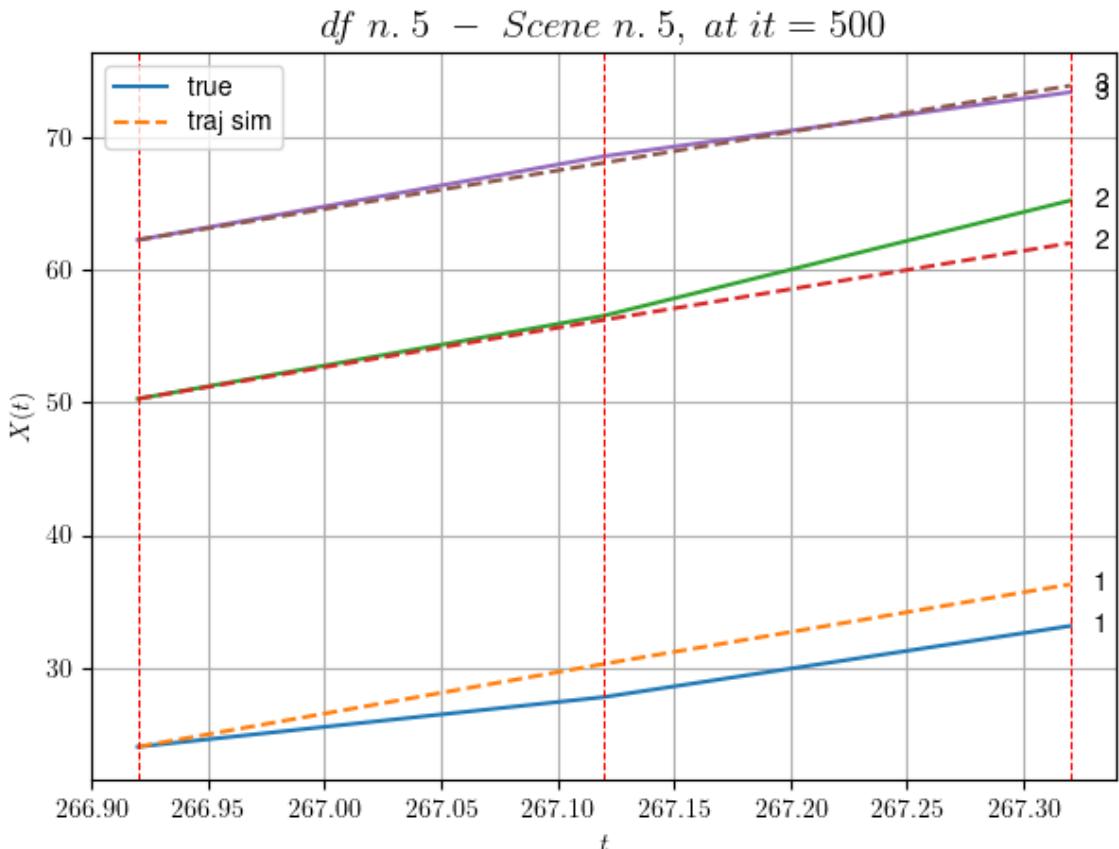
```

* y_true: [18.75024149 31.34179995]
* v_ann: [31.257450103759766, 29.744964599609375, 2
9.085701625925548]

- Time interval n.1: [267.12, 267.32]
* y_true: [26.80047756 43.40316595]
* v_ann: [29.981210708618164, 28.957773208618164, 2
9.085701625925548]

* err= 2.9982831664326617
* Learning rate NN = 7.289998757187277e-05
* diff = 0.0007998814765368678

```



For scene 5/14

```

* use LR_NN=0.0001 with err=13.288164012628087 at it=19
* v0_scn_mean = 29.140559487320942
* MAE = 2.9982831664326617

```

```

=====
=====
- Time interval n.0: [316.92, 317.12]
* y_true: [22.23560763 28.12633872]
* v_ann: [25.232595443725586, 25.174917221069336, 2
2.342045861211655]

```

```

- Time interval n.1: [317.12, 317.32]
 * y_true: [22.67586827 27.74684297]
 * v_ann: [25.20579719543457, 25.17780113220215, 22.
342045861211655]

```

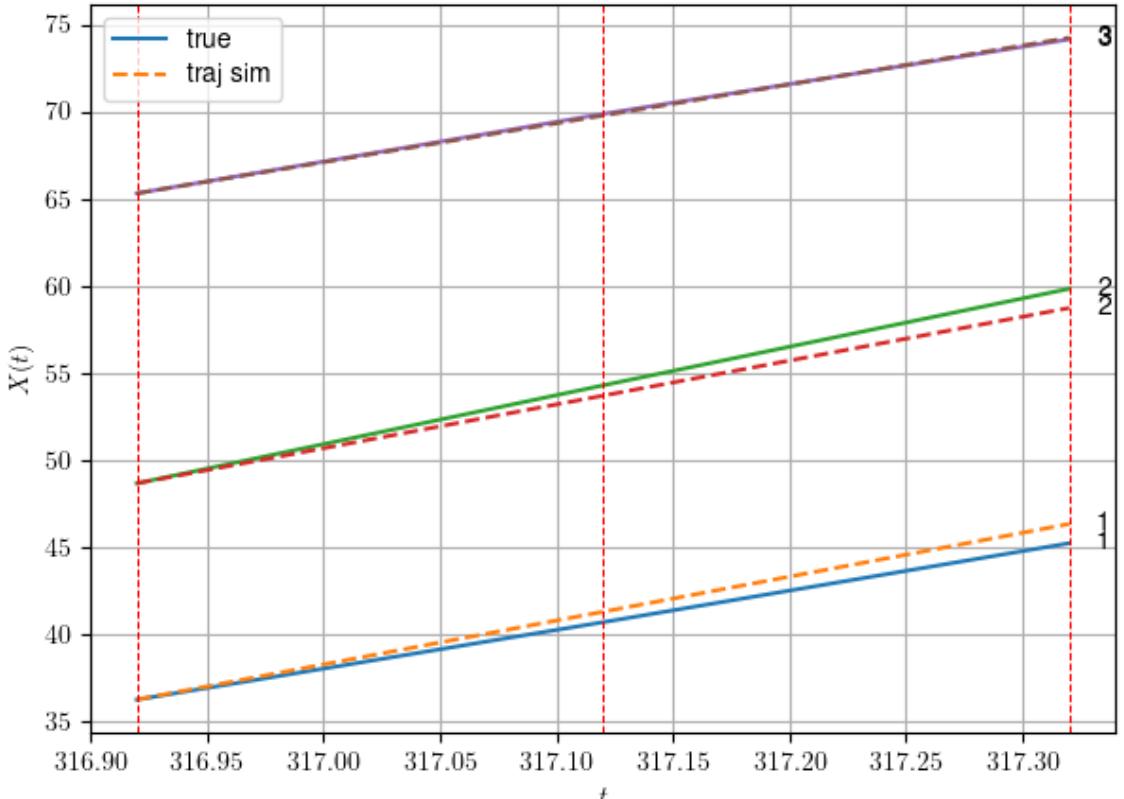
---

```

* err= 0.3518086440850386
* Learning rate NN = 0.00036449998151510954
* diff = 0.0001906505257822102

```

*df n. 5 – Scene n. 6, at it = 500*



#### For scene 6/14

```

* use LR_NN=0.0005 with err=1.3451147775738164 at it=19
* v0_scn_mean = 22.801522765712836
* MAE = 0.3518086440850386

```

---



---

#### For scene 7/14

```

* use LR_NN=0.0001 with err=9.44723203033655 at it=19
* v0_scn_mean = 27.441738746313987
* MAE = 0.02717909264392469

```

---



---

#### For scene 8/14

```

* use LR_NN=0.0001 with err=1.9298669451032044 at it=19
* v0_scn_mean = 35.04615696757825
* MAE = 0.006066203773459994

```

```
=====
=====

 - Time interval n.0: [338.52, 338.72]
 * y_true: [22.83038671 20.44060351]
 * v_ann: [23.8465576171875, 23.872209548950195, 27.
853928426096168]

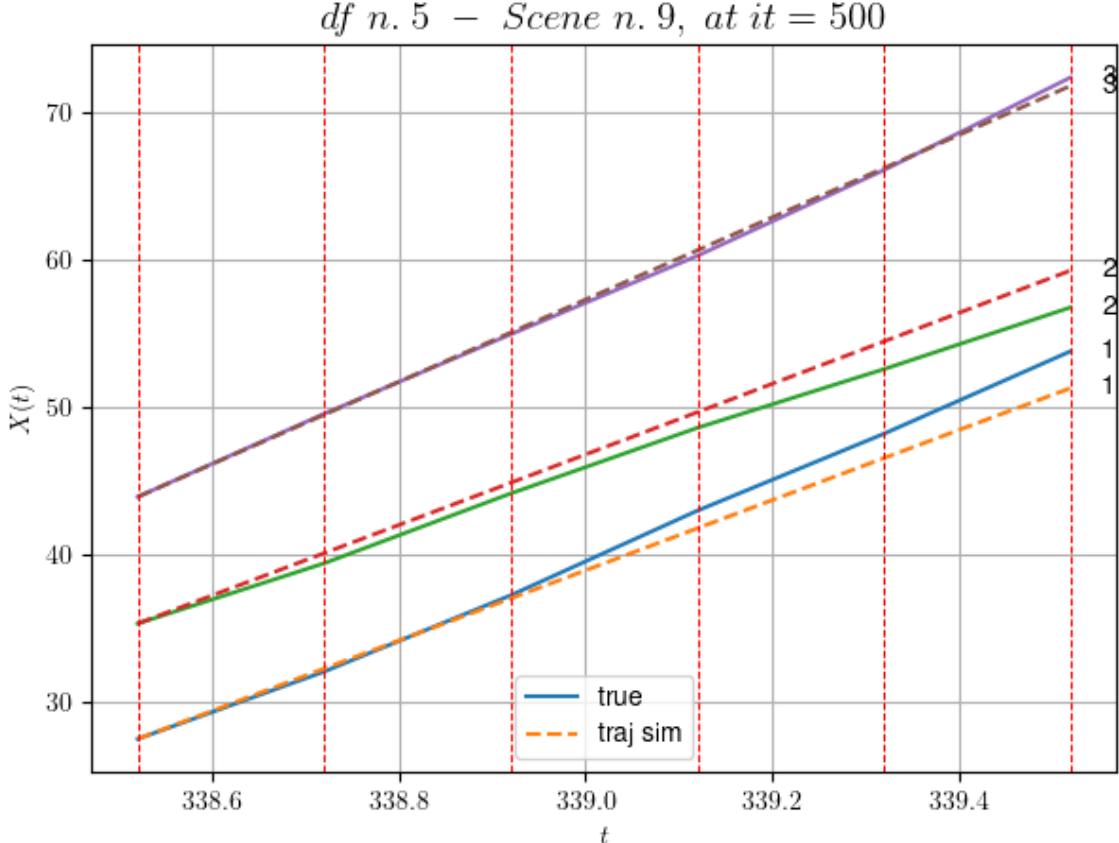
 - Time interval n.1: [338.72, 338.92]
 * y_true: [25.85061095 23.65082523]
 * v_ann: [23.75916290283203, 23.844945907592773, 2
7.853928426096168]

 - Time interval n.2: [338.92, 339.12]
 * y_true: [28.6708889 22.23087004]
 * v_ann: [23.77598762512207, 23.900197982788086, 2
7.853928426096168]

 - Time interval n.3: [339.12, 339.32]
 * y_true: [26.0610325 19.88098798]
 * v_ann: [23.783851623535156, 23.990169525146484, 2
7.853928426096168]

 - Time interval n.4: [339.32, 339.52]
 * y_true: [27.9415295 20.92126982]
 * v_ann: [23.71515464782715, 24.01480484008789, 27.
853928426096168]

* err= 1.27007498849884
* Learning rate NN = 3.874203684972599e-05
* diff = 0 000636266620062722
```



For scene 9/14

```
* use LR_NN=0.0001 with err=13.376202575440464 at it=19
* v0_scn_mean = 27.982692624176046
* MAE = 1.0454780369987169
```

---



---

- Time interval n.0: [435.72, 435.92]
  - \* y\_true: [16.6003121 32.10080247]
  - \* v\_ann: [21.14899444580078, 19.988025665283203, 2 3.002269478052362]

---

- Time interval n.1: [435.92, 436.12]
  - \* y\_true: [17.55040576 22.4007406 ]
  - \* v\_ann: [20.975034713745117, 20.248659133911133, 2 3.002269478052362]

---

- Time interval n.2: [436.12, 436.32]
  - \* y\_true: [16.72550921 26.8011085 ]
  - \* v\_ann: [20.896390914916992, 20.20436668395996, 2 3.002269478052362]

---

- Time interval n.3: [436.32, 436.52]
  - \* y\_true: [16.72550921 28.00144696]
  - \* v\_ann: [20.772632598876953, 20.243051528930664, 2 3.002269478052362]

3.002269478052362]

---

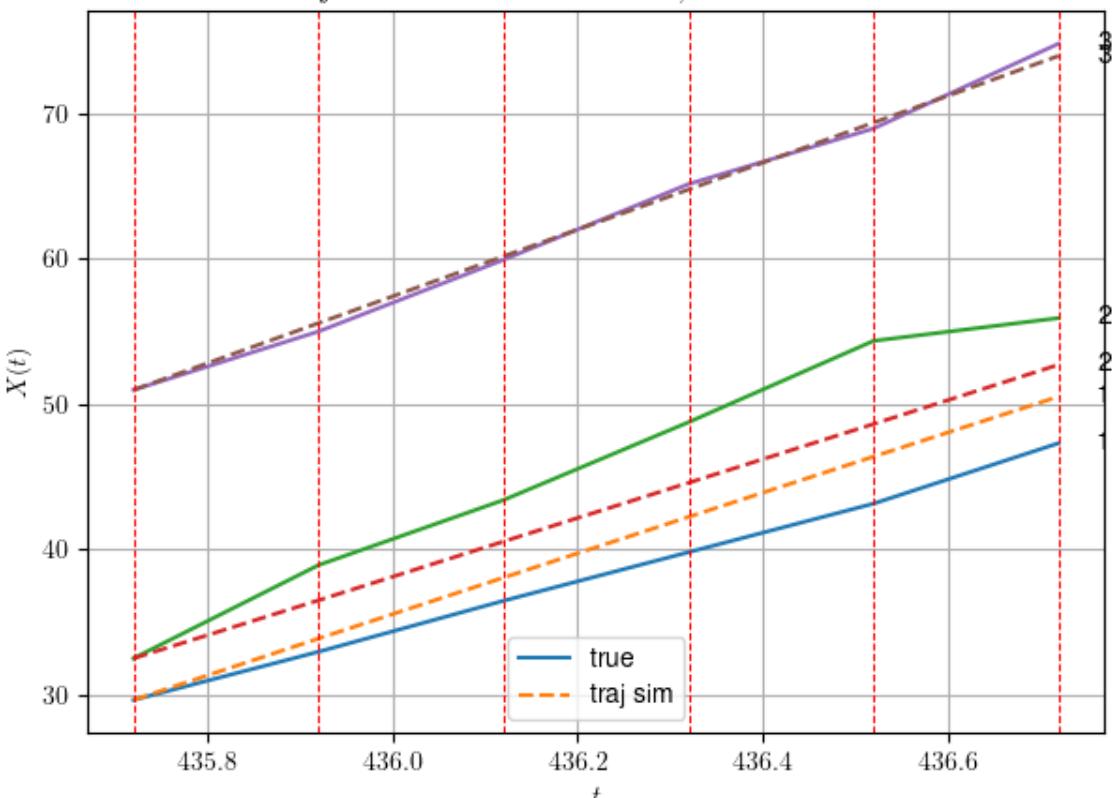
- Time interval n.4: [436.52, 436.72]
  - \* y\_true: [20.80081615 7.85046318]
  - \* v\_ann: [20.648380279541016, 20.41067123413086, 2

3.002269478052362]

---

- \* err= 5.8856404502671715
- \* Learning rate NN = 1.9371018424862996e-05
- \* diff = 0.0002473514934253629

*df n. 5 – Scene n. 10, at it = 500*



For scene 10/14

- \* use LR\_NN=5e-05 with err=14.059707669824713 at it=19
- \* v0\_scn\_mean = 23.422132995186285
- \* MAE = 5.882794200075414

---



---

- Time interval n.0: [565.12, 565.32]
  - \* y\_true: [12.82514463 16.9507403 ]
  - \* v\_ann: [16.24207305908203, 15.937036514282227, 2

0.7503136342696]

---



---

- Time interval n.1: [565.32, 565.52]
  - \* y\_true: [14.2510345 19.19106683]
  - \* v\_ann: [15.623151779174805, 15.381804466247559, 2

0.7503136342696]

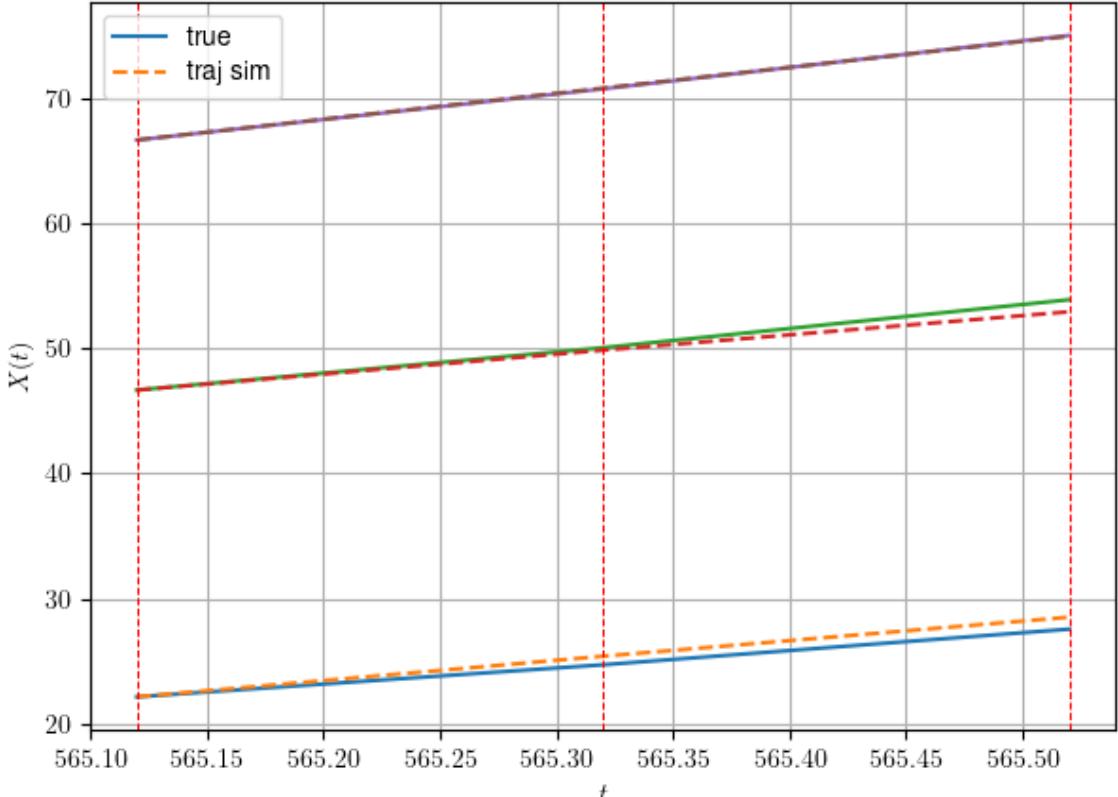
---



---

- \* err= 0.2626463058487675
- \* Learning rate NN = 0.00036449998151510954
- \* diff = 0.0003017381021533372

*df n. 5 – Scene n. 11, at it = 500*



For scene 11/14

- \* use LR\_NN=0.0005 with err=2.5650770438101596 at it=19
- \* v0\_scn\_mean = 21.3052944009231
- \* MAE = 0.22131377715464673

---



---

For scene 12/14

- \* use LR\_NN=0.0005 with err=3.6314395530373633 at it=19
- \* v0\_scn\_mean = 21.856221383964876
- \* MAE = 0.09907593921752363

---



---

For scene 13/14

- \* use LR\_NN=0.0005 with err=6.797438417057123 at it=19
- \* v0\_scn\_mean = 26.503177016631007
- \* MAE = 0.7628545724158942

---



---

```
For df=5 with 14 scenes, time taken: 174.43
=====

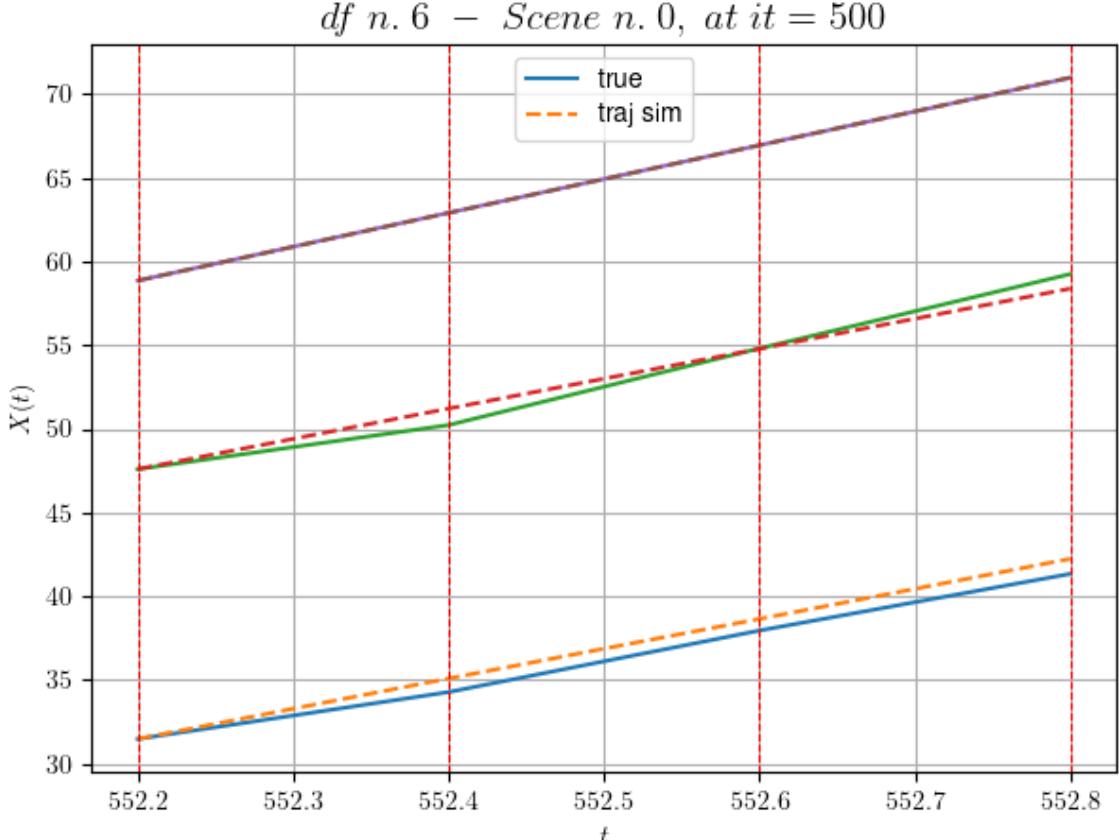
=====

***** In df n.6/10 we have 3 scenes *****
***** -----
***** - Time interval n.0: [552.20, 552.40]
***** * y_true: [14.01030513 13.18063102]
***** * v_ann: [18.077585220336914, 18.110658645629883, 2
0.233205039552278]

***** - Time interval n.1: [552.40, 552.60]
***** * y_true: [18.39048446 22.9012939]
***** * v_ann: [17.794456481933594, 17.84340476989746, 2
0.233205039552278]

***** - Time interval n.2: [552.60, 552.80]
***** * y_true: [16.95052919 22.22132939]
***** * v_ann: [17.96665382385254, 18.01216697692871, 20.
233205039552278]

* err= 0.30621531297294885
* Learning rate NN = 5.904899080633186e-05
* diff = 0.0008710623867790868
```



For scene 0/3

- \* use LR\_NN=0.0001 with err=6.040586444370654 at it=19
  - \* v0\_scn\_mean = 20.81921229867143
  - \* MAE = 0.2539175229188435
- 
- 

For scene 1/3

- \* use LR\_NN=0.001 with err=5.778801945855831 at it=19
  - \* v0\_scn\_mean = 24.292370753061945
  - \* MAE = 0.2629926331170359
- 
- 

For scene 2/3

- \* use LR\_NN=0.0005 with err=7.577405611020717 at it=19
  - \* v0\_scn\_mean = 24.266812628641993
  - \* MAE = 0.1255307841582092
- 
- 

For df=6 with 3 scenes, time taken: 31.67

---



---

\*\*\*\*\*  
\*\*\*\*\*

In df n.7/10 we have 8 scenes

---



---



---



---

- Time interval n.0: [38.56, 38.76]

\* y\_true: [34.50899027 34.29923068]

\* v\_ann: [31.752880096435547, 32.7103385925293, 28.990010590084957]

---



---

- Time interval n.1: [38.76, 38.96]

\* y\_true: [33.76780394 27.40980382]

\* v\_ann: [32.39126205444336, 33.1069221496582, 28.900010590084957]

---



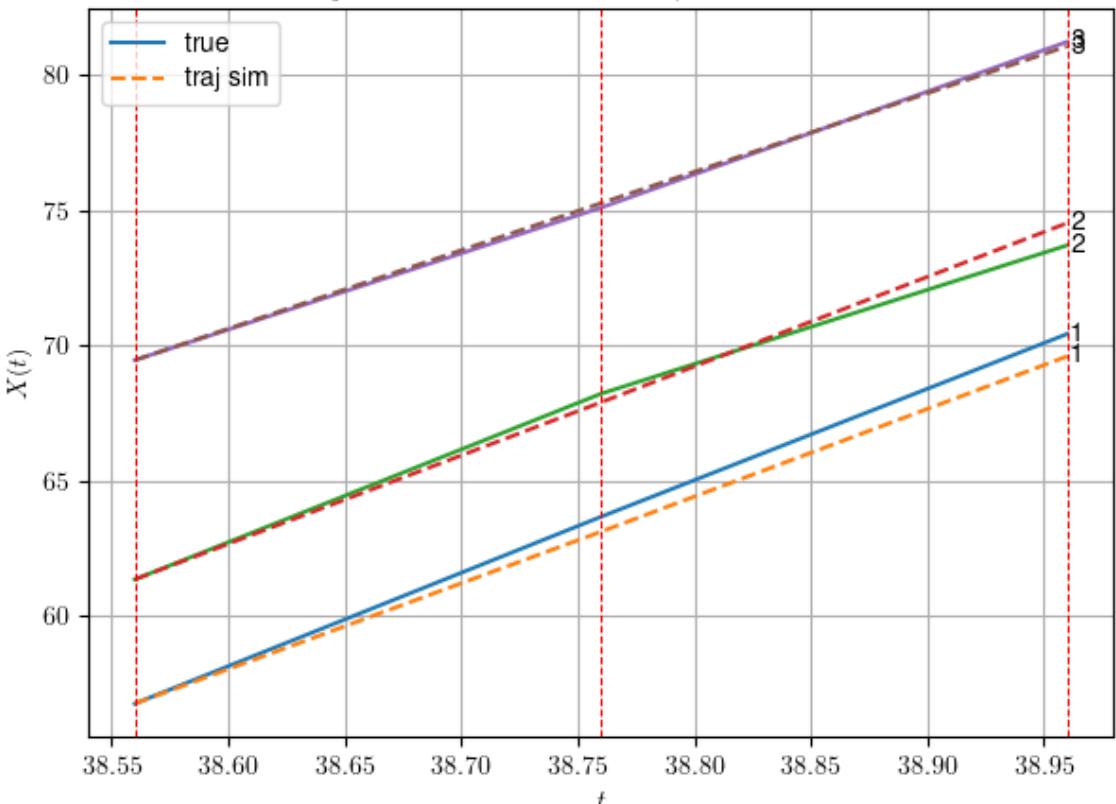
---

\* err= 0.20198518086537365

\* Learning rate NN = 0.00036449998151510954

\* diff = 5.300897942453475e-05

*df n. 7 – Scene n. 0, at it = 500*



For scene 0/8

\* use LR\_NN=0.0005 with err=3.235014877079646 at it=19

\* v0\_scn\_mean = 29.05060990933453

\* MAE = 0.20198518086537365

---



---



---



---

- Time interval n.0: [39.76, 39.96]

\* y\_true: [22.5368218 26.50901133]

\* v\_ann: [26.993637084960938, 1.1925392314274252e-12, 28.629752721377095]

```

 - Time interval n.1: [39.96, 40.16]

 * y_true: [27.13488394 22.34107329]

 * v_ann: [24.83318328857422, 1.4579128919736672e-1

2, 28.629752721377095]

```

```

 - Time interval n.2: [40.16, 40.36]

 * y_true: [29.97962766 28.56631616]

 * v_ann: [26.74374771118164, 1.9887730514072527e-1

4, 28.629752721377095]

```

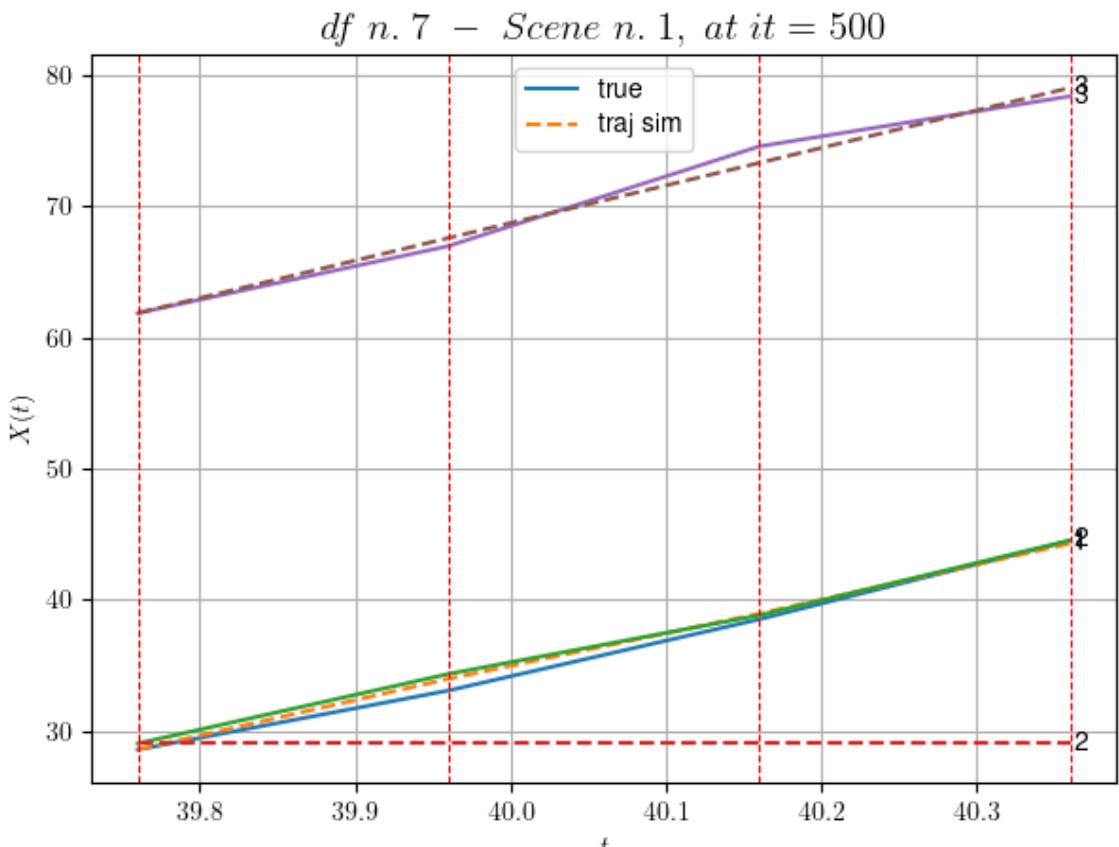
```

* err= 30.557716998744834

* Learning rate NN = 0.0005904899444431067

* diff = 2.2127097935253914e-05

```



For scene 1/8

```

* use LR_NN=0.001 with err=23.51046267937383 at it=19
* v0_scn_mean = 28.711967496573344
* MAE = 6.241041846044204

```

```

=====

 - Time interval n.0: [45.96, 46.16]

 * y_true: [25.63954073 32.24792255]

 * v_ann: [28.40355110168457, 28.64747428894043, 21.

679366296074996]

```

```

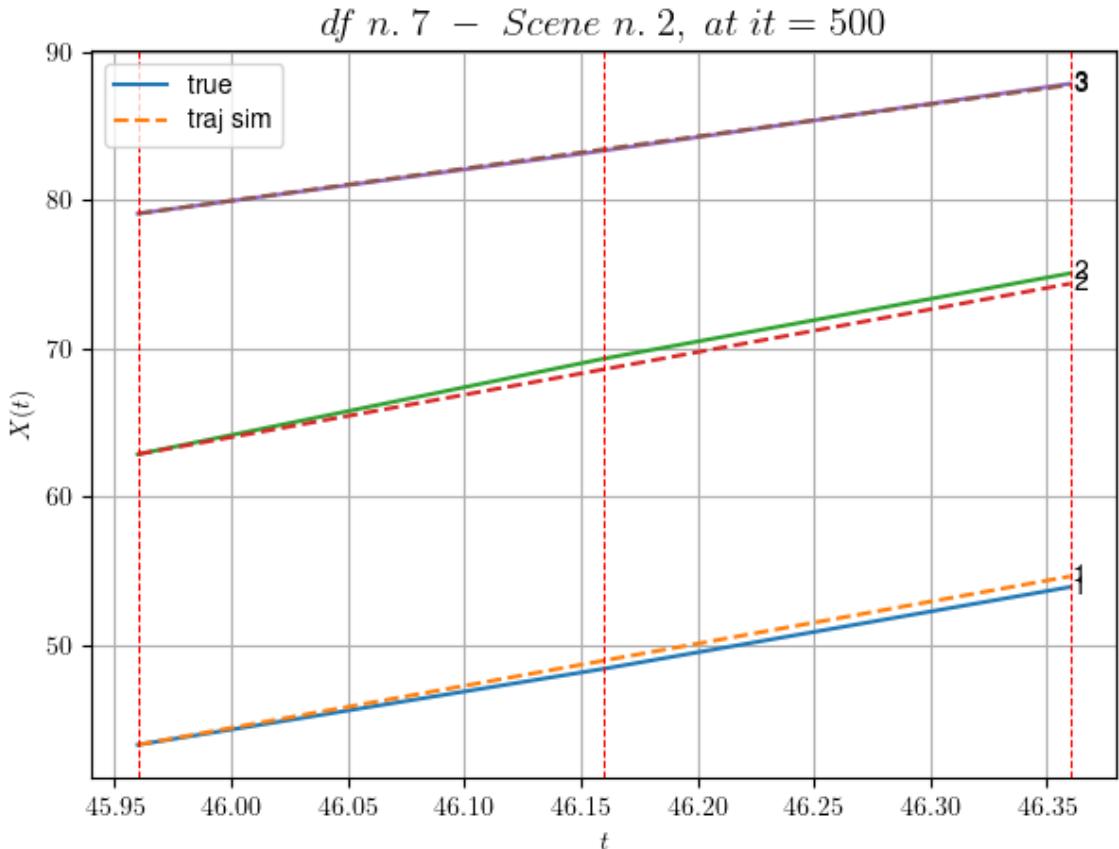
- Time interval n.1: [46.16, 46.36]
 * y_true: [27.5623729 28.76269973]
 * v_ann: [28.395423889160156, 28.872028350830078, 2
 1.679366296074996]

```

```

* err= 0.20512555344385378
* Learning rate NN = 7.289998757187277e-05
* diff = 0.0004935813221118857

```



For scene 2/8

```

* use LR_NN=0.0001 with err=3.0568555878689954 at it=19
* v0_scn_mean = 22.178603944732036
* MAE = 0.1708423377395802

```

```

=====
=====
- Time interval n.0: [162.76, 162.96]
 * y_true: [10.08699654 20.77195672]
 * v_ann: [17.556747436523438, 17.761945724487305, 3
 3.51455461644857]

```

```

=====
- Time interval n.1: [162.96, 163.16]
 * y_true: [12.77745535 25.37230132]
 * v_ann: [16.990253448486328, 17.063854217529297, 3
 3.51455461644857]

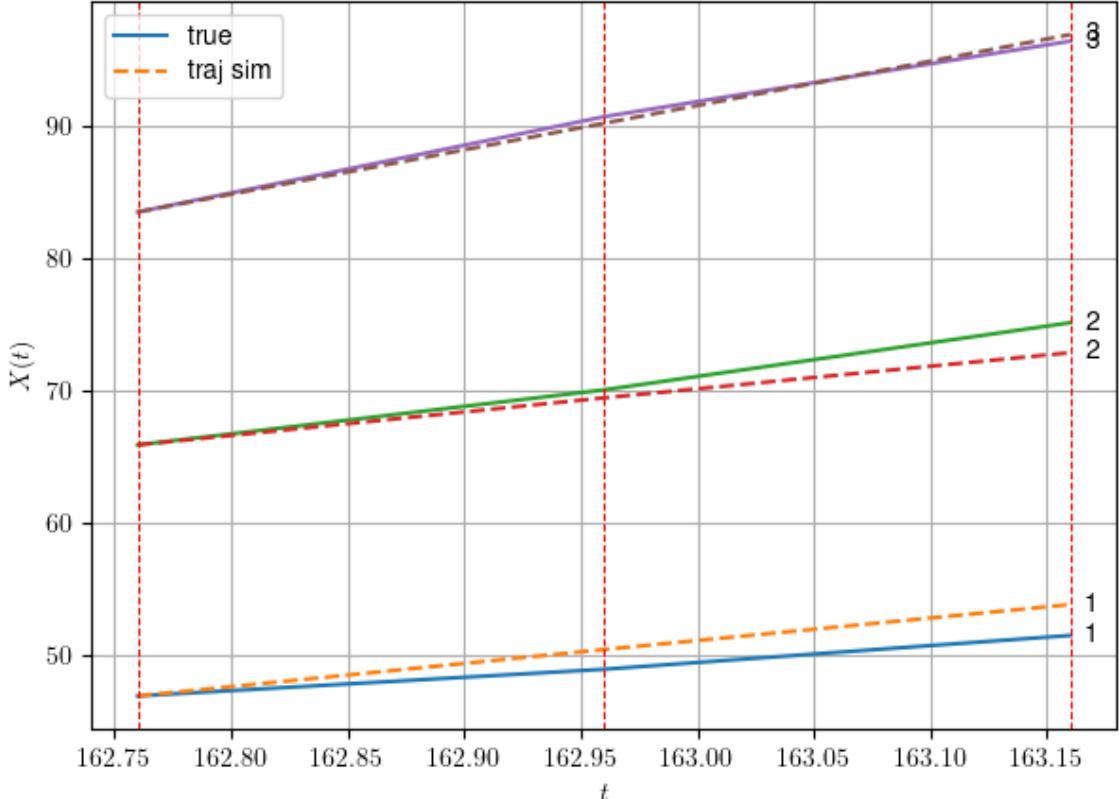
```

```

* err= 1.5188441472490393
* Learning rate NN = 7.289998757187277e-05
* diff = 0.0007766239082940274

```

*df n. 7 – Scene n. 3, at it = 500*



#### For scene 3/8

```

* use LR_NN=0.0001 with err=1.9522426678616205 at it=19
* v0_scn_mean = 33.3036814972576
* MAE = 1.4650012561976358

```

---



---

```

- Time interval n.0: [165.76, 165.96]
 * y_true: [14.62535373 14.97522028]
 * v_ann: [13.942011833190918, 14.579879760742188, 2
7.262209824915317]

```

---



---

```

- Time interval n.1: [165.96, 166.16]
 * y_true: [14.90483904 10.97892299]
 * v_ann: [13.964051246643066, 14.364348411560059, 2
7.262209824915317]

```

---



---

```

- Time interval n.2: [166.16, 166.36]
 * y_true: [13.82116599 15.66867879]
 * v_ann: [13.961760520935059, 14.224101066589355, 2

```

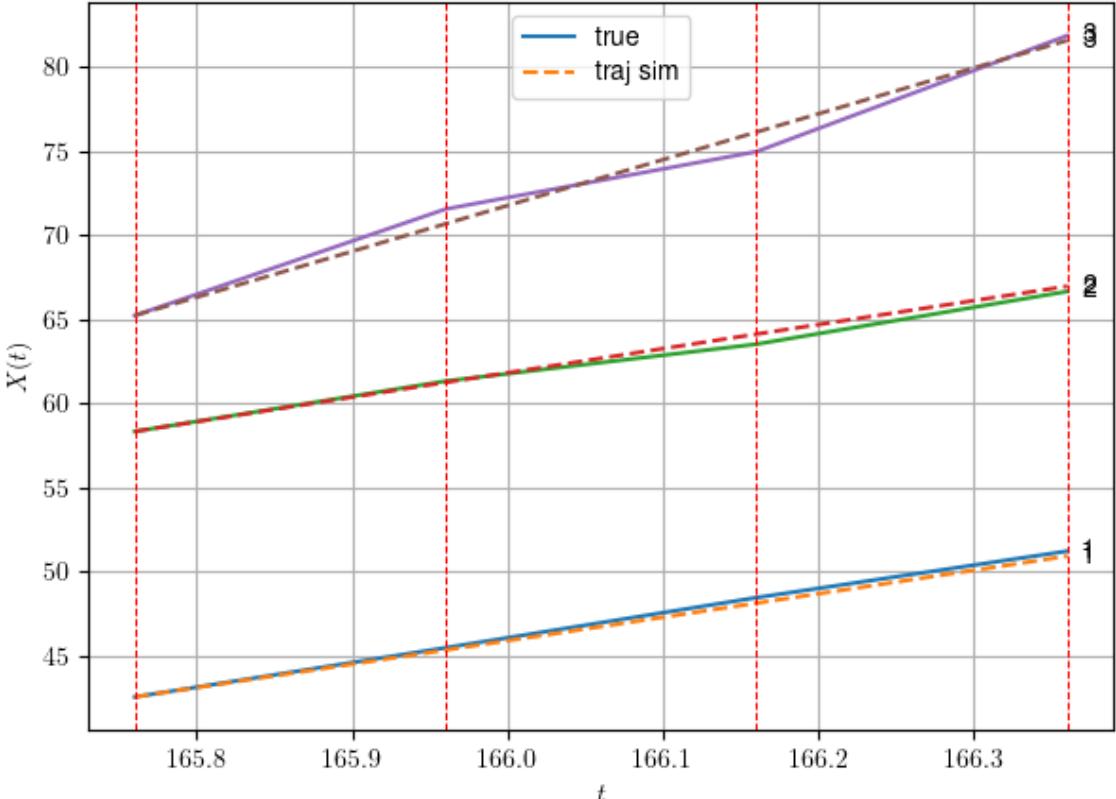
7.262209824915317]

```

* err= 0.2396046351546132
* Learning rate NN = 5.904899080633186e-05
* diff = 0.0002765850005022784

```

df n. 7 - Scene n. 4, at it = 500



For scene 4/8

```

* use LR_NN=0.0001 with err=1.444019231626026 at it=19
* v0_scn_mean = 27.426477112500226
* MAE = 0.2396046351546132

```

```

=====
=====
- Time interval n.0: [188.16, 188.36]
* y_true: [18.26365072 21.2472937]
* v_ann: [20.706796646118164, 21.189252853393555, 2
4.898608242942192]
=====
```

```

=====
=====
- Time interval n.1: [188.36, 188.56]
* y_true: [19.58083161 26.63811802]
* v_ann: [20.671384811401367, 21.13828468322754, 2
4.898608242942192]
=====
```

```

=====
=====
- Time interval n.2: [188.56, 188.76]
* y_true: [19.1135942 21.22632097]
* v_ann: [20.84569549560547, 21.291776657104492, 2
```

4.898608242942192]

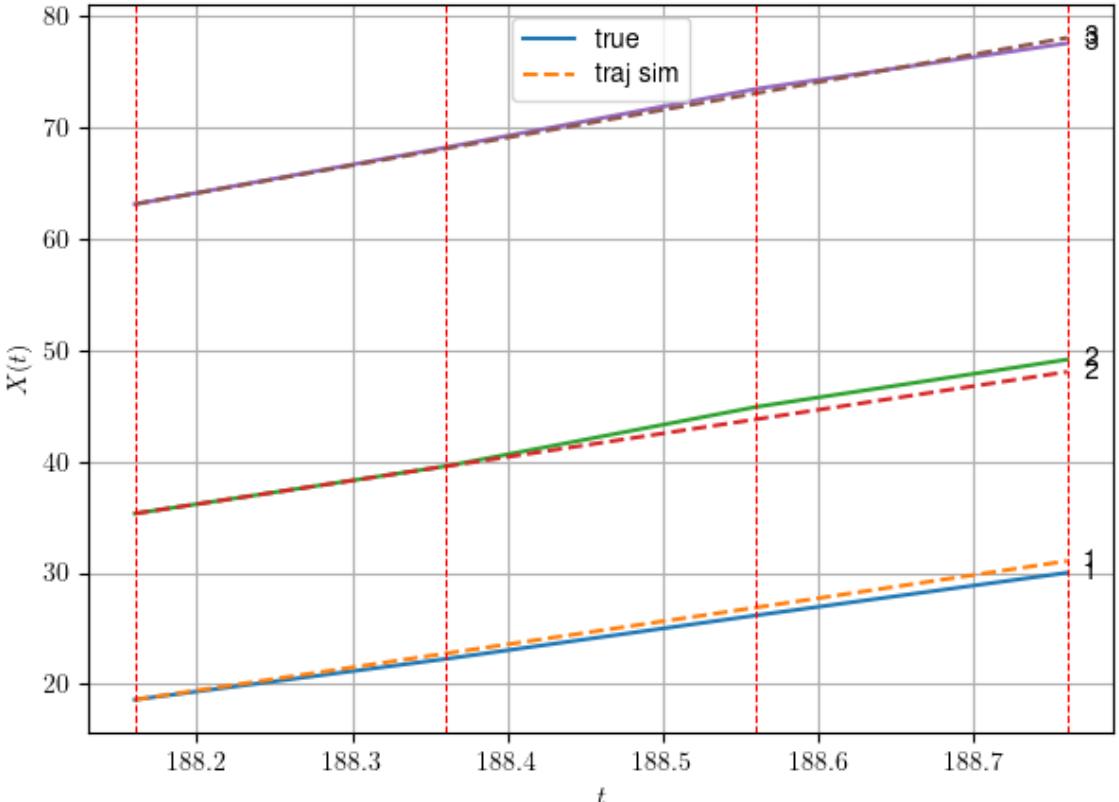
---



---

- \* err= 0.3918857945136937
- \* Learning rate NN = 2.952449540316593e-05
- \* diff = 0.0013063445204102226

*df n. 7 – Scene n. 5, at it = 500*



For scene 5/8

- \* use LR\_NN=5e-05 with err=2.1280378660320114 at it=19
- \* v0\_scn\_mean = 25.204691519323866
- \* MAE = 0.2927846417425049

---



---

- Time interval n.0: [220.96, 221.16]  
 \* y\_true: [27.25777683 27.84910592]  
 \* v\_ann: [27.995410919189453, 28.091489791870117, 2  
 6.579845406052574]

---



---

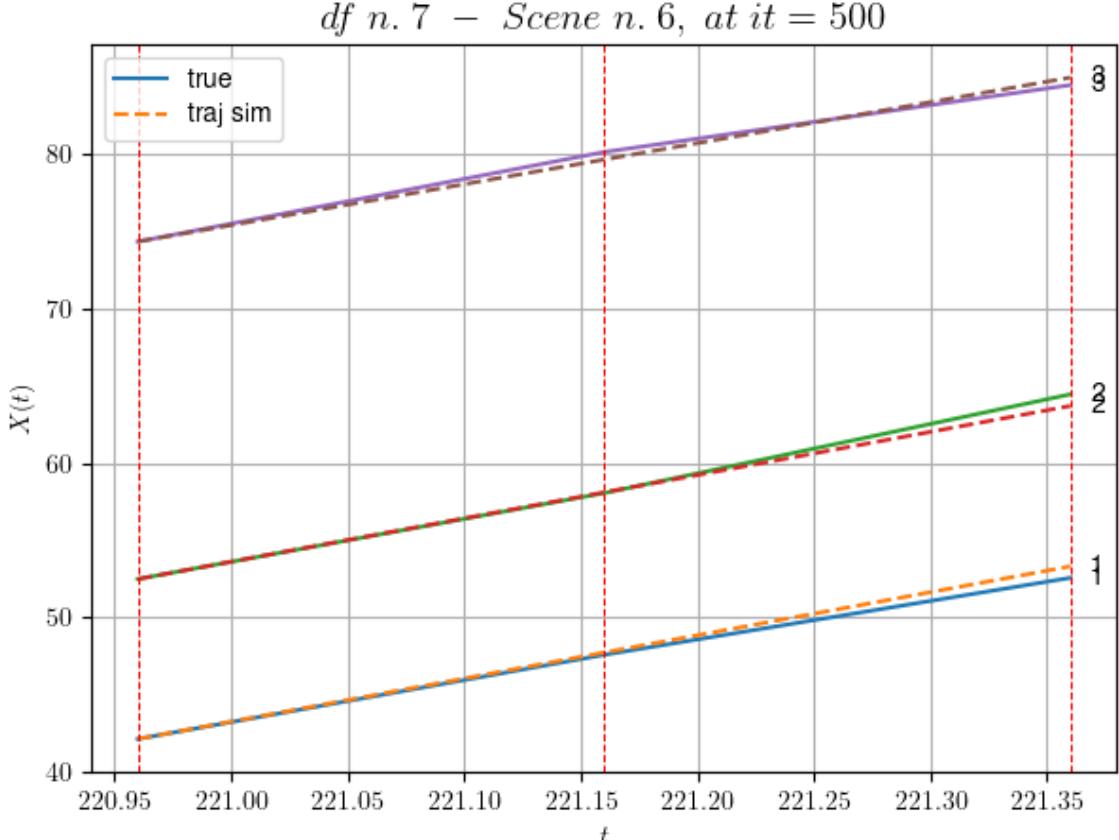
- Time interval n.1: [221.16, 221.36]  
 \* y\_true: [24.9447965 32.01250046]  
 \* v\_ann: [27.941904067993164, 28.001981735229492, 2  
 6.579845406052574]

---



---

- \* err= 0.18059032255852767
- \* Learning rate NN = 7.289998757187277e-05
- \* diff = 0.0002882609017093585



For scene 6/8

- \* use LR\_NN=0.0001 with err=2.8518089631029633 at it=19
- \* v0\_scn\_mean = 26.78505452813204
- \* MAE = 0.09979918797267884

---



---

- Time interval n.0: [166.56, 166.76]
  - \* y\_true: [17.24164345 15.73752306 15.58083022]
  - \* v\_ann: [17.948623657226562, 17.855426788330078, 17.89599609375, 17.3686359690659]

---

- Time interval n.1: [166.76, 166.96]
  - \* y\_true: [18.38470966 27.72552812 9.3330177 ]
  - \* v\_ann: [17.28505516052246, 17.49571990966797, 17.39209747314453, 17.3686359690659]

---

- Time interval n.2: [166.96, 167.16]
  - \* y\_true: [16.02323775 24.97208403 13.98221987]
  - \* v\_ann: [17.707691192626953, 17.72626304626465, 17.715696334838867, 17.3686359690659]

---

- Time interval n.3: [167.16, 167.36]
  - \* y\_true: [18.26534189 20.06151439 15.46259314]
  - \* v\_ann: [17.9609375, 17.822967529296875, 17.902427]

673339844, 17.3686359690659]

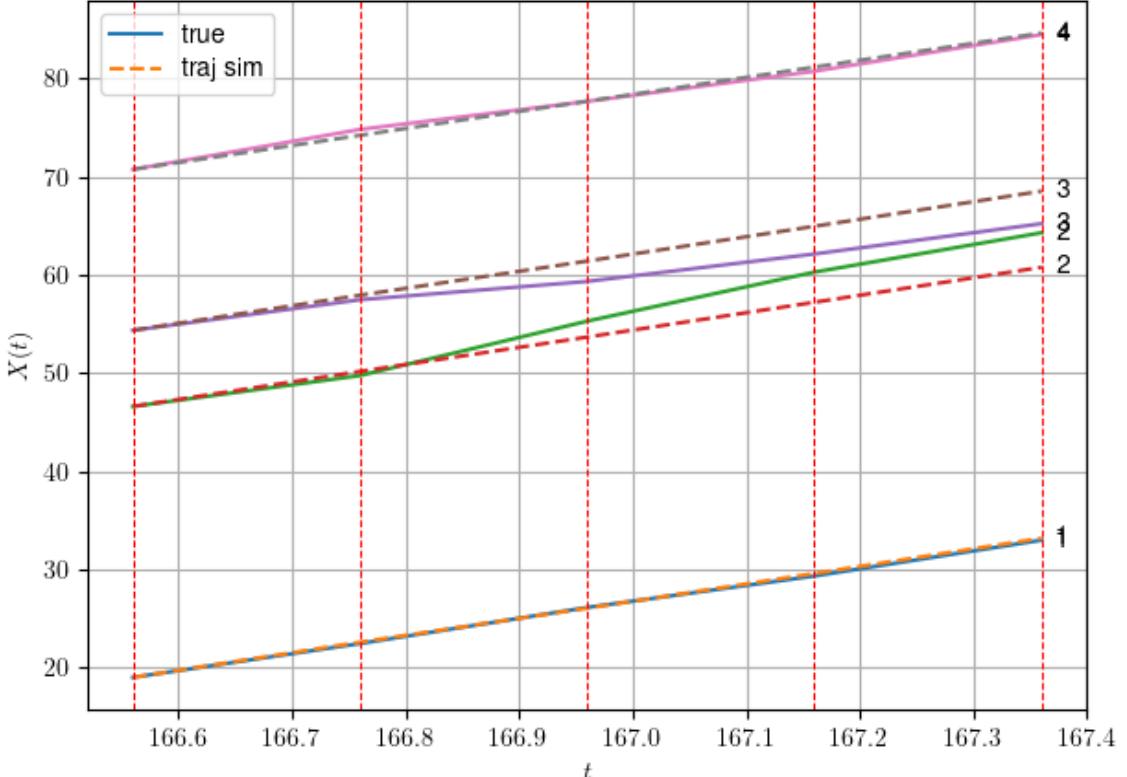
---



---

- \* err= 2.4381348928949356
- \* Learning rate NN = 0.000239148415857926
- \* diff = 5.025003435576991e-07

*df n. 7 – Scene n. 7, at it = 500*



For scene 7/8

- \* use LR\_NN=0.0005 with err=29.260363152619718 at it=19
- \* v0\_scn\_mean = 18.379103987412563
- \* MAE = 2.4274710856056787

---



---

For df=7 with 8 scenes, time taken: 102.91

---



---

In df n.8/10 we have 21 scenes

---



---



---



---

- Time interval n.0: [36.44, 36.64]
- \* y\_true: [16.4303266 8.20020738]
- \* v\_ann: [12.271483421325684, 12.262551307678223, 17.156795934620913]

---



---

- Time interval n.1: [36.64, 36.84]

```

* y_true: [18.55044671 6.80018642]
* v_ann: [12.27385997722168, 12.265963554382324, 1
7.156795934620913]

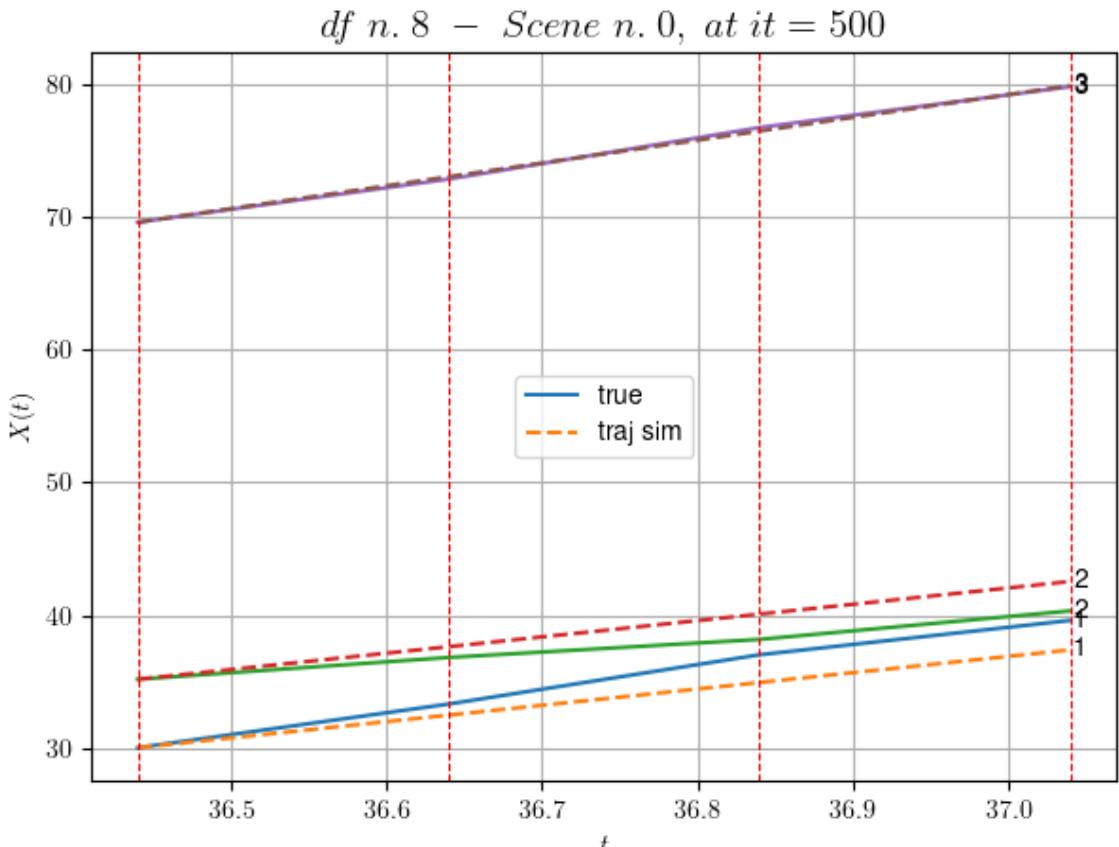
- Time interval n.2: [36.84, 37.04]
* y_true: [12.9262384 10.75446129]
* v_ann: [12.288911819458008, 12.298351287841797, 1
7.156795934620913]

```

```

* err= 1.6049710927806207
* Learning rate NN = 5.904899080633186e-05
* diff = 0.5626202027503780 0.7

```



For scene 0/21

```

* use LR_NN=0.0001 with err=18.59268140498004 at it=19
* v0_scn_mean = 17.927387601911498
* MAE = 1.596266267643144
=====
```

```

- Time interval n.0: [50.24, 50.44]
* y_true: [14.83043604 14.50055453]
* v_ann: [19.543254852294922, 22.69386863708496, 3
0.15766097411076]

```

```

- Time interval n.1: [50.44, 50.64]

```

```

* y_true: [15.35052738 17.38080918]
* v_ann: [16.616546630859375, 16.824087142944336, 3
0.15766097411076]

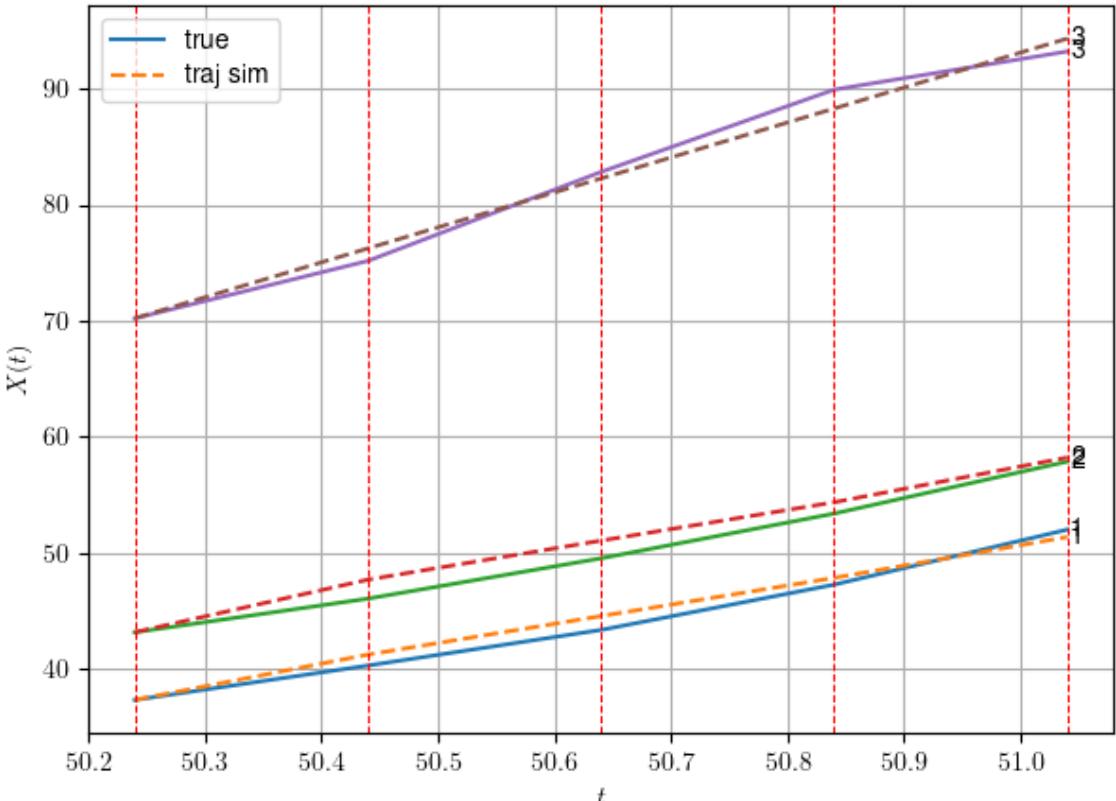
- Time interval n.2: [50.64, 50.84]
* y_true: [19.54078826 19.30097894]
* v_ann: [16.477691650390625, 16.540508270263672, 3
0.15766097411076]

- Time interval n.3: [50.84, 51.04]
* y_true: [23.72114006 22.40641196]
* v_ann: [17.629409790039062, 19.300203323364258, 3
0.15766097411076]

* err= 0.9680939470005558
* Learning rate NN = 0.000478296831715852
* diff = 2 2233859363618436e-06

```

*df n. 8 – Scene n. 1, at it = 500*



For scene 1/21

```

* use LR_NN=0.001 with err=13.845541824722028 at it=19
* v0_scn_mean = 30.148201322742768
* MAE = 0.8093251088369263
=====
```

- Time interval n.0: [102.24, 102.44]

```

* y_true: [22.78095819 15.94092959]
* v_ann: [20.458181381225586, 20.551286697387695, 3
1.34829198332158]

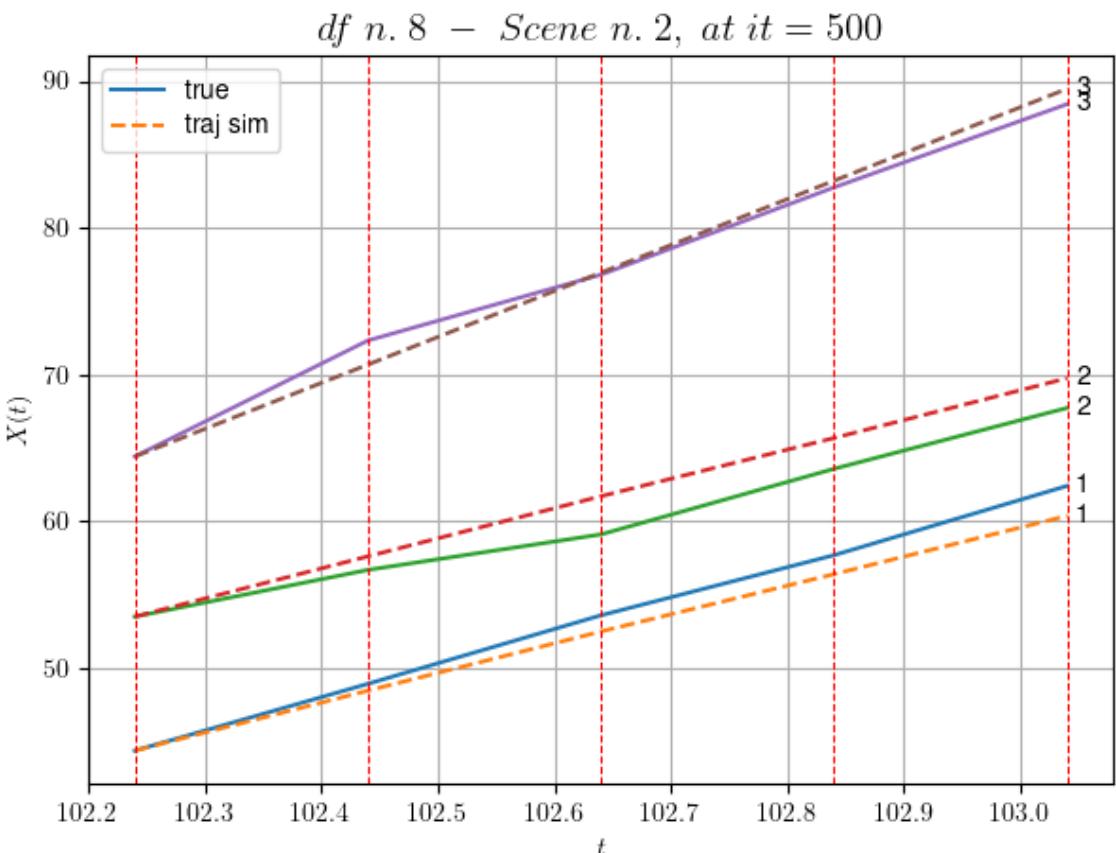
- Time interval n.1: [102.44, 102.64]
* y_true: [23.36120187 12.10080168]
* v_ann: [20.159278869628906, 20.509185791015625, 3
1.34829198332158]

- Time interval n.2: [102.64, 102.84]
* y_true: [20.51121756 22.37162153]
* v_ann: [19.56768798828125, 19.862768173217773, 3
1.34829198332158]

- Time interval n.3: [102.84, 103.04]
* y_true: [23.62167761 20.76175162]
* v_ann: [19.896854400634766, 20.38027000427246, 3
1.34829198332158]

* err= 1.8288339584174593
* Learning rate NN = 0.000239148415857926
* diff = 0.00015571829858829211

```



For scene 2/21

```

* use LR_NN=0.0005 with err=12.556305715655311 at it=19
* v0_scn_mean = 31.26739452485779

```

\* MAE = 1.8288339584174593

---



---

- Time interval n.0: [108.84, 109.04]  
 \* y\_true: [17.9810803 26.65193678]  
 \* v\_ann: [20.745216369628906, 20.66693878173828, 2  
 0.549015112613247]

---

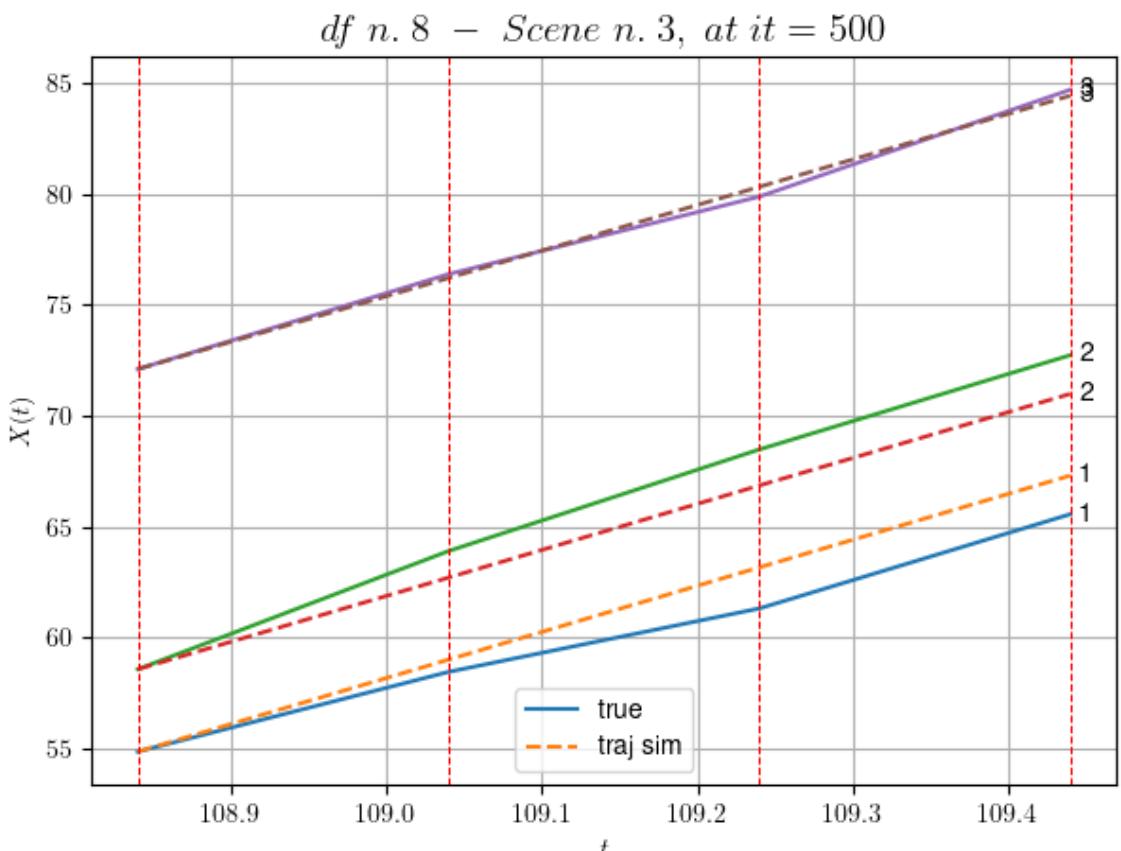
- Time interval n.1: [109.04, 109.24]  
 \* y\_true: [14.30252156 22.9019425 ]  
 \* v\_ann: [20.800886154174805, 20.76174545288086, 2  
 0.549015112613247]

---

- Time interval n.2: [109.24, 109.44]  
 \* y\_true: [21.24158827 21.25204953]  
 \* v\_ann: [20.691036224365234, 20.653369903564453, 2  
 0.549015112613247]

---

\* err= 1.182251794093667  
 \* Learning rate NN = 5.904899080633186e-05  
 \* diff = 0.00029005604823528763



For scene 3/21

\* use LR\_NN=0.0001 with err=6.544763500148538 at it=19  
 \* v0\_scn\_mean = 21.11607378152763

\* MAE = 1.1147227122299965

=====

=====

For scene 4/21

\* use LR\_NN=0.0001 with err=10.229732934267588 at it=19  
\* v0\_scn\_mean = 40.265935976439124  
\* MAE = 0.06886697353859722

=====

=====

- Time interval n.0: [215.24, 215.44]  
\* y\_true: [ 1.34614625 10.42531549]  
\* v\_ann: [18.989688873291016, 21.026554107666016, 1  
5.10068961055018]

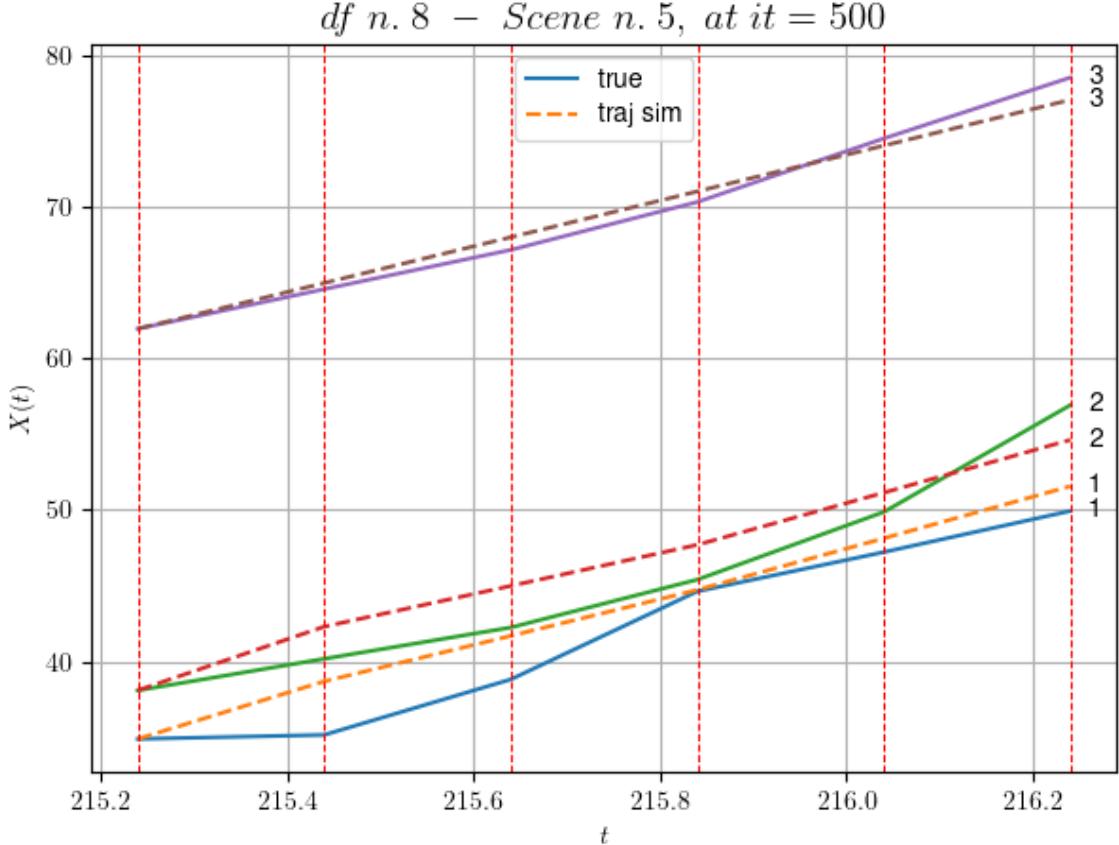
- Time interval n.1: [215.44, 215.64]  
\* y\_true: [18.28906766 10.32533879]  
\* v\_ann: [15.000343322753906, 13.432297706604004, 1  
5.10068961055018]

- Time interval n.2: [215.64, 215.84]  
\* y\_true: [29.02100933 15.78058213]  
\* v\_ann: [15.15902042388916, 13.54601764678955, 15.  
10068961055018]

- Time interval n.3: [215.84, 216.04]  
\* y\_true: [12.95052595 22.3009853 ]  
\* v\_ann: [17.022720336914062, 17.19940185546875, 1  
5.10068961055018]

- Time interval n.4: [216.04, 216.24]  
\* y\_true: [13.56563519 35.25195514]  
\* v\_ann: [17.15971565246582, 17.421283721923828, 1  
5.10068961055018]

\* err= 2.893534294289745  
\* Learning rate NN = 0.0003874204121530056  
\* diff = 0.00020319882997199556



For scene 5/21

- \* use LR\_NN=0.001 with err=43.72302616897119 at it=19
  - \* v0\_scn\_mean = 15.994647564970418
  - \* MAE = 2.8176297520468387
- 
- 

For scene 6/21

- \* use LR\_NN=0.001 with err=25.19249460533781 at it=19
  - \* v0\_scn\_mean = 13.9346521181771
  - \* MAE = 2.042089609506643
- 
- 

- Time interval n.0: [225.24, 225.44]  
 \* y\_true: [9.85023046 1.34614625]  
 \* v\_ann: [8.282713890075684, 8.452948570251465, 13.  
 143683398703434]

---

- Time interval n.1: [225.44, 225.64]  
 \* y\_true: [11.30531094 1.34614625]  
 \* v\_ann: [8.244555473327637, 8.48953914642334, 13.1  
 43683398703434]

---

- Time interval n.2: [225.64, 225.84]

```
* y_true: [12.27536459 1.34614625]
* v_ann: [8.203401565551758, 8.524452209472656, 13.
143683398703434]
```

---

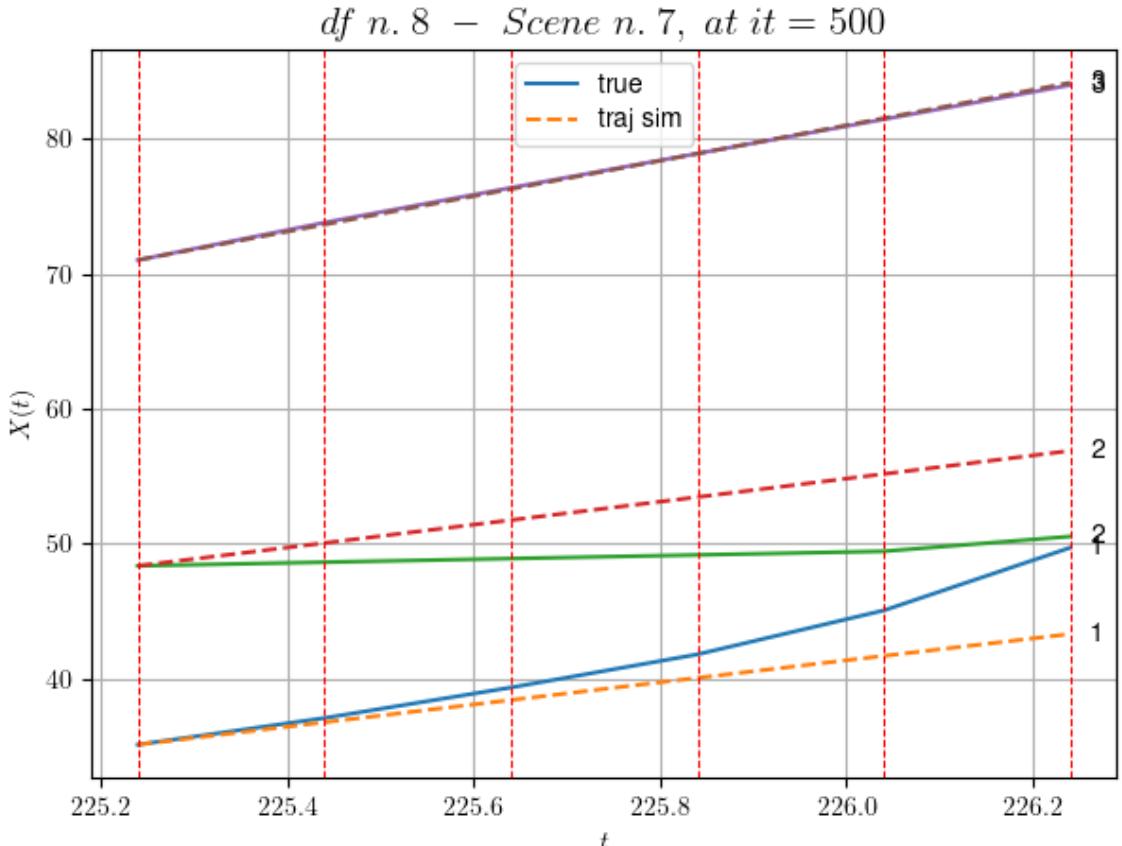
```
- Time interval n.3: [225.84, 226.04]
* y_true: [16.30233516 1.34614625]
* v_ann: [8.160314559936523, 8.559730529785156, 13.
143683398703434]
```

---

```
- Time interval n.4: [226.04, 226.24]
* y_true: [23.251759 5.49560672]
* v_ann: [8.107993125915527, 8.601654052734375, 13.
143683398703434]
```

---

```
* err= 8.775966676903861
* Learning rate NN = 3.874203684972599e-06
* diff = 0.002169015352855297
```



For scene 7/21

```
* use LR_NN=1e-05 with err=52.99132712397571 at it=19
* v0_scn_mean = 14.15506163796904
* MAE = 8.775966676903861
```

---



---

```
- Time interval n.0: [227.04, 227.24]
```

```

* y_true: [1.34614625 11.86069537]
* v_ann: [7.858231544494629, 8.464816093444824, 26.
24315546538644]

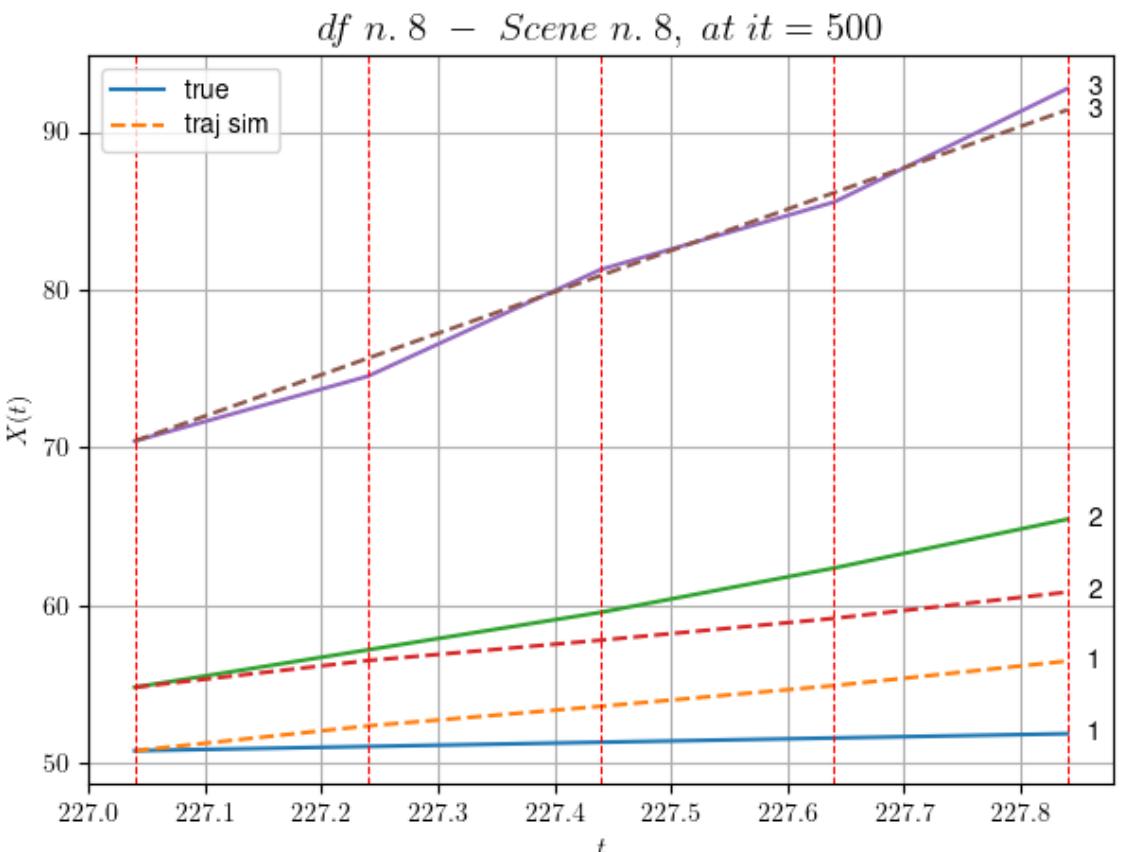
- Time interval n.1: [227.24, 227.44]
* y_true: [1.34614625 11.90074479]
* v_ann: [6.217315673828125, 6.466794013977051, 26.
24315546538644]

- Time interval n.2: [227.44, 227.64]
* y_true: [1.34614625 14.03099458]
* v_ann: [6.564614295959473, 6.911439418792725, 26.
24315546538644]

- Time interval n.3: [227.64, 227.84]
* y_true: [1.34614625 15.45116111]
* v_ann: [7.768466949462891, 8.319108009338379, 26.
24315546538644]

* err= 5.1858486356199505
* Learning rate NN = 0.002391484100371599
* diff = 0.0003471368131124919

```



For scene 8/21  
\* use LR\_NN=0.005 with err=2.822823096494955 at it=19  
\* v0\_scn\_mean = 26.468565968789253

\* MAE = 5.1858486356199505

---

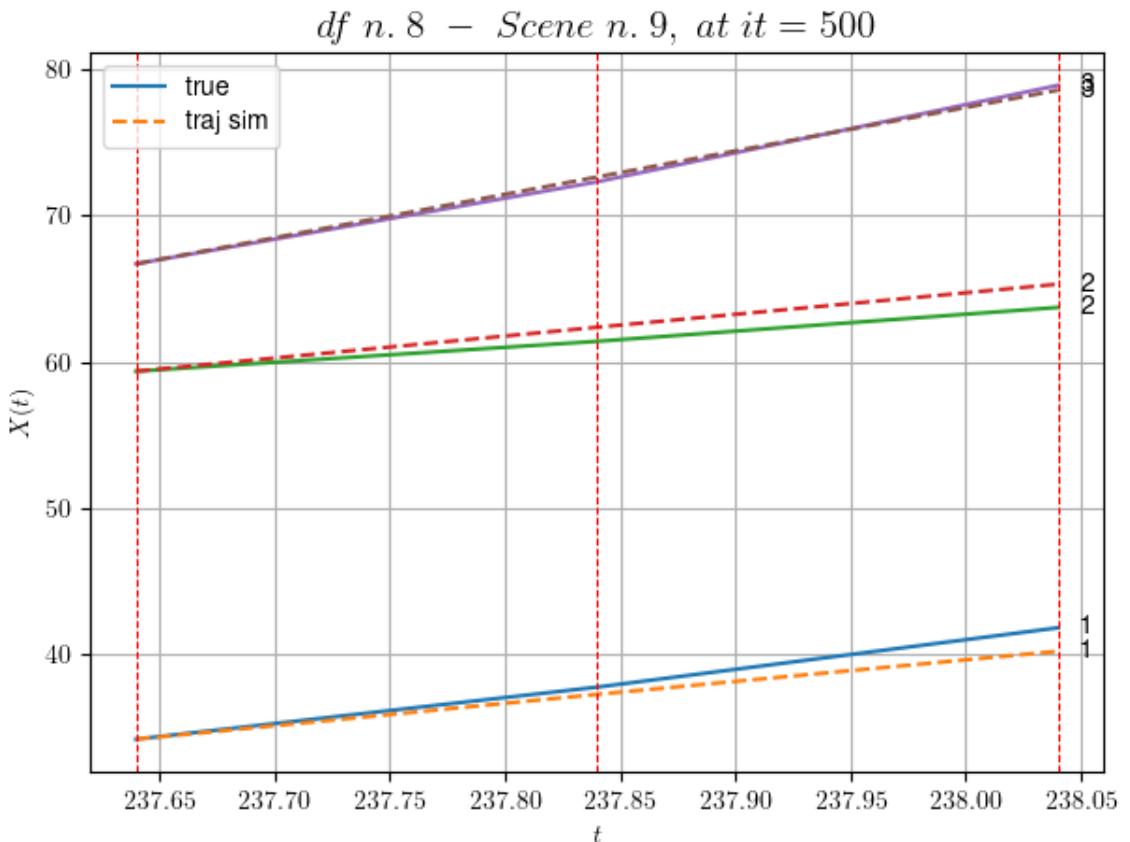


---

```
- Time interval n.0: [237.64, 237.84]
* y_true: [17.80043487 10.22573725]
* v_ann: [15.344884872436523, 15.038838386535645, 2
9.702967492374658]

- Time interval n.1: [237.84, 238.04]
* y_true: [20.29063338 11.60088234]
* v_ann: [14.745081901550293, 14.7421875, 29.702967
492374658]

* err= 0.7197028186293645
* Learning rate NN = 0.00036449998151510954
* diff = 3.032777225131511e-06
```



For scene 9/21

```
* use LR_NN=0.0005 with err=0.4955211715726133 at it=19
* v0_scn_mean = 29.72078942949613
* MAE = 0.3090852306346804
```

---



---

For scene 10/21

```
* use LR_NN=0.0005 with err=4.5582184736796485 at it=19
* v0_scn_mean = 30.119308842016444
* MAE = 0.06462283111266343
```

---

---

For scene 11/21

```
* use LR_NN=0.001 with err=27.781205010956526 at it=19
* v0_scn_mean = 18.114262703953646
* MAE = 1.634555738941341
```

---

---

```
- Time interval n.0: [251.64, 251.84]
 * y_true: [14.32016282 17.2315068]
 * v_ann: [2.902337116299225e-13, 18.62618255615234
4, 19.824906088024314]

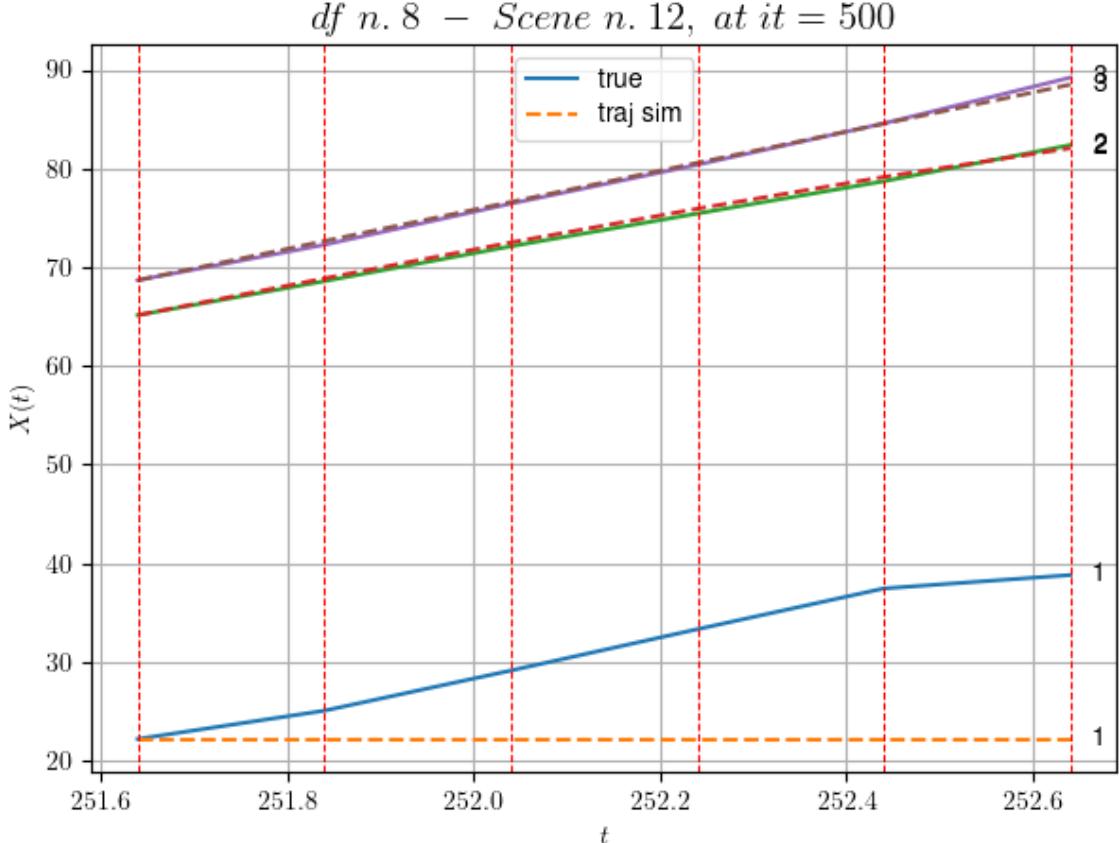
- Time interval n.1: [251.84, 252.04]
 * y_true: [20.34029568 17.65159646]
 * v_ann: [1.1794052876250988e-13, 18.20224571228027
3, 19.824906088024314]

- Time interval n.2: [252.04, 252.24]
 * y_true: [20.93040622 16.61174803]
 * v_ann: [2.230378696402996e-13, 17.10318756103515
6, 19.824906088024314]

- Time interval n.3: [252.24, 252.44]
 * y_true: [20.66049541 16.35178592]
 * v_ann: [6.649117562963769e-13, 16.0952091217041,
19.824906088024314]

- Time interval n.4: [252.44, 252.64]
 * y_true: [6.80019415 18.37232882]
 * v_ann: [2.2457591342117666e-12, 14.59176063537597
7, 19.824906088024314]

* err= 38.32356189161411
* Learning rate NN = 0.0003874204121530056
* diff = 7.099427477896825e-05
```



For scene 12/21

- \* use LR\_NN=0.001 with err=35.793561402286514 at it=19
- \* v0\_scn\_mean = 20.435411265903234
- \* MAE = 11.928131765194946

---



---

For scene 13/21

- \* use LR\_NN=0.0001 with err=2.3011311945036756 at it=19
- \* v0\_scn\_mean = 25.763388470548033
- \* MAE = 26.166964640323645

---



---

- Time interval n.0: [350.64, 350.84]
- \* y\_true: [14.24956692 9.34769854]
- \* v\_ann: [15.95179557800293, 17.21935272216797, 24.0175560316579]

---

- Time interval n.1: [350.84, 351.04]
- \* y\_true: [ 4.06677119 24.77080184]
- \* v\_ann: [15.468221664428711, 16.063684463500977, 24.0175560316579]

---

- Time interval n.2: [351.04, 351.24]

```

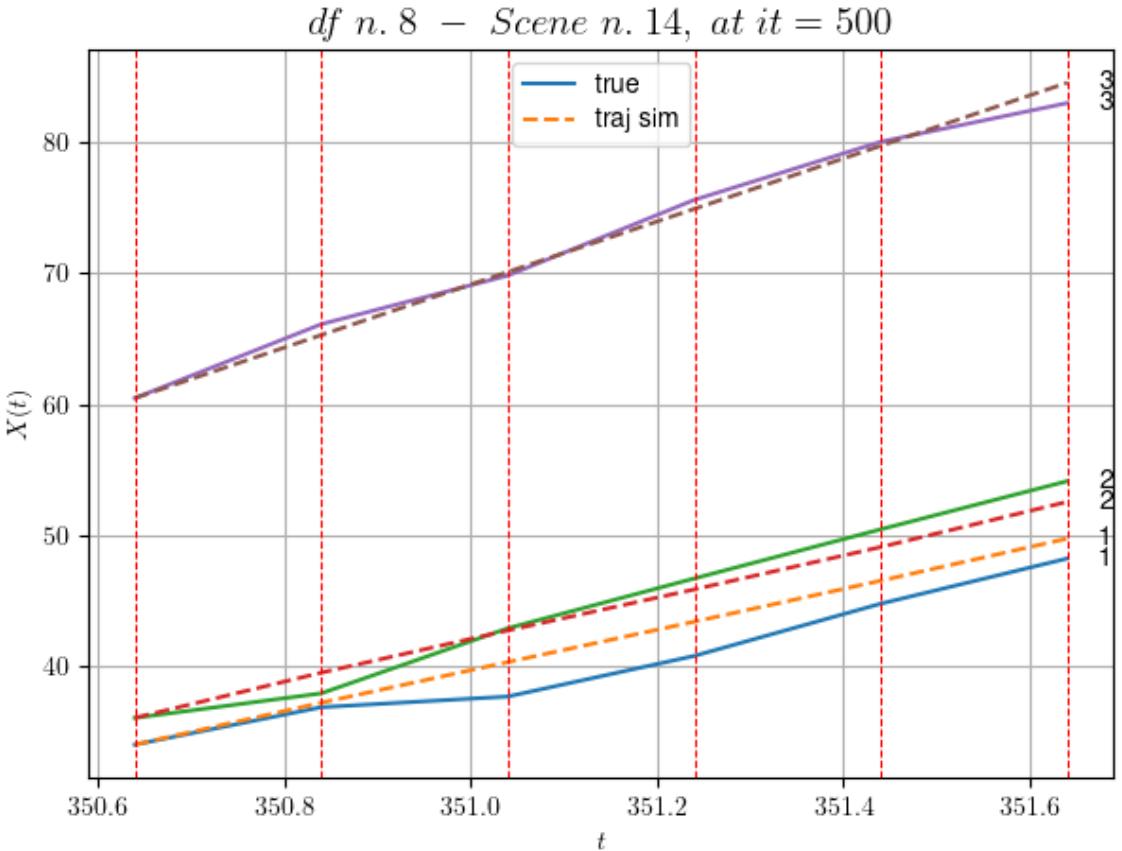
* y_true: [15.46321179 18.97073364]
* v_ann: [15.394719123840332, 15.631829261779785, 2
4.0175560316579]

- Time interval n.3: [351.24, 351.44]
* y_true: [19.89069297 18.71086293]
* v_ann: [15.607460021972656, 16.13608169555664, 2
4.0175560316579]

- Time interval n.4: [351.44, 351.64]
* y_true: [17.2007296 18.34097485]
* v_ann: [16.028581619262695, 17.22640609741211, 2
4.0175560316579]

* err= 1.6868649361726922
* Learning rate NN = 0.0001937102060765028
* diff = 1.8571193588057255e-05

```



For scene 14/21  
\* use LR\_NN=0.0005 with err=16.07284968353766 at it=19  
\* v0\_scn\_mean = 24.37650240115974  
\* MAE = 1.6809092355515345

---



---



---

- Time interval n.0: [368.84, 369.04]

```

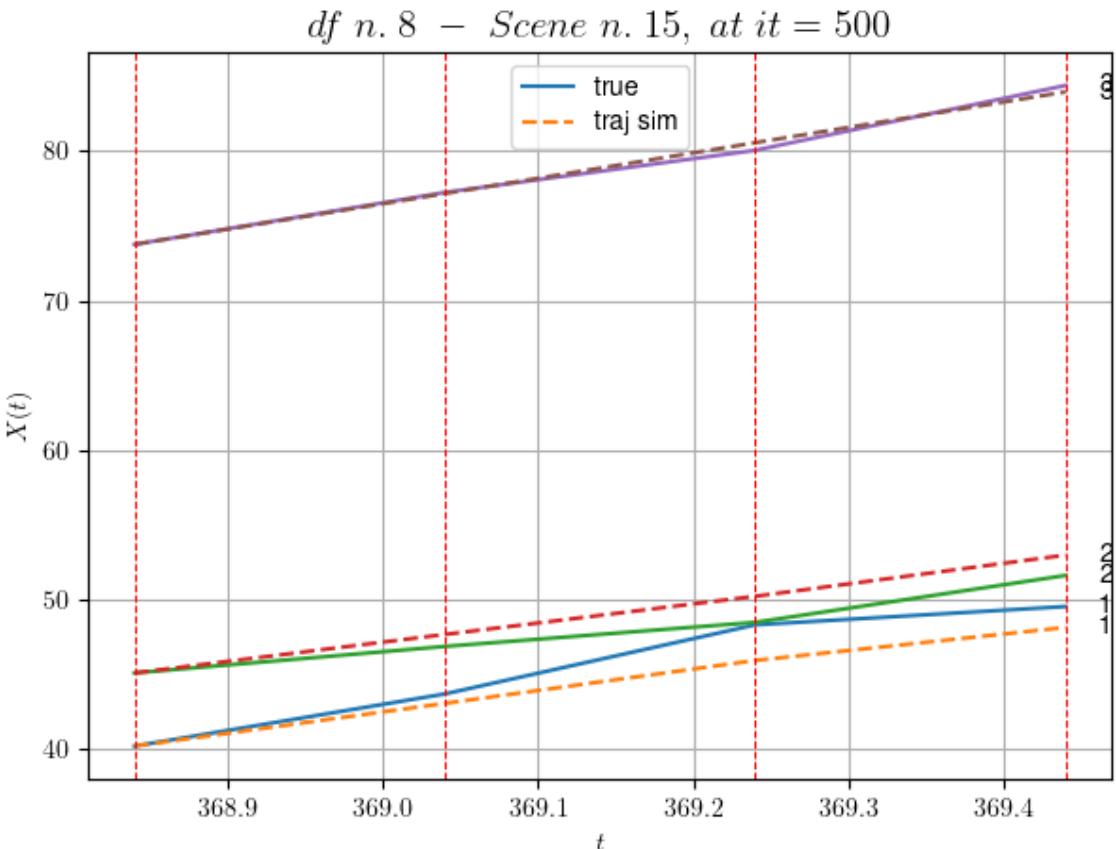
* y_true: [17.45059381 8.87536169]
* v_ann: [14.301308631896973, 12.88708209991455, 1
7.012012000819702]

- Time interval n.1: [369.04, 369.24]
* y_true: [23.11801305 8.05829994]
* v_ann: [14.354511260986328, 12.762439727783203, 1
7.012012000819702]

- Time interval n.2: [369.24, 369.44]
* y_true: [6.12528304 15.69072344]
* v_ann: [11.04975700378418, 13.780930519104004, 1
7.012012000819702]

* err= 1.1676057993767246
* Learning rate NN = 0.0002952449722215533
* diff = 0.00023397388852397505

```



For scene 15/21  
\* use LR\_NN=0.0005 with err=18.08082659535436 at it=19  
\* v0\_scn\_mean = 17.79129069763838  
\* MAE = 1.157363516933463

---



---



---

- Time interval n.0: [414.44, 414.64]

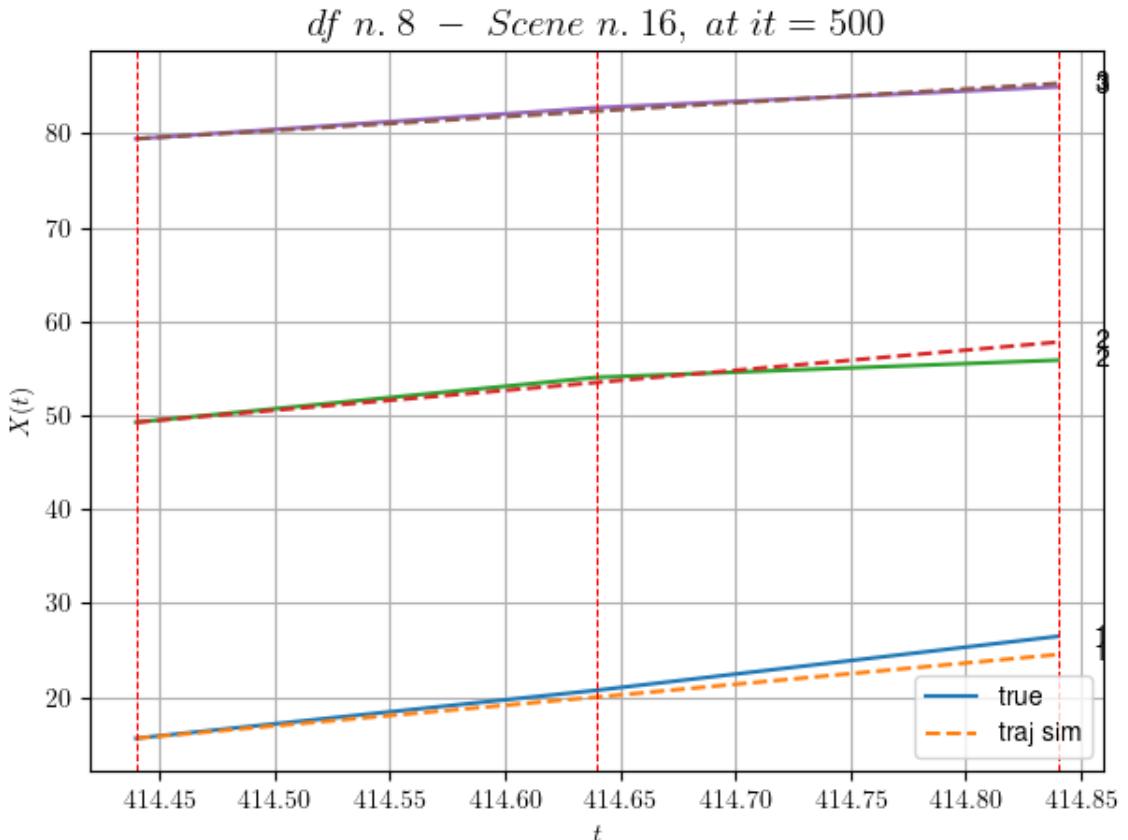
```

* y_true: [25.58017481 23.93124381]
* v_ann: [21.981281280517578, 21.194074630737305, 1
4.740228637605647]

- Time interval n.1: [414.64, 414.84]
* y_true: [28.7103211 9.12051681]
* v_ann: [22.625246047973633, 21.5000057220459, 14.
740228637605647]

* err= 0.9515272580410907
* Learning rate NN = 7.289998757187277e-05
* diff = 0.0003736464048539334

```



For scene 16/21

```

* use LR_NN=0.0001 with err=6.086146105598311 at it=19
* v0_scn_mean = 15.655814234218463
* MAE = 0.9515272580410907

```

```

=====
=====

- Time interval n.0: [477.84, 478.04]
* y_true: [17.90015387 15.74042221]
* v_ann: [18.645965576171875, 19.044443130493164, 2
1.268159302176983]

- Time interval n.1: [478.04, 478.24]

```

```

* y_true: [18.02021575 17.32056356]
* v_ann: [17.409067153930664, 17.14105224609375, 2
1.268159302176983]

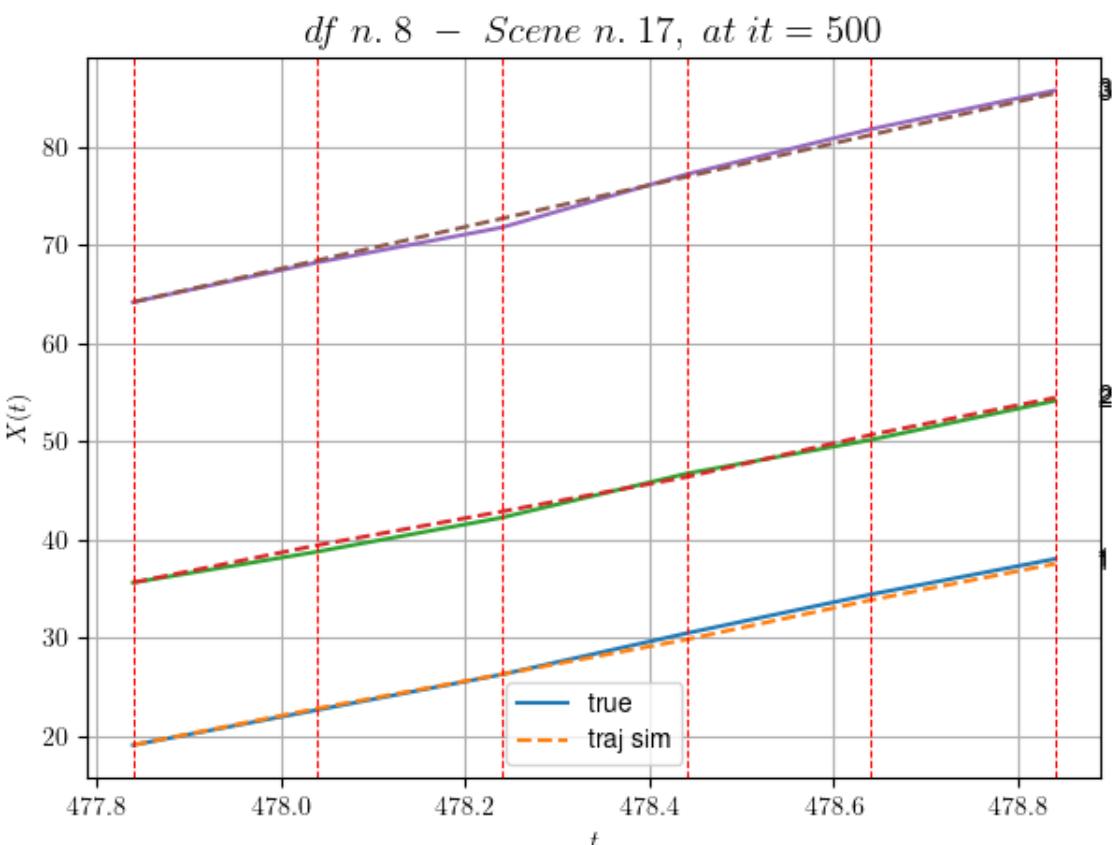
- Time interval n.2: [478.24, 478.44]
* y_true: [20.95033635 22.3908747]
* v_ann: [17.651599884033203, 17.52627944946289, 2
1.268159302176983]

- Time interval n.3: [478.44, 478.64]
* y_true: [19.80040923 17.17076636]
* v_ann: [20.086538314819336, 21.477081298828125, 2
1.268159302176983]

- Time interval n.4: [478.64, 478.84]
* y_true: [18.07046469 19.89107551]
* v_ann: [18.47191619873047, 18.90271759033203, 21.
268159302176983]

* err= 0.2034690774247185
* Learning rate NN = 0.0003874204121530056
* diff = 0.0004128048298052689

```



For scene 17/21  
\* use LR\_NN=0.001 with err=16.03559461538399 at it=19  
\* v0\_scn\_mean = 21.792069352005804

\* MAE = 0.2034690774247185

---



---

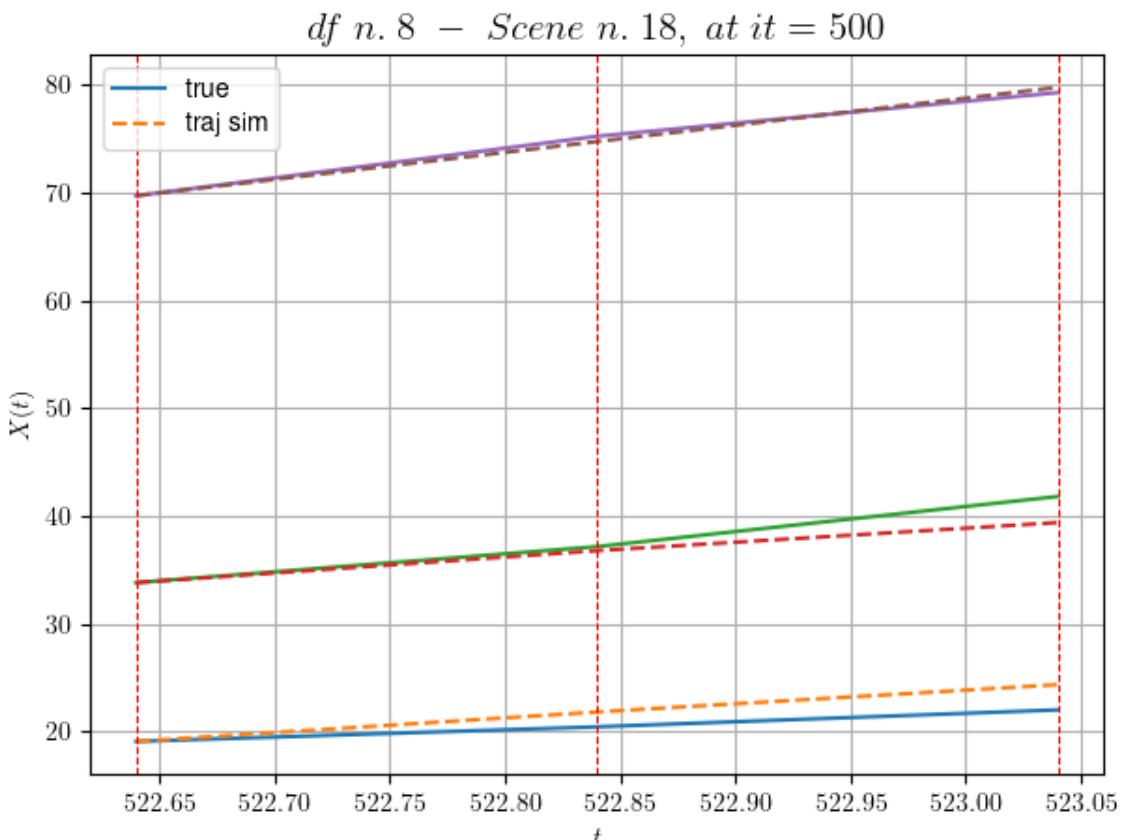
- Time interval n.0: [522.64, 522.84]  
 \* y\_true: [ 6.78505349 16.71042372]  
 \* v\_ann: [13.664837837219238, 14.836836814880371, 2  
 5.155972882592305]

---

- Time interval n.1: [522.84, 523.04]  
 \* y\_true: [ 7.85007105 23.28071684]  
 \* v\_ann: [12.679062843322754, 13.044591903686523, 2  
 5.155972882592305]

---

\* err= 1.5398150462938494  
 \* Learning rate NN = 0.00036449998151510954  
 \* diff = 8.190130341922952e-05



For scene 18/21

\* use LR\_NN=0.0005 with err=0.8970629336843187 at it=19  
 \* v0\_scn\_mean = 25.446614292151665  
 \* MAE = 1.4847523987480018

---



---

- Time interval n.0: [593.04, 593.24]

```
* y_true: [18.14041096 18.46062677]
* v_ann: [18.91355323791504, 19.222055435180664, 2
0.297836048725244]

- Time interval n.1: [593.24, 593.44]
* y_true: [15.67042287 23.16095213]
* v_ann: [18.789546966552734, 18.957059860229492, 2
0.297836048725244]

- Time interval n.2: [593.44, 593.64]
* y_true: [13.25043489 21.00101152]
* v_ann: [19.179672241210938, 19.147184371948242, 2
0.297836048725244]

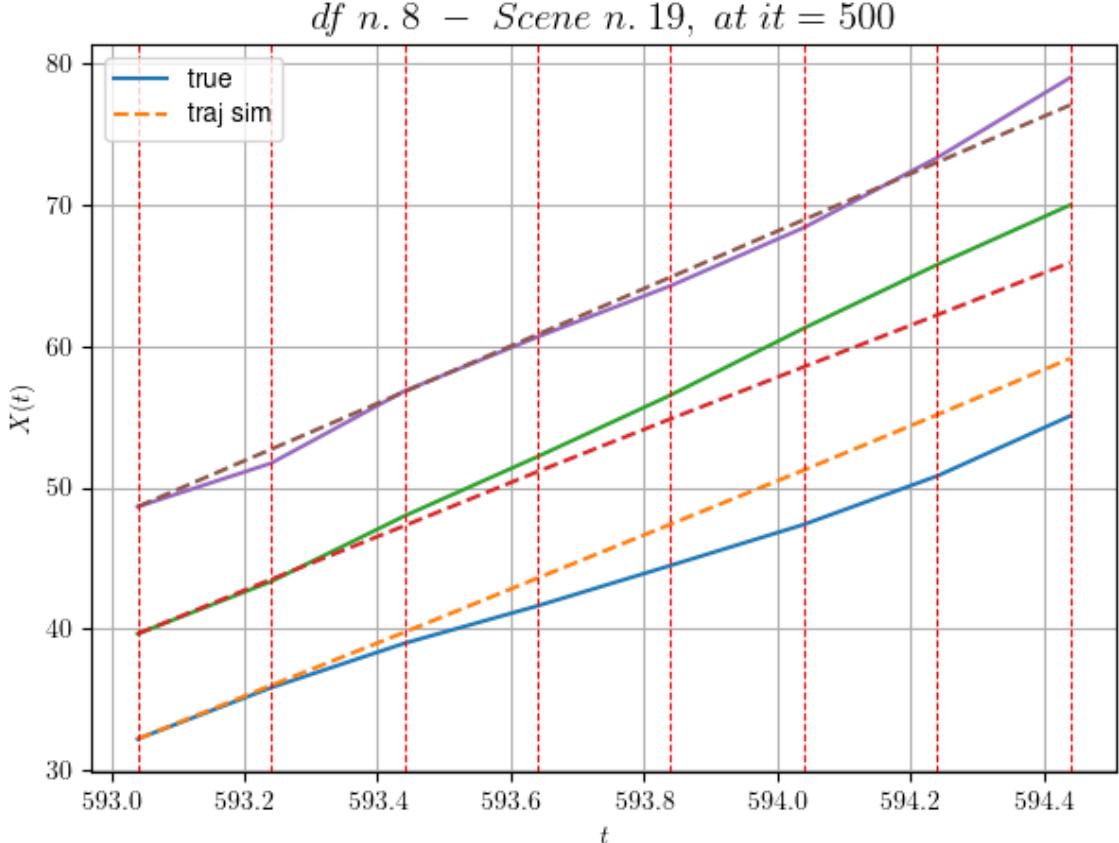
- Time interval n.3: [593.64, 593.84]
* y_true: [14.30052292 21.80126526]
* v_ann: [19.06977081298828, 18.691499710083008, 2
0.297836048725244]

- Time interval n.4: [593.84, 594.04]
* y_true: [14.50059166 23.66159236]
* v_ann: [19.160493850708008, 18.40239715576172, 2
0.297836048725244]

- Time interval n.5: [594.04, 594.24]
* y_true: [17.13492662 22.4617536]
* v_ann: [19.543460845947266, 18.34325408935547, 2
0.297836048725244]

- Time interval n.6: [594.24, 594.44]
* y_true: [21.29116558 21.12188145]
* v_ann: [19.923419952392578, 18.572702407836914, 2
0.297836048725244]

* err= 4.571960501315032
* Learning rate NN = 0.00025418648147024214
* diff = 0.001062276005632607
```



For scene 19/21

- \* use LR\_NN=0.001 with err=30.384435933224736 at it=19
- \* v0\_scn\_mean = 20.87996545019586
- \* MAE = 4.5544894010238135

---



---

- Time interval n.0: [256.44, 256.64]
  - \* y\_true: [ 7.48303167 10.07767618 21.73093279]
  - \* v\_ann: [11.081796646118164, 15.97073745727539, 1  
5.525997161865234, 17.104258674666447]

---

- Time interval n.1: [256.64, 256.84]
  - \* y\_true: [13.09283525 13.17831107 21.42106847]
  - \* v\_ann: [16.08464241027832, 16.003000259399414, 1  
5.225980758666992, 17.104258674666447]

---

- Time interval n.2: [256.84, 257.04]
  - \* y\_true: [11.5255681 16.82586504 17.99104223]
  - \* v\_ann: [16.097585678100586, 15.957904815673828, 1  
5.338647842407227, 17.104258674666447]

---

- Time interval n.3: [257.04, 257.24]
  - \* y\_true: [10.66053629 16.53589178 24.03163218]
  - \* v\_ann: [16.01947021484375, 15.911750793457031, 1

5.320916175842285, 17.104258674666447]

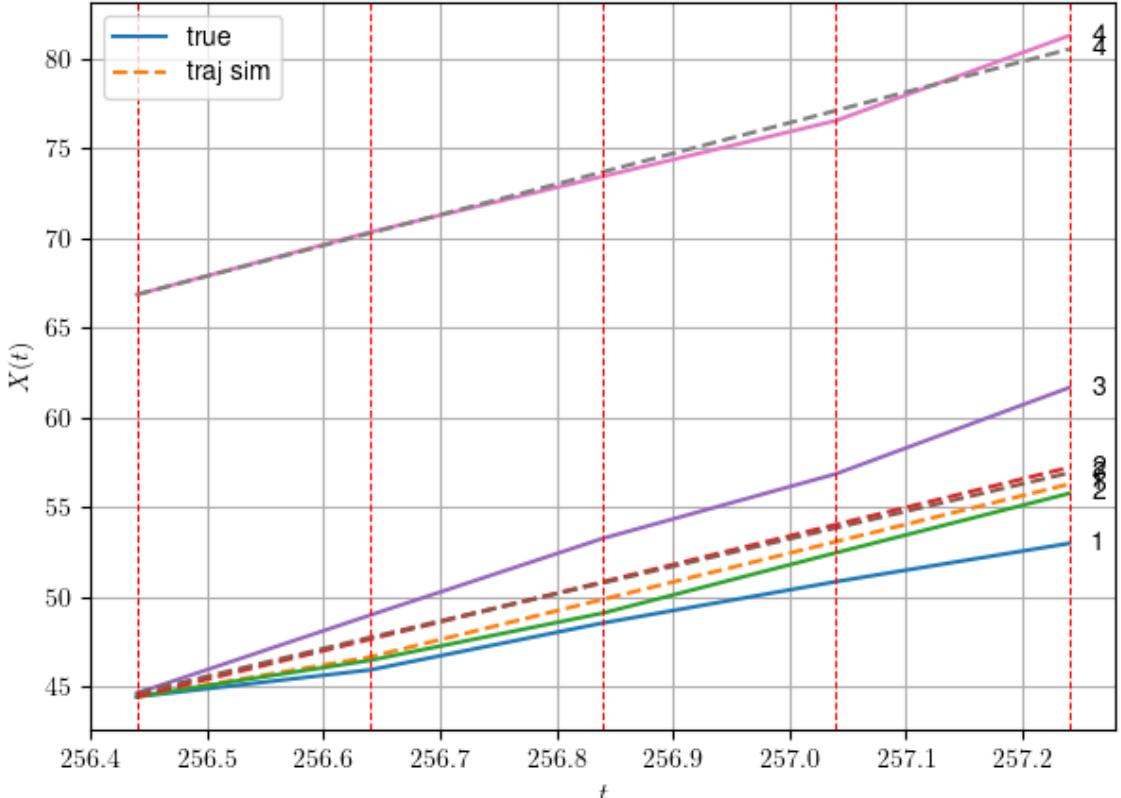
---



---

- \* err= 3.3715224857759845
- \* Learning rate NN = 0.000239148415857926
- \* diff = 0.0008020609802774636

*df n. 8 – Scene n. 20, at it = 500*



For scene 20/21

- \* use LR\_NN=0.0005 with err=23.166904490281155 at it=19
- \* v0\_scn\_mean = 18.13587601624612
- \* MAE = 3.326169296138466

---



---

For df=8 with 21 scenes, time taken: 299.79

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\*\*\*\*\*  
\*\*\*\*\*

In df n. 9/10 we have 9 scenes

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\*\*\*\*\*  
\*\*\*\*\*

For scene 0/9

- \* use LR\_NN=0.0005 with err=38.29462285568108 at it=19
- \* v0\_scn\_mean = 29.139759773968496
- \* MAE = 1.5436299951049337

For scene 1/9  
\* use LR\_NN=0.001 with err=15.251495480117876 at it=19  
\* v0\_scn\_mean = 32.53807527316807  
\* MAE = 0.15164486464629848

---

---

- Time interval n.0: [37.80, 38.00]  
\* y\_true: [21.35828745 27.25004814]  
\* v\_ann: [21.644357681274414, 21.83771514892578, 2  
3.639051069297977]

---

- Time interval n.1: [38.00, 38.20]  
\* y\_true: [19.23626153 17.91519282]  
\* v\_ann: [22.617727279663086, 22.46770668029785, 2  
3.639051069297977]

---

- Time interval n.2: [38.20, 38.40]  
\* y\_true: [24.96063116 28.62771944]  
\* v\_ann: [21.06456184387207, 21.44552230834961, 23.  
639051069297977]

---

- Time interval n.3: [38.40, 38.60]  
\* y\_true: [24.1844348 25.71934895]  
\* v\_ann: [23.281551361083984, 22.87980079650879, 2  
3.639051069297977]

---

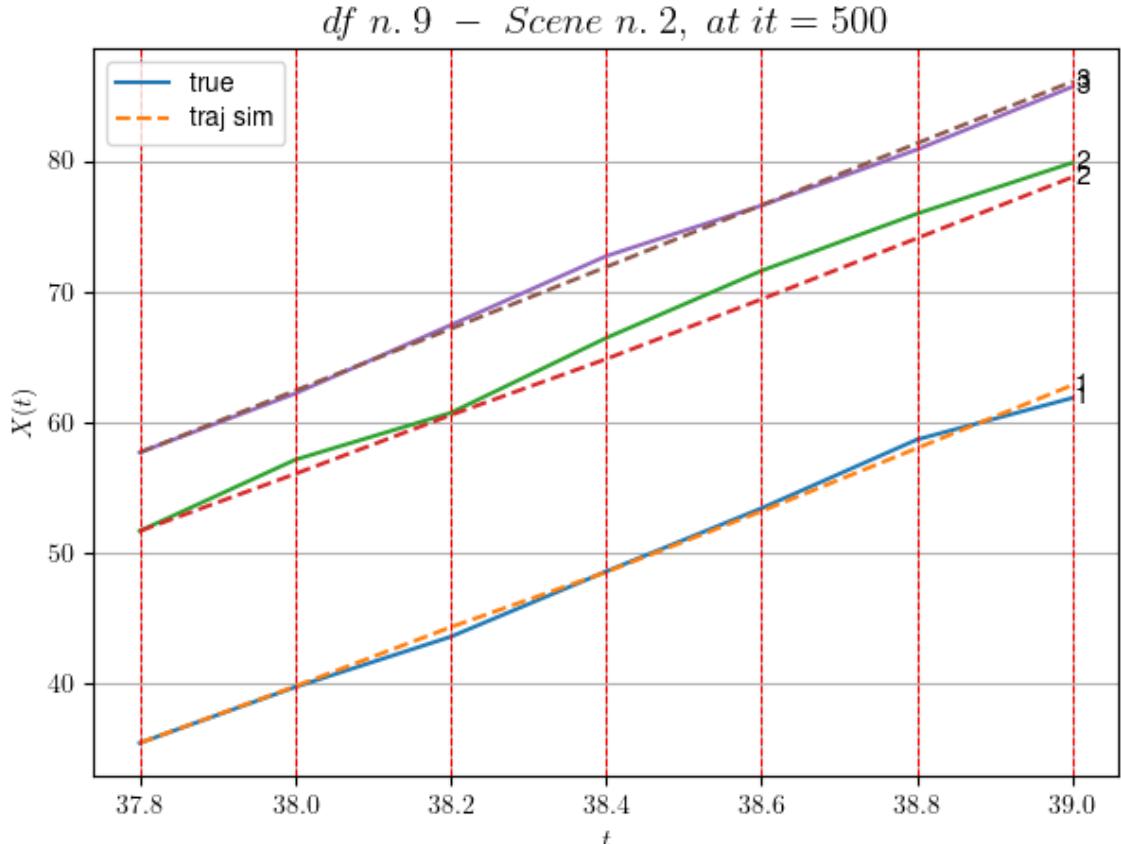
- Time interval n.4: [38.60, 38.80]  
\* y\_true: [26.26418379 21.80127307]  
\* v\_ann: [24.090938568115234, 23.30246353149414, 2  
3.639051069297977]

---

- Time interval n.5: [38.80, 39.00]  
\* y\_true: [15.9216195 19.51476921]  
\* v\_ann: [24.12725830078125, 23.366870880126953, 2  
3.639051069297977]

---

\* err= 0.7839868886967558  
\* Learning rate NN = 0.00031381050939671695  
\* diff = 9.274017651739186e-05



For scene 2/9

- \* use LR\_NN=0.001 with err=42.8734592389061 at it=19
- \* v0\_scn\_mean = 24.02070771954728
- \* MAE = 0.7797364287571821

---



---

- Time interval n.0: [44.40, 44.60]
- \* y\_true: [24.95803839 22.94664651]
- \* v\_ann: [25.40049171447754, 25.37126922607422, 18.016106720508343]

---



---

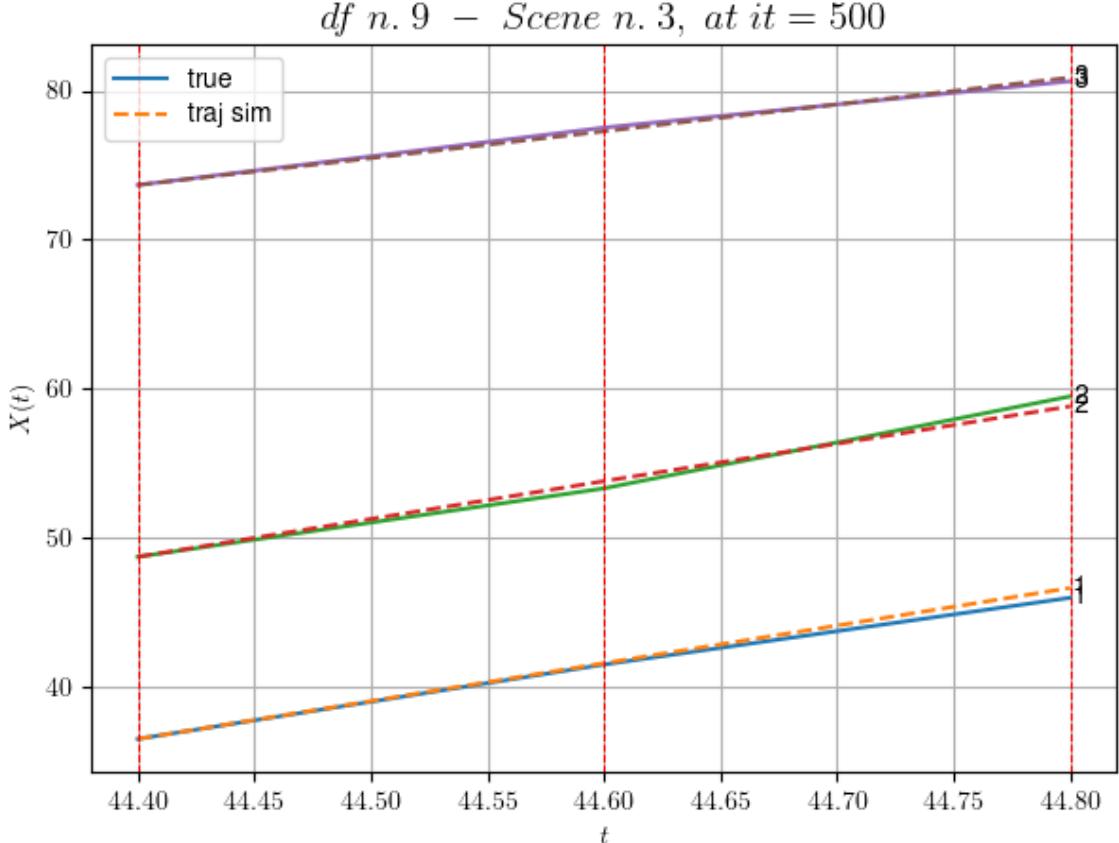
- Time interval n.1: [44.60, 44.80]
- \* y\_true: [22.38974011 30.85088397]
- \* v\_ann: [25.23801040649414, 25.10093879699707, 18.016106720508343]

---



---

- \* err= 0.13786964602226767
- \* Learning rate NN = 7.289998757187277e-05
- \* diff = 0.0001051755849781344



For scene 3/9

- \* use LR\_NN=0.0001 with err=5.527467804084483 at it=19
- \* v0\_scn\_mean = 18.73513977922689
- \* MAE = 0.11862426599858206

---



---

- Time interval n.0: [117.80, 118.00]
- \* y\_true: [26.21501314 26.51617559]
- \* v\_ann: [25.90825653076172, 25.643434524536133, 3  
2.947825633500926]

---



---

- Time interval n.1: [118.00, 118.20]
- \* y\_true: [24.27291409 32.45579962]
- \* v\_ann: [25.940027236938477, 25.688613891601562, 3  
2.947825633500926]

---



---

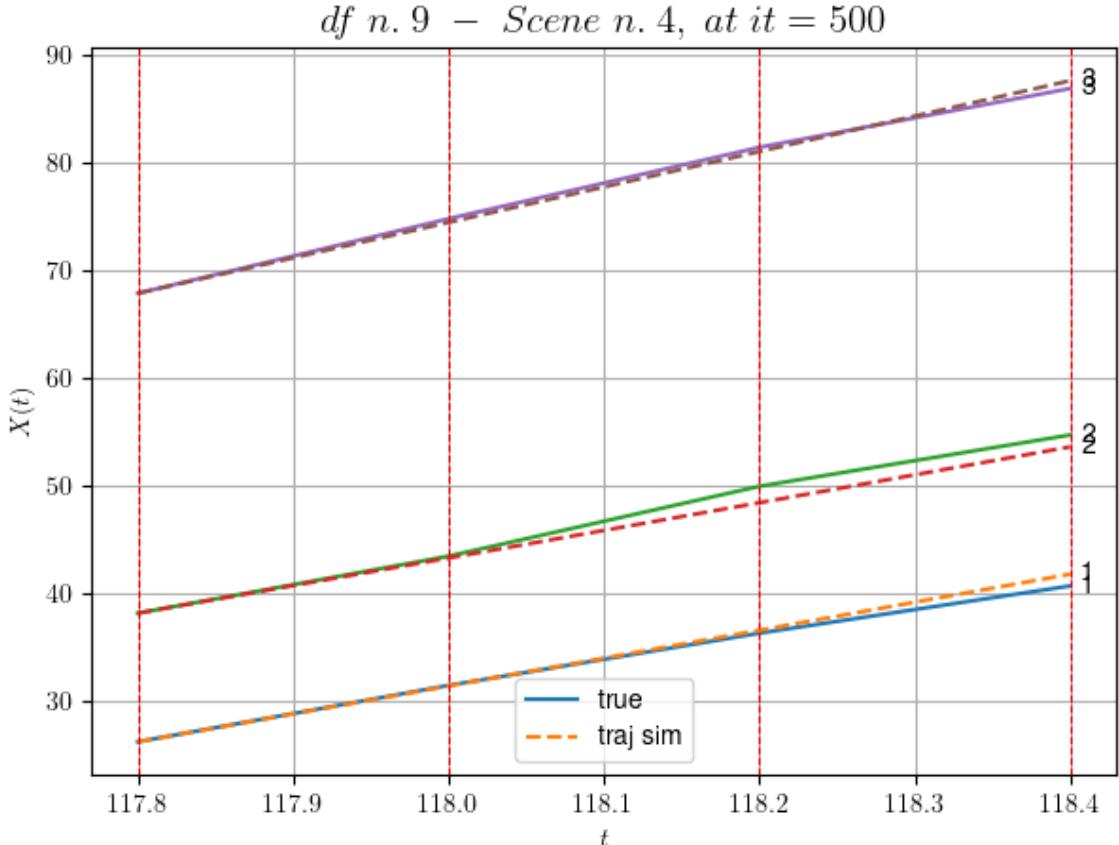
- Time interval n.2: [118.20, 118.40]
- \* y\_true: [21.96072195 23.86482679]
- \* v\_ann: [26.070457458496094, 25.98096466064453, 3  
2.947825633500926]

---



---

- \* err= 0.47188593576868937
- \* Learning rate NN = 2.952449540316593e-05
- \* diff = 8.0005525542437e-05



For scene 4/9

- \* use LR\_NN=5e-05 with err=7.186779321031081 at it=19
- \* v0\_scn\_mean = 32.770956227842
- \* MAE = 0.4376959862761925

---



---

- Time interval n.0: [119.20, 119.40]
  - \* y\_true: [23.20444186 22.52067771]
  - \* v\_ann: [25.082172393798828, 25.04979133605957, 2
  - 6.734589830538276]

---



---

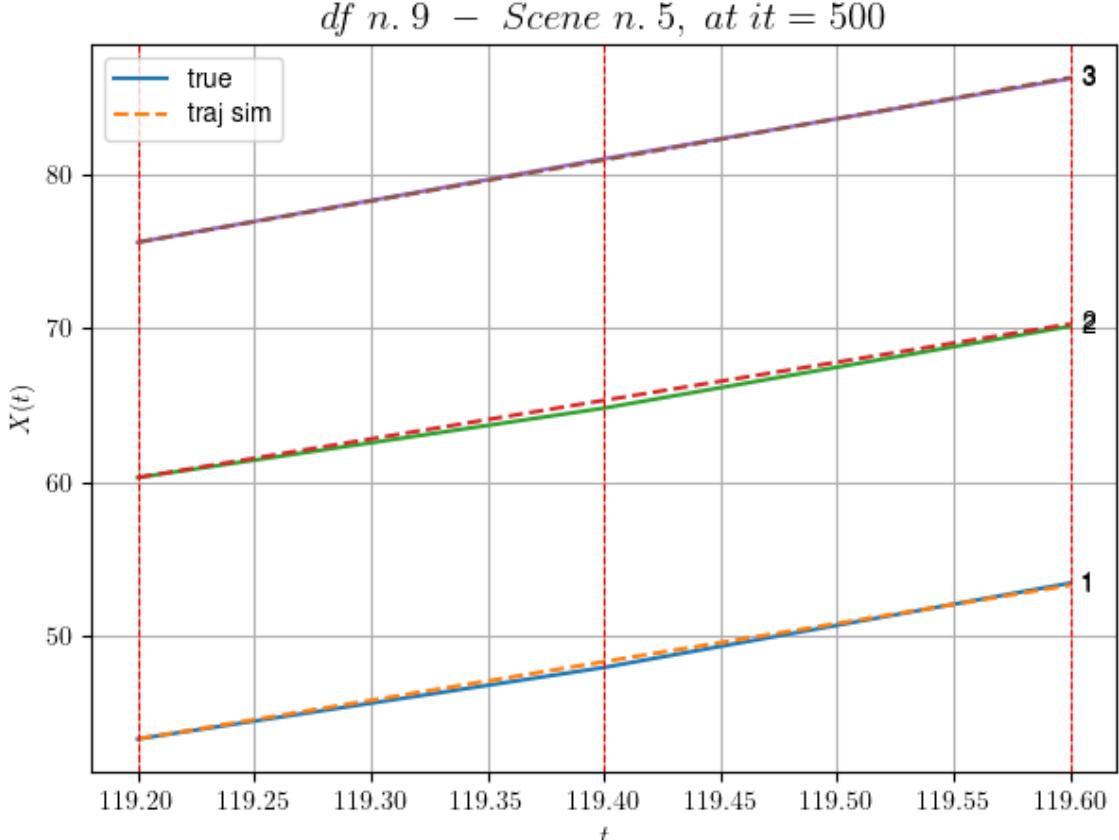
- Time interval n.1: [119.40, 119.60]
  - \* y\_true: [27.39348249 26.5570173 ]
  - \* v\_ann: [24.797855377197266, 24.79277801513672, 2
  - 6.734589830538276]

---



---

- \* err= 0.05018993650364121
- \* Learning rate NN = 7.289998757187277e-05
- \* diff = 2.88271192349851e-05



For scene 5/9

- \* use LR\_NN=0.0001 with err=0.2925237380793113 at it=19
- \* v0\_scn\_mean = 26.930514294096273
- \* MAE = 0.05001939129701168

---



---

- Time interval n.0: [120.20, 120.40]
- \* y\_true: [30.48045094 26.16776015]
- \* v\_ann: [26.67574119567871, 27.09115982055664, 27.34898730757144]

---



---

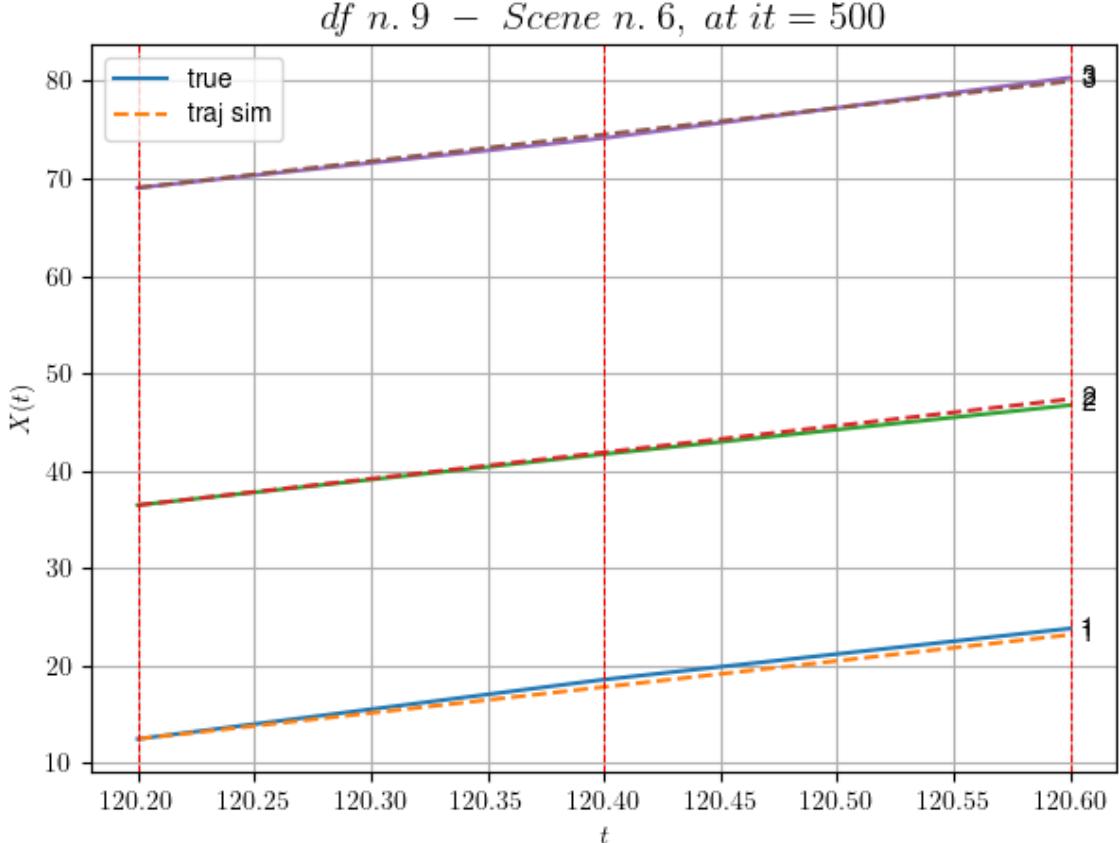
- Time interval n.1: [120.40, 120.60]
- \* y\_true: [26.23623075 25.12734403]
- \* v\_ann: [26.82098960876465, 27.333925247192383, 27.34898730757144]

---



---

- \* err= 0.18899024919780125
- \* Learning rate NN = 3.6449993785936385e-05
- \* diff = 0.0001564513488565844



For scene 6/9

- \* use LR\_NN=5e-05 with err=1.6923092314531925 at it=19
- \* v0\_scn\_mean = 27.508047950092333
- \* MAE = 0.18899024919780125

---



---

- Time interval n.0: [121.40, 121.60]
- \* y\_true: [23.88369588 31.34452269]
- \* v\_ann: [25.720510482788086, 25.61631202697754, 2  
8.65752843457767]

---



---

- Time interval n.1: [121.60, 121.80]
- \* y\_true: [22.66516063 24.1738881 ]
- \* v\_ann: [25.802778244018555, 25.859020233154297, 2  
8.65752843457767]

---



---

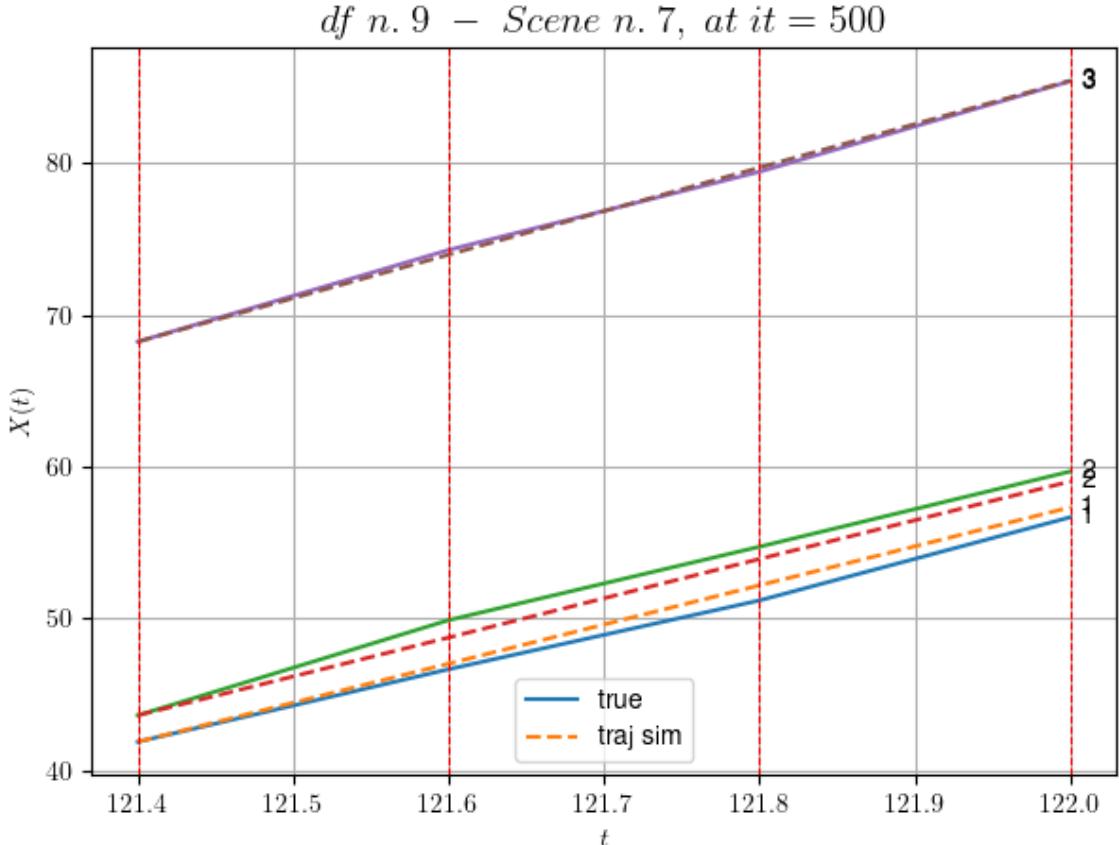
- Time interval n.2: [121.80, 122.00]
- \* y\_true: [27.39865086 24.79107704]
- \* v\_ann: [25.68906593322754, 25.549419403076172, 2  
8.65752843457767]

---



---

- \* err= 0.34340547473958133
- \* Learning rate NN = 5.904899080633186e-05
- \* diff = 1.4868938854051272e-06



For scene 7/9

```
* use LR_NN=0.0001 with err=19.69579862059813 at it=19
* v0_scn_mean = 28.738076668229056
* MAE = 0.3148714687797672
```

---



---

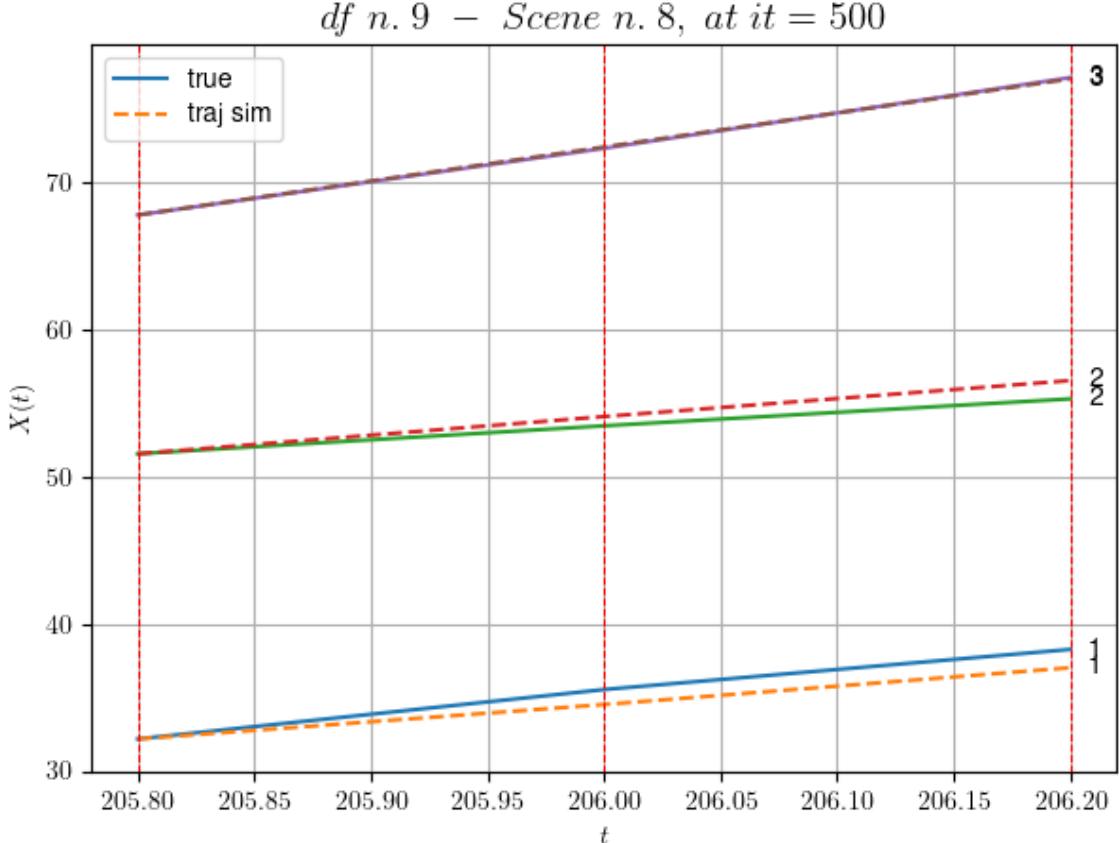
```
- Time interval n.0: [205.80, 206.00]
 * y_true: [16.81767795 9.52209489]
 * v_ann: [11.72094440460205, 12.675712585449219, 2
3.158651176007165]
```

---

```
- Time interval n.1: [206.00, 206.20]
 * y_true: [13.65726133 9.1692133]
 * v_ann: [12.517407417297363, 12.245939254760742, 2
3.158651176007165]
```

---

```
* err= 0.5069875795548894
* Learning rate NN = 0.00036449998151510954
* diff = 0.00041142776807112647
```



For scene 8/9

- \* use LR\_NN=0.0005 with err=1.326473588796376 at it=19
- \* v0\_scn\_mean = 23.569131798284786
- \* MAE = 0.5069875795548894

---



---

For df=9 with 9 scenes, time taken: 103.11

---



---

In df n.10/10 we have 22 scenes

---



---

- Time interval n.0: [25.72, 25.92]
- \* y\_true: [19.85100065 23.2716 ]
- \* v\_ann: [24.036218643188477, 23.948413848876953, 1 9.70878358322818]

---



---

- Time interval n.1: [25.92, 26.12]
- \* y\_true: [21.59125574 29.46240542]
- \* v\_ann: [23.17035484313965, 22.92607879638672, 19. 70878358322818]

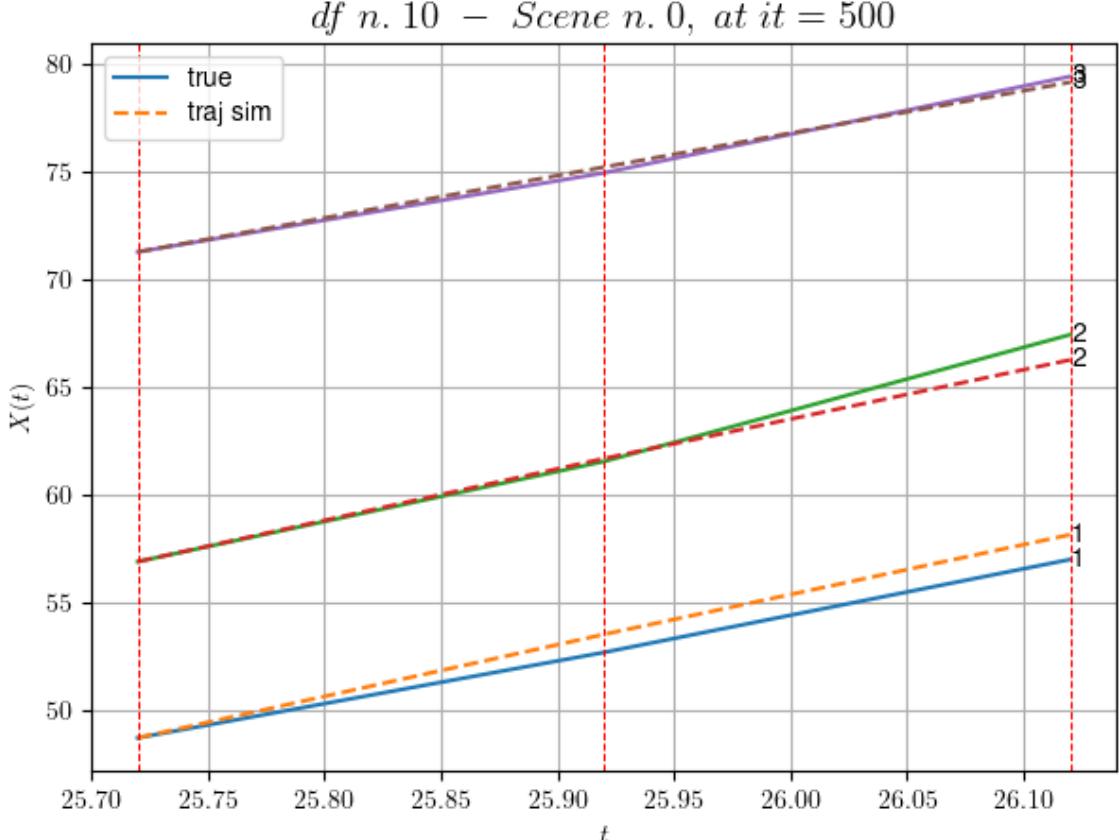
---



---

\* err= 0.3962827933328806

\* Learning rate NN = 0.00036449998151510954  
 \* diff = 3.253690358540062e-05



For scene 0/22

\* use LR\_NN=0.0005 with err=2.80043979500711 at it=19  
 \* v0\_scn\_mean = 20.326256106181148  
 \* MAE = 0.3962827933328806

---



---

- Time interval n.0: [71.72, 71.92]
  - \* y\_true: [25.44045996 0.68637625]
  - \* v\_ann: [15.875864028930664, 17.07916831970215, 2 4.696180100224435]

---

- Time interval n.1: [71.92, 72.12]
  - \* y\_true: [ 7.65710886 16.8398502 ]
  - \* v\_ann: [13.61022663116455, 19.516435623168945, 2 4.696180100224435]

---

- Time interval n.2: [72.12, 72.32]
  - \* y\_true: [ 0.68637625 22.9307169 ]
  - \* v\_ann: [14.383580207824707, 19.68478012084961, 2 4.696180100224435]

---

- Time interval n.3: [72.32, 72.52]

```

* y_true: [6.45821063 27.07107802]
* v_ann: [16.297618865966797, 19.493335723876953, 2
4.696180100224435]

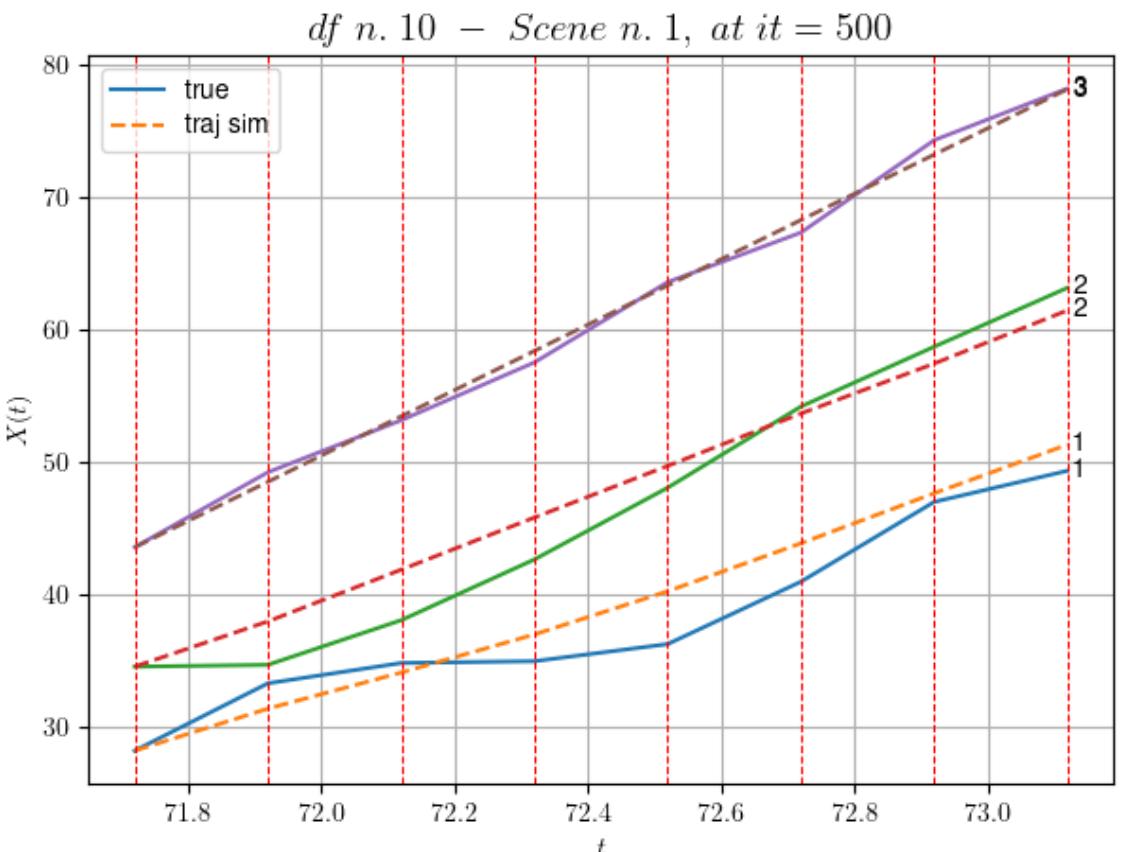
- Time interval n.4: [72.52, 72.72]
* y_true: [23.5506867 30.63154479]
* v_ann: [18.10795021057129, 19.756628036499023, 2
4.696180100224435]

- Time interval n.5: [72.72, 72.92]
* y_true: [30.10113572 22.57136168]
* v_ann: [18.882831573486328, 18.84469985961914, 2
4.696180100224435]

- Time interval n.6: [72.92, 73.12]
* y_true: [11.75053045 22.24158734]
* v_ann: [18.335304260253906, 20.089160919189453, 2
4.696180100224435]

* err= 3.4643476841358964
* Learning rate NN = 1.2709323527815286e-05
* diff = 0.006650392676090799

```



For scene 1/22  
\* use LR\_NN=5e-05 with err=13.36646817986985 at it=19  
\* v0\_scn\_mean = 25.014409056080943

\* MAE = 3.4643476841358964

---



---

- Time interval n.0: [120.92, 121.12]  
 \* y\_true: [2.40007998 4.01291198]  
 \* v\_ann: [8.55378246307373, 8.572556495666504, 19.8  
 7543626344988]

---

- Time interval n.1: [121.12, 121.32]  
 \* y\_true: [3.94779745 3.96114827]  
 \* v\_ann: [6.66935396194458, 6.5950212478637695, 19.  
 87543626344988]

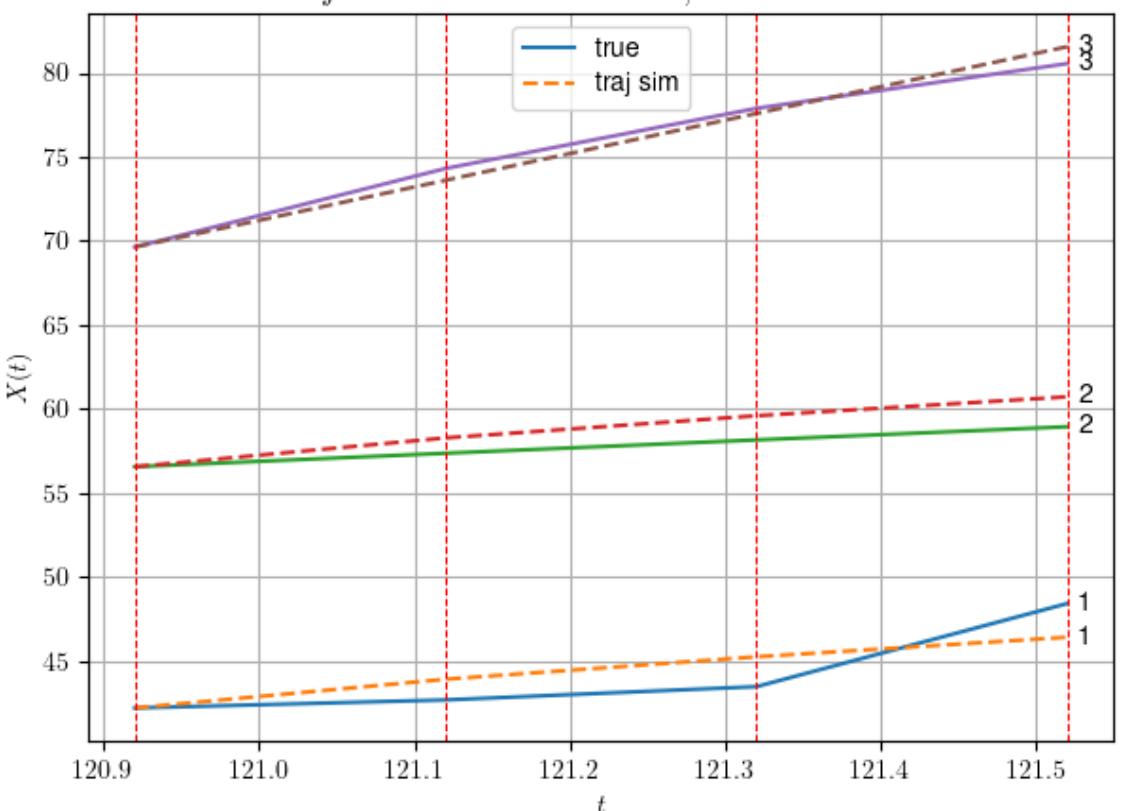
---

- Time interval n.2: [121.32, 121.52]  
 \* y\_true: [24.74097787 3.92663913]  
 \* v\_ann: [5.827238082885742, 5.635151386260986, 19.  
 87543626344988]

---

\* err= 1.3637210228365364  
 \* Learning rate NN = 0.0005904899444431067  
 \* diff = 0.00010797751704716418

*df n. 10 – Scene n. 2, at it = 500*



For scene 2/22

\* use LR\_NN=0.001 with err=6.8258808788263385 at it=19  
 \* v0\_scn\_mean = 20.48290963307194

\* MAE = 1.324957440582965

---



---

- Time interval n.0: [122.12, 122.32]  
 \* y\_true: [20.84138029 3.6661027 ]  
 \* v\_ann: [8.923686027526855, 9.322758674621582, 27.  
 527679985064857]

---

- Time interval n.1: [122.32, 122.52]  
 \* y\_true: [11.80149783 9.92593948]  
 \* v\_ann: [12.252900123596191, 11.070547103881836, 2  
 7.527679985064857]

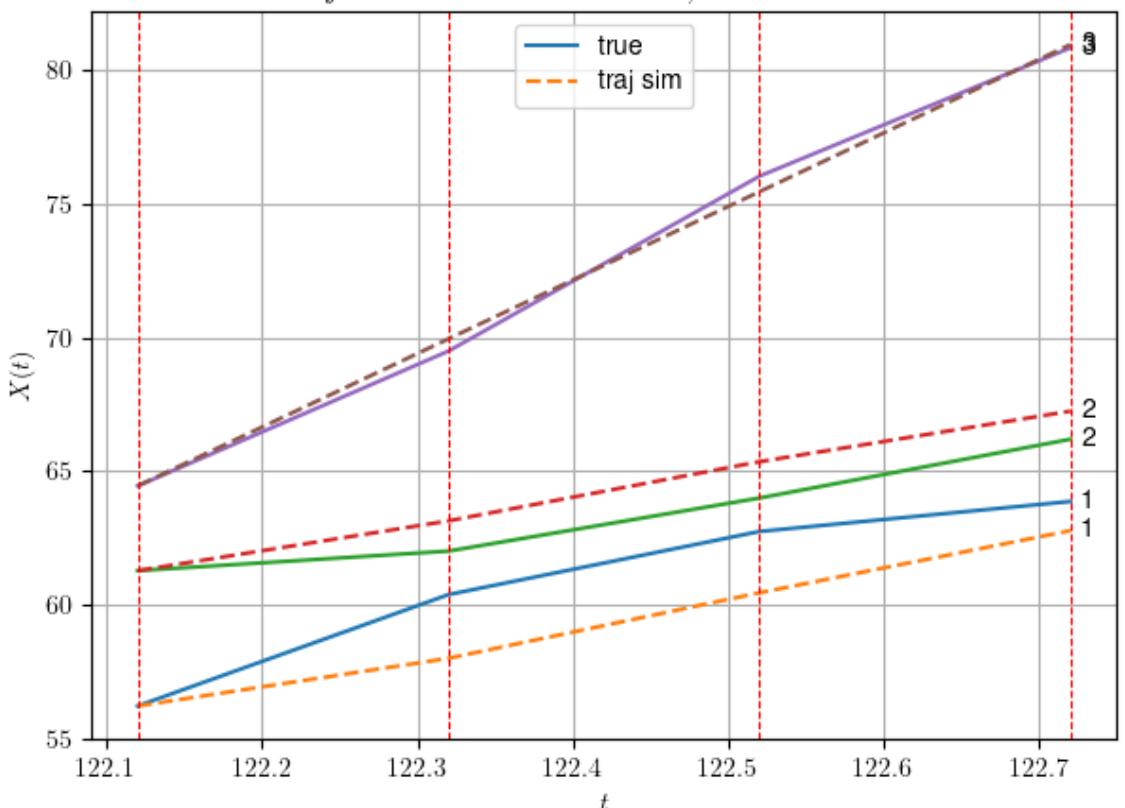
---

- Time interval n.2: [122.52, 122.72]  
 \* y\_true: [ 5.61571017 11.00089954]  
 \* v\_ann: [11.63029670715332, 9.454046249389648, 27.  
 527679985064857]

---

\* err= 1.4103484196761202  
 \* Learning rate NN = 0.0029524494893848896  
 \* diff = 0.00015125320731090852

*df n. 10 – Scene n. 3, at it = 500*



For scene 3/22

\* use LR\_NN=0.005 with err=5.07392486896467 at it=19

```
* vθ_scn_mean = 27.67601907495927
* MAE = 1.2844594065395174
```

---



---

```
- Time interval n.0: [194.52, 194.72]
 * y_true: [18.69097642 14.73135237]
 * v_ann: [21.321218490600586, 20.468326568603516, 1
5.38504666298677]
```

---

```
- Time interval n.1: [194.72, 194.92]
 * y_true: [17.84107996 20.91213867]
 * v_ann: [18.105323791503906, 18.852964401245117, 1
5.38504666298677]
```

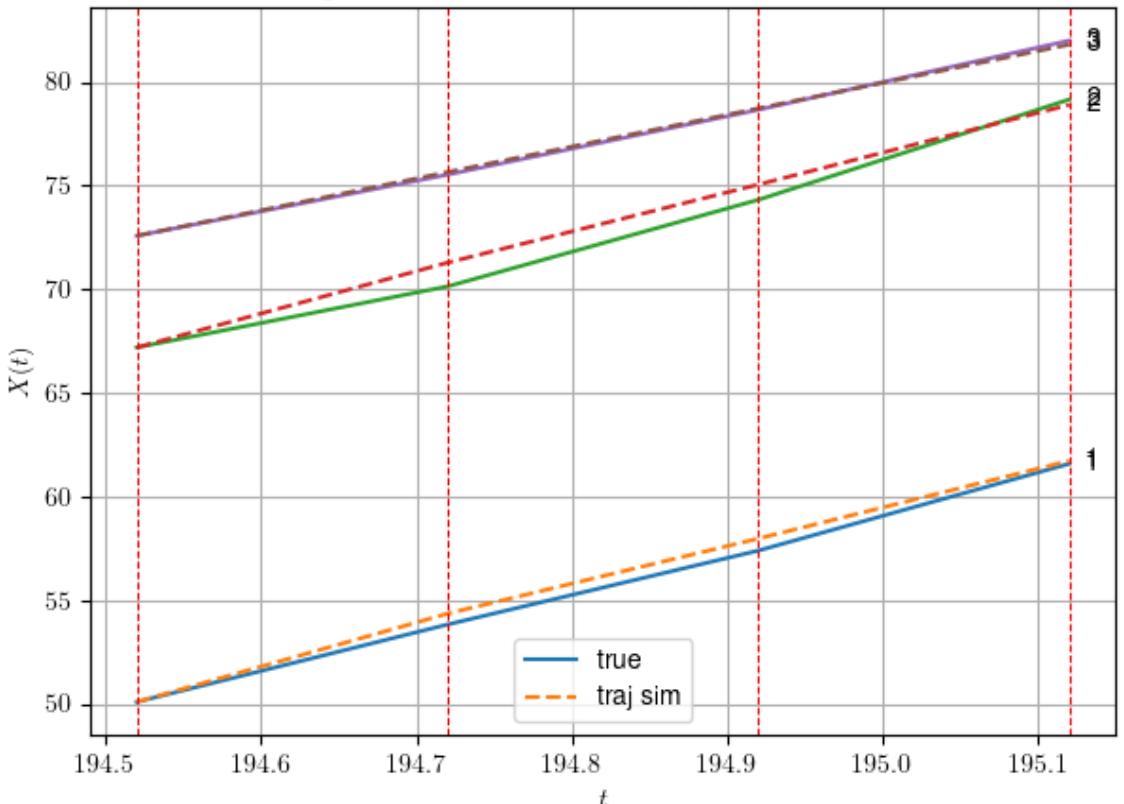
---

```
- Time interval n.2: [194.92, 195.12]
 * y_true: [20.95142105 24.20273885]
 * v_ann: [18.758169174194336, 19.227575302124023, 1
5.38504666298677]
```

---

```
* err= 0.21786858873767798
* Learning rate NN = 0.0005904899444431067
* diff = 2.51400726160081002e-06
```

*df n. 10 – Scene n. 4, at it = 500*



For scene 4/22

\* use LR\_NN=0.001 with err=16.529539804531463 at it=19

```
* vθ_scn_mean = 16.261943207027606
* MAE = 0.2119159106790499
```

```
=====
=====
```

- Time interval n.0: [201.52, 201.72]  
\* y\_true: [45.67726396 25.9301702 ]  
\* v\_ann: [29.21828842163086, 29.401466369628906, 2  
5.797423357466553]

```


```

- Time interval n.1: [201.72, 201.92]  
\* y\_true: [22.15536429 29.26032799]  
\* v\_ann: [29.41946792602539, 30.089969635009766, 2  
5.797423357466553]

```


```

- Time interval n.2: [201.92, 202.12]  
\* y\_true: [30.43022185 23.25036083]  
\* v\_ann: [29.303367614746094, 29.684356689453125, 2  
5.797423357466553]

```


```

- Time interval n.3: [202.12, 202.32]  
\* y\_true: [33.22042439 22.87050849]  
\* v\_ann: [29.16786766052246, 29.419578552246094, 2  
5.797423357466553]

```


```

- Time interval n.4: [202.32, 202.52]  
\* y\_true: [33.45065979 24.47068757]  
\* v\_ann: [29.101028442382812, 29.287067413330078, 2  
5.797423357466553]

```


```

- Time interval n.5: [202.52, 202.72]  
\* y\_true: [28.37081651 28.03104175]  
\* v\_ann: [29.077985763549805, 29.2724552154541, 25.  
797423357466553]

```


```

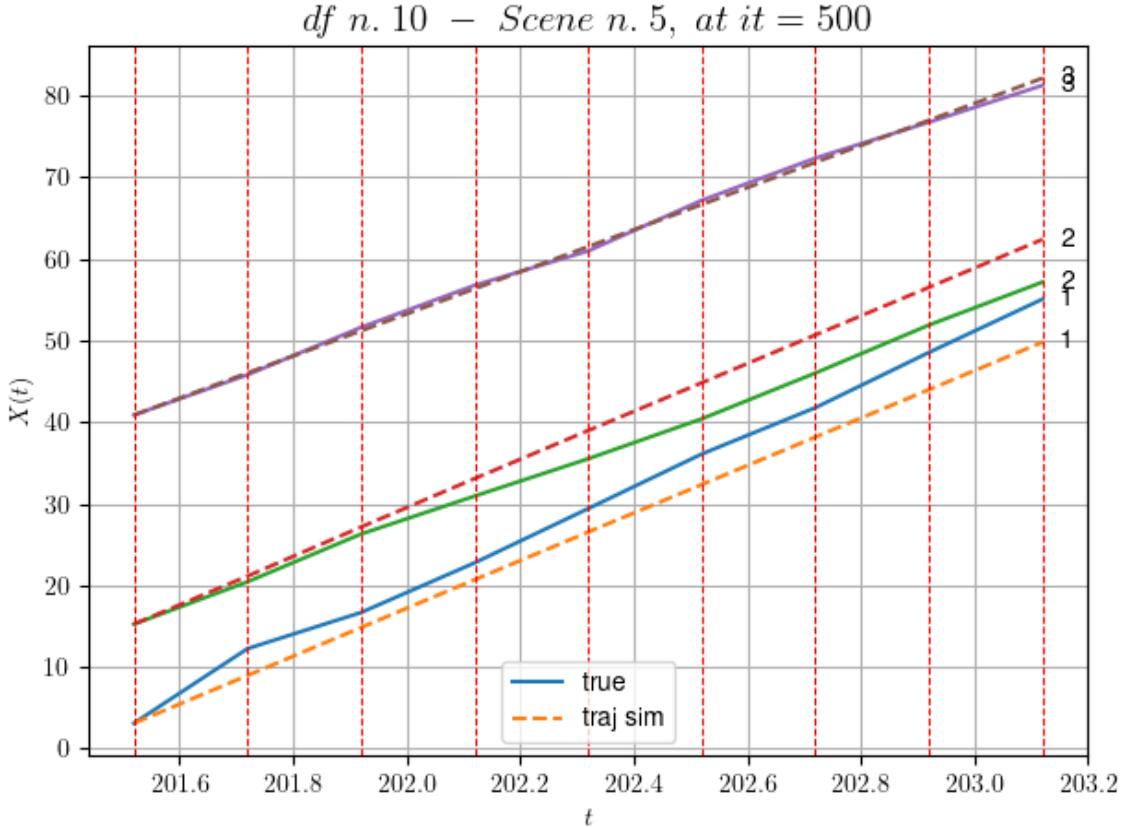
- Time interval n.6: [202.72, 202.92]  
\* y\_true: [33.85129081 29.41136895]  
\* v\_ann: [29.05613899230957, 29.172771453857422, 2  
5.797423357466553]

```


```

- Time interval n.7: [202.92, 203.12]  
\* y\_true: [32.65166271 26.3315156 ]  
\* v\_ann: [29.09571647644043, 29.378488540649414, 2  
5.797423357466553]

\* err= 7.861371218779027  
 \* Learning rate NN = 2.058910467894748e-05



For scene 5/22

\* use LR\_NN=0.0001 with err=169.86519523104747 at it=19  
 \* v0\_scn\_mean = 26.049577767331932  
 \* MAE = 7.849092444807533

---



---

- Time interval n.0: [210.12, 210.32]  
 \* y\_true: [23.65050773 21.02104774]  
 \* v\_ann: [23.605955123901367, 24.724557876586914, 2  
 4.382899423201234]

---



---



---

- Time interval n.1: [210.32, 210.52]  
 \* y\_true: [27.53081175 21.02121012]  
 \* v\_ann: [21.890565872192383, 22.67007064819336, 2  
 4.382899423201234]

---

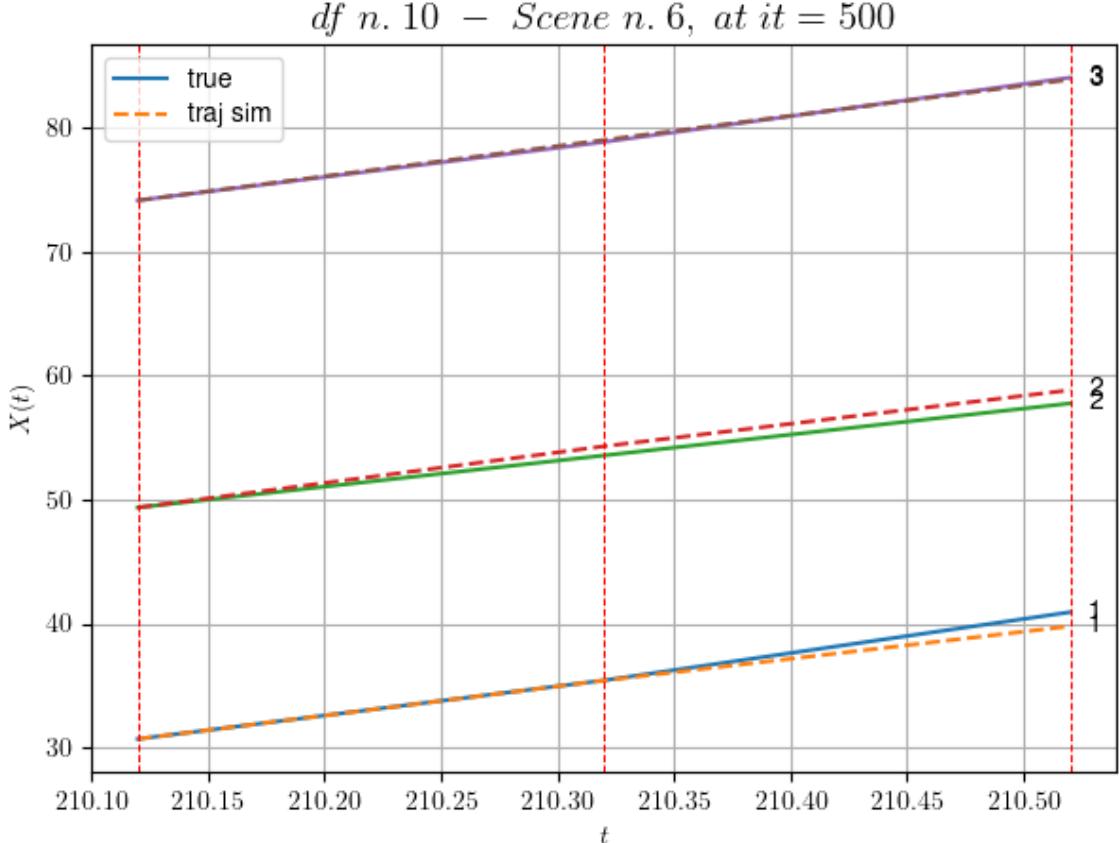


---



---

\* err= 0.33790362228227044  
 \* Learning rate NN = 0.00036449998151510954  
 \* diff = 0.0007360012707531283



For scene 6/22

- \* use LR\_NN=0.0005 with err=2.0111040365726516 at it=19
- \* v0\_scn\_mean = 24.719925205613553
- \* MAE = 0.33790362228227044

---



---

- Time interval n.0: [236.52, 236.72]
- \* y\_true: [22.75077388 14.36119092]
- \* v\_ann: [25.32623291015625, 22.489044189453125, 24.94426075613373]

---

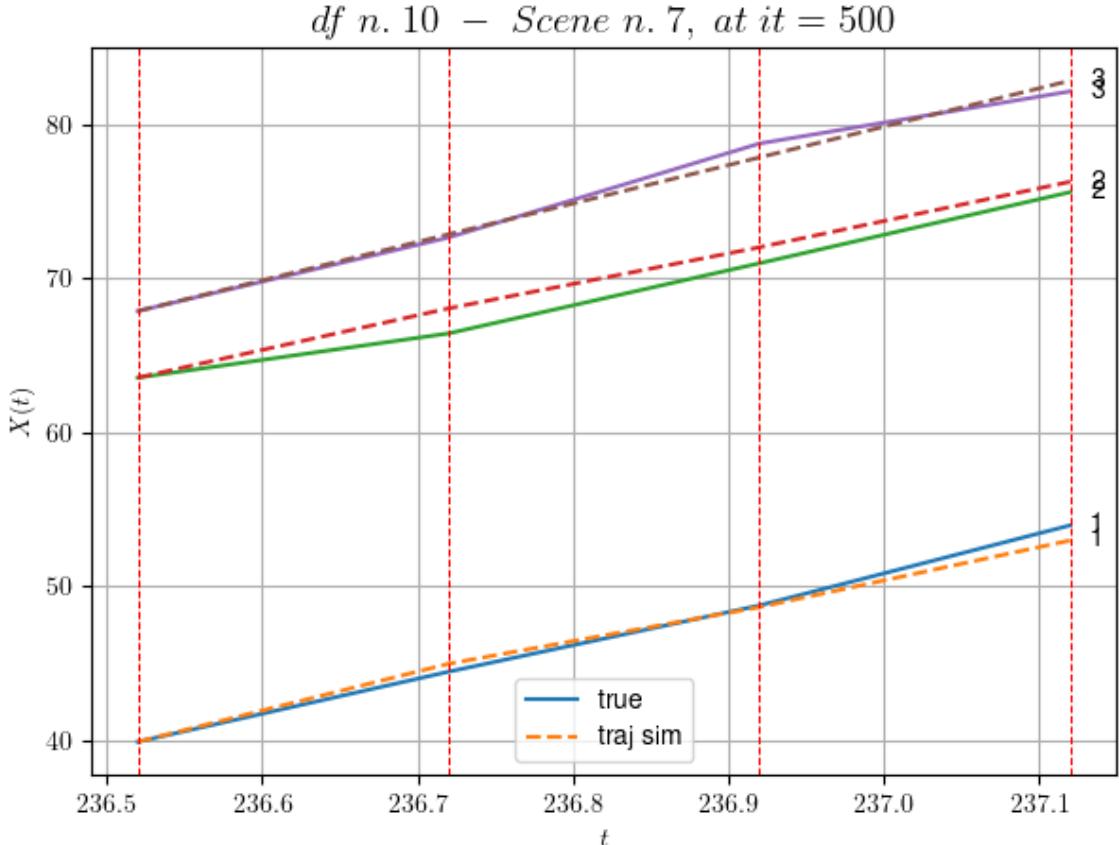
- Time interval n.1: [236.72, 236.92]
- \* y\_true: [21.51093715 22.77208028]
- \* v\_ann: [18.38767433166504, 19.8380069732666, 24.94426075613373]

---

- Time interval n.2: [236.92, 237.12]
- \* y\_true: [26.0213192 23.10241688]
- \* v\_ann: [21.668821334838867, 21.295087814331055, 24.94426075613373]

---

- \* err= 0.5633913912956164
- \* Learning rate NN = 0.0005904899444431067
- \* diff = 0.00020846860729306638



For scene 7/22

- \* use LR\_NN=0.001 with err=8.504277770374712 at it=19
- \* v0\_scn\_mean = 25.247604883774017
- \* MAE = 0.4673076767710816

---



---

For scene 8/22

- \* use LR\_NN=0.001 with err=1.9274224306565684 at it=19
- \* v0\_scn\_mean = 26.093055213926842
- \* MAE = 0.3021279062032094

---



---

- Time interval n.0: [317.32, 317.52]
  - \* y\_true: [14.46061508 5.00523108]
  - \* v\_ann: [9.890533447265625, 9.751202583312988, 5.959391366535909]

---

- Time interval n.1: [317.52, 317.72]
  - \* y\_true: [10.48047894 8.66542797]
  - \* v\_ann: [9.861530303955078, 9.689748764038086, 5.959391366535909]

---

- Time interval n.2: [317.72, 317.92]

```

* y_true: [5.95030099 13.38070893]
* v_ann: [9.76278018951416, 9.546982765197754, 5.95
9391366535909]

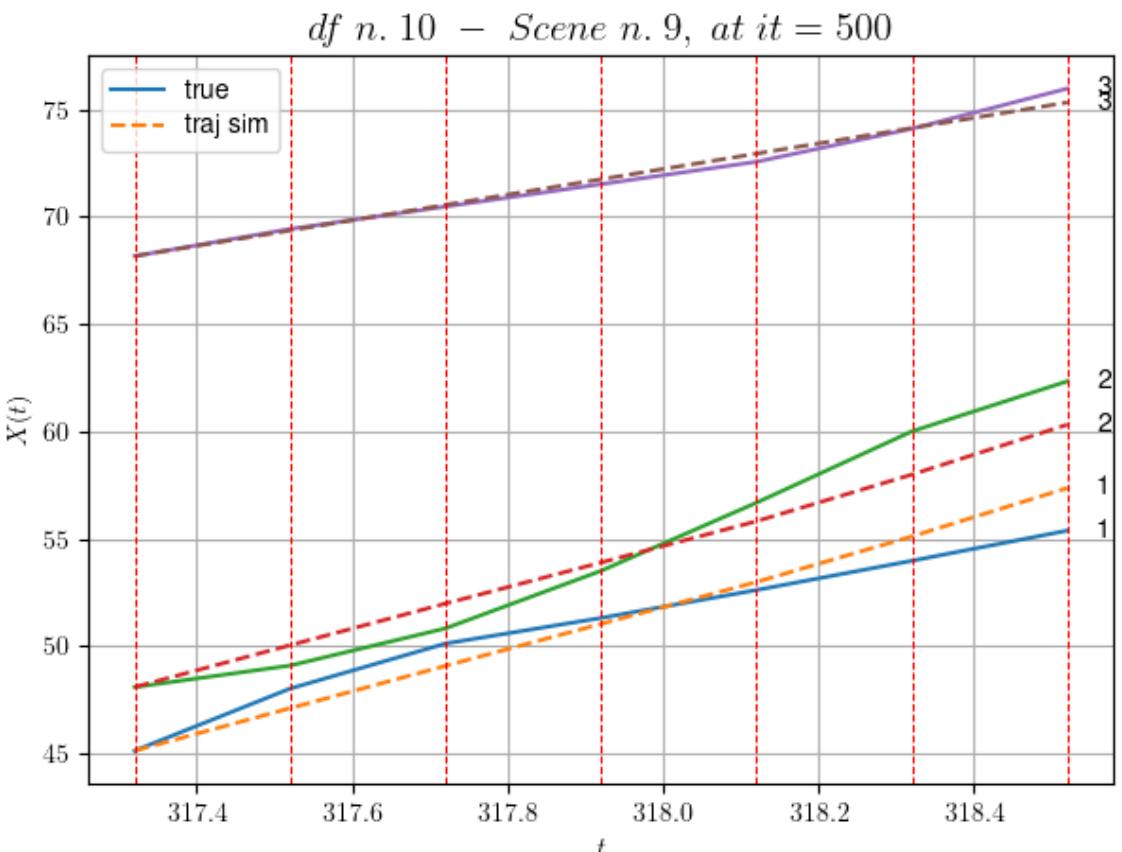
- Time interval n.3: [317.92, 318.12]
* y_true: [6.50033899 15.86094106]
* v_ann: [9.755158424377441, 9.608715057373047, 5.9
59391366535909]

- Time interval n.4: [318.12, 318.32]
* y_true: [6.81537877 16.61109559]
* v_ann: [10.603715896606445, 10.864721298217773,
5.959391366535909]

- Time interval n.5: [318.32, 318.52]
* y_true: [7.02540529 11.65083477]
* v_ann: [11.274831771850586, 11.628003120422363,
5.959391366535909]

* err= 0.9152104537683258
* Learning rate NN = 0.0015690524596720934
* diff = 1.69403642238386e-05

```



For scene 9/22  
\* use LR\_NN=0.005 with err=105.18948182097284 at it=19  
\* v0\_scn\_mean = 7.401826805172383

\* MAE = 0.9103959227959058

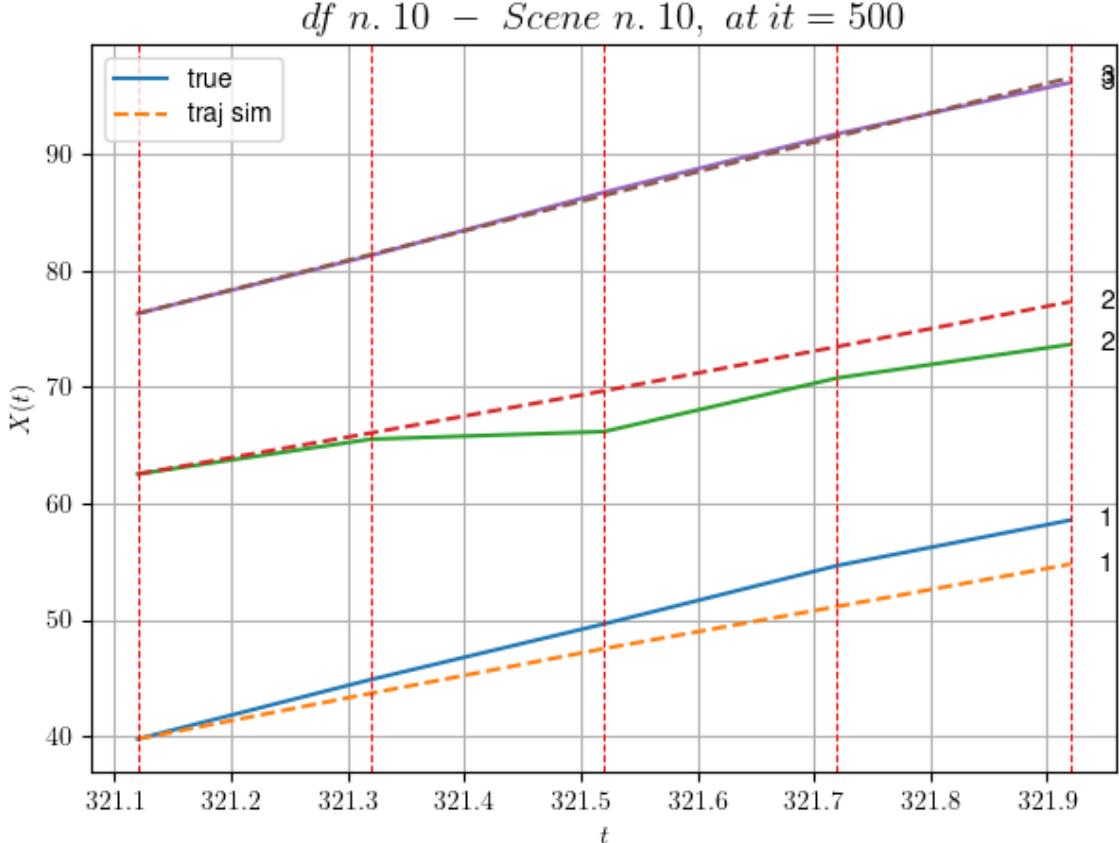
```
=====
=====
- Time interval n.0: [321.12, 321.32]
 * y_true: [25.50087189 14.95118626]
 * v_ann: [19.58948516845703, 17.604705810546875, 2
5.328428635552708]

- Time interval n.1: [321.32, 321.52]
 * y_true: [23.87107171 3.25027229]
 * v_ann: [19.176340103149414, 18.089494705200195, 2
5.328428635552708]

- Time interval n.2: [321.52, 321.72]
 * y_true: [25.04128771 23.00208642]
 * v_ann: [18.09565544128418, 18.967811584472656, 2
5.328428635552708]

- Time interval n.3: [321.72, 321.92]
 * y_true: [19.5212431 14.40145141]
 * v_ann: [18.177217483520508, 19.263648986816406, 2
5.328428635552708]

* err= 4.401345957465511
* Learning rate NN = 2.3914839403005317e-05
* diff = 0.002067221002305608
```



For scene 10/22

- \* use LR\_NN=5e-05 with err=4.624851428437121 at it=19
- \* v0\_scn\_mean = 25.60872270767608
- \* MAE = 4.2695989962615135

---



---

- Time interval n.0: [323.12, 323.32]
  - \* y\_true: [ 6.90008114 15.05052158]
  - \* v\_ann: [11.893375396728516, 11.700189590454102, 1  
3.161317147759586]
- Time interval n.1: [323.32, 323.52]
  - \* y\_true: [ 8.30010994 16.45065772]
  - \* v\_ann: [11.821757316589355, 11.666027069091797, 1  
3.161317147759586]
- Time interval n.2: [323.52, 323.72]
  - \* y\_true: [ 9.85014911 16.15074097]
  - \* v\_ann: [11.824007987976074, 11.718096733093262, 1  
3.161317147759586]
- Time interval n.3: [323.72, 323.92]
  - \* y\_true: [10.7001865 10.85055419]
  - \* v\_ann: [11.872542381286621, 11.805392265319824, 1  
3.161317147759586]

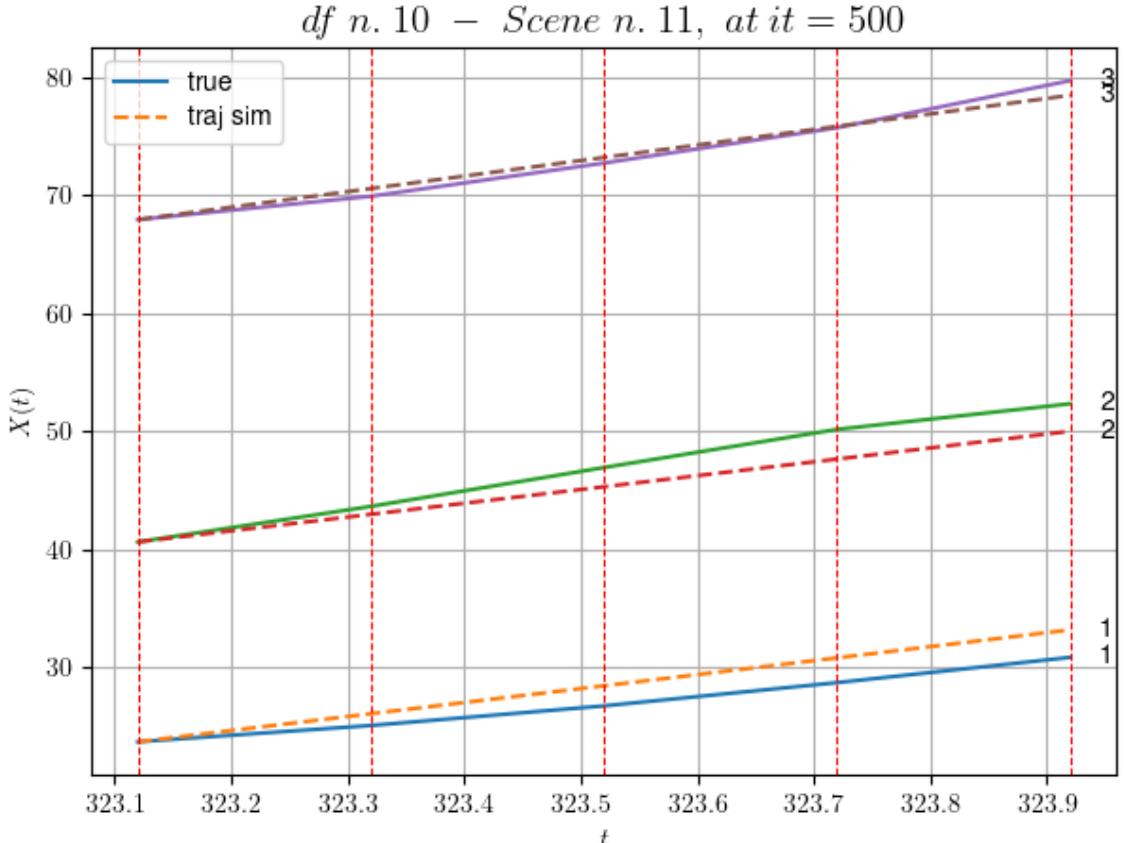
3.161317147759586]

---



---

- \* err= 2.050129973366125
- \* Learning rate NN = 4.7829678806010634e-05
- \* diff = 0.0007949716582205113



For scene 11/22

- \* use LR\_NN=0.0001 with err=21.87179246979976 at it=19
- \* v0\_scn\_mean = 14.171637362873506
- \* MAE = 2.050129973366125

---



---

- Time interval n.0: [337.72, 337.92]
  - \* y\_true: [11.69035174 22.47147634]
  - \* v\_ann: [13.878912925720215, 13.999794006347656, 1 6.73844444980704]

---



---

- Time interval n.1: [337.92, 338.12]
  - \* y\_true: [10.20034007 18.27135214]
  - \* v\_ann: [13.982756614685059, 14.224719047546387, 1 6.73844444980704]

---



---

- Time interval n.2: [338.12, 338.32]
  - \* y\_true: [ 7.94029275 13.91116184]
  - \* v\_ann: [13.93160343170166, 14.236621856689453, 1]

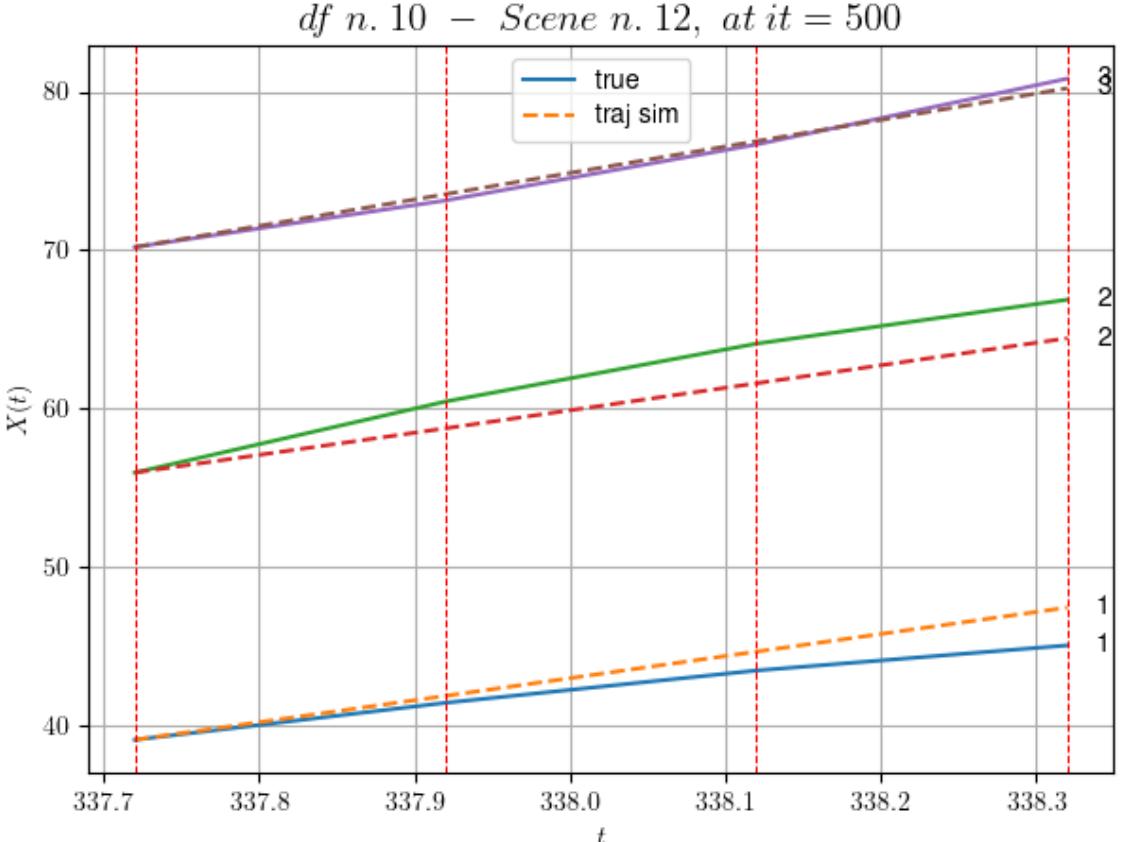
6.73844444980704]

---



---

- \* err= 1.9166167809506405
- \* Learning rate NN = 5.904899080633186e-05
- \* diff = 0.00194703862206147



For scene 12/22

- \* use LR\_NN=0.0001 with err=11.916878815993224 at it=19
- \* v0\_scn\_mean = 17.534137187403612
- \* MAE = 1.9166167809506405

---



---

- Time interval n.0: [369.32, 369.52]
- \* y\_true: [22.34117259 11.42097363]
- \* v\_ann: [16.366519927978516, 16.475194931030273, 2 0.508861972534003]

---



---

- Time interval n.1: [369.52, 369.72]
- \* y\_true: [22.31135956 8.65079743]
- \* v\_ann: [16.62015724182129, 16.605464935302734, 2 0.508861972534003]

---



---

- Time interval n.2: [369.72, 369.92]
- \* y\_true: [16.17115552 17.53172003]
- \* v\_ann: [16.12311363220215, 16.210906982421875, 2

0.508861972534003]

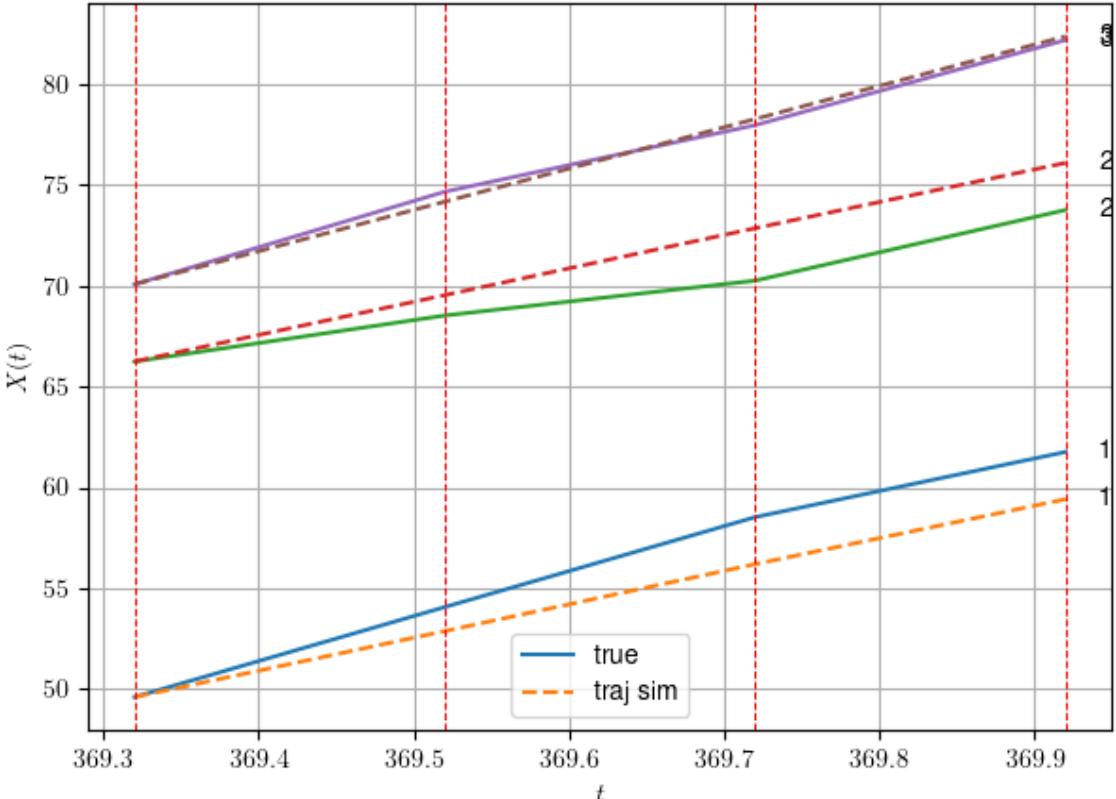
---



---

- \* err= 2.165588156763814
- \* Learning rate NN = 0.0005904899444431067
- \* diff = 1.666566730351704e-05

*df n. 10 – Scene n. 13, at it = 500*



For scene 13/22

- \* use LR\_NN=0.001 with err=5.330111215361108 at it=19
- \* v0\_scn\_mean = 21.078329828050926
- \* MAE = 2.165588156763814

---



---

- Time interval n.0: [370.92, 371.12]  
 \* y\_true: [12.30016813 11.70074461]  
 \* v\_ann: [10.076150894165039, 9.698282241821289, 1  
 9.89212045378672]

---

- Time interval n.1: [371.12, 371.32]  
 \* y\_true: [ 9.3501493 10.70073785]  
 \* v\_ann: [10.383203506469727, 10.533869743347168, 1  
 9.89212045378672]

---

- Time interval n.2: [371.32, 371.52]  
 \* y\_true: [ 8.90016062 10.12074395]  
 \* v\_ann: [10.317645072937012, 10.499580383300781, 1

```
9.89212045378672]
```

```
- Time interval n.3: [371.52, 371.72]
 * y_true: [8.30016702 9.00070559]
 * v_ann: [10.171174049377441, 10.43097972869873, 1
```

```
9.89212045378672]
```

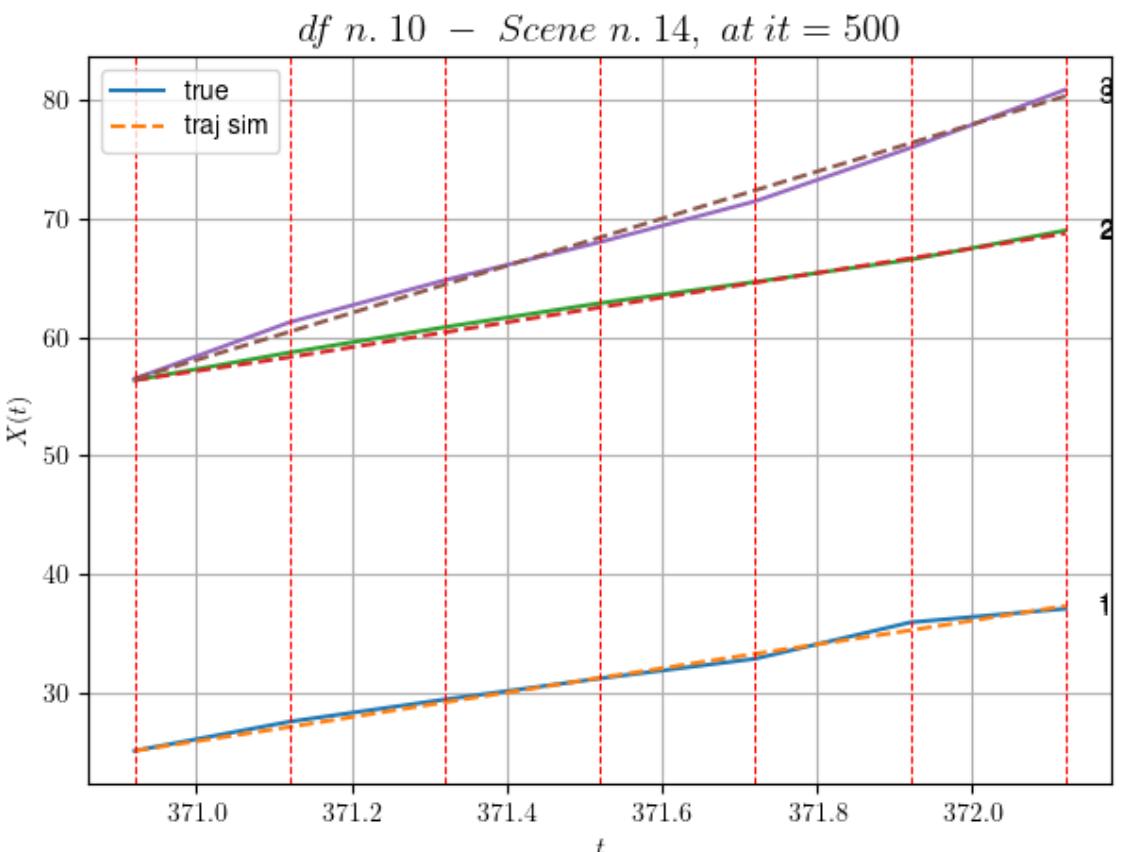
```
- Time interval n.4: [371.72, 371.92]
 * y_true: [15.35035581 9.32077268]
 * v_ann: [9.89422607421875, 10.292123794555664, 19.
```

```
89212045378672]
```

```
- Time interval n.5: [371.92, 372.12]
 * y_true: [5.75014975 12.37110708]
 * v_ann: [10.320115089416504, 10.450644493103027, 1
```

```
9.89212045378672]
```

```
* err= 0.17862857807927454
* Learning rate NN = 0.00015690525469835848
* diff = 2.097566484948743e-05
```



For scene 14/22

```
* use LR_NN=0.0005 with err=28.068107196267206 at it=19
* v0_scn_mean = 20.498592772738046
* MAE = 0.1783706126858761
```

```
=====
=====

For scene 15/22
* use LR_NN=0.0005 with err=16.408124598690048 at it=19
* v0_scn_mean = 14.922057038932374
* MAE = 0.11289681604609313
```

```
=====
=====

For scene 16/22
* use LR_NN=0.001 with err=8.145546482894636 at it=19
* v0_scn_mean = 23.28367393608953
* MAE = 0.3295730677346899
```

```


```

- Time interval n.0: [483.92, 484.12]
  - \* y\_true: [19.08092085 0.51217506]
  - \* v\_ann: [9.844292640686035, 9.860466957092285, 22.61891693965095]

```

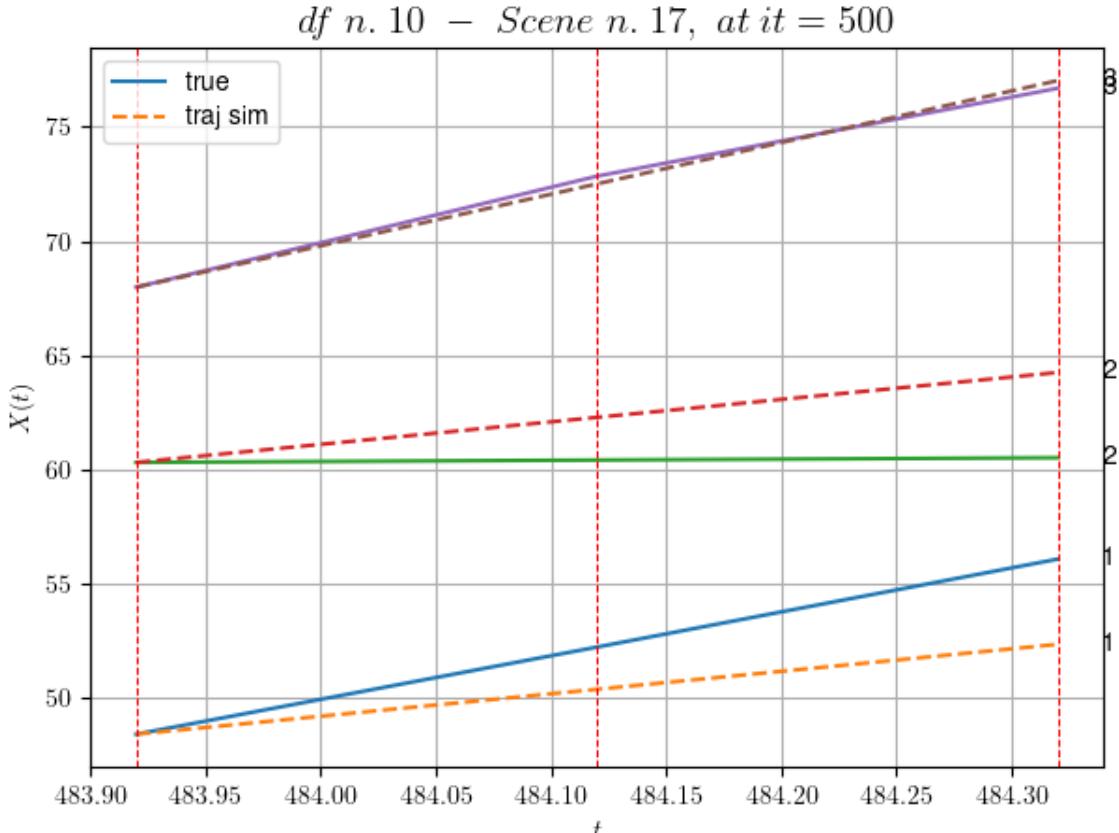

```

- Time interval n.1: [484.12, 484.32]
  - \* y\_true: [19.26103904 0.51217506]
  - \* v\_ann: [9.841631889343262, 9.823450088500977, 22.61891693965095]

```


```

- \* err= 3.8871144157174395
- \* Learning rate NN = 0.0007289999630302191
- \* diff = 0.00013455997692268795



For scene 17/22

\* use LR\_NN=0.001 with err=4.9395191323336896 at it=19  
 \* v0\_scn\_mean = 23.061781591876276  
 \* MAE = 3.8871144157174395

---



---

- Time interval n.0: [531.72, 531.92]  
 \* y\_true: [0.21693371 8.7044085 ]  
 \* v\_ann: [9.370099067687988, 9.22443962097168, 18.2  
 05173948354133]

---

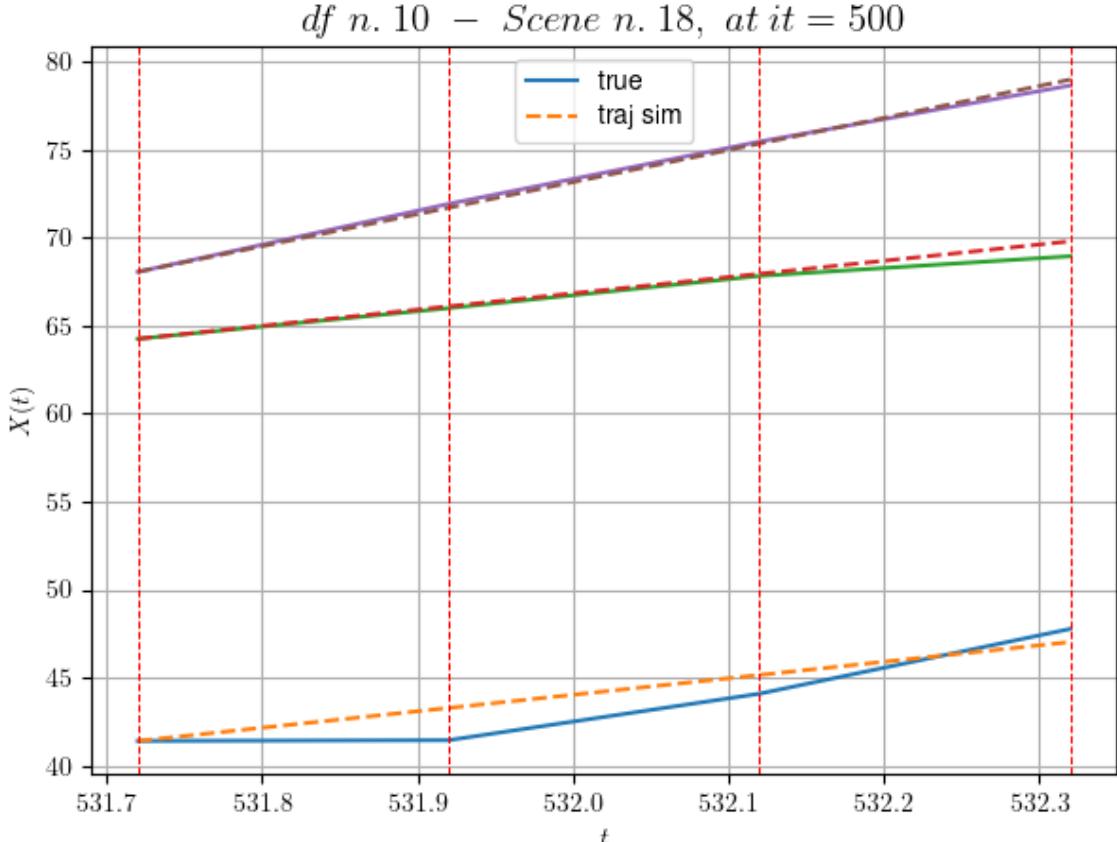
- Time interval n.1: [531.92, 532.12]  
 \* y\_true: [13.20333652 9.14775604]  
 \* v\_ann: [9.36367130279541, 9.228943824768066, 18.2  
 05173948354133]

---

- Time interval n.2: [532.12, 532.32]  
 \* y\_true: [18.40074328 5.60188997]  
 \* v\_ann: [9.365607261657715, 9.246259689331055, 18.  
 205173948354133]

---

\* err= 0.4964744491313735  
 \* Learning rate NN = 5.9048988987342454e-06  
 \* diff = 0.00021592460246516731



For scene 18/22

- \* use LR\_NN=1e-05 with err=8.559742435441857 at it=19
- \* v0\_scn\_mean = 18.91286298189043
- \* MAE = 0.4964744491313735

---



---

- Time interval n.0: [202.52, 202.72]
- \* y\_true: [23.35318258 28.37081651 28.03104175]
- \* v\_ann: [28.16667938232422, 28.080902099609375, 2

8.64931869506836, 24.01414470414926]

---



---

- Time interval n.1: [202.72, 202.92]
- \* y\_true: [23.6005682 33.85129081 29.41136895]
- \* v\_ann: [27.424530029296875, 27.61518669128418, 2

6.671049118041992, 24.01414470414926]

---



---

- Time interval n.2: [202.92, 203.12]
- \* y\_true: [26.25082225 32.65166271 26.3315156 ]
- \* v\_ann: [28.285259246826172, 28.065542221069336, 2

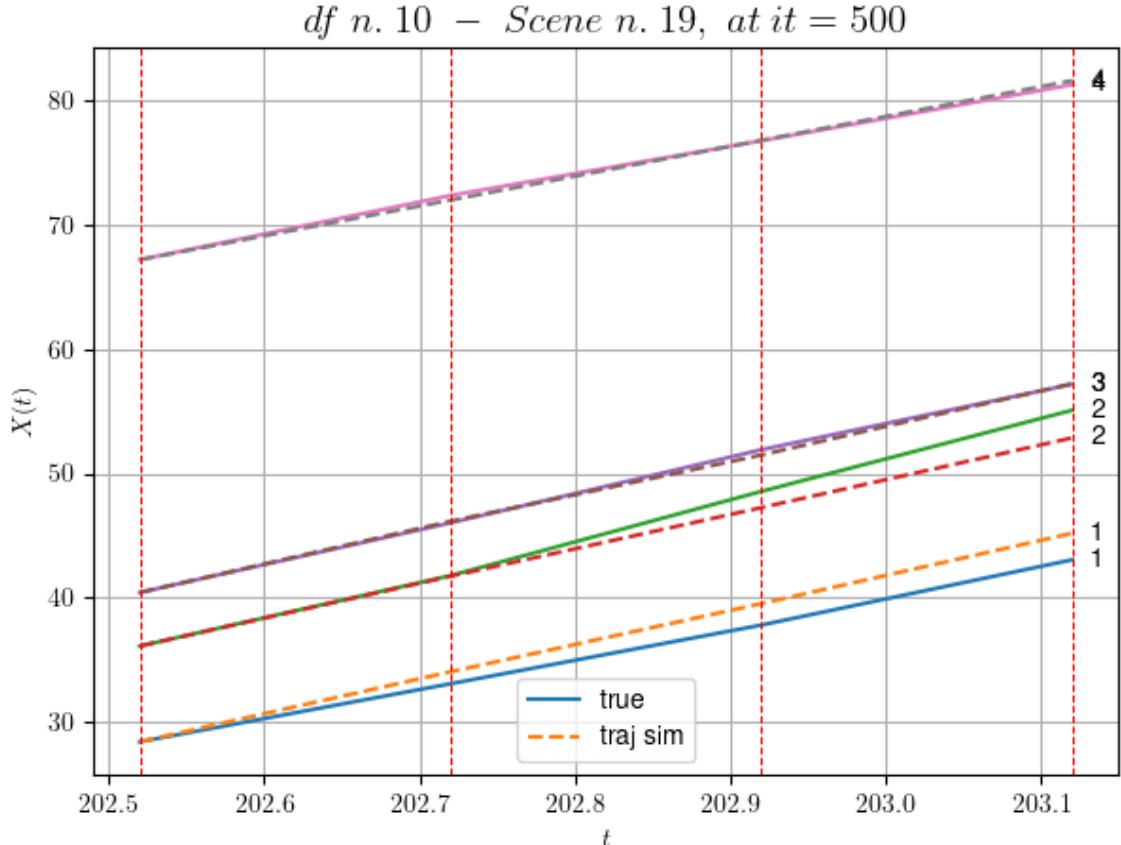
8.70383071899414, 24.01414470414926]

---



---

- \* err= 0.9720457796205302
- \* Learning rate NN = 0.0002952449722215533
- \* diff = 1.6207234221354838e-06



For scene 19/22

- \* use LR\_NN=0.0005 with err=25.63099220480663 at it=19
  - \* v0\_scn\_mean = 24.492993649053147
  - \* MAE = 0.97082932183657
- 
- 

For scene 20/22

- \* use LR\_NN=0.001 with err=7.707236668283968 at it=19
  - \* v0\_scn\_mean = 16.707950920843768
  - \* MAE = 0.5214510938986097
- 
- 

For scene 21/22

- \* use LR\_NN=0.001 with err=3.972962323267042 at it=19
  - \* v0\_scn\_mean = 20.343007380454615
  - \* MAE = 0.5653540631297769
- 
- 

For df=10 with 22 scenes, time taken: 293.31

---



---

Time taken for the computation: 2876.72

Time taken using 1-2-1 NN structure: 2876.78

=====  
NN structure: 1-4-1  
=====

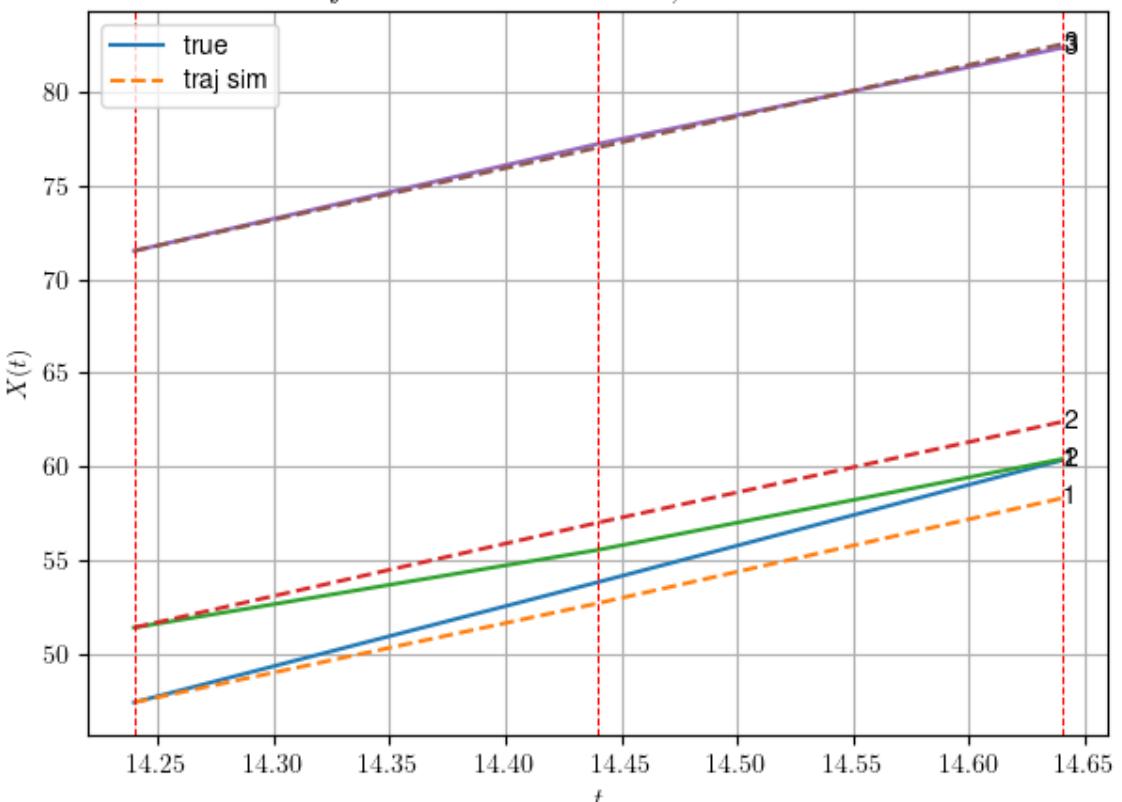
\*\*\*\*\*  
\*\*\*\*\*  
In df n.1/10 we have 28 scenes  
\*\*\*\*\*  
\*\*\*\*\*

- Time interval n.0: [14.24, 14.44]
  - \* y\_true: [32.1443344 20.77111865]
  - \* v\_ann: [26.49651336669922, 28.063213348388672, 27.636278285272216]

- Time interval n.1: [14.44, 14.64]
  - \* y\_true: [32.5721373 24.27162308]
  - \* v\_ann: [28.093647003173828, 26.947927474975586, 27.636278285272216]

- \* err= 1.2842225467399777
- \* Learning rate NN = 0.00036449998151510954
- \* diff = 0.0013516064908372094

*df n. 1 – Scene n. 0, at it = 500*



For scene 0/28

- \* use LR\_NN=0.0005 with err=18.17563279675981 at it=19
- \* v0\_scn\_mean = 27.778101482029907
- \* MAE = 1.2842225467399777

```
=====
=====

 - Time interval n.0: [23.64, 23.84]
 * y_true: [26.6509107 26.65125804]
 * v_ann: [26.360706329345703, 24.857009887695312, 3
1.184420565840096]

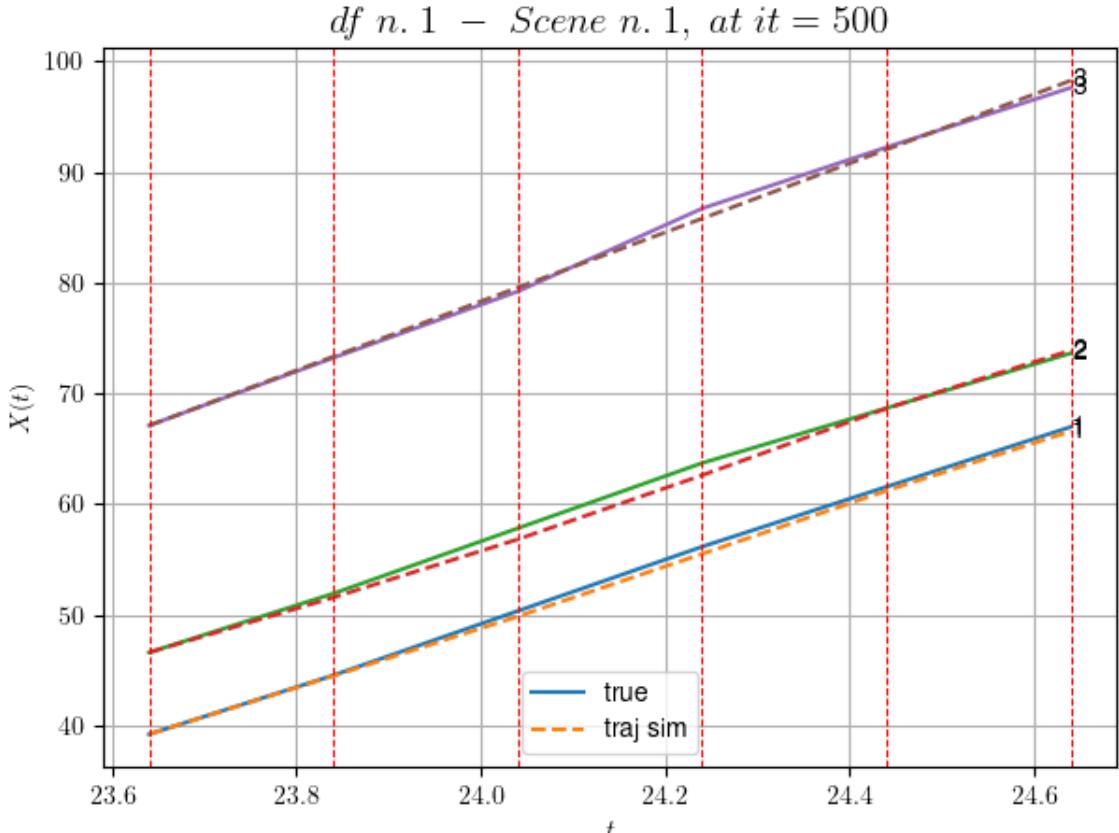
 - Time interval n.1: [23.84, 24.04]
 * y_true: [29.05143519 29.47691739]
 * v_ann: [26.896312713623047, 26.27703857421875, 3
1.184420565840096]

 - Time interval n.2: [24.04, 24.24]
 * y_true: [29.05143519 29.47691739]
 * v_ann: [28.255332946777344, 28.960777282714844, 3
1.184420565840096]

 - Time interval n.3: [24.24, 24.44]
 * y_true: [27.07699139 24.80226709]
 * v_ann: [28.555227279663086, 30.20098876953125, 3
1.184420565840096]

 - Time interval n.4: [24.44, 24.64]
 * y_true: [27.07699139 24.80226709]
 * v_ann: [26.94495391845703, 26.223352432250977, 3
1.184420565840096]

* err= 0.26468236251409916
* Learning rate NN = 0.0003874204121530056
* diff = 0.0005357954288391364
```



For scene 1/28

```
* use LR_NN=0.001 with err=31.56006619711378 at it=19
* v0_scn_mean = 31.113355385067635
* MAE = 0.15803546025615578
```

---



---

```
- Time interval n.0: [72.44, 72.64]
* y_true: [25.85001228 31.10049693]
* v_ann: [26.467254638671875, 28.92597770690918, 2
8.250920573908303]
```

---

```
- Time interval n.1: [72.64, 72.84]
* y_true: [30.00006309 33.82077482]
* v_ann: [26.744657516479492, 29.04920196533203, 2
8.250920573908303]
```

---

```
- Time interval n.2: [72.84, 73.04]
* y_true: [23.75011307 26.19081077]
* v_ann: [27.348918914794922, 28.984813690185547, 2
8.250920573908303]
```

---

```
- Time interval n.3: [73.04, 73.24]
* y_true: [29.90025591 27.11111625]
* v_ann: [27.08599090576172, 28.936443328857422, 2
```

8.250920573908303]

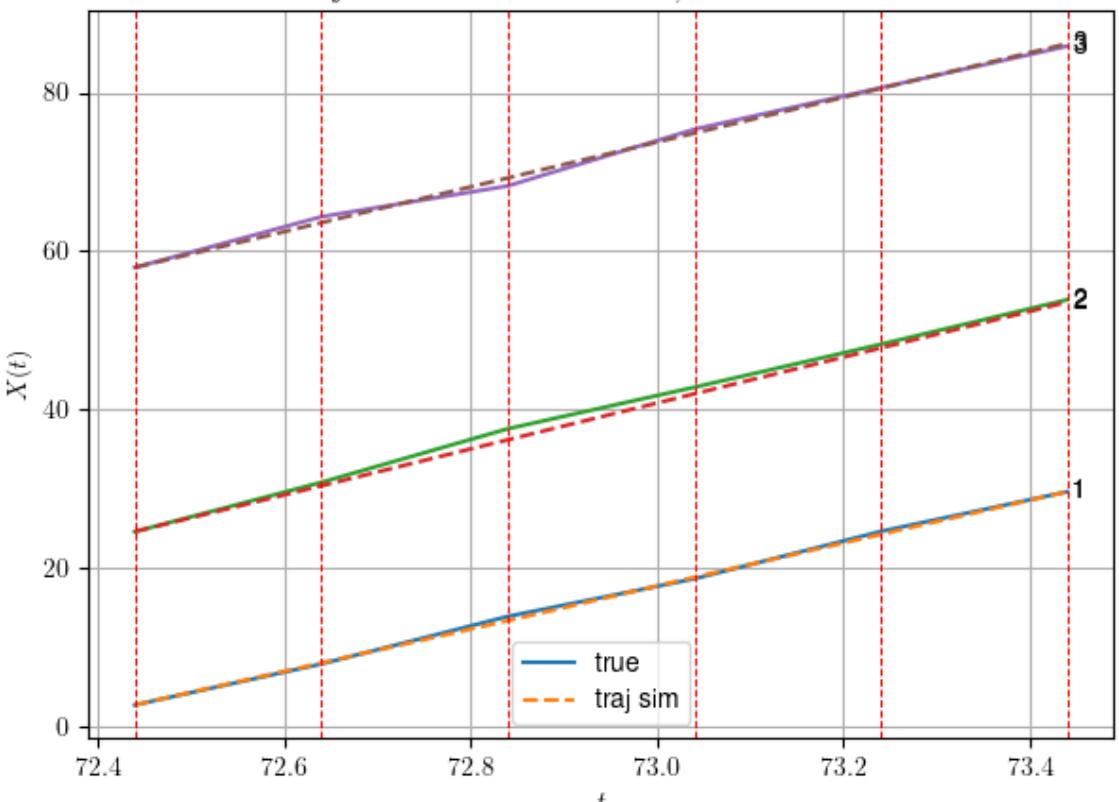
---

- Time interval n.4: [73.24, 73.44]
  - \* y\_true: [25.05033948 28.161422 ]
  - \* v\_ann: [27.006940841674805, 28.954315185546875, 2 9.494365593581996]

---

- \* err= 0.30664365923361037
- \* Learning rate NN = 1.9371018424862996e-05
- \* diff = 0.0005995424581043407

*df n. 1 – Scene n. 2, at it = 500*



For scene 2/28

- \* use LR\_NN=5e-05 with err=3.4805021953711743 at it=19
- \* v0\_scn\_mean = 28.35586526094395
- \* MAE = 0.2930439981493329

---



---

- Time interval n.0: [84.24, 84.44]
  - \* y\_true: [29.4403562 23.48047527]
  - \* v\_ann: [26.497941970825195, 27.55751609802246, 2 9.494365593581996]

---



---

- Time interval n.1: [84.44, 84.64]
  - \* y\_true: [27.01049004 24.28067739]
  - \* v\_ann: [27.59303855895996, 27.593908309936523, 2

9.494365593581996]

---

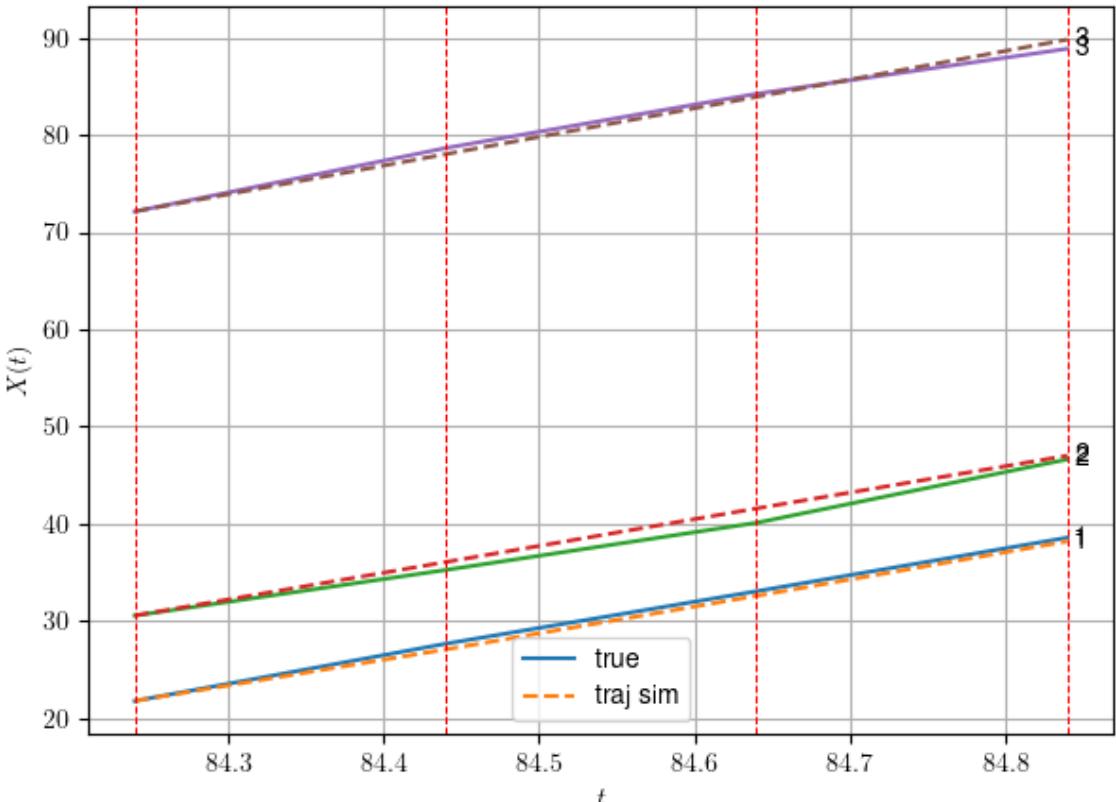
- Time interval n.2: [84.64, 84.84]
  - \* y\_true: [27.60069732 32.65118399]
  - \* v\_ann: [28.04754066467285, 27.161649703979492, 2

9.494365593581996]

---

- \* err= 0.42519898859080857
- \* Learning rate NN = 2.952449540316593e-05
- \* diff = 1.4830494272644046e-05

*df n. 1 – Scene n. 3, at it = 500*



For scene 3/28

- \* use LR\_NN=5e-05 with err=23.89005494812301 at it=19
- \* v0\_scn\_mean = 29.524703635264988
- \* MAE = 0.4243239063030099

---



---

- Time interval n.0: [131.64, 131.84]
  - \* y\_true: [30.80073929 29.11067519]
  - \* v\_ann: [28.82952117919922, 29.444936752319336, 2

8.442892702247462]

---

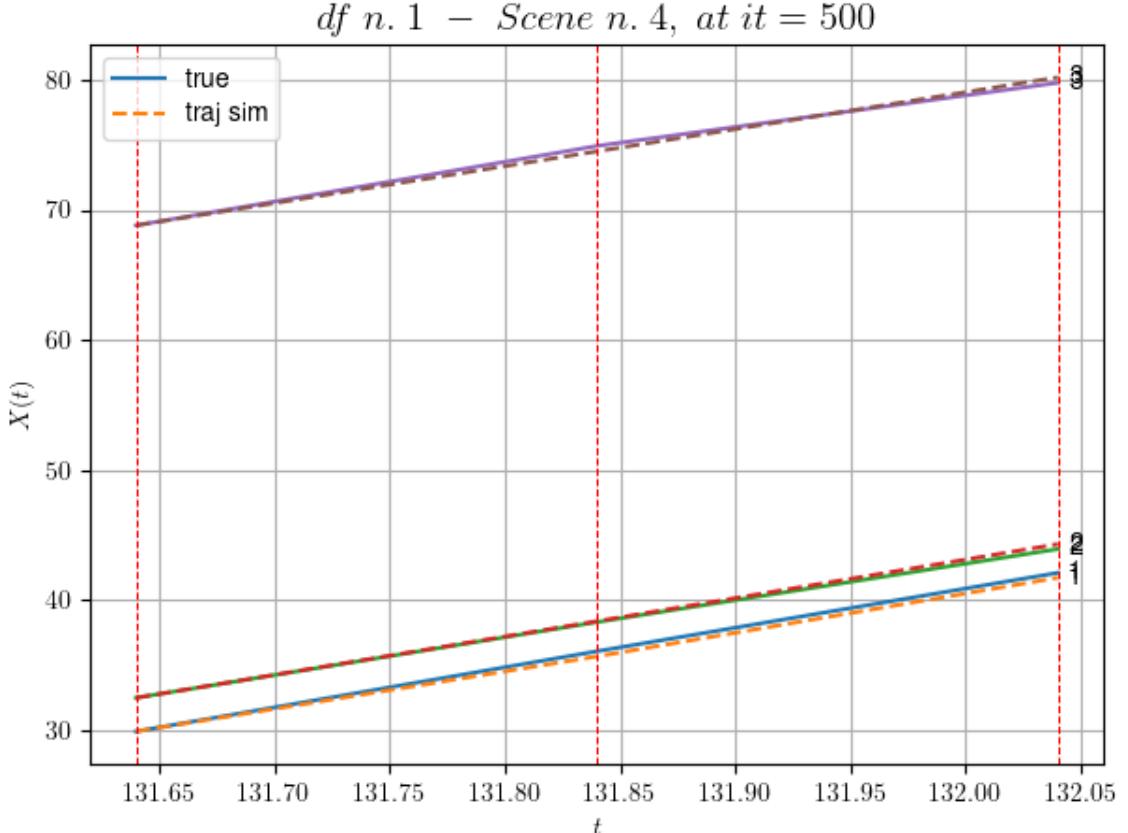
- Time interval n.1: [131.84, 132.04]
  - \* y\_true: [30.16079766 28.07097758]
  - \* v\_ann: [30.25234603881836, 29.63128089904785, 28.

442892702247462]

```

* err= 0.08806821450725605
* Learning rate NN = 3.6449993785936385e-05
* diff = 2.6269991081559474e-05

```



For scene 4/28

```

* use LR_NN=5e-05 with err=17.50460387777532 at it=19
* v0_scn_mean = 28.53631907020148
* MAE = 0.05573048300082883

```

```

- Time interval n.0: [148.04, 148.24]
 * y_true: [21.93113488 25.90203153]
 * v_ann: [26.142589569091797, 25.92307472229004, 2
 7.621656721216215]

```

```

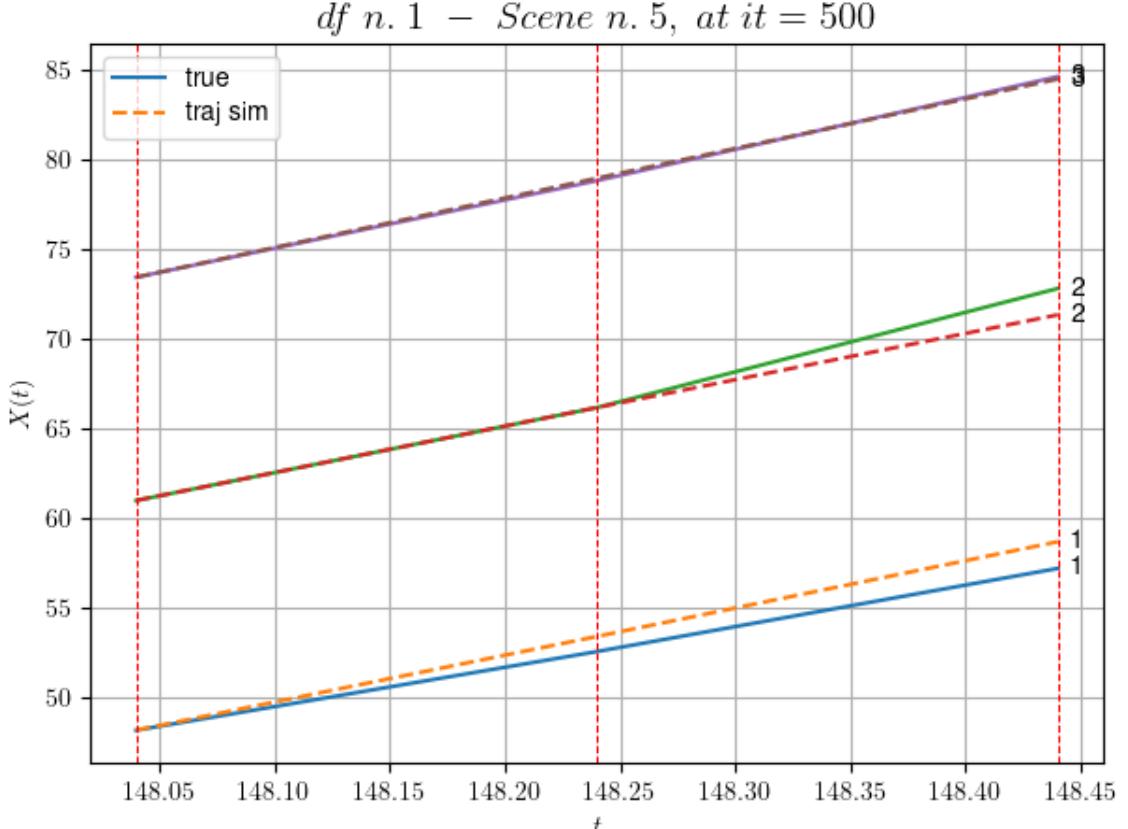
- Time interval n.1: [148.24, 148.44]
 * y_true: [23.17638158 33.20310746]
 * v_ann: [26.406314849853516, 25.830995559692383, 2
 7.621656721216215]

```

```

* err= 0.5695072975971297
* Learning rate NN = 7.289998757187277e-05
* diff = 5.8670014823070105e-05

```



For scene 5/28

- \* use LR\_NN=0.0001 with err=0.7972690390020242 at it=19
- \* v0\_scn\_mean = 27.764357211160632
- \* MAE = 0.5667192266148998

---



---

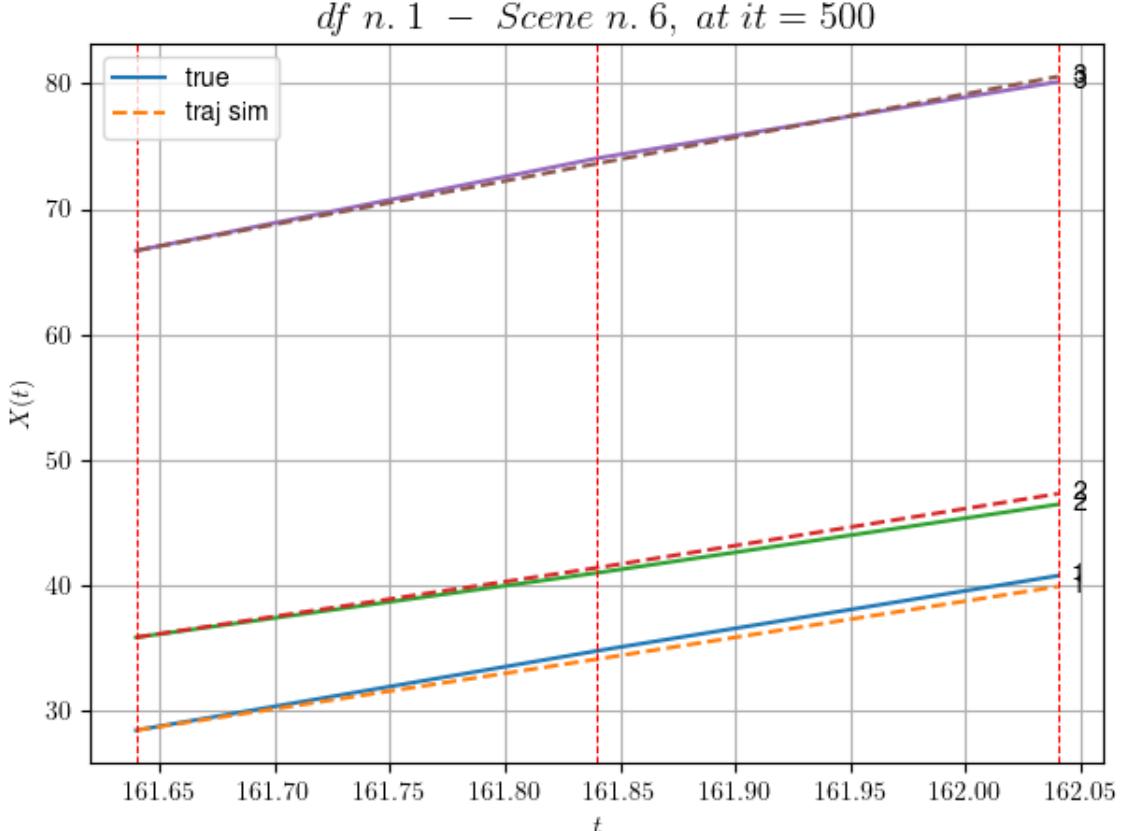
- Time interval n.0: [161.64, 161.84]
- \* y\_true: [31.66062591 25.70084842]
- \* v\_ann: [28.354345321655273, 27.734895706176758, 34.71181519803634]

---

- Time interval n.1: [161.84, 162.04]
- \* y\_true: [29.96082912 27.30094687]
- \* v\_ann: [28.9698543548584, 29.517723083496094, 34.71181519803634]

---

- \* err= 0.269184052523595
- \* Learning rate NN = 0.00036449998151510954
- \* diff = 6.862817751651651e-05



For scene 6/28

```
* use LR_NN=0.0005 with err=12.999879092294934 at it=19
* v0_scn_mean = 34.42910649770428
* MAE = 0.25179467444561815
```

---



---

```
- Time interval n.0: [164.04, 164.24]
* y_true: [27.950014 32.5307084]
* v_ann: [24.260610580444336, 27.074831008911133, 3
2.43285094624307]
```

---



---

```
- Time interval n.1: [164.24, 164.44]
* y_true: [26.70005561 31.43096027]
* v_ann: [31.35354995727539, 34.30485916137695, 32.
43285094624307]
```

---



---

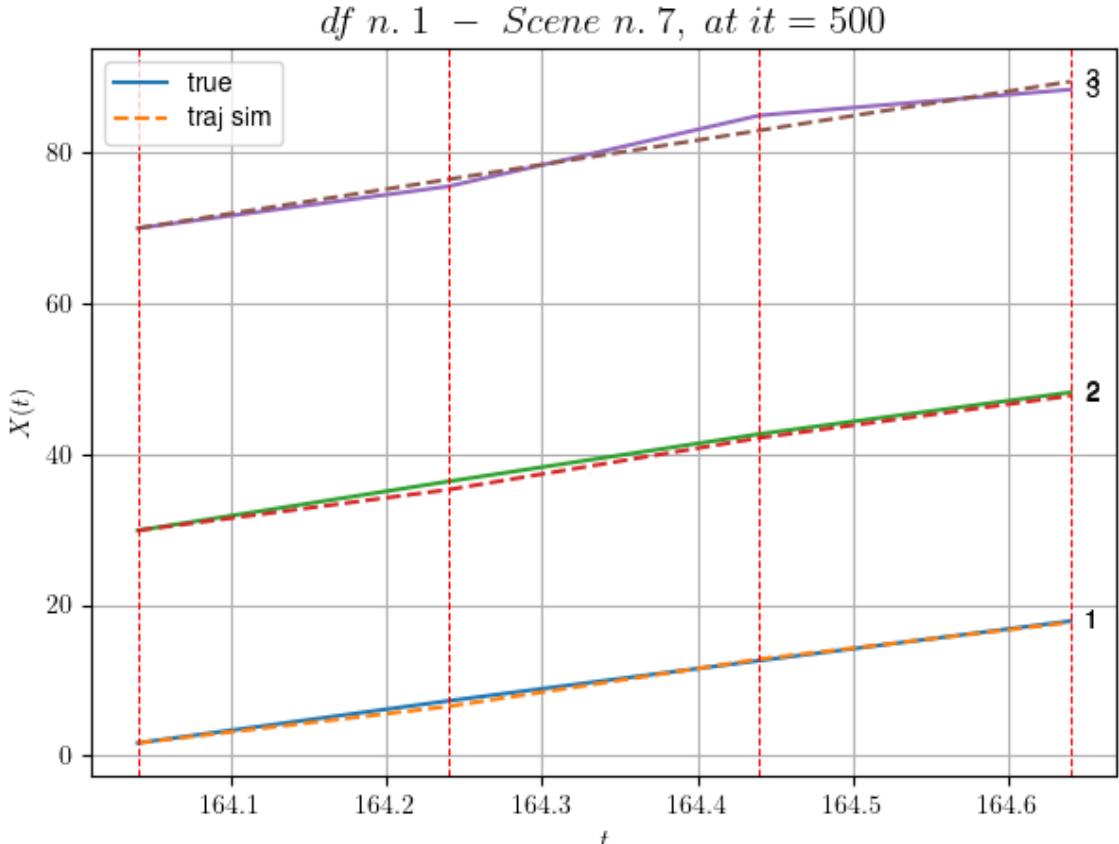
```
- Time interval n.2: [164.44, 164.64]
* y_true: [26.20012328 27.61110245]
* v_ann: [24.336589813232422, 27.908580780029297, 3
2.43285094624307]
```

---



---

```
* err= 0.6875121987427787
* Learning rate NN = 0.0002952449722215533
* diff = 0.07288314129898765
```



For scene 7/28

- \* use LR\_NN=0.0005 with err=1.5447417744512453 at it=19
- \* v0\_scn\_mean = 32.28687999869844
- \* MAE = 0.5897393302011116

---



---

- Time interval n.0: [215.64, 215.84]
- \* y\_true: [29.28007092 34.74092457]
- \* v\_ann: [31.171497344970703, 31.924488067626953, 37.48377847226492]

---



---

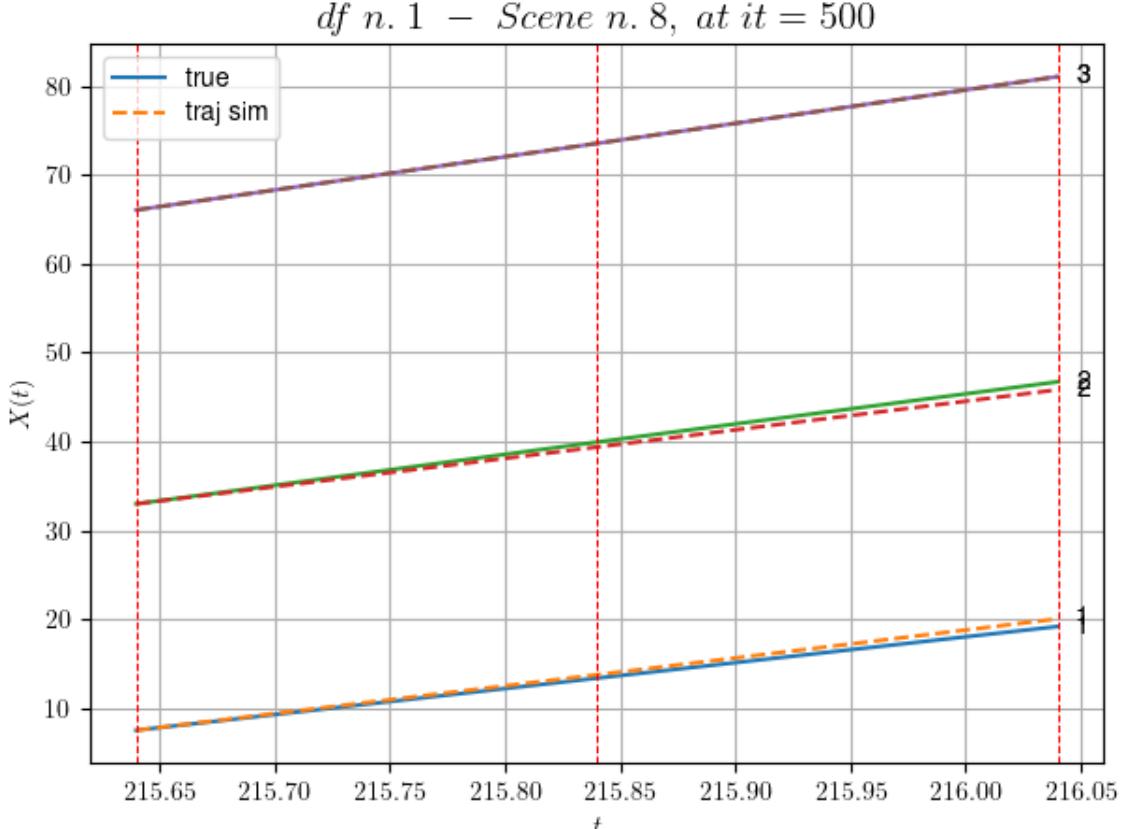
- Time interval n.1: [215.84, 216.04]
- \* y\_true: [29.05016449 33.87124084]
- \* v\_ann: [31.468849182128906, 32.219139099121094, 37.48377847226492]

---



---

- \* err= 0.22249766898725695
- \* Learning rate NN = 3.6449993785936385e-05
- \* diff = 0.00030701800207008634



For scene 8/28

\* use LR\_NN=5e-05 with err=1.3585556162126682 at it=19  
 \* v0\_scn\_mean = 37.0347520999342  
 \* MAE = 0.1972925461867849

---



---

- Time interval n.0: [216.64, 216.84]  
 \* y\_true: [37.52054047 34.13112536]  
 \* v\_ann: [35.9940299987793, 45.64796829223633, 34.8  
 518251107549]

---



---

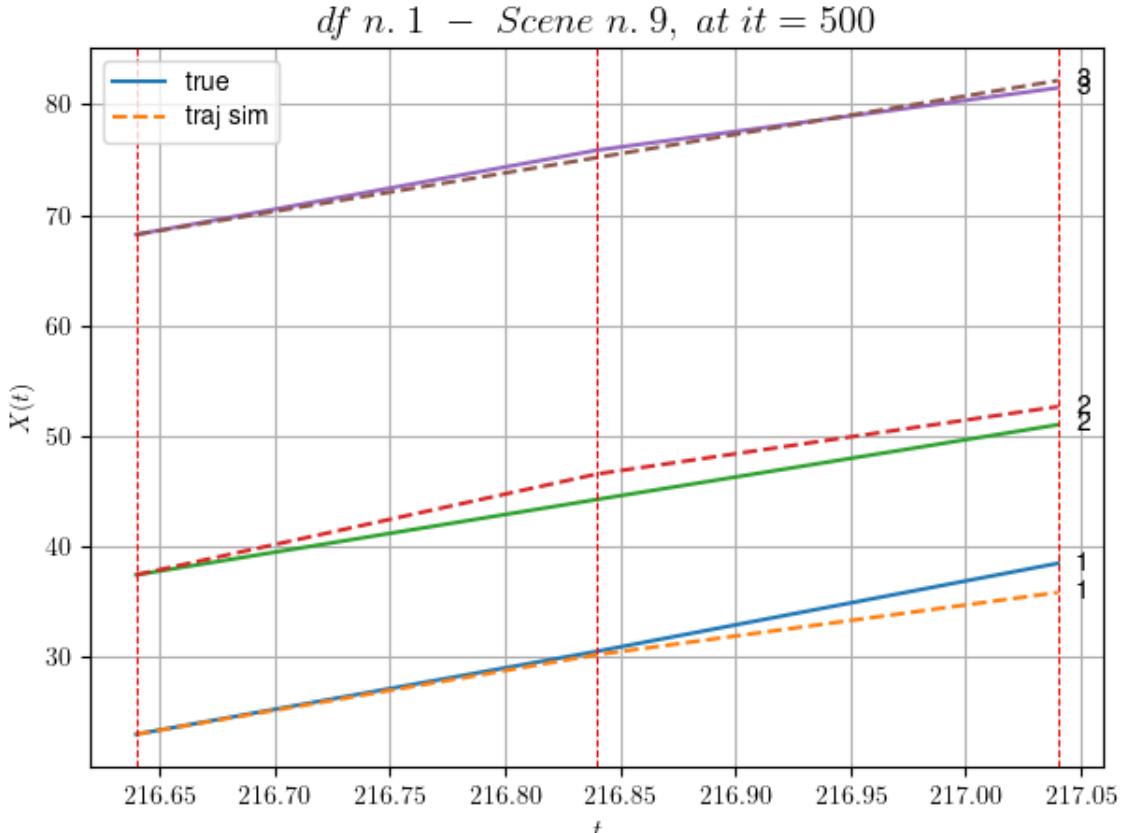
- Time interval n.1: [216.84, 217.04]  
 \* y\_true: [39.83095433 33.81148861]  
 \* v\_ann: [28.17274284362793, 30.530683517456055, 3  
 4.8518251107549]

---



---

\* err= 1.772320330453815  
 \* Learning rate NN = 0.00036449998151510954  
 \* diff = 0.009990674707206049



For scene 9/28

```
* use LR_NN=0.0005 with err=9.96777657181429 at it=19
* v0_scn_mean = 34.56071582194623
* MAE = 1.7138396884180611
```

---



---

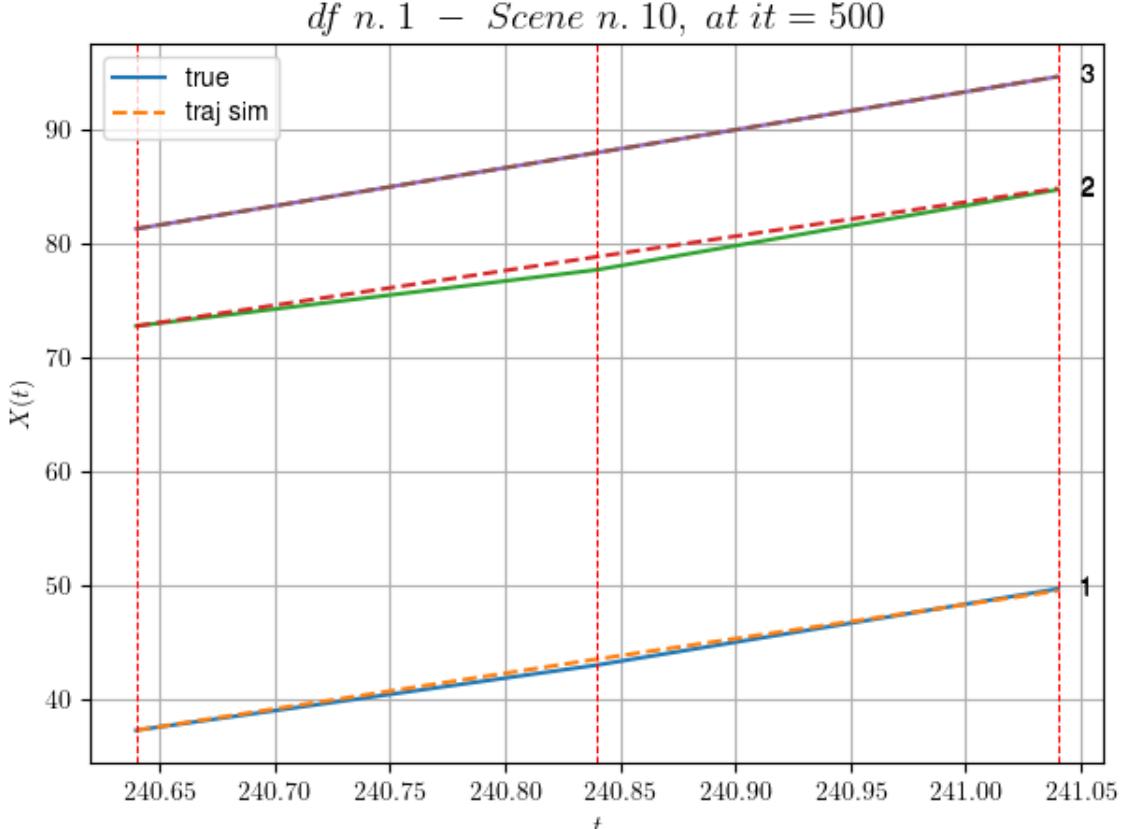
```
- Time interval n.0: [240.64, 240.84]
* y_true: [28.54090912 24.62265201]
* v_ann: [31.14864730834961, 30.33305549621582, 33.
34476984108546]
```

---

```
- Time interval n.1: [240.84, 241.04]
* y_true: [33.36143299 35.0745887]
* v_ann: [29.89031982421875, 29.92634391784668, 33.
34476984108546]
```

---

```
* err= 0.17987939721806867
* Learning rate NN = 3.6449993785936385e-05
* diff = 0.000221357918494397
```



For scene 10/28

- \* use LR\_NN=5e-05 with err=9.725282593184282 at it=19
- \* v0\_scn\_mean = 33.14408380079369
- \* MAE = 0.15135664723915818

---



---

- Time interval n.0: [253.64, 253.84]
- \* y\_true: [26.81042151 28.10122634]
- \* v\_ann: [30.53420639038086, 30.943655014038086, 2  
7.474879582348915]

---



---

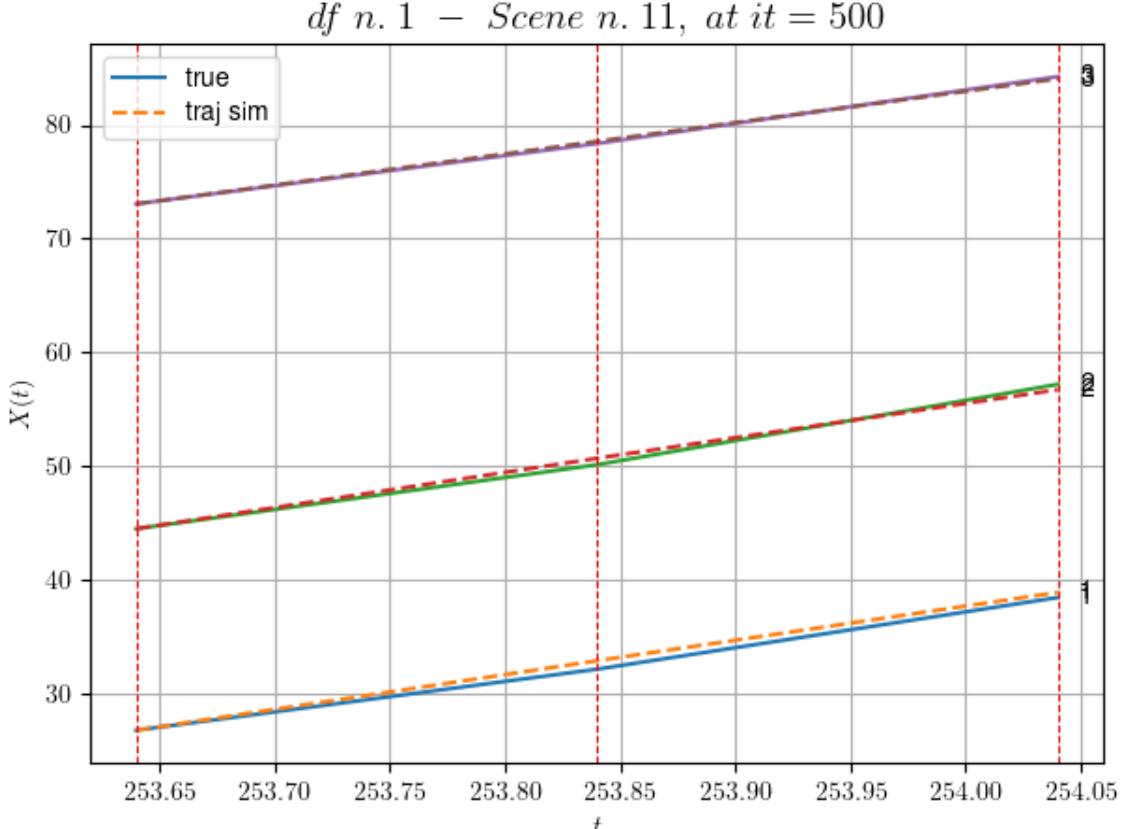
- Time interval n.1: [253.84, 254.04]
- \* y\_true: [31.5007643 35.35225595]
- \* v\_ann: [30.016437530517578, 30.1297550201416, 27.  
474879582348915]

---



---

- \* err= 0.15383782773182628
- \* Learning rate NN = 3.6449993785936385e-05
- \* diff = 7.789252038342687e-06



For scene 11/28

```
* use LR_NN=5e-05 with err=1.5035026183139892 at it=19
* v0_scn_mean = 27.626386694035414
* MAE = 0.15244797653940723
```

---



---

- Time interval n.0: [262.64, 262.84]
  - \* y\_true: [36.75102901 34.57147294]
  - \* v\_ann: [30.467451095581055, 30.397310256958008, 35.93109742746504]
  
- Time interval n.1: [262.84, 263.04]
  - \* y\_true: [20.65076329 34.76181544]
  - \* v\_ann: [32.290592193603516, 33.68476486206055, 35.93109742746504]
  
- Time interval n.2: [263.04, 263.24]
  - \* y\_true: [40.30193432 23.95156631]
  - \* v\_ann: [30.235210418701172, 30.078596115112305, 35.93109742746504]
  
- Time interval n.3: [263.24, 263.44]
  - \* y\_true: [32.10201673 27.4721836 ]
  - \* v\_ann: [31.10917854309082, 31.690305709838867, 35.93109742746504]

5.93109742746504]

---

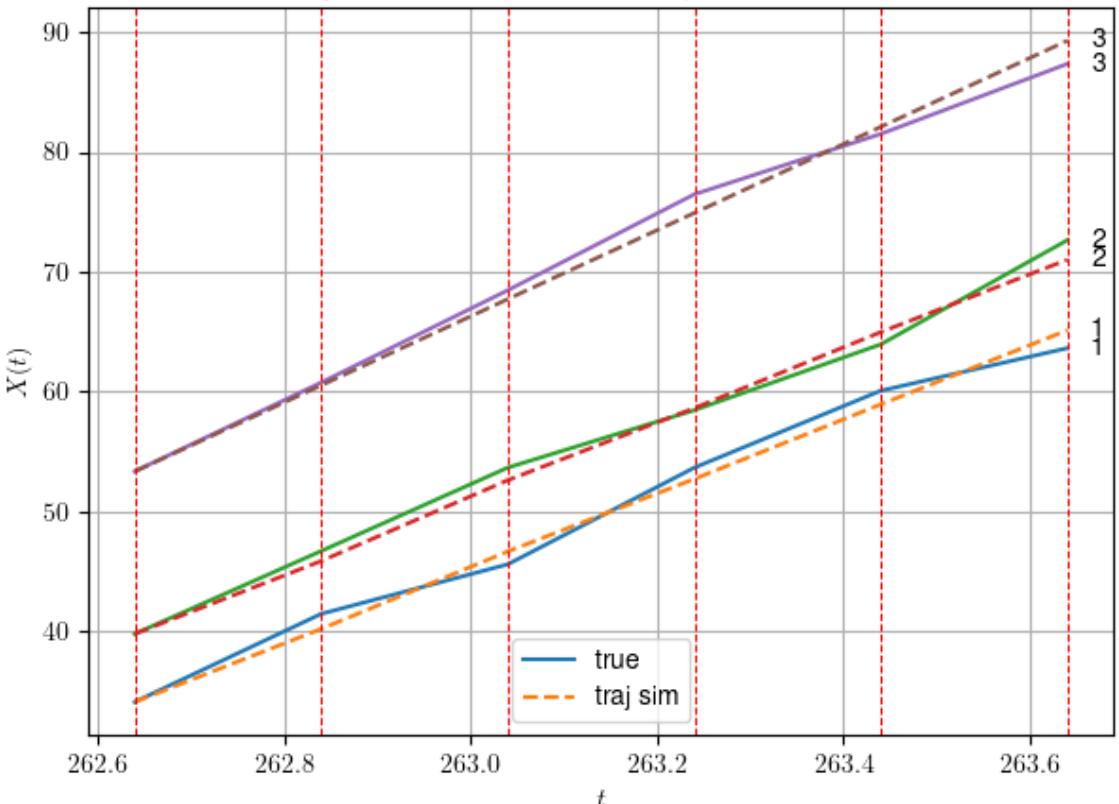
- Time interval n.4: [263.44, 263.64]
  - \* y\_true: [17.75131644 43.4543127 ]
  - \* v\_ann: [30.924219131469727, 30.1960506439209, 35.

93109742746504]

---

- \* err= 1.099977153669833
- \* Learning rate NN = 0.0003874204121530056
- \* diff = 0.00024149191774025525

*df n. 1 – Scene n. 12, at it = 500*



For scene 12/28

- \* use LR\_NN=0.001 with err=34.458819575072546 at it=19
- \* v0\_scn\_mean = 35.57523184811027
- \* MAE = 1.0906782795748384

---



---

- Time interval n.0: [314.84, 315.04]
  - \* y\_true: [29.62016755 31.54681236]
  - \* v\_ann: [30.56598663330078, 29.908180236816406, 3

0.92624785892672]

---

- Time interval n.1: [315.04, 315.24]
  - \* y\_true: [30.12030665 32.32740505]
  - \* v\_ann: [30.988780975341797, 30.081472396850586, 3

0.92624785892672]

---

- Time interval n.2: [315.24, 315.44]
  - \* y\_true: [25.99040223 31.02242591]
  - \* v\_ann: [31.912656784057617, 30.445600509643555, 3

0.92624785892672]

---

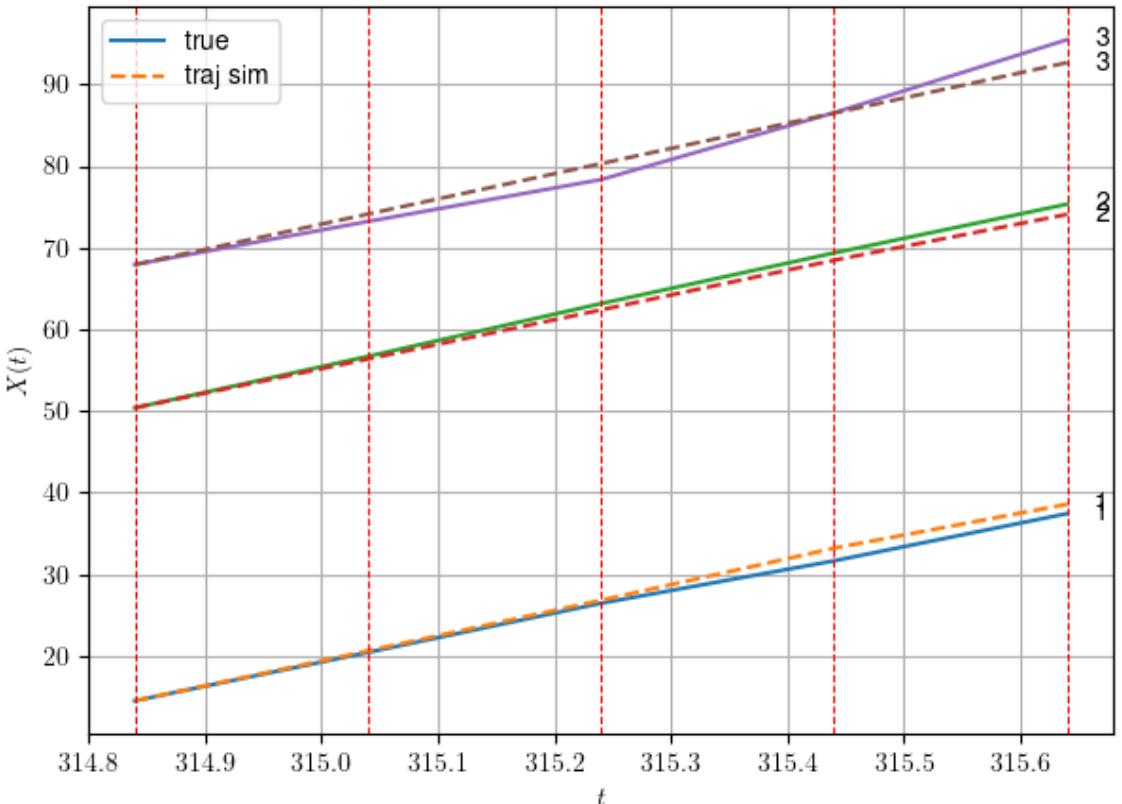
- Time interval n.3: [315.44, 315.64]
  - \* y\_true: [28.95064907 29.88823464]
  - \* v\_ann: [26.944194793701172, 28.094724655151367, 3

0.92624785892672]

---

- \* err= 1.3030735585221214
- \* Learning rate NN = 0.000239148415857926
- \* diff = 0.0008183892417641392

*df n. 1 – Scene n. 13, at it = 500*



For scene 13/28

- \* use LR\_NN=0.0005 with err=22.173743060241424 at it=19
- \* v0\_scn\_mean = 30.870673028977865
- \* MAE = 1.3030735585221214

=====

=====

For scene 14/28

- \* use LR\_NN=5e-05 with err=17.668822872510276 at it=19
- \* v0\_scn\_mean = 29.87264188904295

\* MAE = 0.4428212542850581

---



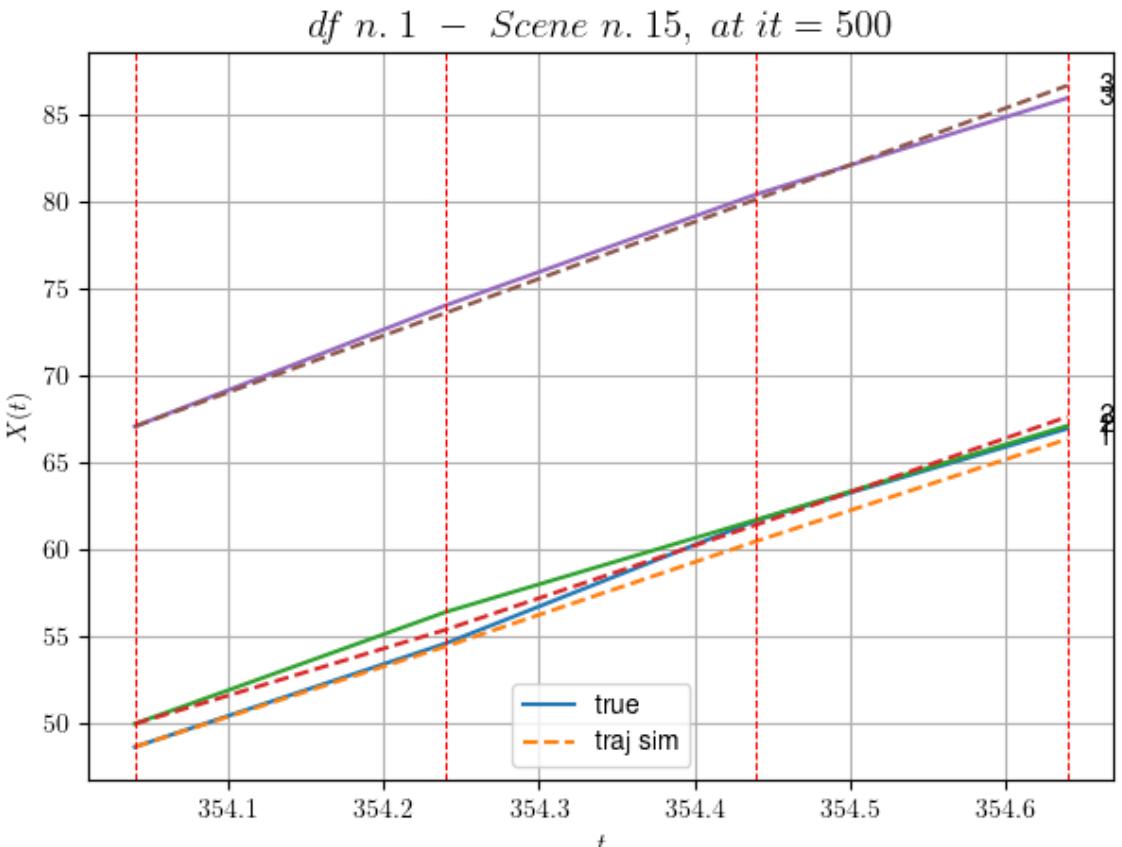
---

```
- Time interval n.0: [354.04, 354.24]
* y_true: [29.77169216 32.15176545]
* v_ann: [28.908864974975586, 27.060205459594727, 3
2.693522172934884]

- Time interval n.1: [354.24, 354.44]
* y_true: [35.38251939 26.55179403]
* v_ann: [30.292755126953125, 30.209386825561523, 3
2.693522172934884]

- Time interval n.2: [354.44, 354.64]
* y_true: [26.40441101 27.01000163]
* v_ann: [29.339099884033203, 31.0454158782959, 32.
693522172934884]

* err= 0.3324359387568278
* Learning rate NN = 0.0005904899444431067
* diff = 0.0013937530423412392
```



For scene 15/28

\* use LR\_NN=0.001 with err=26.935953174448986 at it=19  
\* v0\_scn\_mean = 32.5319109634922

\* MAE = 0.3324359387568278

---



---

- Time interval n.0: [363.44, 363.64]  
 \* y\_true: [23.6502752 28.55056389]  
 \* v\_ann: [28.763036727905273, 28.858905792236328, 3  
 8.923494443014064]

---

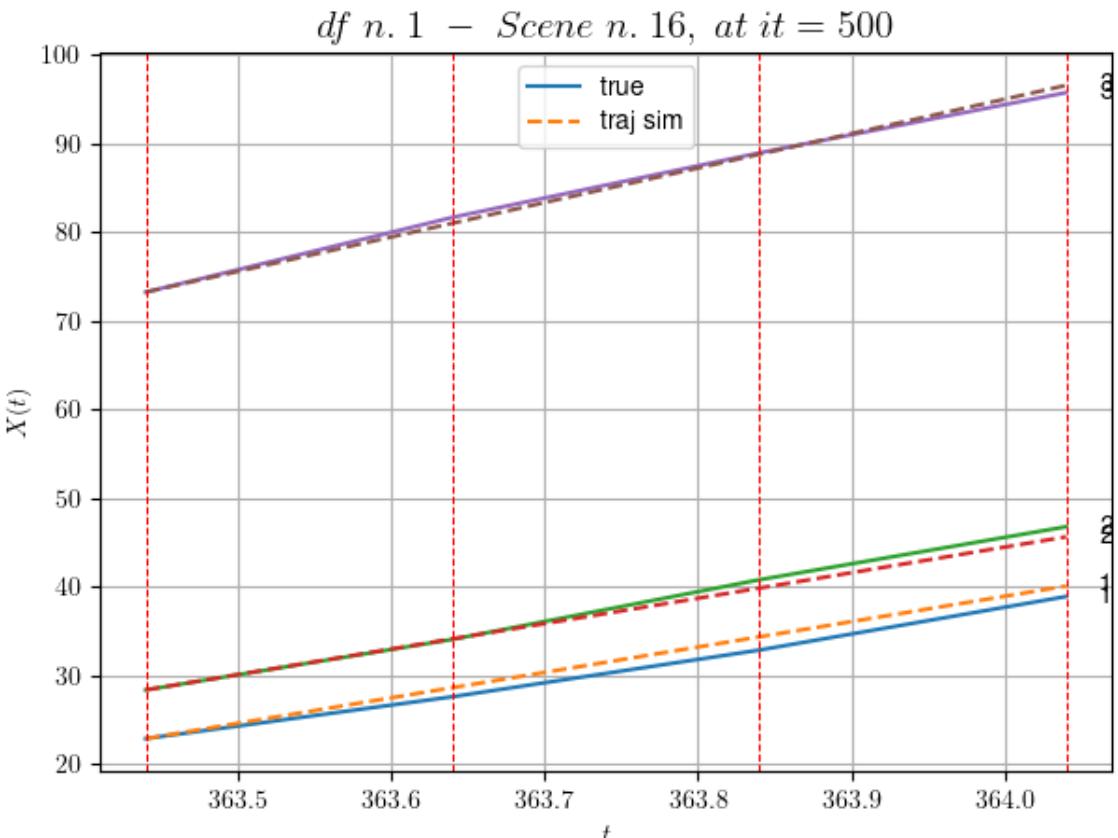
- Time interval n.1: [363.64, 363.84]  
 \* y\_true: [26.3393983 33.66093634]  
 \* v\_ann: [28.683963775634766, 28.63963508605957, 3  
 8.923494443014064]

---

- Time interval n.2: [363.84, 364.04]  
 \* y\_true: [30.2407755 29.94110461]  
 \* v\_ann: [28.66423988342285, 28.95928955078125, 38.  
 923494443014064]

---

\* err= 0.6644812552194727  
 \* Learning rate NN = 2.952449540316593e-05  
 \* diff = 0.0007850158433215793



For scene 16/28

\* use LR\_NN=5e-05 with err=24.18059993851402 at it=19  
 \* v0\_scn\_mean = 38.388085177079795

\* MAE = 0.6644812552194727

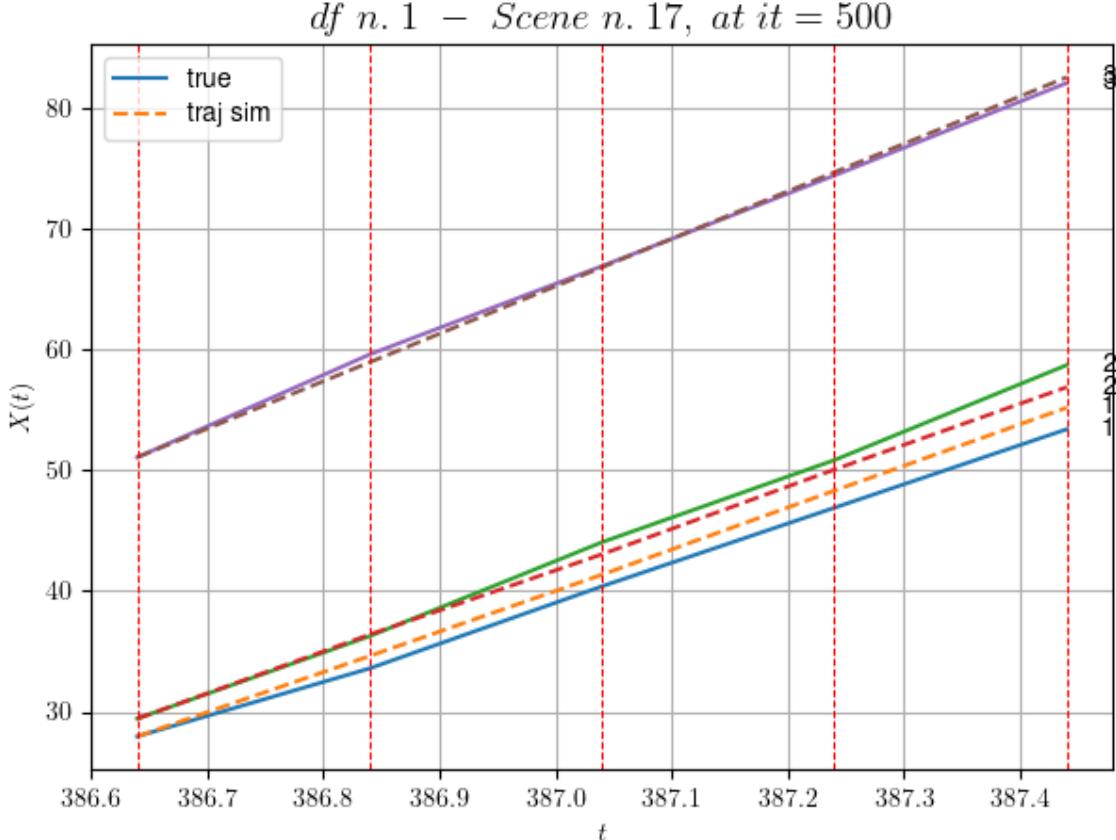
```
=====
=====
- Time interval n.0: [386.64, 386.84]
 * y_true: [28.15052447 34.1607672]
 * v_ann: [33.269798278808594, 34.80943298339844, 3
9.34610016762252]

- Time interval n.1: [386.84, 387.04]
 * y_true: [34.00091123 38.91120777]
 * v_ann: [33.71818161010742, 33.272735595703125, 3
9.34610016762252]

- Time interval n.2: [387.04, 387.24]
 * y_true: [32.52639997 34.00151192]
 * v_ann: [34.767547607421875, 35.07497024536133, 3
9.34610016762252]

- Time interval n.3: [387.24, 387.44]
 * y_true: [32.52639997 39.36234046]
 * v_ann: [34.3917121887207, 34.120967864990234, 39.
34610016762252]

* err= 0.8596256537011863
* Learning rate NN = 0.000239148415857926
* diff = 0.00032191821010929544
```



For scene 17/28

```
* use LR_NN=0.0005 with err=59.001515437301485 at it=19
* v0_scn_mean = 38.785334577184464
* MAE = 0.8109687346250635
```

---



---

```
- Time interval n.0: [431.84, 432.04]
* y_true: [30.8908033 31.49166882]
* v_ann: [32.2120361328125, 32.24612045288086, 30.0
84161636189485]
```

---



---

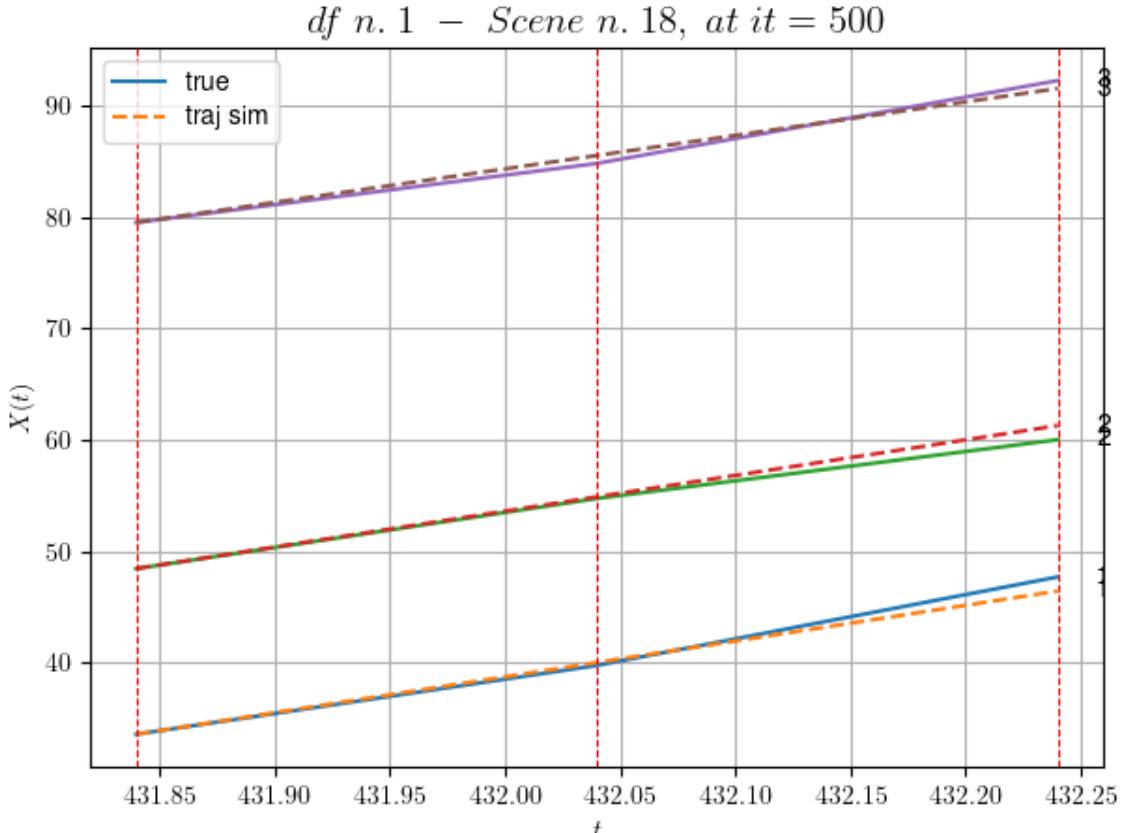
```
- Time interval n.1: [432.04, 432.24]
* y_true: [39.73151551 26.376716]
* v_ann: [32.067195892333984, 31.95087432861328, 3
0.084161636189485]
```

---



---

```
* err= 0.47950019418911755
* Learning rate NN = 3.6449993785936385e-05
* diff = 1.073393496309194e-07
```



For scene 18/28

\* use LR\_NN=5e-05 with err=7.435997320539738 at it=19  
 \* v0\_scn\_mean = 30.079111941794626  
 \* MAE = 0.47903377540195285

---



---

- Time interval n.0: [446.24, 446.44]  
 \* y\_true: [25.89017971 23.30046083]  
 \* v\_ann: [26.90035629272461, 27.349924087524414, 2  
 9.554429209125928]

---

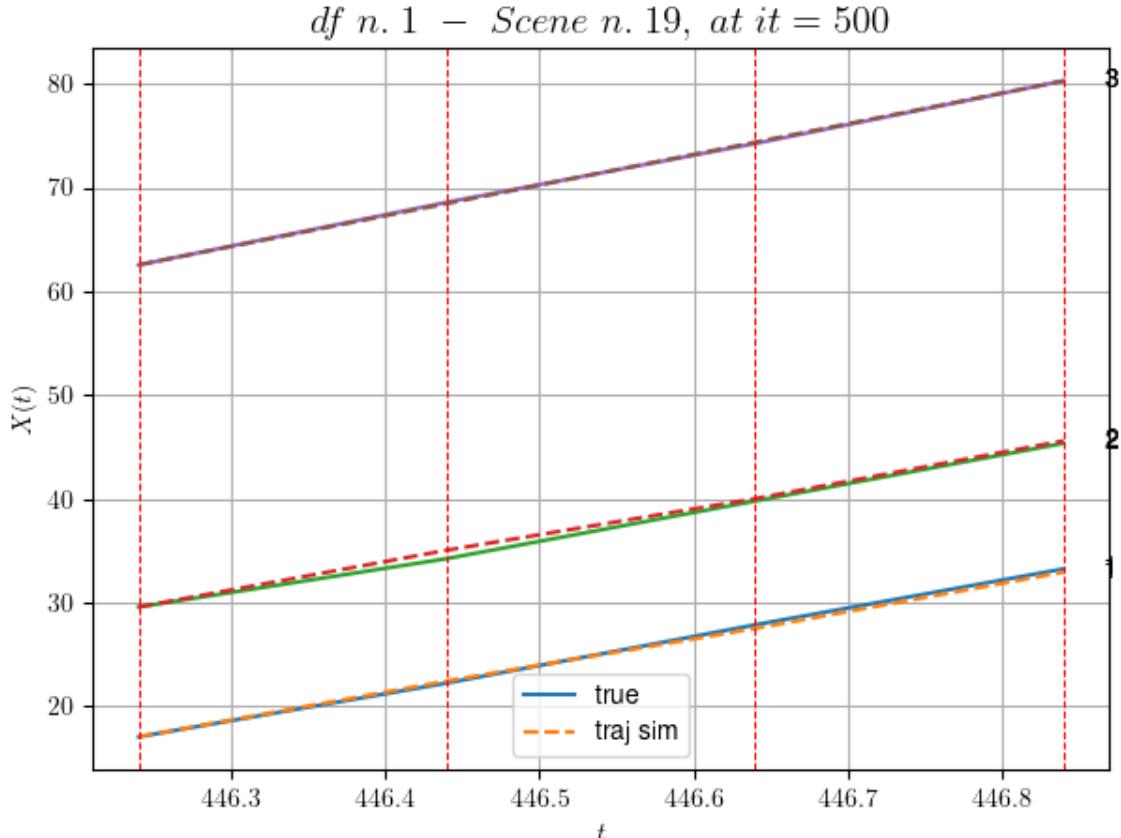
- Time interval n.1: [446.44, 446.64]  
 \* y\_true: [28.05031625 27.72075411]  
 \* v\_ann: [25.312591552734375, 24.839139938354492, 2  
 9.554429209125928]

---

- Time interval n.2: [446.64, 446.84]  
 \* y\_true: [26.94045507 27.8009832 ]  
 \* v\_ann: [27.075632095336914, 27.847408294677734, 2  
 9.554429209125928]

---

\* err= 0.08874716192539878  
 \* Learning rate NN = 0.0002952449722215533  
 \* diff = 5.938404611512127e-05



For scene 19/28

```
* use LR_NN=0.0005 with err=12.316271160639737 at it=19
* v0_scn_mean = 29.581163436573114
* MAE = 0.07433196267806522
```

---



---

```
- Time interval n.0: [447.44, 447.64]
* y_true: [31.0713577 29.31148494]
* v_ann: [29.89601707458496, 27.025733947753906, 3
2.58486004517727]
```

---

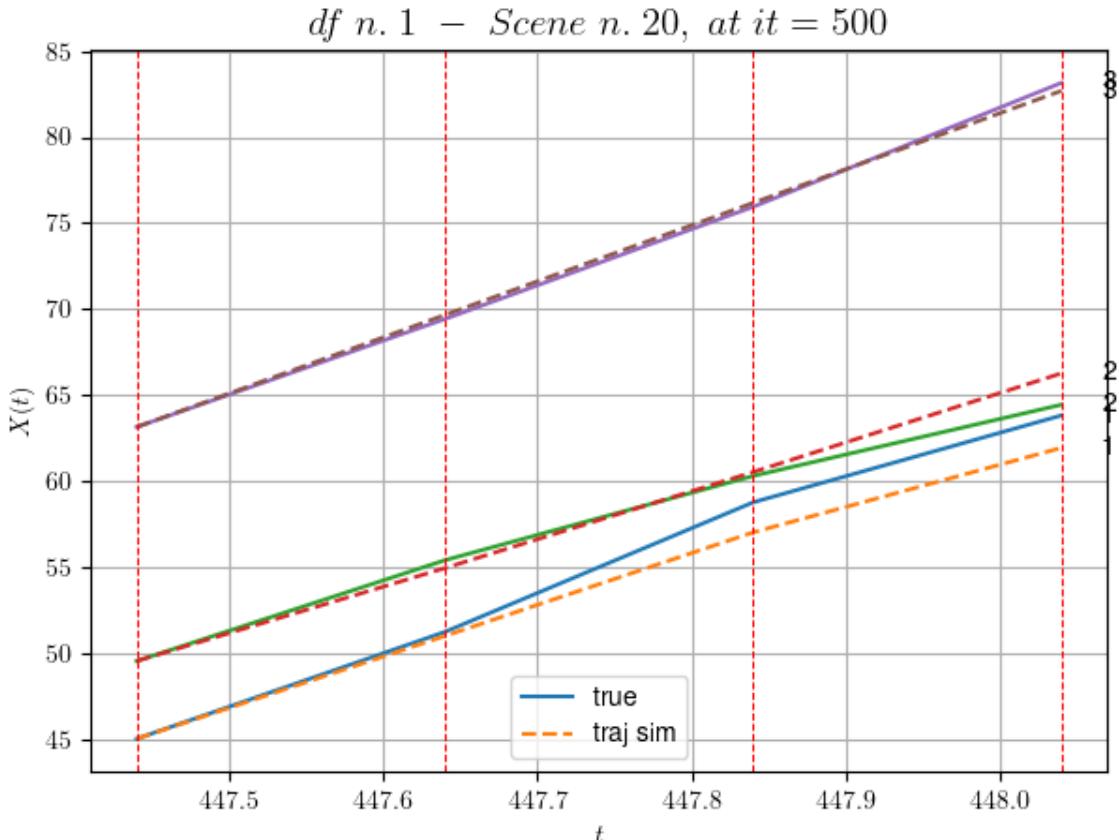
```
- Time interval n.1: [447.64, 447.84]
* y_true: [37.68225285 24.50151408]
* v_ann: [30.123071670532227, 27.913511276245117, 3
2.58486004517727]
```

---

```
- Time interval n.2: [447.84, 448.04]
* y_true: [25.261801 20.71149408]
* v_ann: [24.58056640625, 28.71484375, 32.584860045
17727]
```

---

```
* err= 0.8807281331874882
* Learning rate NN = 0.0002952449722215533
* diff = 0.0027972137424812082
```



For scene 20/28

```
* use LR_NN=0.0005 with err=25.072417425630604 at it=19
* v0_scn_mean = 32.4297685585214
* MAE = 0.8807281331874882
```

---



---

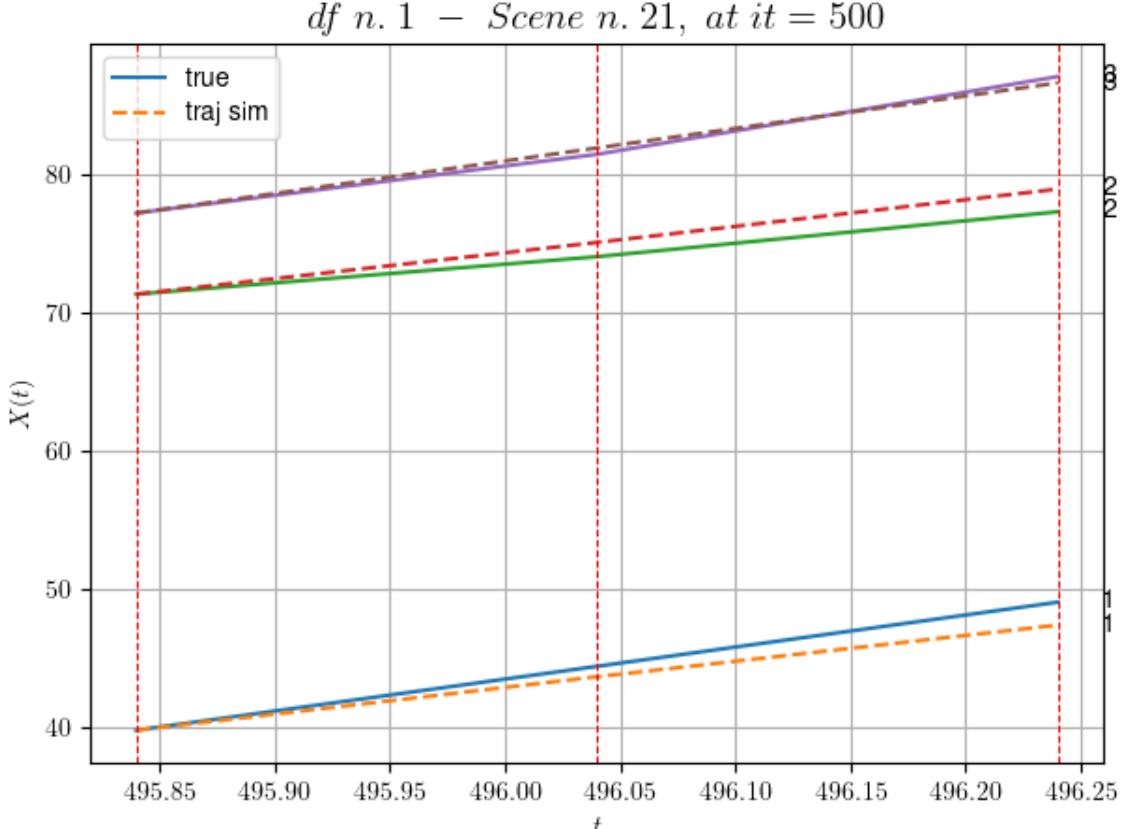
```
- Time interval n.0: [495.84, 496.04]
* y_true: [23.1307843 13.57637571]
* v_ann: [19.365163803100586, 18.740930557250977, 2
3.563093490872664]
```

---

```
- Time interval n.1: [496.04, 496.24]
* y_true: [23.23098731 16.2618474]
* v_ann: [18.69980239868164, 19.318519592285156, 2
3.563093490872664]
```

---

```
* err= 0.8347373849912345
* Learning rate NN = 0.00036449998151510954
* diff = 0.00019906586754292466
```



For scene 21/28

\* use LR\_NN=0.0005 with err=2.9766019514961535 at it=19  
 \* v0\_scn\_mean = 23.949307592416893  
 \* MAE = 0.8347373849912345

---



---

For scene 22/28

\* use LR\_NN=0.0005 with err=13.80751495201821 at it=19  
 \* v0\_scn\_mean = 24.303895430676793  
 \* MAE = 0.51686261052183

---



---

- Time interval n.0: [499.04, 499.24]  
 \* y\_true: [23.84103851 15.32650765]  
 \* v\_ann: [21.539377212524414, 21.422338485717773, 1  
 7.832163517130507]

---



---

- Time interval n.1: [499.24, 499.44]  
 \* y\_true: [26.92142921 19.88726092]  
 \* v\_ann: [21.419519424438477, 21.50026512145996, 1  
 7.832163517130507]

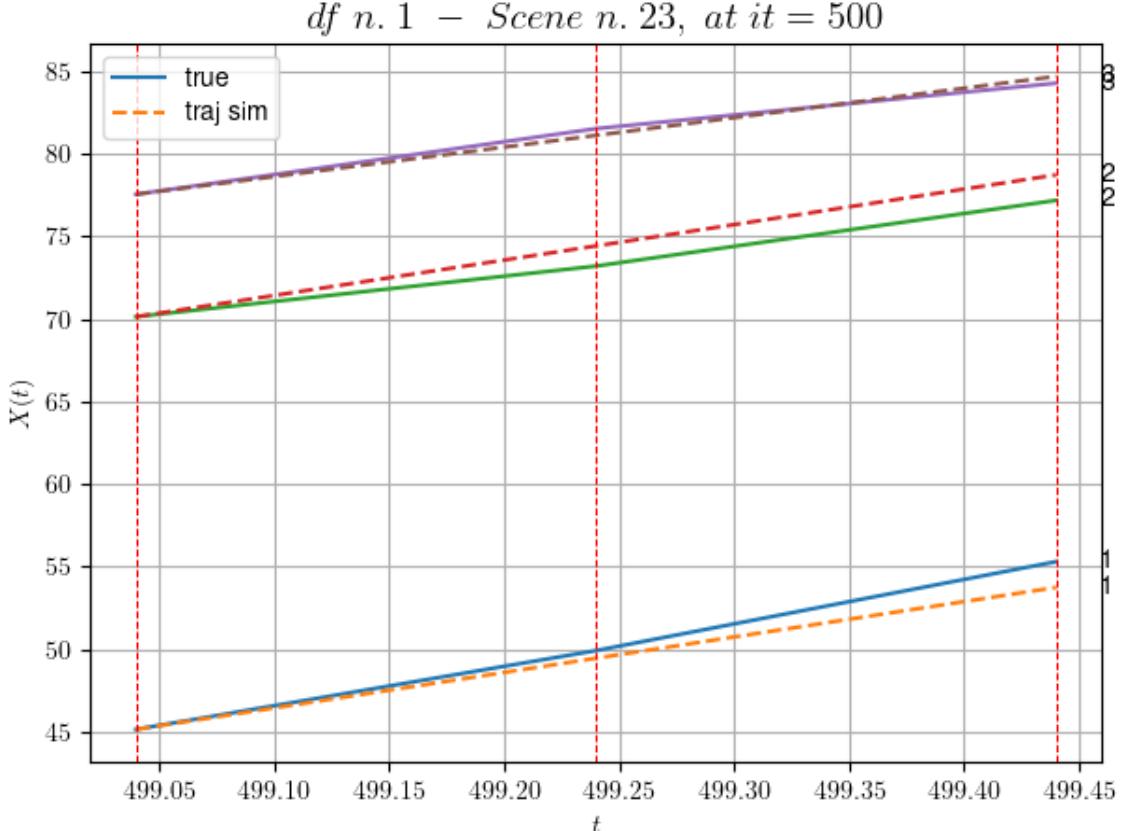
---



---

\* err= 0.7604586147103393

\* Learning rate NN = 3.6449993785936385e-05  
 \* diff = 0.000598147836867069



For scene 23/28

\* use LR\_NN=5e-05 with err=5.194595633355877 at it=19  
 \* v0\_scn\_mean = 18.562233159793404  
 \* MAE = 0.6182063829110503

---



---

For scene 24/28

\* use LR\_NN=0.001 with err=10.59316327051112 at it=19  
 \* v0\_scn\_mean = 13.651999744148144  
 \* MAE = 0.04867570410222053

---



---

- Time interval n.0: [502.24, 502.44]  
 \* y\_true: [20.97545504 14.04040867]  
 \* v\_ann: [16.61563491821289, 18.220203399658203, 1  
 5.581016722934319]

---



---

- Time interval n.1: [502.44, 502.64]  
 \* y\_true: [18.07559412 14.7904947 ]  
 \* v\_ann: [16.884342193603516, 17.943401336669922, 1  
 5.581016722934319]

---



---

```

- Time interval n.2: [502.64, 502.84]

* y_true: [18.07559412 14.18054394]

* v_ann: [17.28670310974121, 16.907245635986328, 1

5.581016722934319]

- Time interval n.3: [502.84, 503.04]

* y_true: [21.64181695 16.68485314]

* v_ann: [18.184823989868164, 16.229040145874023, 1

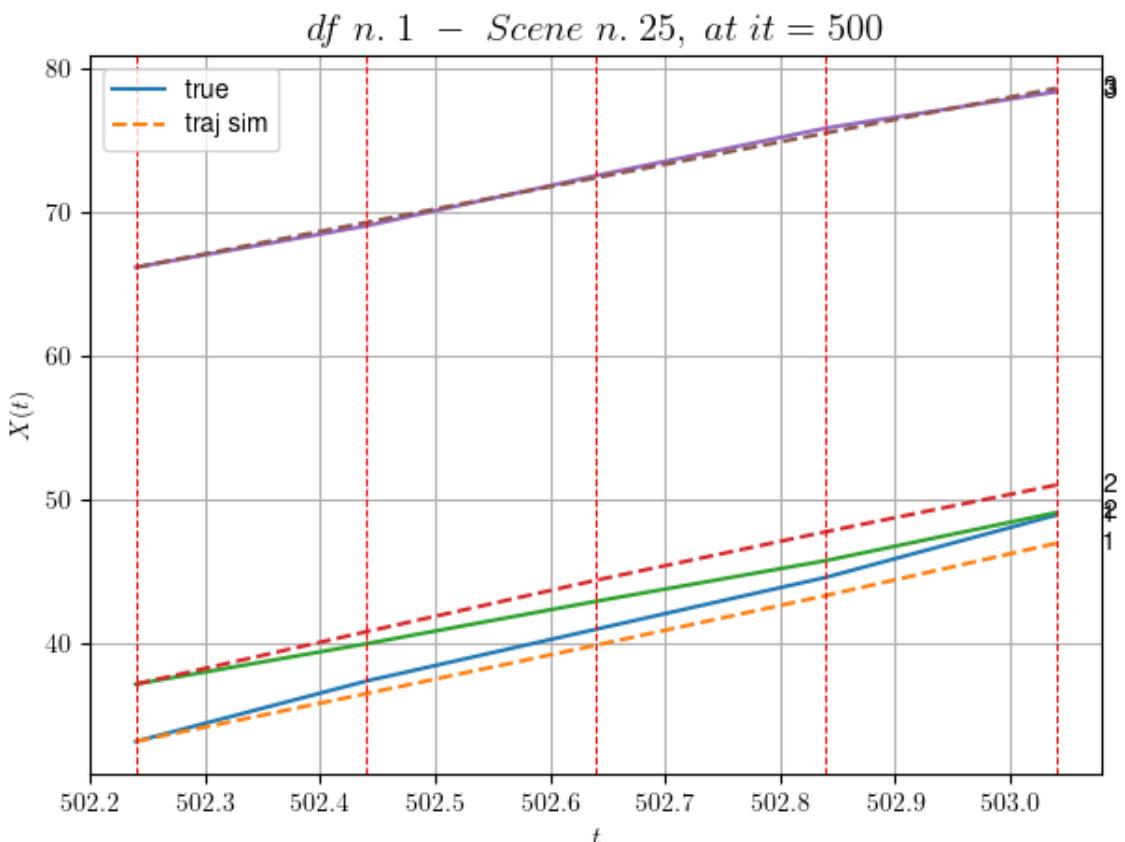
5.581016722934319]

* err= 1.2191635814353072

* Learning rate NN = 0.000478296831715852

* diff = 0.00027011159216977602

```



For scene 25/28

```

* use LR_NN=0.001 with err=40.22285410764469 at it=19
* v0_scn_mean = 16.446155072177035
* MAE = 1.2191635814353072
=====
```

```

- Time interval n.0: [534.84, 535.04]

* y_true: [8.93323515 20.37071651]

* v_ann: [16.69361114501953, 19.148582458496094, 2

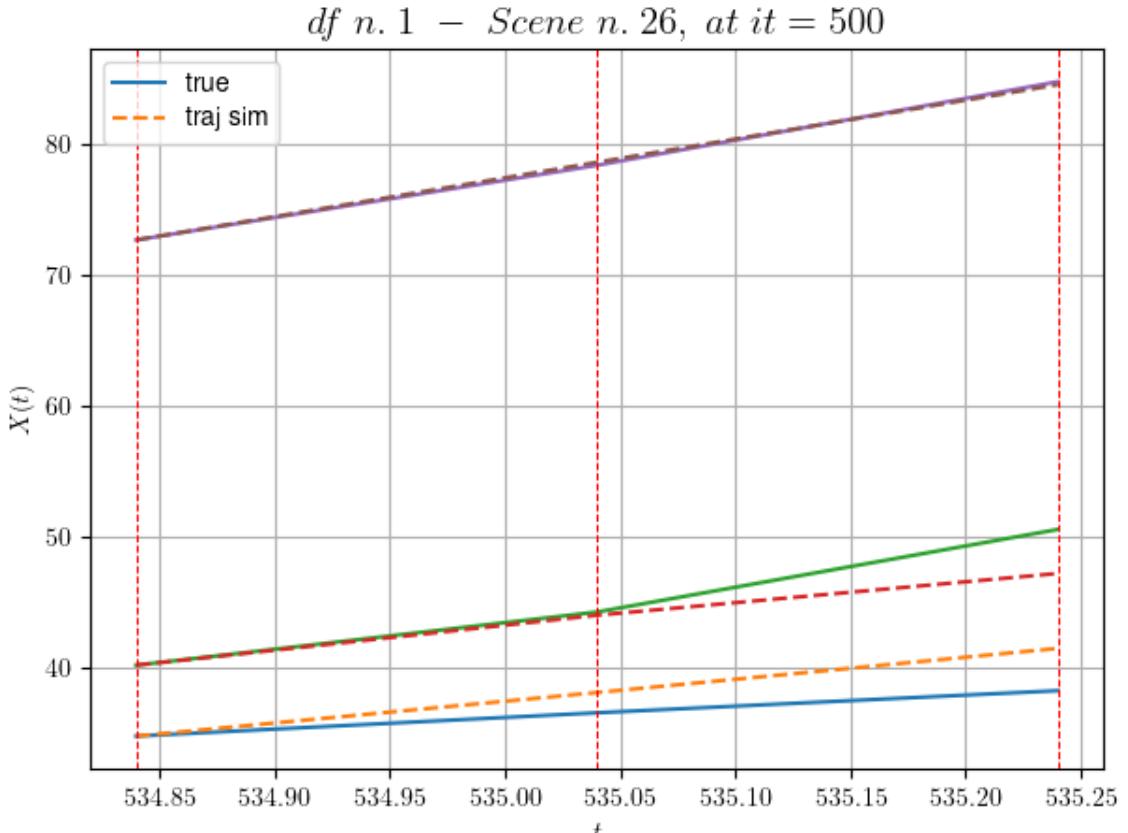
9.75348235783514]

```

- Time interval n.1: [535.04, 535.24]  
 \* y\_true: [ 8.47527286 31.64140498]  
 \* v\_ann: [16.90751838684082, 16.002954483032227, 2  
 9.75348235783514]

---

\* err= 2.714861493554659  
 \* Learning rate NN = 0.00036449998151510954  
 \* diff = 0.00011703263282480947



For scene 26/28

\* use LR\_NN=0.0005 with err=1.0685576829802128 at it=19  
 \* v0\_scn\_mean = 29.768273405296473  
 \* MAE = 2.6302088461535185

---



---

- Time interval n.0: [573.84, 574.04]  
 \* y\_true: [20.07571717 13.74586409]  
 \* v\_ann: [12.786943435668945, 12.975638389587402,  
 9.338719660907138]

---

- Time interval n.1: [574.04, 574.24]  
 \* y\_true: [13.45064024 11.92582032]  
 \* v\_ann: [14.690225601196289, 15.671672821044922,  
 9.338719660907138]

---



---

```

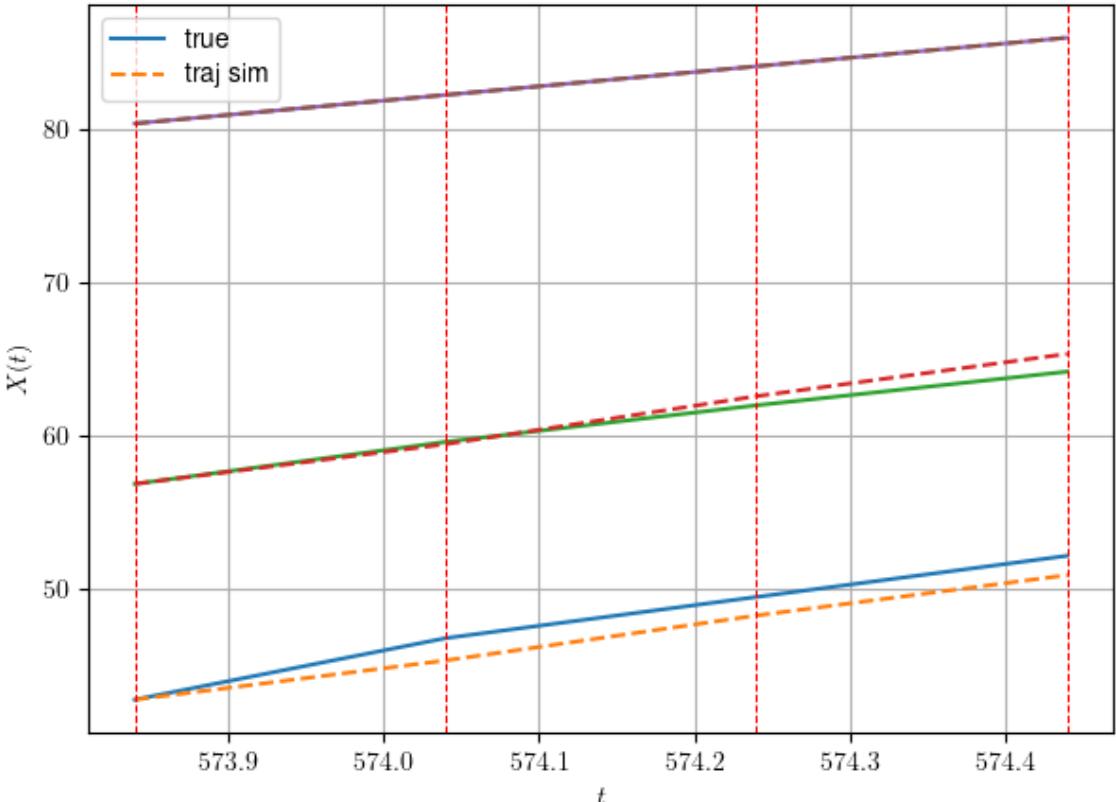
- Time interval n.2: [574.24, 574.44]
 * y_true: [13.45064024 11.00083908]
 * v_ann: [13.188897132873535, 13.828593254089355,
 9.338719660907138]
```

---

```

* err= 0.5755786389585563
* Learning rate NN = 0.0005904899444431067
* diff = 9.310069514800734e-05
```

*df n. 1 – Scene n. 27, at it = 500*



For scene 27/28

```

* use LR_NN=0.001 with err=22.641675233429776 at it=19
* v0_scn_mean = 10.578395553605835
* MAE = 0.5546801517172052
```

---



---

For df=1 with 28 scenes, time taken: 323.70

---



---

In df n.2/10 we have 18 scenes

---



---

For scene 0/18

```

* use LR_NN=5e-05 with err=15.823800698932347 at it=19
* v0_scn_mean = 17.267678400773995
* MAE = 0.21509722926856767
```

```
=====
=====

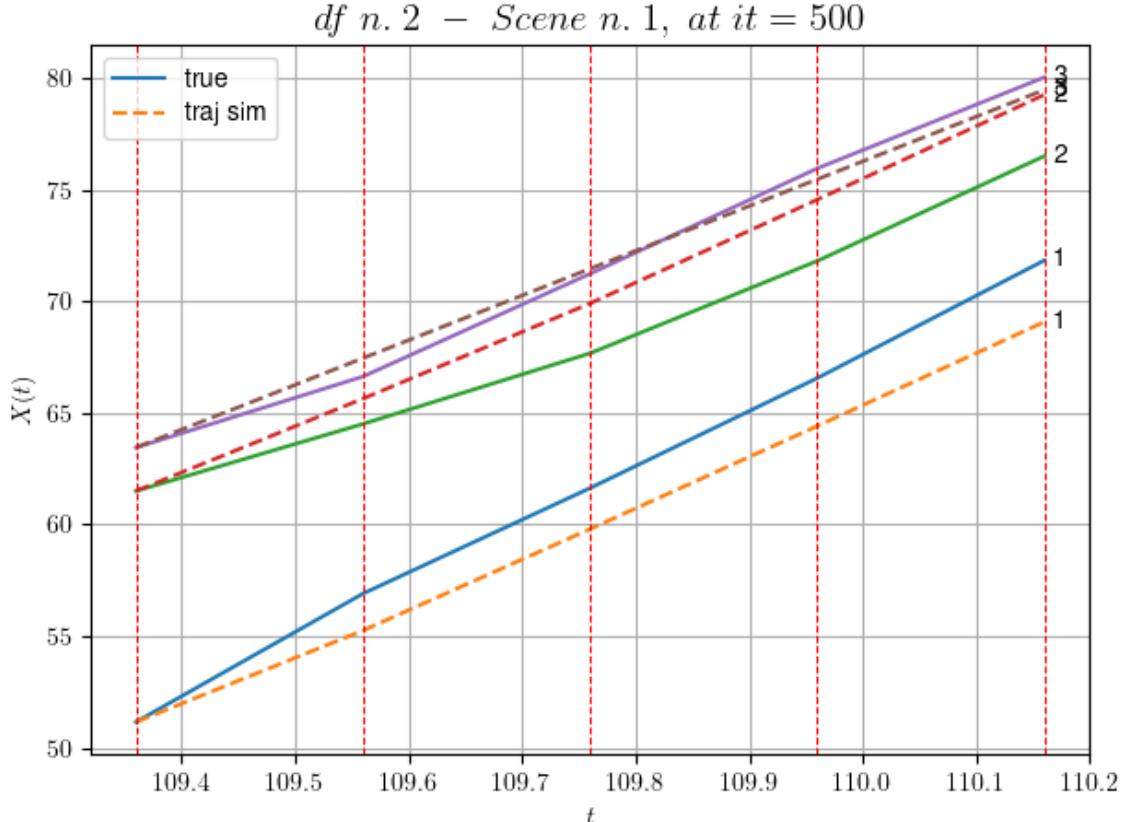
 - Time interval n.0: [109.36, 109.56]
 * y_true: [28.77160952 15.03115545]
 * v_ann: [20.504507064819336, 20.701618194580078, 2
0.033858704331468]

 - Time interval n.1: [109.56, 109.76]
 * y_true: [23.64157457 15.83133823]
 * v_ann: [22.73688316345215, 21.33312225341797, 20.
033858704331468]

 - Time interval n.2: [109.76, 109.96]
 * y_true: [24.63196009 20.68195399]
 * v_ann: [23.055397033691406, 23.242141723632812, 2
0.033858704331468]

 - Time interval n.3: [109.96, 110.16]
 * y_true: [26.38241903 23.49250056]
 * v_ann: [23.348594665527344, 23.50180435180664, 2
0.033858704331468]

* err= 2.731806628703378
* Learning rate NN = 0.000478296831715852
* diff = 0.00018366337983488634
```



For scene 1/18

```
* use LR_NN=0.001 with err=10.221025642932823 at it=19
* v0_scn_mean = 20.63182673461345
* MAE = 2.731806628703378
```

---



---

- Time interval n.0: [170.36, 170.56]
  - \* y\_true: [25.3307413 19.52081588]
  - \* v\_ann: [24.46790313720703, 23.998632431030273, 1  
6.15160939147769]

---

- Time interval n.1: [170.56, 170.76]
  - \* y\_true: [29.74113537 17.1608437 ]
  - \* v\_ann: [24.413818359375, 23.819910049438477, 16.1  
5160939147769]

---

- Time interval n.2: [170.76, 170.96]
  - \* y\_true: [24.43113316 23.6413756 ]
  - \* v\_ann: [24.303956985473633, 23.79364776611328, 1  
6.15160939147769]

---

- Time interval n.3: [170.96, 171.16]
  - \* y\_true: [22.71130298 30.41206279]
  - \* v\_ann: [24.262779235839844, 23.878250122070312, 1

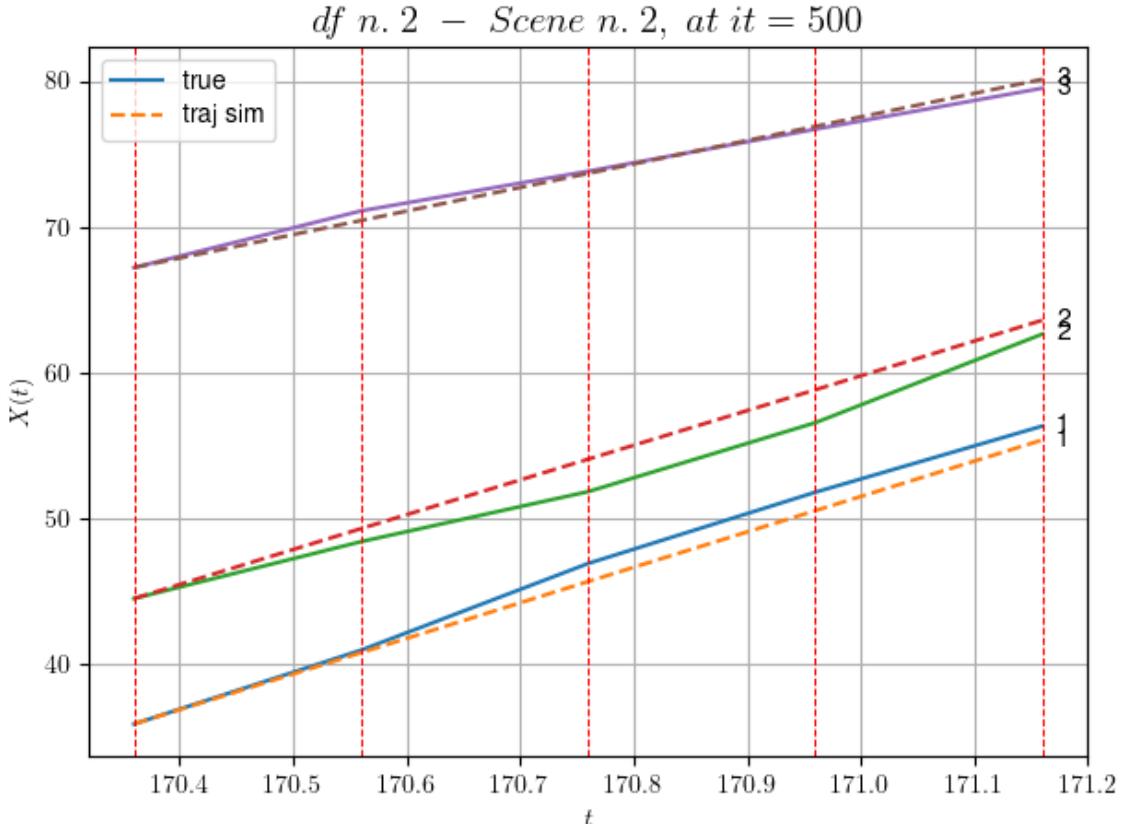
6.15160939147769]

---



---

```
* err= 1.11375092371211
* Learning rate NN = 4.7829678806010634e-05
* diff = 0.211216044282666e-05
```



For scene 2/18

```
* use LR_NN=0.0001 with err=43.16132613663277 at it=19
* v0_scn_mean = 16.982512206226353
* MAE = 1.110781821795048
```

---



---

```
- Time interval n.0: [179.36, 179.56]
 * y_true: [10.36002857 23.43048282]
 * v_ann: [17.291290283203125, 17.95186996459961, 2
2.08199952987911]
```

---

```
- Time interval n.1: [179.56, 179.76]
 * y_true: [10.37004005 22.87060641]
 * v_ann: [17.117280960083008, 17.49122428894043, 2
2.08199952987911]
```

---

```
- Time interval n.2: [179.76, 179.96]
 * y_true: [15.39008451 20.81068862]
 * v_ann: [16.918298721313477, 17.136245727539062, 2
2.08199952987911]
```

---

```

- Time interval n.3: [179.96, 180.16]

* y_true: [12.44008929 23.53096892]

* v_ann: [17.46919059753418, 17.777442932128906, 2

2.08199952987911]

```

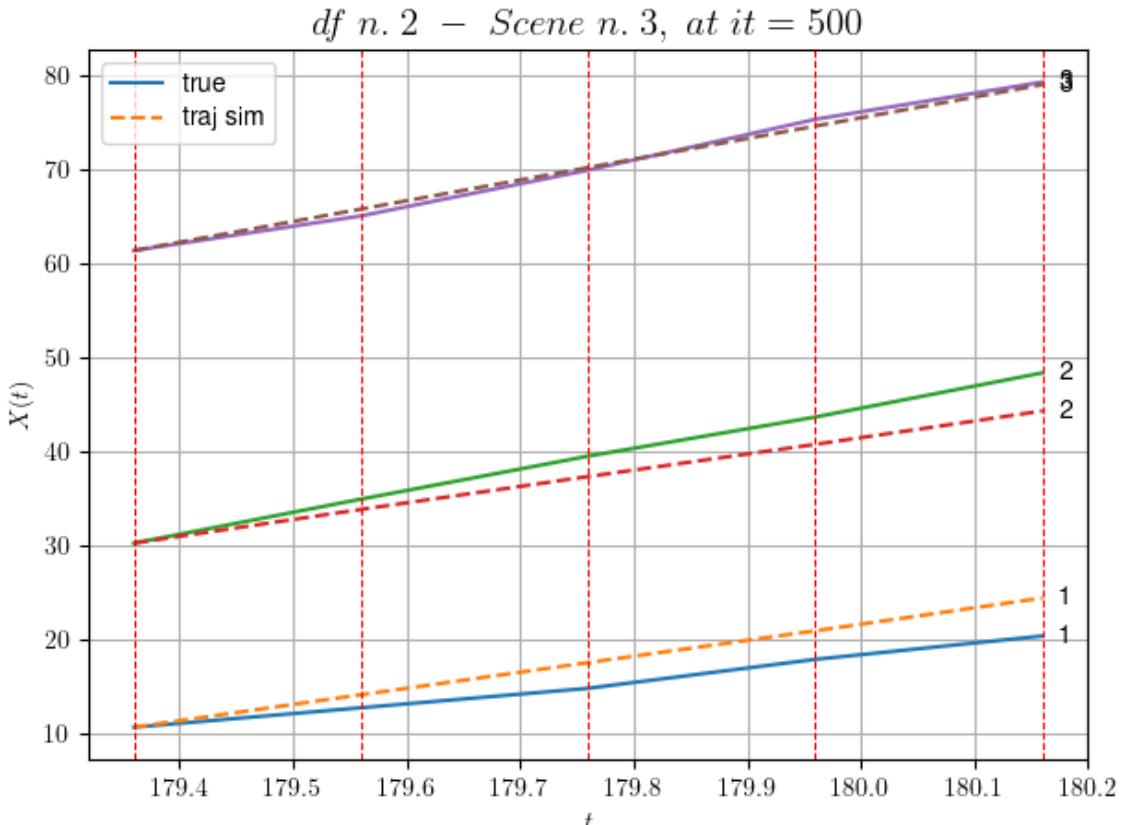
```

* err= 4.470592710364458

* Learning rate NN = 0.000239148415857926

* diff = 0.00013021929814094335

```



For scene 3/18

```

* use LR_NN=0.0005 with err=5.969946102690813 at it=19

* v0_scn_mean = 22.557079202585275

* MAE = 4.468621460052198
=====
```

```

- Time interval n.0: [199.76, 199.96]

* y_true: [18.79121443 18.55195156]

* v_ann: [19.65087890625, 19.070266723632812, 14.65

1669964039954]

```

```

- Time interval n.1: [199.96, 200.16]

* y_true: [20.30155709 19.85230976]

* v_ann: [19.060909271240234, 19.697826385498047, 1

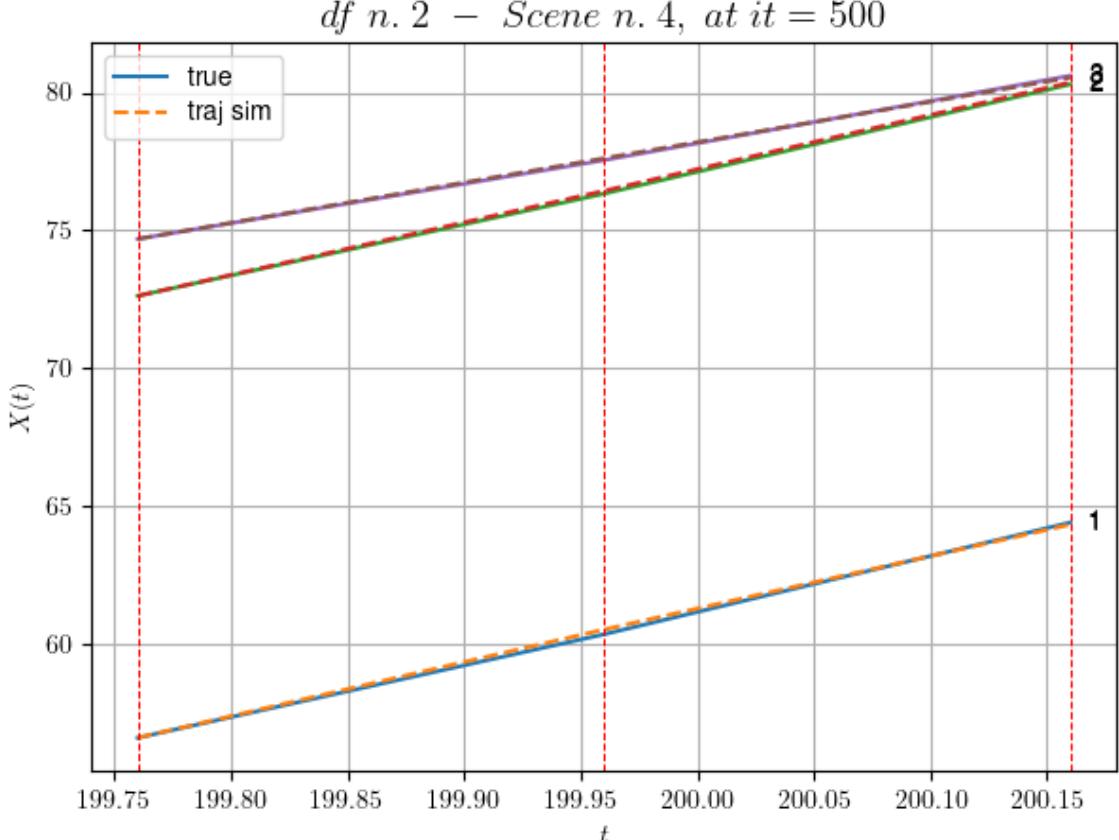
4.651669964039954]

```

```

* err= 0.006801389700142782
* Learning rate NN = 0.0007289999630302191
* diff = 4.400865967113098e-05

```



For scene 4/18

```

* use LR_NN=0.001 with err=9.980803048613545 at it=19
* v0_scn_mean = 15.57256907709068
* MAE = 0.006801389700142782

```

---



---

- Time interval n.0: [212.56, 212.76]  
\* y\_true: [14.43013055 12.85042103]  
\* v\_ann: [17.258197784423828, 16.454181671142578, 2  
0.507135320916543]

---



---

- Time interval n.1: [212.76, 212.96]  
\* y\_true: [10.79011916 33.80137312]  
\* v\_ann: [17.15740394592285, 16.015182495117188, 2  
0.507135320916543]

---



---

- Time interval n.2: [212.96, 213.16]  
\* y\_true: [16.24022861 13.70067627]  
\* v\_ann: [16.976181030273438, 16.651729583740234, 2  
0.507135320916543]

```

- Time interval n.3: [213.16, 213.36]

 * y_true: [10.73017559 21.10118973]

 * v_ann: [16.929515838623047, 16.6243839263916, 20.

507135320916543]

```

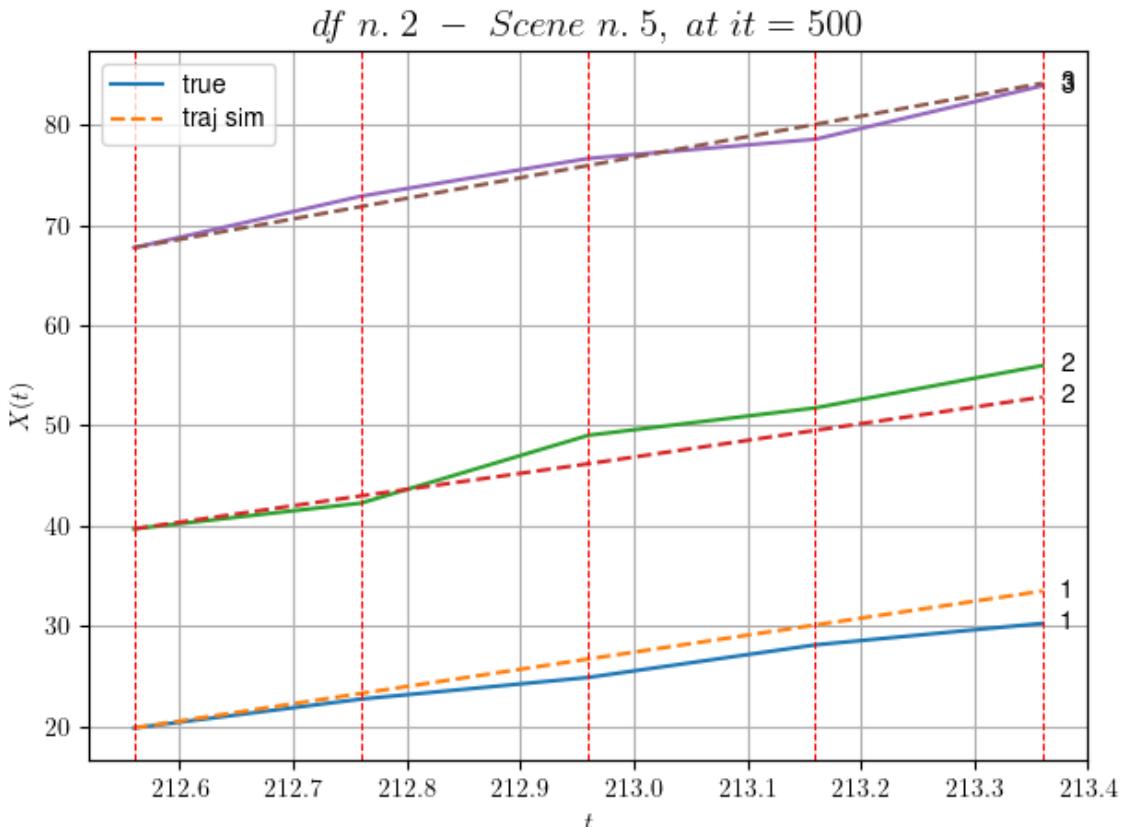
```

* err= 3.0244786079350257

* Learning rate NN = 2.3914839403005317e-05

* diff = 0.0056966450271769276

```



For scene 5/18

```

* use LR_NN=5e-05 with err=8.785346994824904 at it=19

* v0_scn_mean = 21.076706775452404

* MAE = 3.0244786079350257

```

```

=====
=====

- Time interval n.0: [318.16, 318.36]

 * y_true: [13.01007537 20.36054455]

 * v_ann: [17.23914909362793, 16.84164047241211, 20.

35519762916315]

```

```

- Time interval n.1: [318.36, 318.56]

 * y_true: [14.27010639 20.89068863]

 * v_ann: [17.16510009765625, 16.7984561920166, 20.3

5519762916315]

```

```

- Time interval n.2: [318.56, 318.76]

 * y_true: [12.16011799 21.20084683]

 * v_ann: [17.147533416748047, 16.857563018798828, 2

 0.35519762916315]

```

```

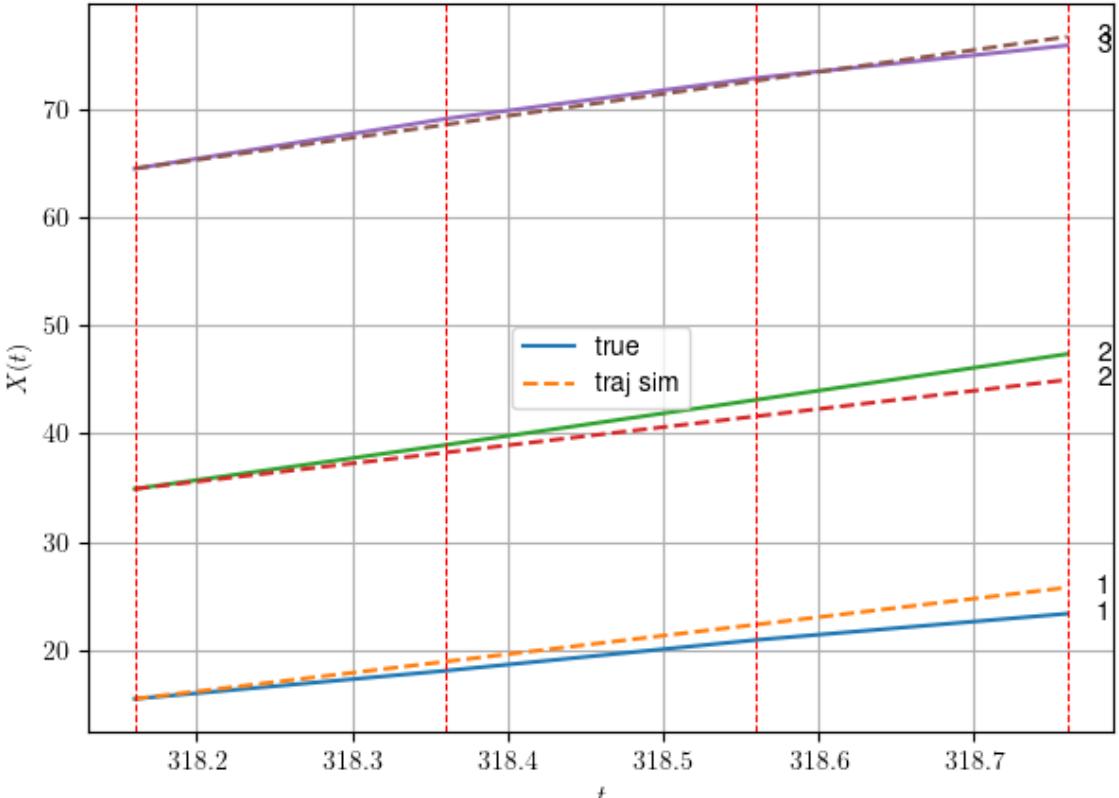
* err= 1.5127197948657967

* Learning rate NN = 2.952449540316593e-05

* diff = 0.001464886457699599

```

*df n. 2 – Scene n. 6, at it = 500*



For scene 6/18

```

* use LR_NN=5e-05 with err=4.955878503103803 at it=19

* v0_scn_mean = 20.933885338383284

* MAE = 1.5127197948657967

```

```

=====
=====

- Time interval n.0: [430.16, 430.36]

 * y_true: [15.83005748 20.27065425]

 * v_ann: [18.855323791503906, 18.800718307495117, 2

 1.236902740721405]

```

```


- Time interval n.1: [430.36, 430.56]

 * y_true: [19.99011659 24.33092793]

 * v_ann: [18.836334228515625, 18.817712783813477, 2

 1.236902740721405]

```

```

- Time interval n.2: [430.56, 430.76]

* y_true: [14.67011767 20.05093433]

* v_ann: [19.255094528198242, 19.040124893188477, 2

1.236902740721405]

```

```

- Time interval n.3: [430.76, 430.96]

* y_true: [14.38015429 21.97121967]

* v_ann: [19.137327194213867, 18.7900390625, 21.236

902740721405]

```

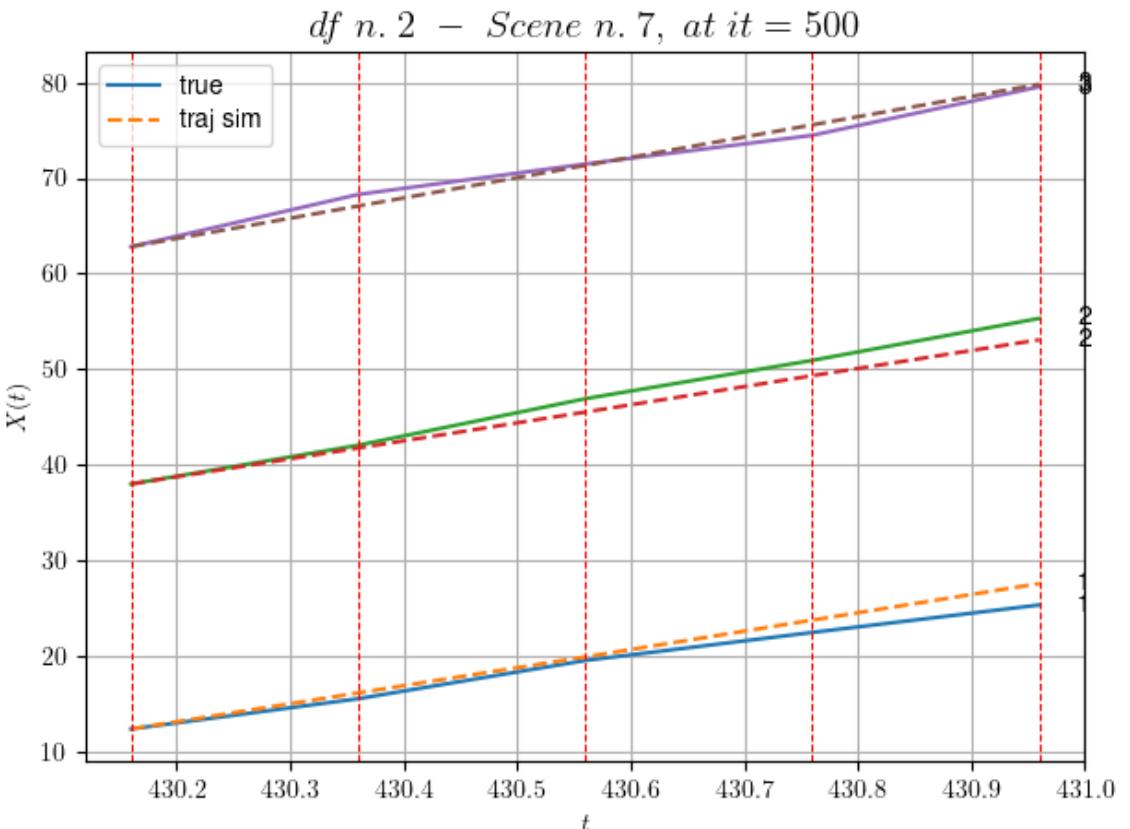
```

* err= 1.3037983313375283

* Learning rate NN = 4.7829678806010634e-05

* diff = 0.00030379838332317277

```



For scene 7/18

```

* use LR_NN=0.0001 with err=8.639940242319996 at it=19

* v0_scn_mean = 21.762688182834108

* MAE = 1.2936555938768217

```

```

=====

=====

- Time interval n.0: [435.96, 436.16]

* y_true: [15.85107698 23.95169404]

* v_ann: [19.901294708251953, 22.070446014404297, 2

1.458715492509157]

```

```

- Time interval n.1: [436.16, 436.36]

* y_true: [18.0813972 25.19206379]

* v_ann: [21.7379207611084, 19.155519485473633, 21.

458715492509157]

```

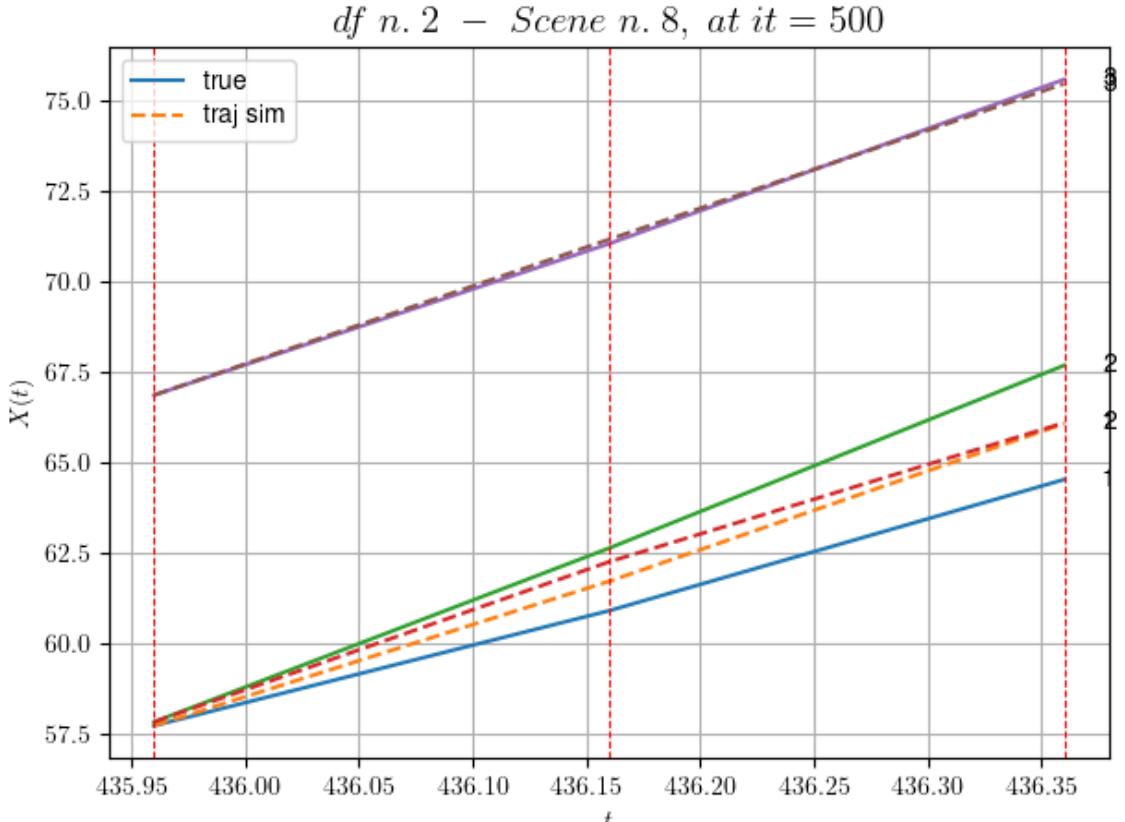
```

* err= 0.634404537752128

* Learning rate NN = 0.0036449995823204517

* diff = 6.092119152212305e-05

```



For scene 8/18

```

* use LR_NN=0.005 with err=3.1109917362984874 at it=19

* v0_scn_mean = 21.97119217947286

* MAE = 0.63008412990017

```

```

=====

=====

- Time interval n.0: [442.76, 442.96]

* y_true: [18.06141662 13.31057742]

* v_ann: [19.417089462280273, 18.938434600830078, 2

2.775896802505255]

```

```

- Time interval n.1: [442.96, 443.16]

* y_true: [20.34015276 11.01053508]

* v_ann: [18.970542907714844, 18.779415130615234, 2

2.775896802505255]

```

```

 - Time interval n.2: [443.16, 443.36]

 * y_true: [26.42894929 13.47072378]

 * v_ann: [18.58771514892578, 18.60253143310547, 22.

775896802505255]

```

```

 - Time interval n.3: [443.36, 443.56]

 * y_true: [22.70036274 15.67093348]

 * v_ann: [18.73341178894043, 18.694185256958008, 2

2.775896802505255]

```

```

 - Time interval n.4: [443.56, 443.76]

 * y_true: [30.60068675 16.84112333]

 * v_ann: [18.774566650390625, 18.734588623046875, 2

2.775896802505255]

```

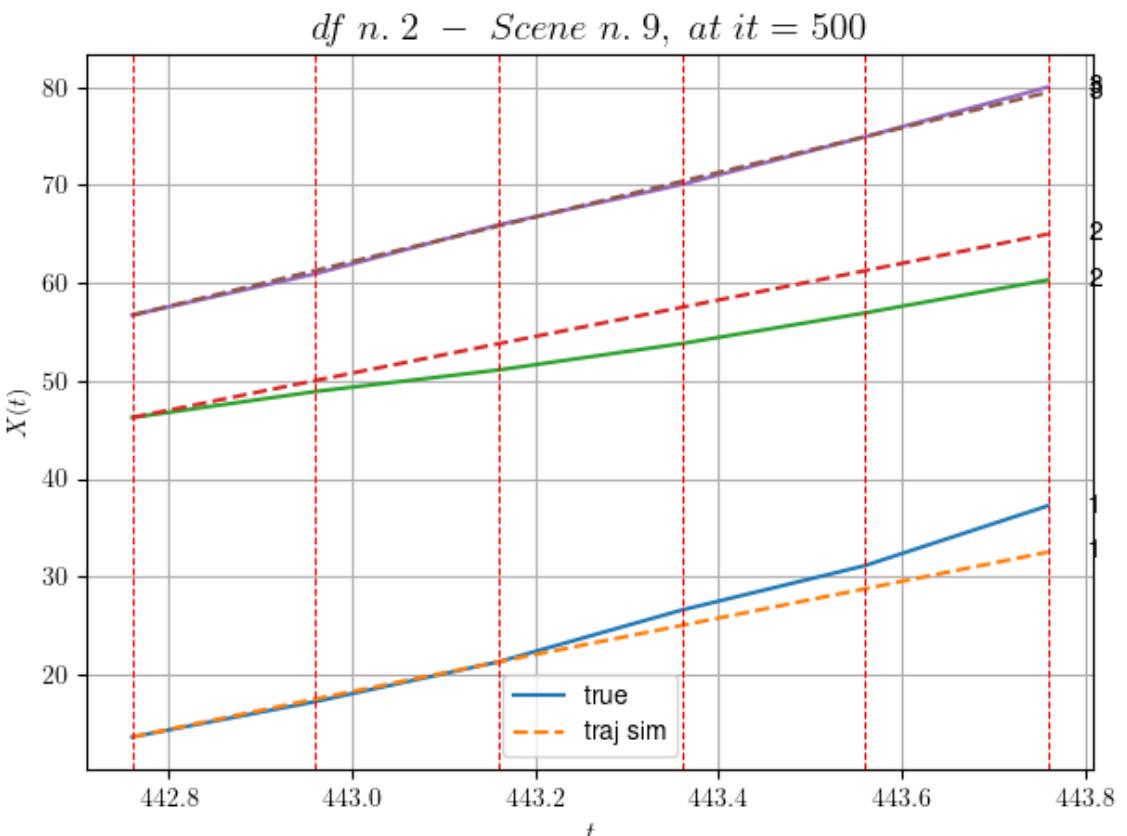
```

* err= 5.20888764207454

* Learning rate NN = 3.874203684972599e-05

* diff = 0.0005480288967225633

```



For scene 9/18

```

* use LR_NN=0.0001 with err=8.187969206012559 at it=19
* v0_scn_mean = 23.20934267000817
* MAE = 5.2027487352485435

```

```

- Time interval n.0: [487.56, 487.76]
 * y_true: [22.90018755 16.61065196]
 * v_ann: [20.762357711791992, 20.513351440429688, 2
1.11190024799205]
```

---

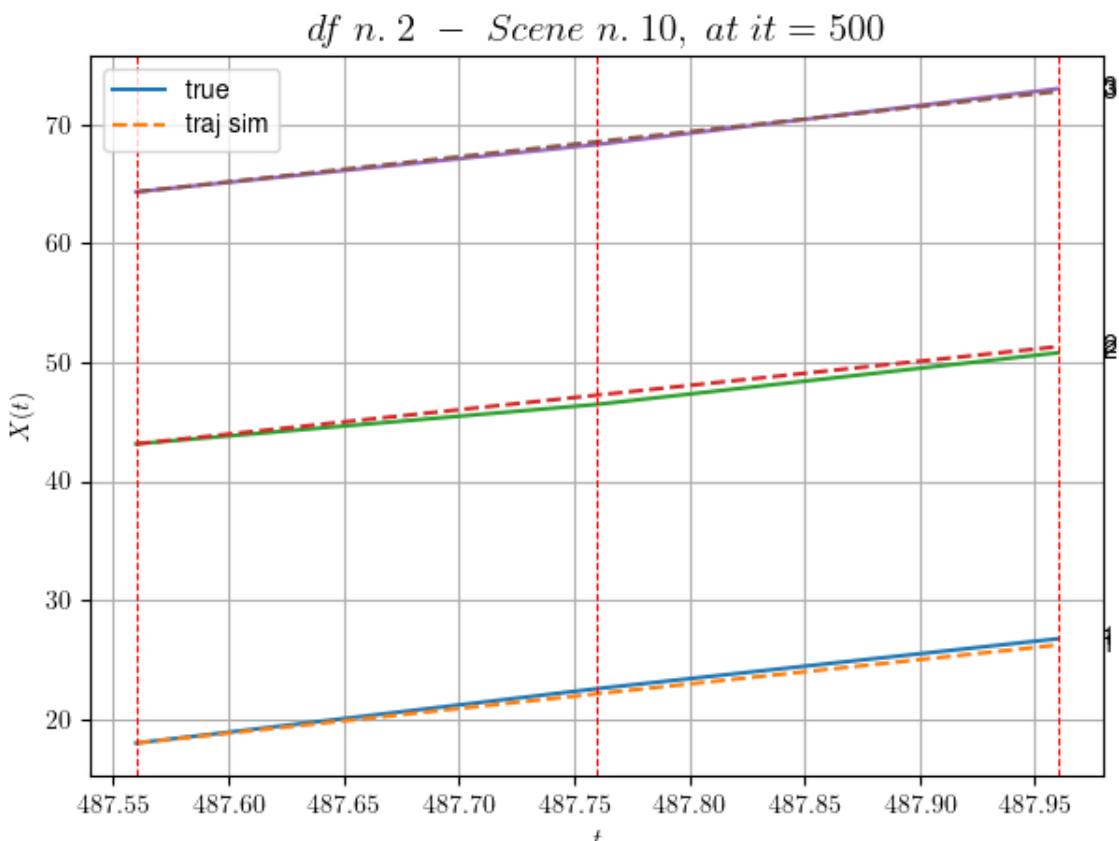
```

- Time interval n.1: [487.76, 487.96]
 * y_true: [21.00025249 21.71102285]
 * v_ann: [20.507944107055664, 20.39201545715332, 2
1.11190024799205]
```

---

```

* err= 0.1614383653859419
* Learning rate NN = 7.289998757187277e-05
* diff = 4.15207502180992e-05
```



For scene 10/18

```

* use LR_NN=0.0001 with err=1.6974711906798479 at it=19
* v0_scn_mean = 21.645185834056058
* MAE = 0.15844658440510848
```

---



---

```

- Time interval n.0: [531.76, 531.96]
 * y_true: [23.26110286 19.80102444]
 * v_ann: [21.61417579650879, 21.996212005615234, 1
7.911731328080357]
```

---



---

```

- Time interval n.1: [531.96, 532.16]
 * y_true: [19.37730225 14.13461647]
 * v_ann: [21.607128143310547, 21.29326820373535, 1
 7.911731328080357]

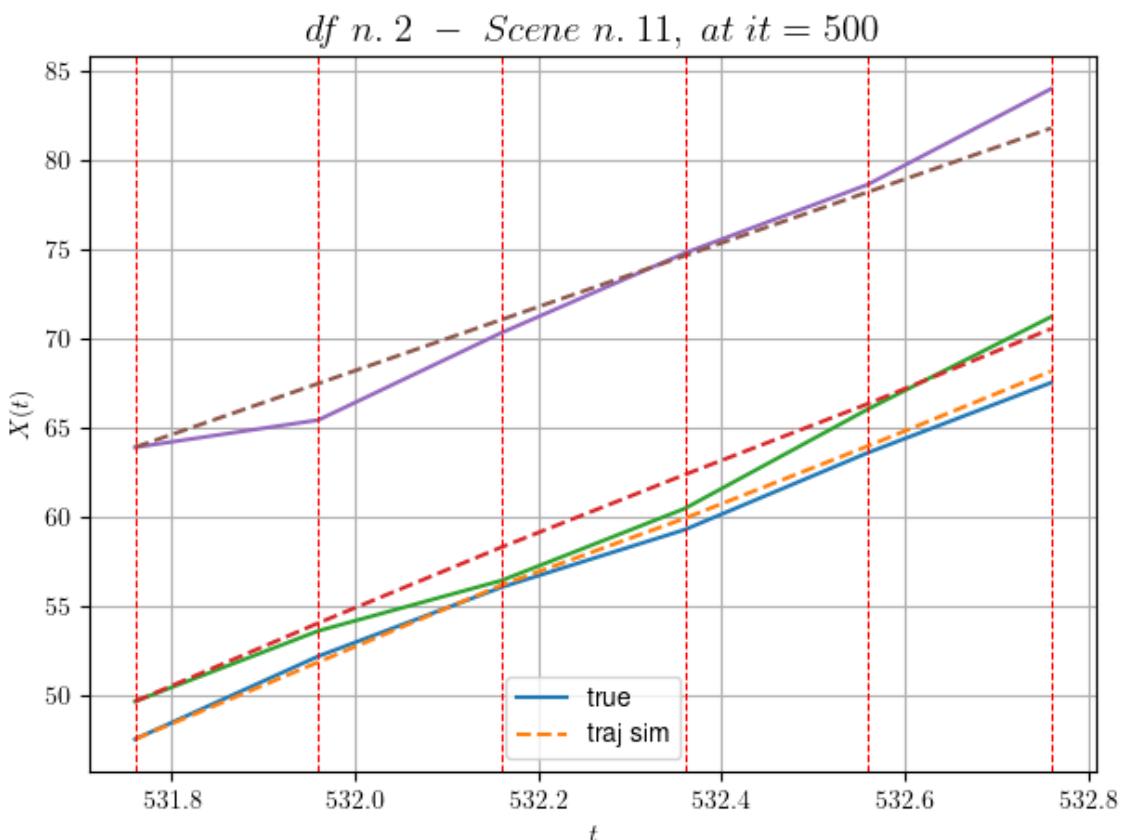
- Time interval n.2: [532.16, 532.36]
 * y_true: [16.15104075 20.18132342]
 * v_ann: [18.746986389160156, 20.352954864501953, 1
 7.911731328080357]

- Time interval n.3: [532.36, 532.56]
 * y_true: [21.60157988 27.91216632]
 * v_ann: [20.28713607788086, 19.88710594177246, 17.
 911731328080357]

- Time interval n.4: [532.56, 532.76]
 * y_true: [19.65163525 25.90233391]
 * v_ann: [21.008758544921875, 21.045347213745117, 1
 7.911731328080357]

* err= 1.0434014179402629
* Learning rate NN = 0.0003874204121530056
* diff = 0.00044742027069055723

```



For scene 11/18  
 \* use LR\_NN=0.001 with err=37.53968712776461 at it=19

```
* vθ_scn_mean = 18.637026905658036
* MAE = 1.0242598361225062
```

```
=====
=====

- Time interval n.0: [538.36, 538.56]
 * y_true: [17.69068154 17.20117669]
 * v_ann: [21.792510986328125, 20.575794219970703, 2
1.518869344523672]

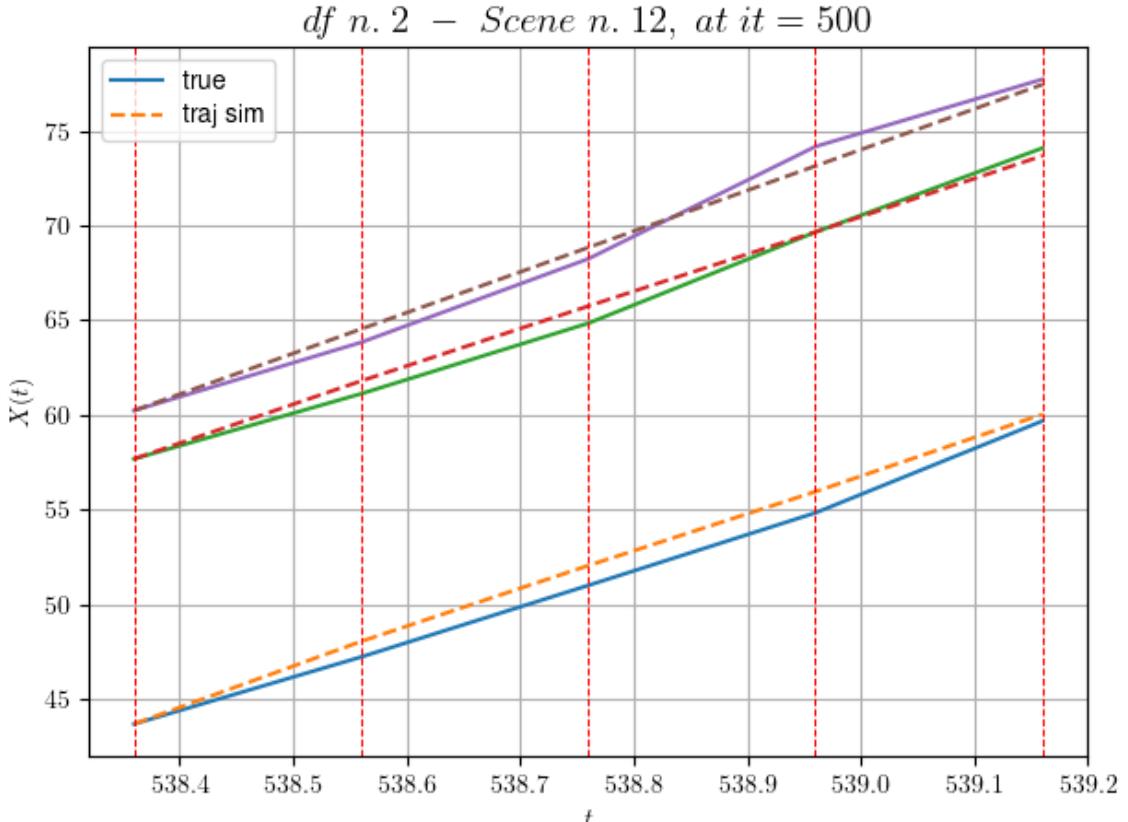
- Time interval n.1: [538.56, 538.76]
 * y_true: [18.89091077 18.60142936]
 * v_ann: [20.018110275268555, 19.751646041870117, 2
1.518869344523672]

- Time interval n.2: [538.76, 538.96]
 * y_true: [19.15102468 24.05210496]
 * v_ann: [19.520387649536133, 19.575218200683594, 2
1.518869344523672]

- Time interval n.3: [538.96, 539.16]
 * y_true: [24.26158149 22.202218]
 * v_ann: [20.42137336730957, 20.128568649291992, 2
1.518869344523672]


```

\* err= 0.4376876809962857  
\* Learning rate NN = 0.000478296831715852  
\* diff = 0.00017366951086722482



For scene 12/18

\* use LR\_NN=0.001 with err=20.665551332183227 at it=19

\* v0\_scn\_mean = 22.02773680306828

\* MAE = 0.434420588048442

---



---

- Time interval n.0: [541.16, 541.36]  
 \* y\_true: [22.67086863 28.23390149]  
 \* v\_ann: [24.38741683959961, 23.312061309814453, 2  
 0.489990975466398]

---

- Time interval n.1: [541.36, 541.56]  
 \* y\_true: [19.45088023 23.11862329]  
 \* v\_ann: [23.700382232666016, 23.902597427368164, 2  
 0.489990975466398]

---

- Time interval n.2: [541.56, 541.76]  
 \* y\_true: [24.96136667 24.68114114]  
 \* v\_ann: [22.896623611450195, 22.934959411621094, 2  
 0.489990975466398]

---

- Time interval n.3: [541.76, 541.96]  
 \* y\_true: [23.96154506 23.41644837]  
 \* v\_ann: [23.255640029907227, 23.482254028320312, 2

0.489990975466398]

---

- Time interval n.4: [541.96, 542.16]
  - \* y\_true: [22.22167267 29.9460798 ]
  - \* v\_ann: [23.34703254699707, 23.561019897460938, 2

0.489990975466398]

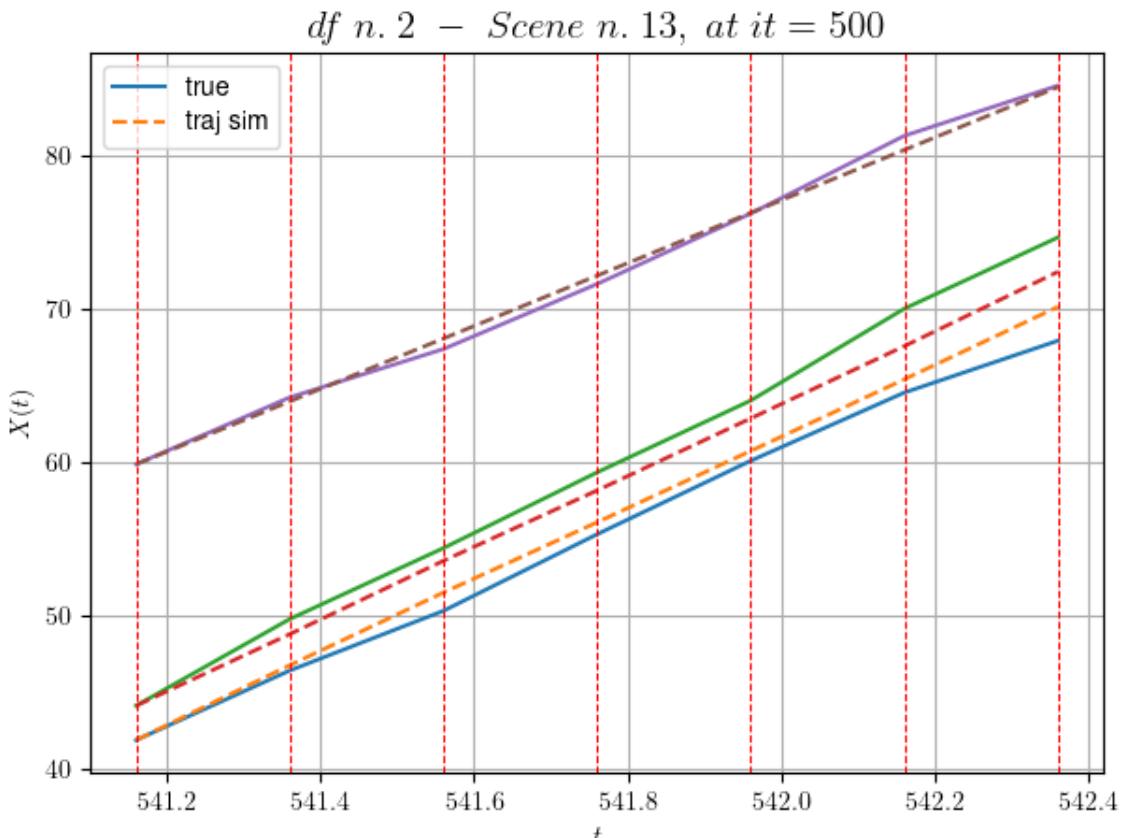
---

- Time interval n.5: [542.16, 542.36]
  - \* y\_true: [16.91142821 23.23526684]
  - \* v\_ann: [23.638505935668945, 24.235103607177734, 2

0.489990975466398]

---

- \* err= 1.202539356939009
- \* Learning rate NN = 0.00031381050939671695
- \* ~~df n. 2 — Scene n. 13, at it = 500~~



For scene 13/18

- \* use LR\_NN=0.001 with err=31.700517547857867 at it=19
- \* v0\_scn\_mean = 21.060591089960408
- \* MAE = 1.1793246678623373

---



---

- Time interval n.0: [549.76, 549.96]
  - \* y\_true: [23.30098965 17.25125335]
  - \* v\_ann: [22.420866012573242, 22.080747604370117, 2

2.495719525409708]

```

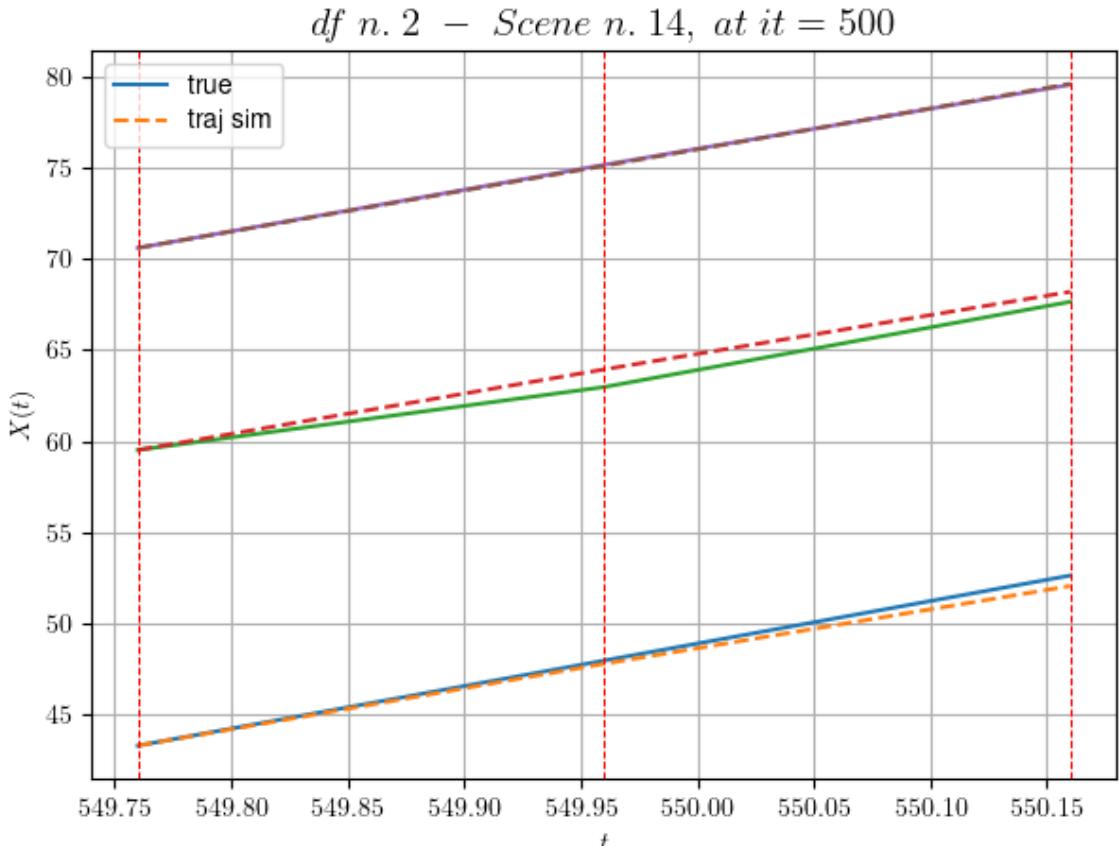
- Time interval n.1: [549.96, 550.16]
 * y_true: [23.30098965 23.35192881]
 * v_ann: [21.307010650634766, 21.26303482055664, 2
 2.495719525409708]

```

```

* err= 0.17793011289546676
* Learning rate NN = 0.00036449998151510954
* diff = 7.39358842709037e-05

```



For scene 14/18

```

* use LR_NN=0.0005 with err=1.417513065434492 at it=19
* v0_scn_mean = 22.945976016958745
* MAE = 0.1758804267586004

```

```

=====
=====
- Time interval n.0: [566.76, 566.96]
 * y_true: [31.35080123 25.9264585]
 * v_ann: [27.138473510742188, 26.331178665161133, 2
 4.222520391151644]

```

```

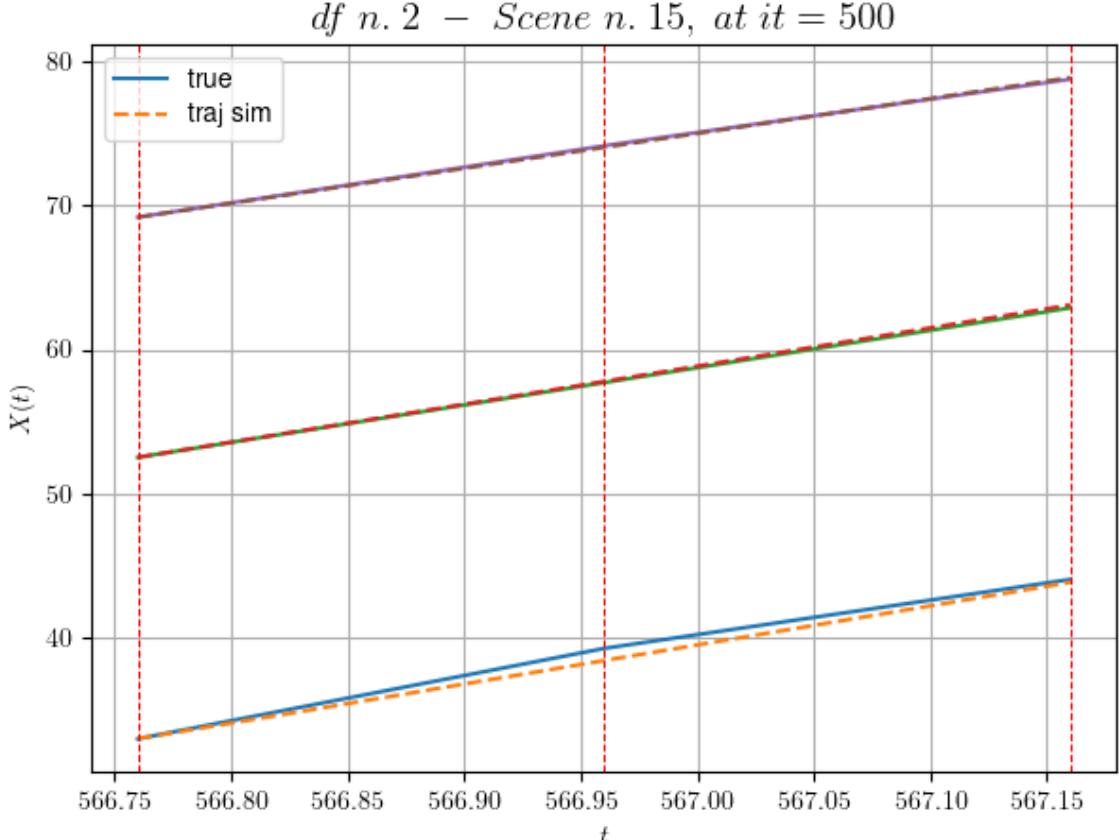
=====
=====
- Time interval n.1: [566.96, 567.16]
 * y_true: [23.95081051 25.9264585]
 * v_ann: [27.147659301757812, 26.554576873779297, 2
 4.222520391151644]

```

```

* err= 0.09180080915075116
* Learning rate NN = 7.289998757187277e-05
* diff = 4.048379877688579e-05

```



For scene 15/18

```

* use LR_NN=0.0001 with err=0.8385297124787732 at it=19
* v0_scn_mean = 24.569168908286343
* MAE = 0.09176785997554192

```

- 
- 
- Time interval n.0: [87.56, 87.76]
    - \* y\_true: [20.56019483 17.07029985 18.3510221 ]
    - \* v\_ann: [19.851078033447266, 20.500614166259766, 2  
0.176963806152344, 23.39910333176457]

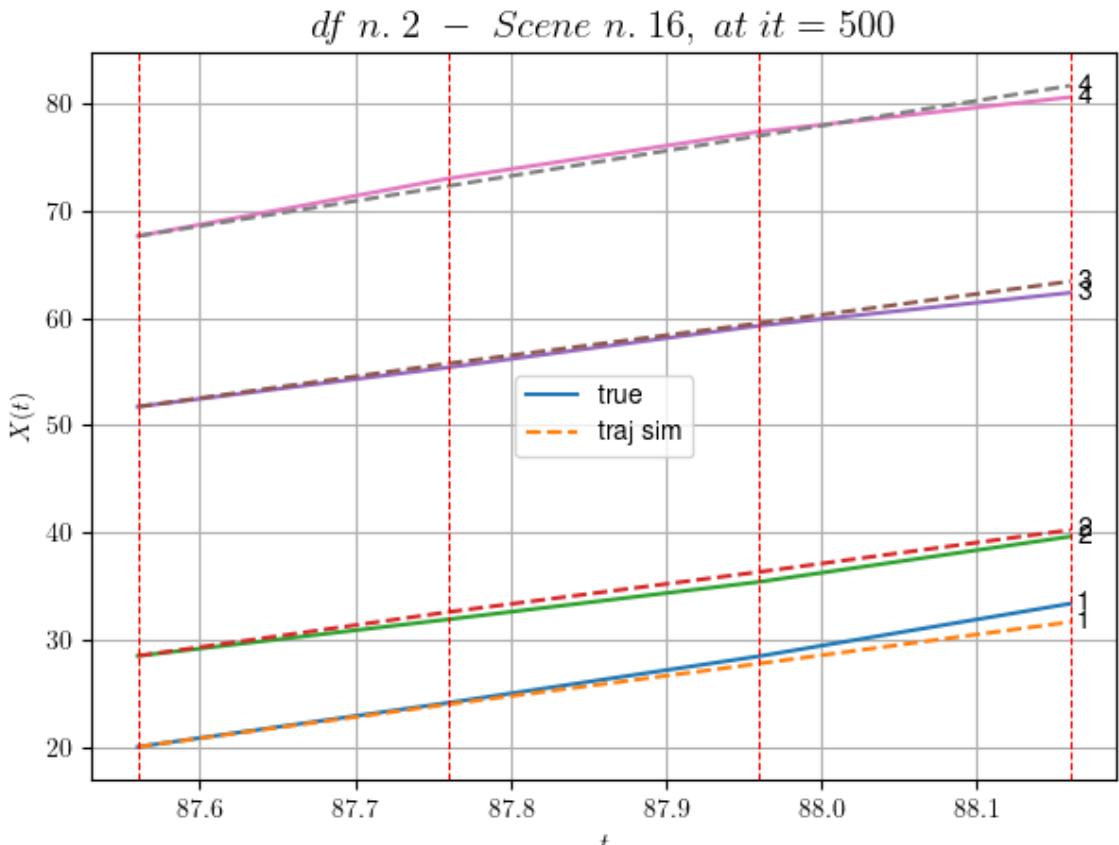
---

  - Time interval n.1: [87.76, 87.96]
    - \* y\_true: [21.72029145 17.49039467 19.46124504]
    - \* v\_ann: [18.992509841918945, 18.692636489868164, 1  
8.802593231201172, 23.39910333176457]

---

  - Time interval n.2: [87.96, 88.16]
    - \* y\_true: [24.51045762 21.12058621 15.36109554]
    - \* v\_ann: [19.383338928222656, 19.562694549560547, 1  
9.495960235595703, 23.39910333176457]

```
* err= 0.5151486654838114
* Learning rate NN = 0.0005904899444431067
* diff = 1.2475606314565901e-05
```



For scene 16/18

```
* use LR_NN=0.001 with err=8.69331614557587 at it=19
* v0_scn_mean = 23.92715358503308
* MAE = 0.5151486654838114
```

---



---

- Time interval n.0: [305.96, 306.16]  
\* y\_true: [18.64270885 18.88070057 19.63111636]  
\* v\_ann: [20.591506958007812, 20.566457748413086, 2  
0.456443786621094, 13.681341801173367]

---



---

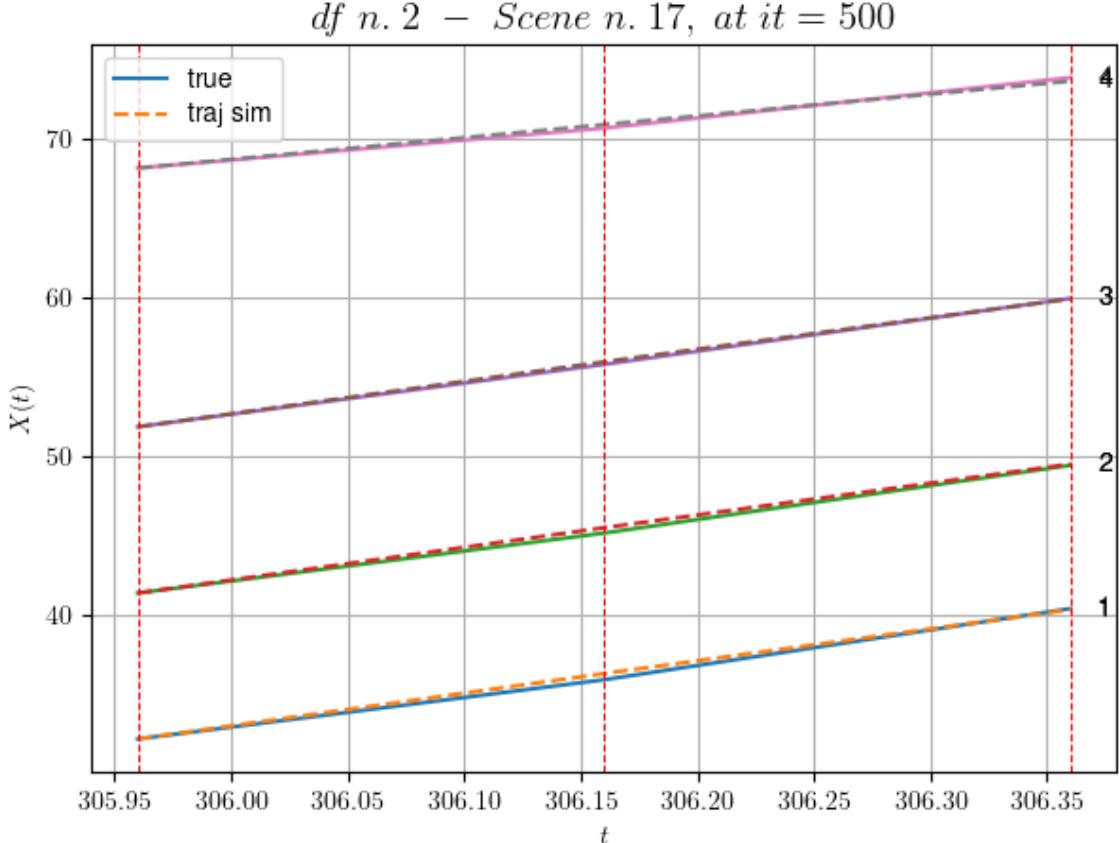
- Time interval n.1: [306.16, 306.36]  
\* y\_true: [22.41204338 21.34093202 20.7913521 ]  
\* v\_ann: [20.116352081298828, 20.04804229736328, 1  
9.840417861938477, 13.681341801173367]

---



---

```
* err= 0.03403672358630343
* Learning rate NN = 0.00036449998151510954
* diff = 1.4008537201765092e-06
```



For scene 17/18

- \* use LR\_NN=0.0005 with err=5.327348543596429 at it=19
- \* v0\_scn\_mean = 14.986781354008873
- \* MAE = 0.03327324709561662

---



---

For df=2 with 18 scenes, time taken: 242.72

---



---

In df n.3/10 we have 55 scenes

---



---

- Time interval n.0: [16.16, 16.36]
- \* y\_true: [27.36596872 40.6089382 ]
- \* v\_ann: [24.567424774169922, 24.04737663269043, 3 9.22728178683314]

---

- Time interval n.1: [16.36, 16.56]
- \* y\_true: [22.16572117 32.62072047]
- \* v\_ann: [34.189361572265625, 31.72690200805664, 3 9.22728178683314]

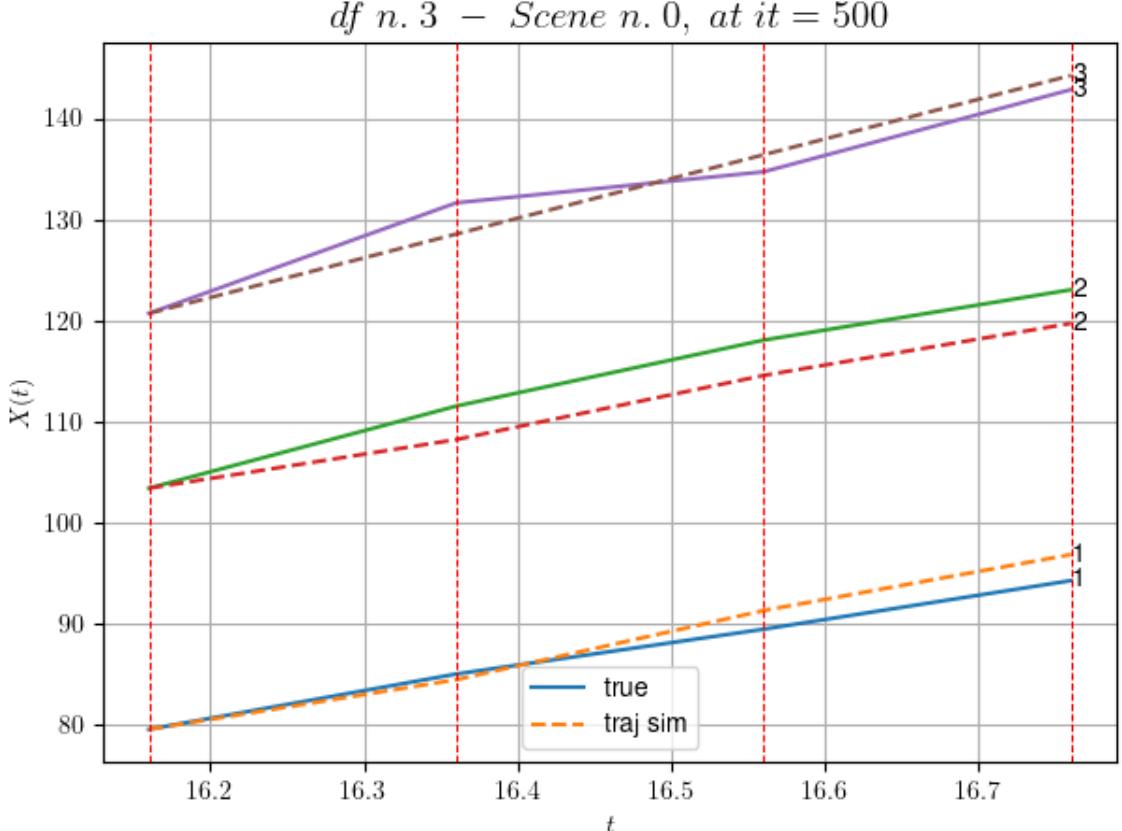
---

- Time interval n.2: [16.56, 16.76]

```
* y_true: [24.04131334 24.91936545]
* v_ann: [27.691768646240234, 25.737995147705078, 3
9.22728178683314]
```

```


* err= 4.91210018287182
* Learning rate NN = 0.0002952449722215533
* diff = 0.009541565020695586
```



For scene 0/55

```
* use LR_NN=0.0005 with err=13.263342638056633 at it=19
* v0_scn_mean = 38.67364529390811
* MAE = 4.91210018287182
```

```
=====

- Time interval n.0: [17.56, 17.76]
* y_true: [26.87631442 28.75240293]
* v_ann: [29.05922508239746, 29.632617950439453, 3
7.341608941888985]
```

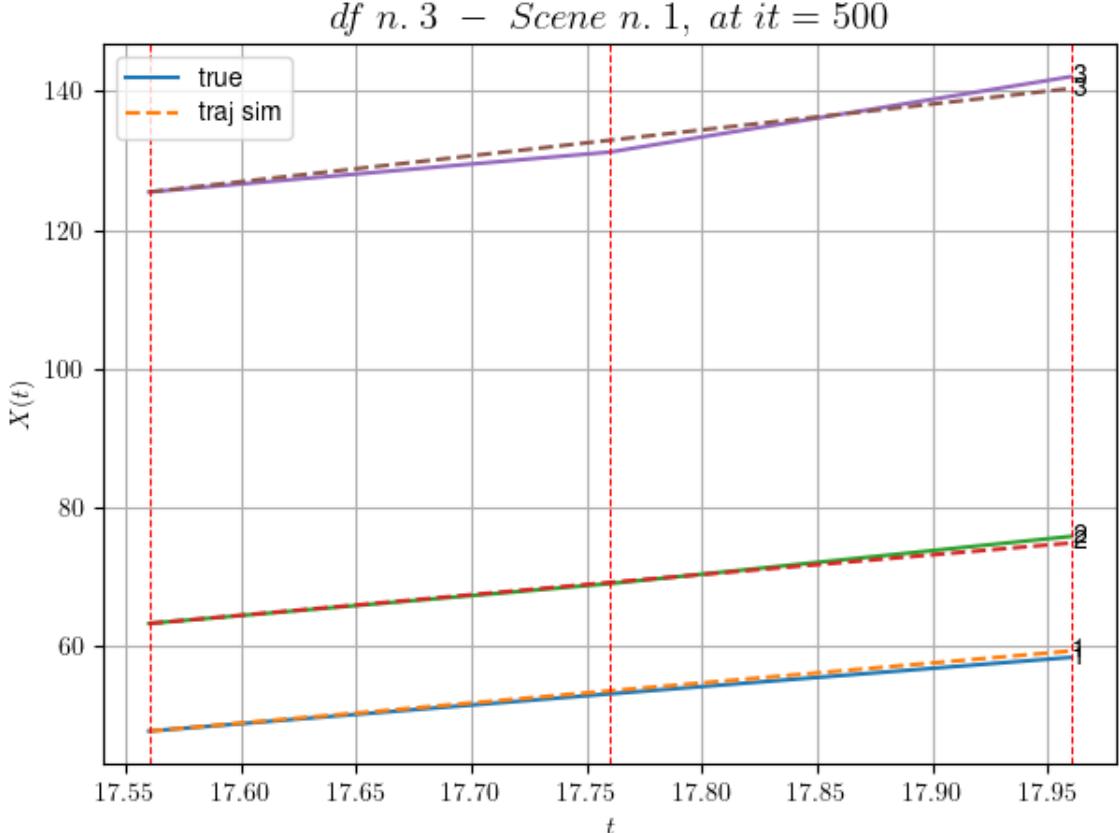
```


- Time interval n.1: [17.76, 17.96]
* y_true: [26.32655772 34.05345458]
* v_ann: [28.738670349121094, 28.431617736816406, 3
7.341608941888985]
```

```


* err= 0.8636405375379027
```

\* Learning rate NN = 3.6449993785936385e-05  
 \* diff = 0.0003894196176674747



For scene 1/55

\* use LR\_NN=5e-05 with err=9.41571482006463 at it=19  
 \* v0\_scn\_mean = 36.901112734997966  
 \* MAE = 0.761846054903106

- 
- 
- Time interval n.0: [23.96, 24.16]
    - \* y\_true: [31.9527567 21.95230333]
    - \* v\_ann: [24.605693817138672, 25.87152099609375, 27.016664353697205]

---

  - Time interval n.1: [24.16, 24.36]
    - \* y\_true: [26.79271708 14.85171745]
    - \* v\_ann: [26.56938362121582, 27.89071273803711, 27.016664353697205]

---

  - Time interval n.2: [24.36, 24.56]
    - \* y\_true: [20.5424093 31.65411216]
    - \* v\_ann: [24.860809326171875, 22.01558494567871, 27.016664353697205]

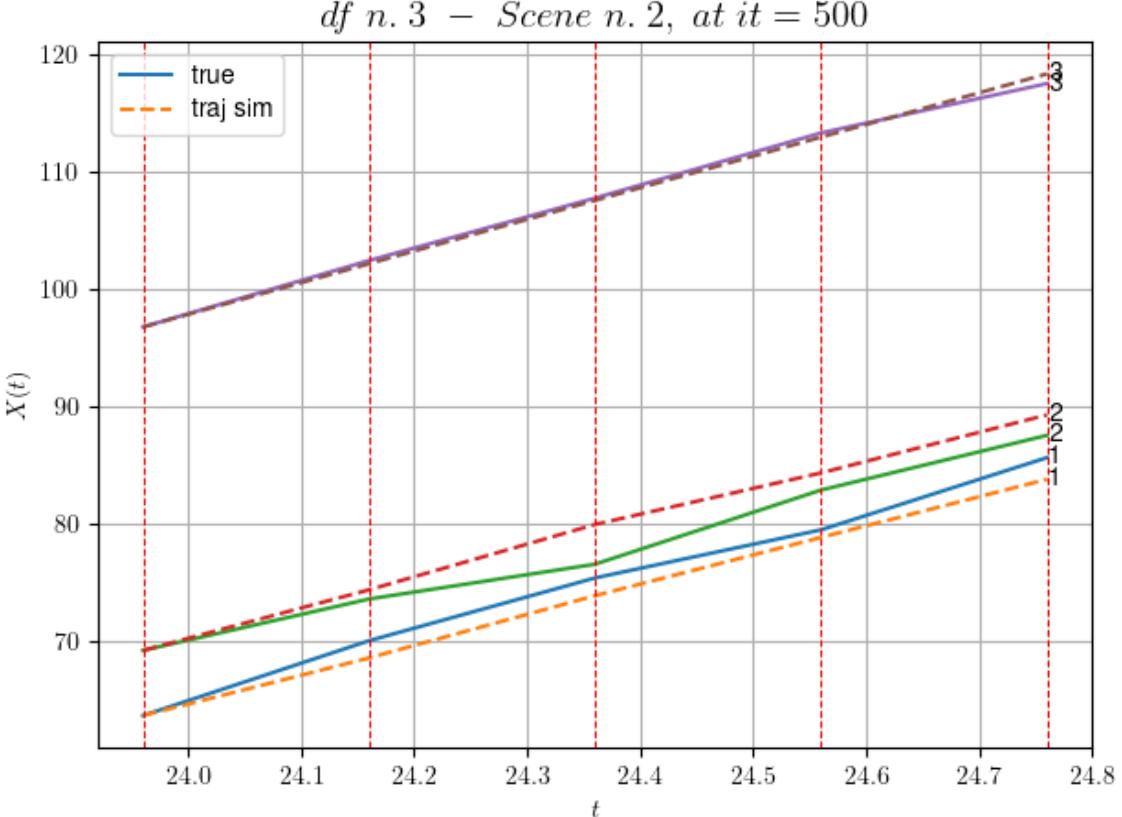
---

  - Time interval n.3: [24.56, 24.76]

```
* y_true: [30.8240747 23.35345154]
* v_ann: [24.828323364257812, 24.77033042907715, 2
7.016664353697205]
```

```


* err= 1.769469468040879
* Learning rate NN = 0.000478296831715852
* diff = 0.00033444485405964564
```



For scene 2/55

```
* use LR_NN=0.001 with err=41.49926130392773 at it=19
* v0_scn_mean = 27.19566435853006
* MAE = 1.7680024608807734
```

```
=====
=====
- Time interval n.0: [42.96, 43.16]
* y_true: [34.44093898 36.40531345]
* v_ann: [25.344663619995117, 25.46571922302246, 2
7.35067344092242]
```

```


- Time interval n.1: [43.16, 43.36]
* y_true: [27.09071898 44.10770887]
* v_ann: [33.418922424316406, 31.917259216308594, 2
7.35067344092242]
```

```


- Time interval n.2: [43.36, 43.56]
* y_true: [24.51583897 25.2301032]
```

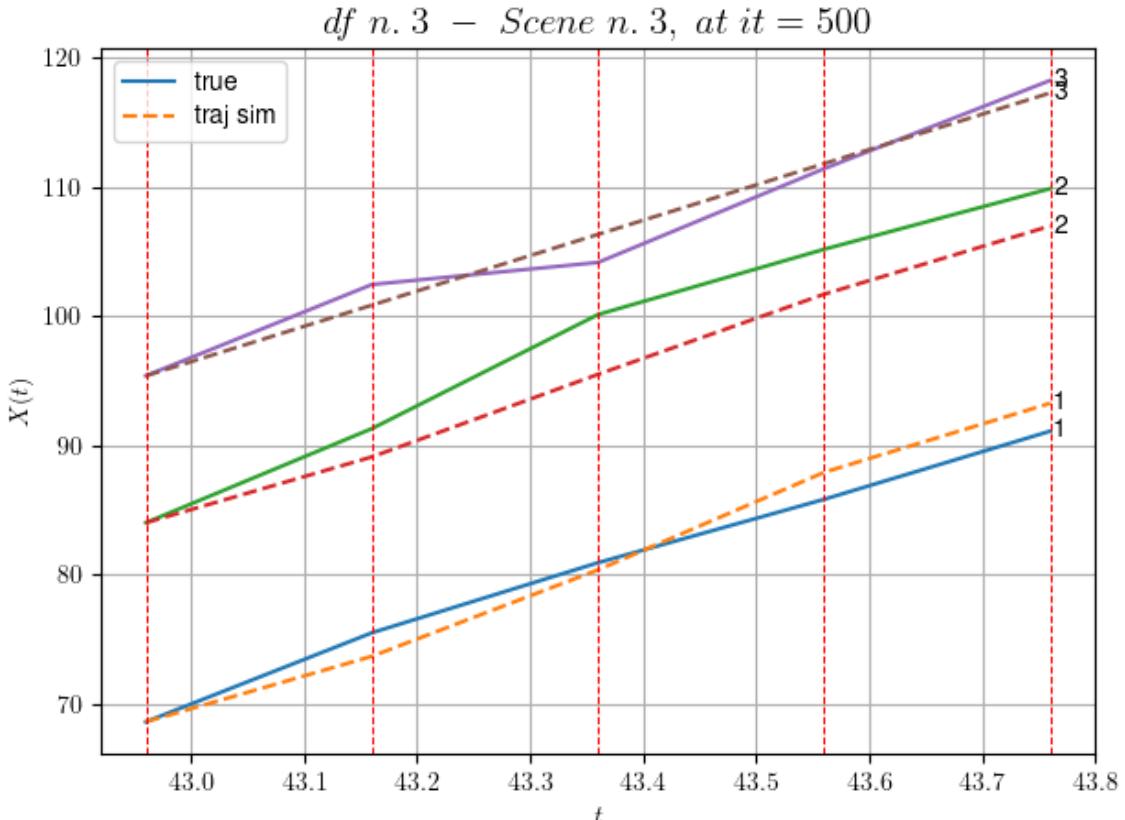
```
* v_ann: [37.73148727416992, 30.992521286010742, 2
7.35067344092242]
```

---

```
- Time interval n.3: [43.56, 43.76]
* y_true: [26.35394512 23.45522926]
* v_ann: [26.698482513427734, 26.37942123413086, 2
7.35067344092242]
```

---

```
* err= 4.505210072121485
* Learning rate NN = 0.000478296831715852
* diff = 0.0024053236330434657
```



For scene 3/55

```
* use LR_NN=0.001 with err=22.32998372416459 at it=19
* v0_scn_mean = 27.50963291551805
* MAE = 3.978882453654441
```

---



---

```
- Time interval n.0: [61.76, 61.96]
* y_true: [28.79377133 7.10177762]
* v_ann: [31.712127685546875, 30.515987396240234, 2
7.830090416767167]
```

---



---

```
- Time interval n.1: [61.96, 62.16]
* y_true: [41.29768472 31.64601894]
* v_ann: [20.222820281982422, 21.701383590698242, 2
```

7.830090416767167]

```

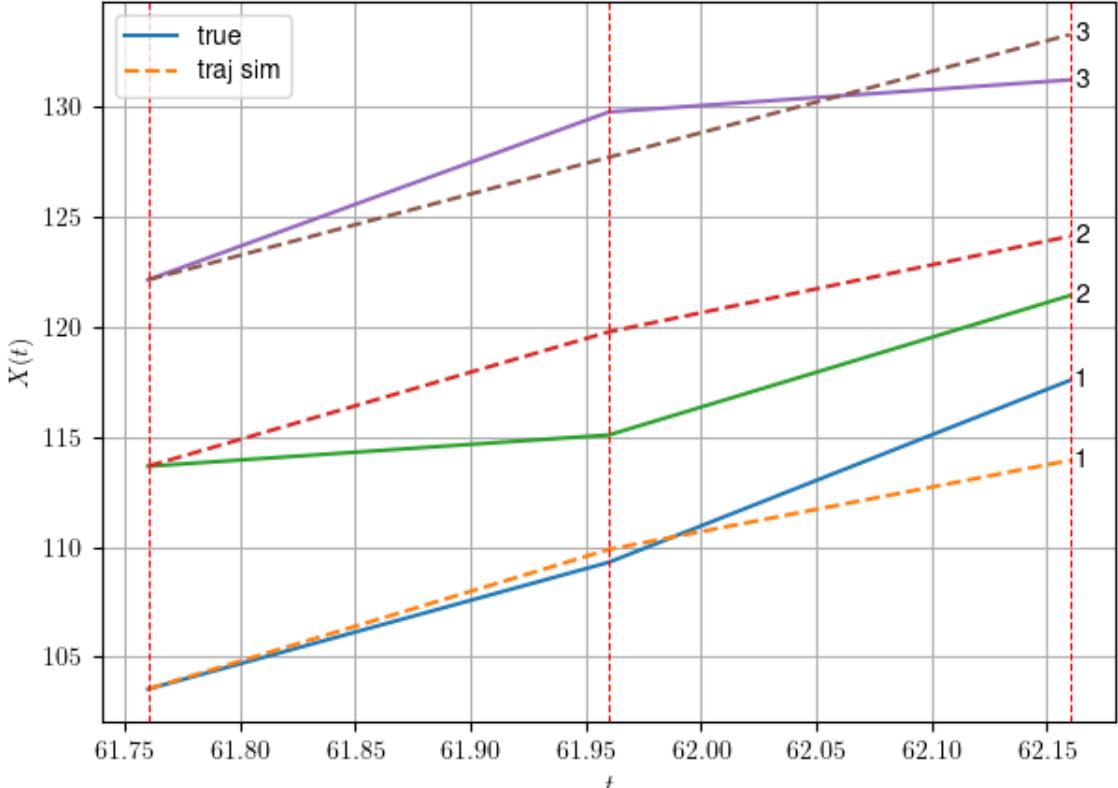
* err= 5.684618952956753

* Learning rate NN = 0.0007289999630302191

* diff = 0.0007483448173557505

```

df n. 3 - Scene n. 4, at it = 500



For scene 4/55

```

* use LR_NN=0.001 with err=7.321252217697375 at it=19

* v0_scn_mean = 27.960284894336944

* MAE = 5.543616820416602

```

3.83988267438127]

```

- Time interval n.0: [63.76, 63.96]

```

```

* y_true: [39.33120973 30.97229006]

```

```

* v_ann: [30.350574493408203, 29.076356887817383, 3

```

3.83988267438127]

```

- Time interval n.1: [63.96, 64.16]

```

```

* y_true: [32.2308074 22.86038312]

```

```

* v_ann: [33.627479553222656, 31.232206344604492, 3

```

3.83988267438127]

```

* err= 1.1079955651845423

```

```

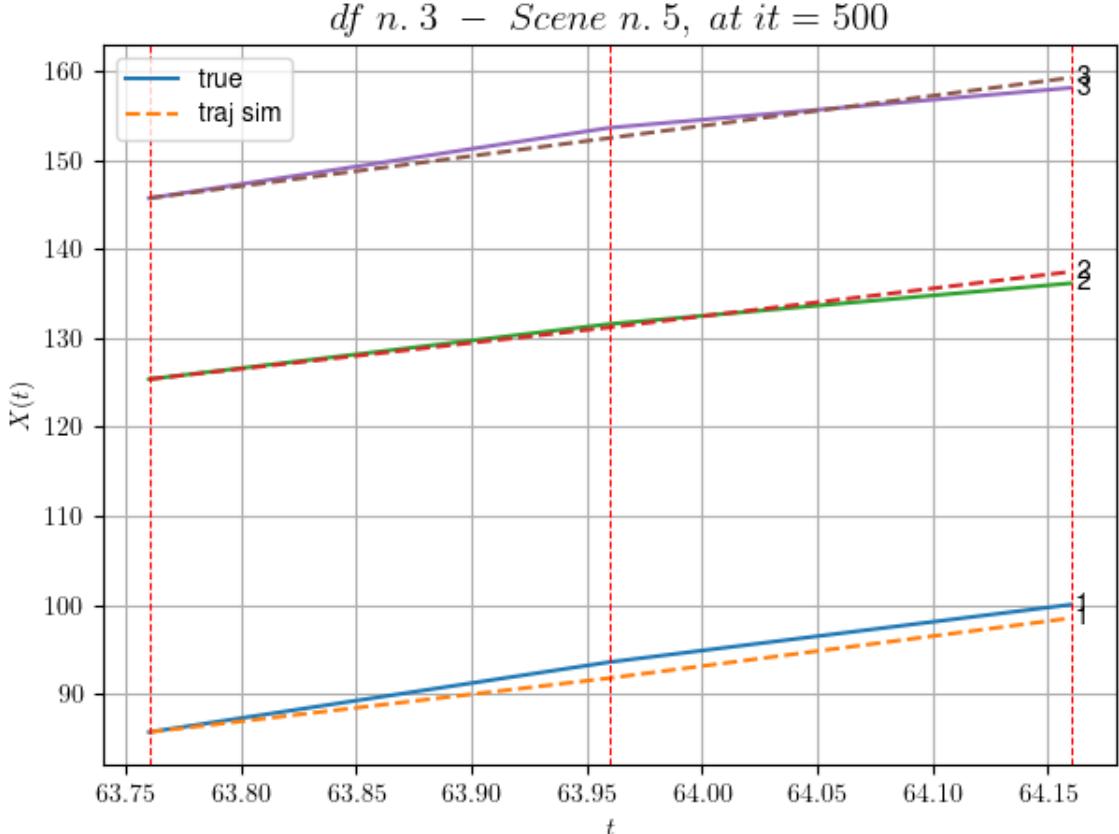
* Learning rate NN = 7.289998757187277e-05

```

```

* diff = 0.0024621676745659737

```



For scene 5/55

```
* use LR_NN=0.0001 with err=1.8998198915727975 at it=19
* v0_scn_mean = 33.6094898863208
* MAE = 0.6773241182003695
```

---



---

```
- Time interval n.0: [67.16, 67.36]
* y_true: [27.17586615 28.72375126]
* v_ann: [25.947132110595703, 26.14663314819336, 3
2.13932154245638]
```

---



---

```
- Time interval n.1: [67.36, 67.56]
* y_true: [31.70635664 24.62373081]
* v_ann: [27.006908416748047, 26.727413177490234, 3
2.13932154245638]
```

---



---

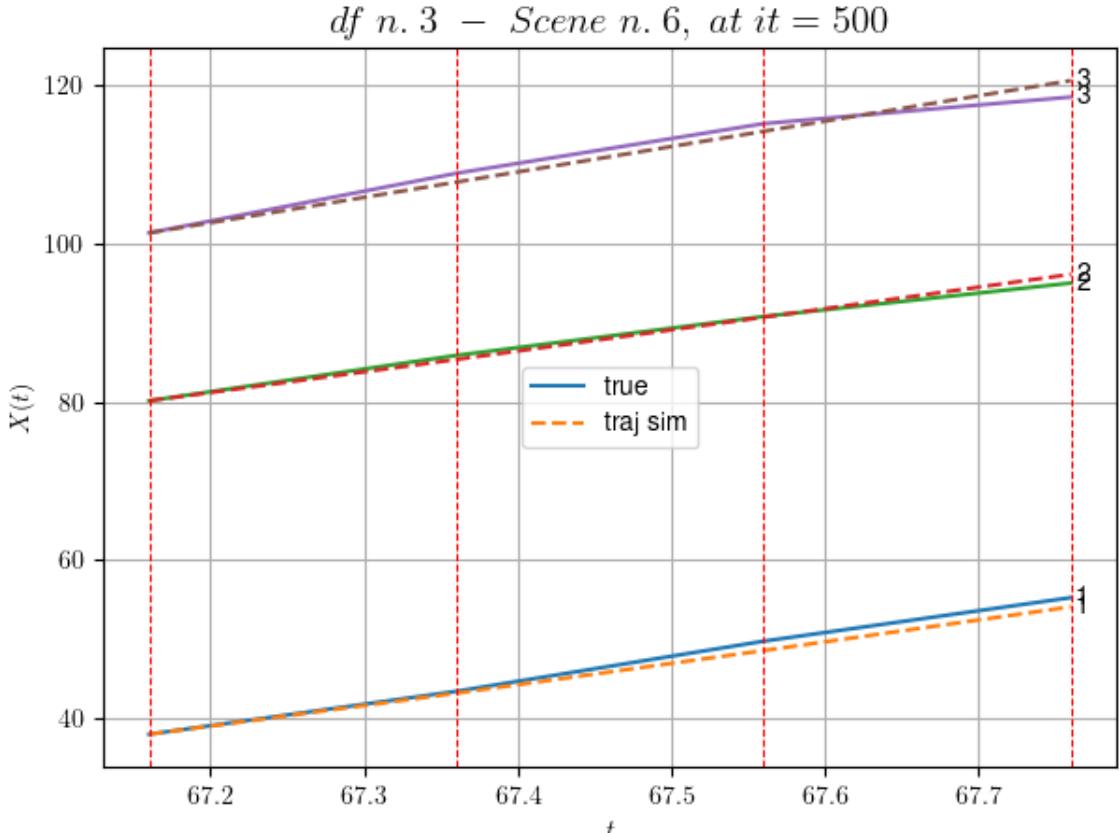
```
- Time interval n.2: [67.56, 67.76]
* y_true: [27.5714436 21.15852297]
* v_ann: [27.681198120117188, 27.173006057739258, 3
2.13932154245638]
```

---



---

```
* err= 0.9056317391197966
* Learning rate NN = 5.904899080633186e-05
* diff = 0.0003910774111034465
```



For scene 6/55

```
* use LR_NN=0.0001 with err=4.242572255748663 at it=19
* v0_scn_mean = 32.01096234595996
* MAE = 0.8988693801069357
```

---



---

- Time interval n.0: [72.76, 72.96]
  - \* y\_true: [28.501496 30.93407752]
  - \* v\_ann: [31.251283645629883, 31.228172302246094, 2 8.12124026314021]
  
- Time interval n.1: [72.96, 73.16]
  - \* y\_true: [36.65243351 31.9148258 ]
  - \* v\_ann: [30.121444702148438, 30.599206924438477, 2 8.12124026314021]
  
- Time interval n.2: [73.16, 73.36]
  - \* y\_true: [27.70226144 28.33497935]
  - \* v\_ann: [32.945621490478516, 32.07037353515625, 2 8.12124026314021]
  
- Time interval n.3: [73.36, 73.56]
  - \* y\_true: [34.7534691 39.55781959]
  - \* v\_ann: [29.855213165283203, 30.544679641723633, 2 8.12124026314021]

8.12124026314021]

```
- Time interval n.4: [73.56, 73.76]
 * y_true: [35.21414381 29.47666535]
 * v_ann: [34.541446685791016, 32.59275436401367, 2
```

8.12124026314021]

```
- Time interval n.5: [73.76, 73.96]
 * y_true: [30.89430642 26.20657024]
 * v_ann: [33.34990692138672, 32.47236633300781, 28.
```

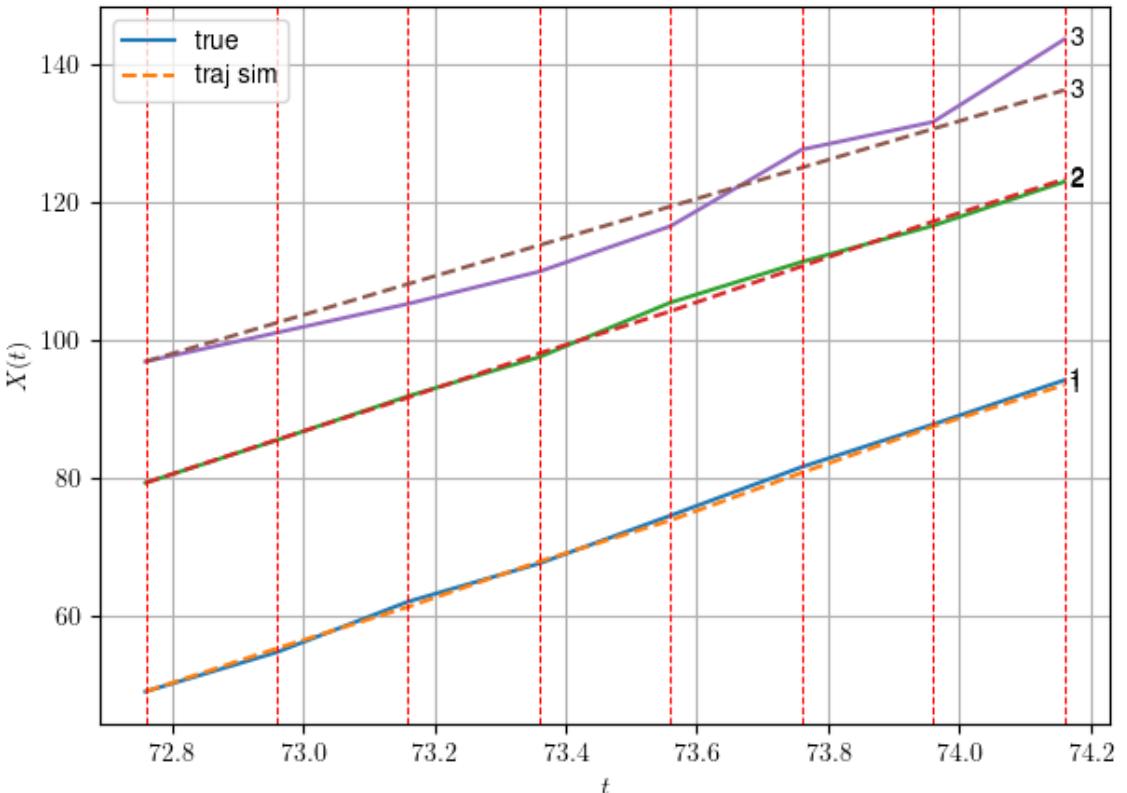
12124026314021]

```
- Time interval n.6: [73.96, 74.16]
 * y_true: [32.05509091 31.88895952]
 * v_ann: [30.215835571289062, 30.634477615356445, 2
```

8.12124026314021]

```
* err= 4.192855751882761
* Learning rate NN = 0.00012709324073512107
* diff = 0.00081777584613274
```

df n. 3 – Scene n. 7, at it = 500



For scene 7/55

```
* use LR_NN=0.0005 with err=48.564464058983994 at it=19
* v0_scn_mean = 28.233965762999574
* MAE = 4.173741127806667
```

```

=====
=====

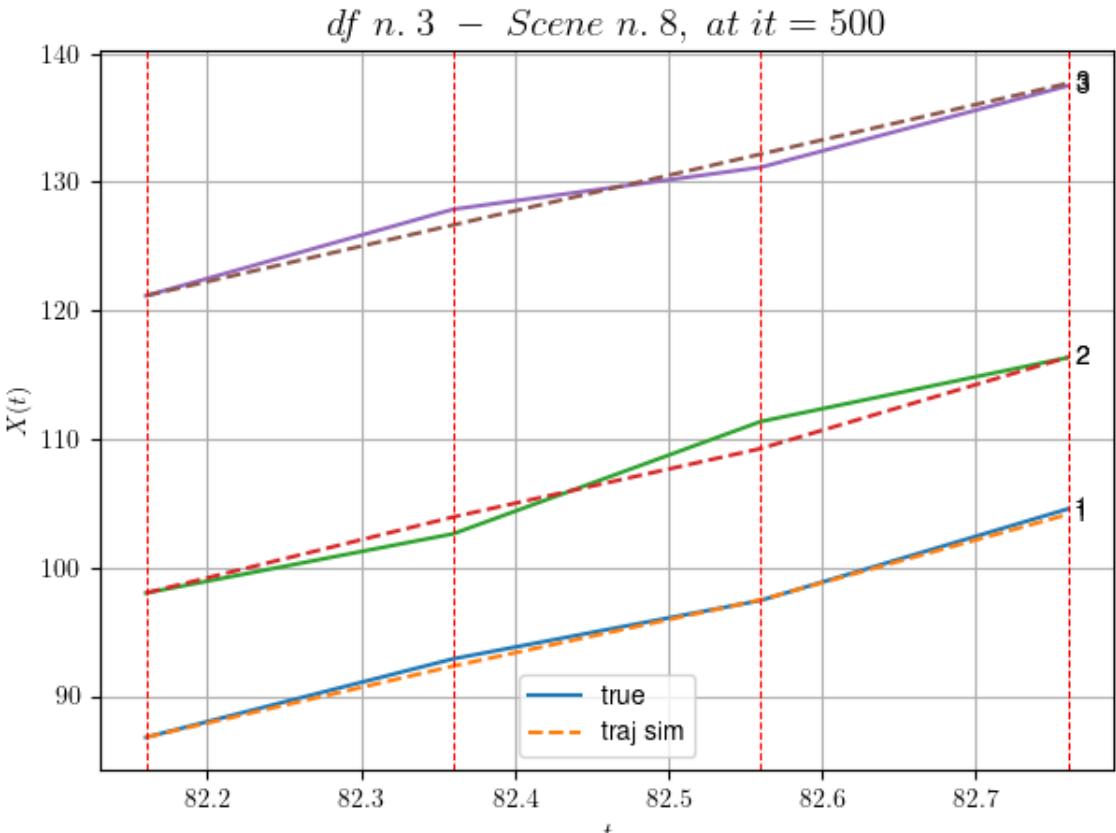
 - Time interval n.0: [82.16, 82.36]
 * y_true: [30.54468004 23.04450554]
 * v_ann: [27.73244285583496, 29.585796356201172, 2
7.55023741370725]

 - Time interval n.1: [82.36, 82.56]
 * y_true: [22.71402344 43.65971655]
 * v_ann: [25.766969680786133, 26.606538772583008, 2
7.55023741370725]

 - Time interval n.2: [82.56, 82.76]
 * y_true: [35.61686857 24.88594316]
 * v_ann: [33.24802017211914, 35.534584045410156, 2
7.55023741370725]

* err= 0.7674202555294043
* Learning rate NN = 0.0005904899444431067
* diff = 5.514182478004017e-05

```



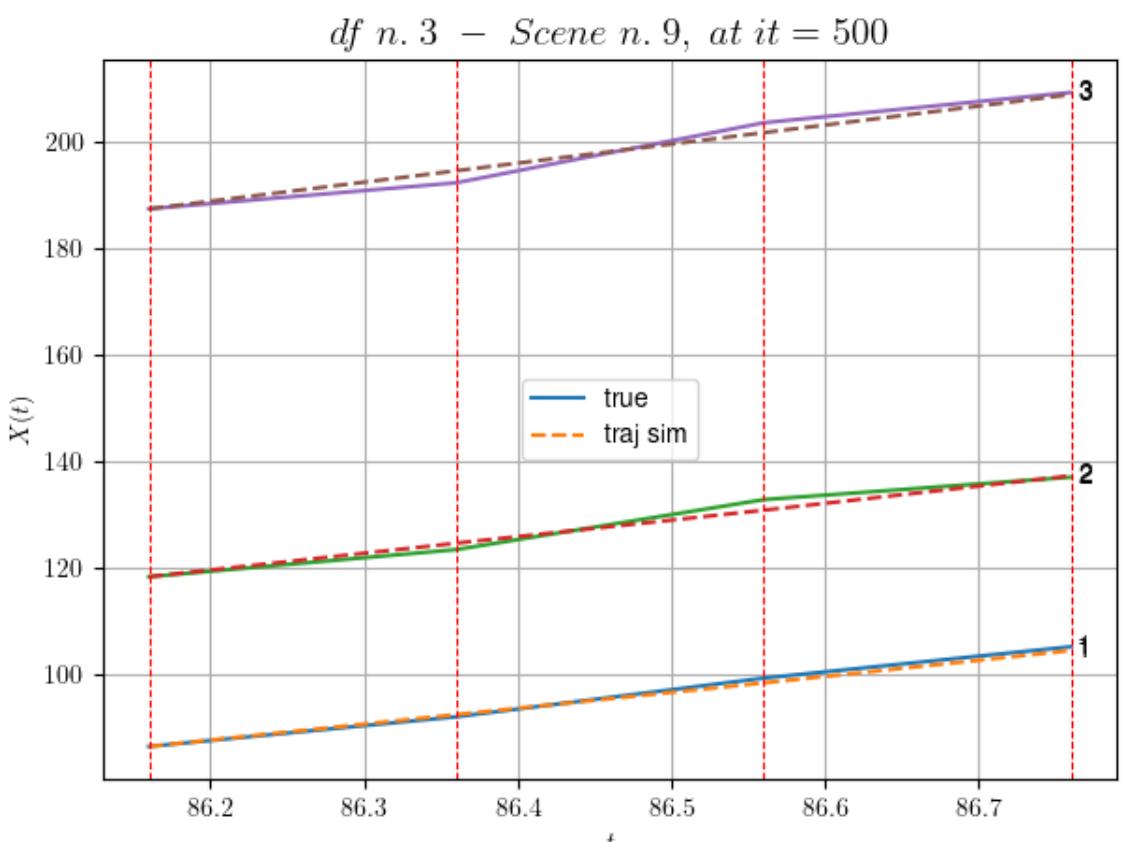
For scene 8/55  
\* use LR\_NN=0.001 with err=7.0719489708775525 at it=19  
\* v0\_scn\_mean = 27.69722305889582  
\* MAE = 0.7636171753926416

```
=====
- Time interval n.0: [86.16, 86.36]
 * y_true: [27.89181051 25.45740923]
 * v_ann: [29.958852767944336, 31.47844123840332, 3
5.764736613454396]

=====
- Time interval n.1: [86.36, 86.56]
 * y_true: [36.25627338 46.92477715]
 * v_ann: [29.701213836669922, 30.967180252075195, 3
5.764736613454396]

=====
- Time interval n.2: [86.56, 86.76]
 * y_true: [29.50579063 21.07714474]
 * v_ann: [30.416812896728516, 32.34227752685547, 3
5.764736613454396]

=====
* err= 1.3069416275347743
* Learning rate NN = 5.9048988987342454e-06
* diff = 0.001008093429329282
```



For scene 9/55  
\* use LR\_NN=1e-05 with err=13.608979541790488 at it=19  
\* v0\_scn\_mean = 35.41885267547112  
\* MAE = 1.3069416275347743

```
=====
- Time interval n.0: [130.96, 131.16]
 * y_true: [15.85249734 39.95916833]
 * v_ann: [32.85558319091797, 31.457380294799805, 3
1.752337885124273]

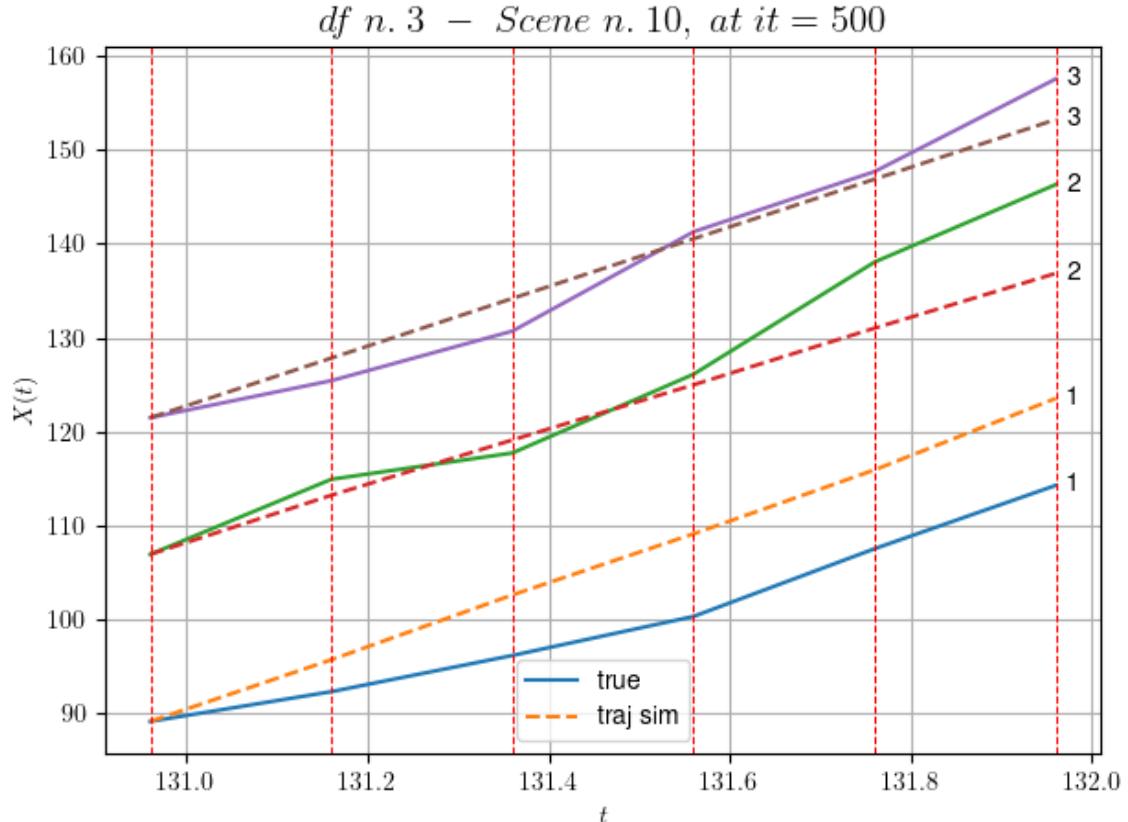
- Time interval n.1: [131.16, 131.36]
 * y_true: [19.2732587 14.0236874]
 * v_ann: [34.500614166259766, 29.44378662109375, 3
1.752337885124273]

- Time interval n.2: [131.36, 131.56]
 * y_true: [20.77382027 41.90201833]
 * v_ann: [32.51084899902344, 29.35838508605957, 31.
752337885124273]

- Time interval n.3: [131.56, 131.76]
 * y_true: [36.06757222 59.75967406]
 * v_ann: [34.07626724243164, 30.176559448242188, 3
1.752337885124273]

- Time interval n.4: [131.76, 131.96]
 * y_true: [33.71775213 41.23564164]
 * v_ann: [38.03328323364258, 29.167884826660156, 3
1.752337885124273]

* err= 26.080309031316887
* Learning rate NN = 3.874203684972599e-05
* diff = 0.003995854895340045
```



For scene 10/55

```
* use LR_NN=0.0001 with err=58.692116753648314 at it=19
* v0_scn_mean = 31.647197690692813
* MAE = 19.543911553870814
```

---



---

```
- Time interval n.0: [139.16, 139.36]
 * y_true: [22.50033849 31.62238978]
 * v_ann: [27.94762420654297, 28.248640060424805, 2
 8.144630567259213]
```

---

```
- Time interval n.1: [139.36, 139.56]
 * y_true: [29.90063418 17.15160439]
 * v_ann: [27.769128799438477, 28.1921443939209, 28.
 144630567259213]
```

---

```
- Time interval n.2: [139.56, 139.76]
 * y_true: [27.10078793 37.57385655]
 * v_ann: [27.070035934448242, 27.97599983215332, 2
 8.144630567259213]
```

---

```
- Time interval n.3: [139.76, 139.96]
 * y_true: [25.40095052 21.65266443]
 * v_ann: [27.848941802978516, 28.209932327270508, 2
 8.144630567259213]
```

```
- Time interval n.4: [139.96, 140.16]
 * y_true: [21.40097883 32.03445568]
 * v_ann: [27.122699737548828, 27.969440460205078, 2
8.144630567259213]

- Time interval n.5: [140.16, 140.36]
 * y_true: [21.7011754 31.91506312]
 * v_ann: [26.959983825683594, 26.262157440185547, 2
8.144630567259213]

- Time interval n.6: [140.36, 140.56]
 * y_true: [30.50199276 23.65435061]
 * v_ann: [26.885637283325195, 25.651912689208984, 2
8.144630567259213]

- Time interval n.7: [140.56, 140.76]
 * y_true: [27.90220498 42.04863469]
 * v_ann: [26.98737907409668, 28.00193214416504, 28.
144630567259213]

- Time interval n.8: [140.76, 140.96]
 * y_true: [45.30444602 33.92792147]
 * v_ann: [28.438488006591797, 28.24425506591797, 2
8.144630567259213]

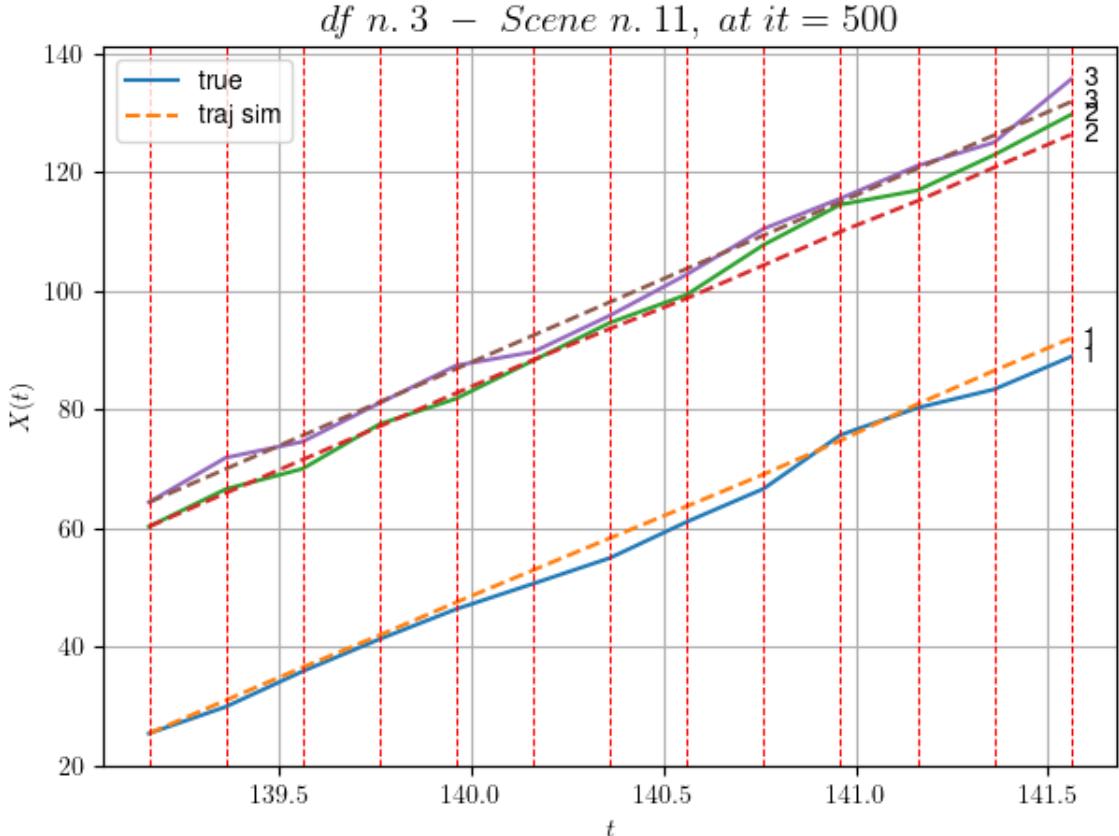
- Time interval n.9: [140.96, 141.16]
 * y_true: [22.85268623 11.9131035]
 * v_ann: [30.68155860900879, 25.830841064453125, 2
8.144630567259213]

- Time interval n.10: [141.16, 141.36]
 * y_true: [15.65202595 30.01833255]
 * v_ann: [28.281450271606445, 28.35405731201172, 2
8.144630567259213]

- Time interval n.11: [141.36, 141.56]
 * y_true: [27.55395105 33.94025545]
 * v_ann: [27.245567321777344, 27.630136489868164, 2
8.144630567259213]

* err= 3.7631653015266857
```

\* Learning rate NN = 4.431466732057743e-05  
 \* diff = 0.003912035351895327



For scene 11/55

\* use LR\_NN=0.0005 with err=175.4090306112207 at it=19  
 \* v0\_scn\_mean = 28.255952649921525  
 \* MAE = 3.7018875283231125

---



---

- Time interval n.0: [143.76, 143.96]  
 \* y\_true: [30.62207823 41.7261053 ]  
 \* v\_ann: [30.117626190185547, 30.17597198486328, 2  
 9.414744463246812]

---

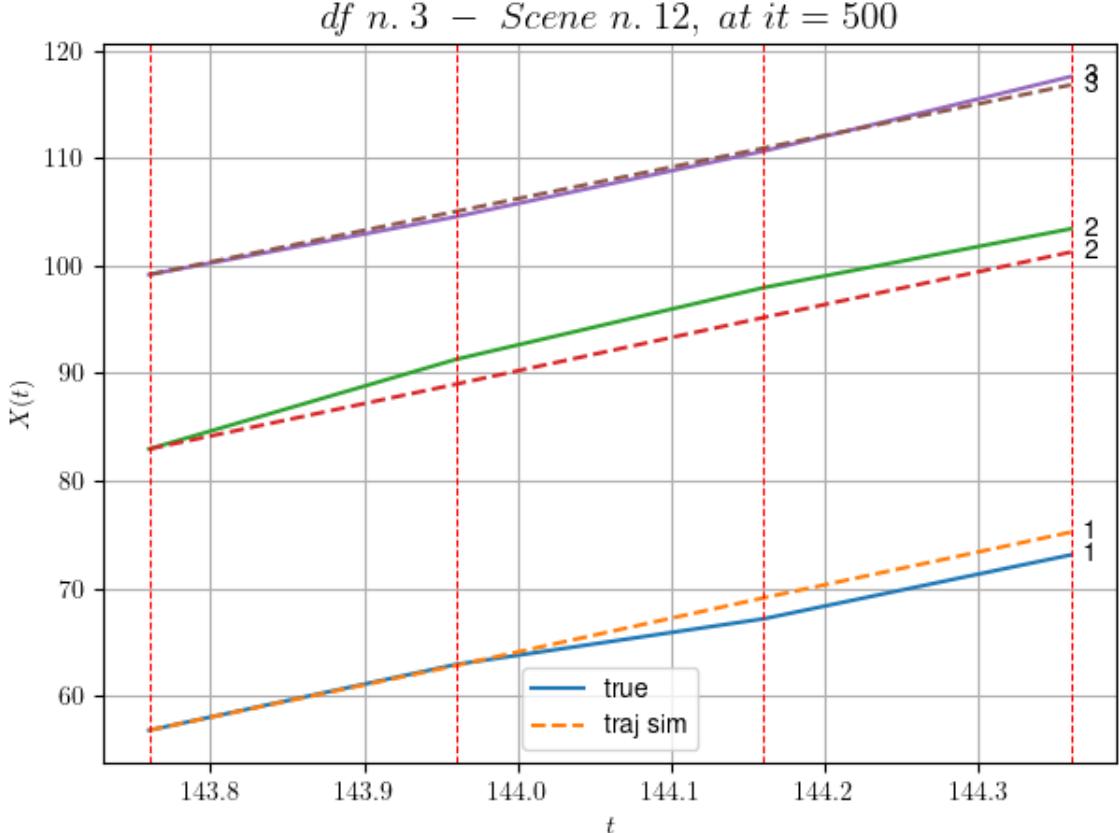
- Time interval n.1: [143.96, 144.16]  
 \* y\_true: [21.21173425 33.31570327]  
 \* v\_ann: [31.441553115844727, 30.958106994628906, 2  
 9.414744463246812]

---

- Time interval n.2: [144.16, 144.36]  
 \* y\_true: [29.72284222 27.36558717]  
 \* v\_ann: [30.570018768310547, 30.445236206054688, 2  
 9.414744463246812]

\* err= 2.2459314274627786

\* Learning rate NN = 5.904899080633186e-05  
 \* diff = 0.0005813378744532471



For scene 12/55

\* use LR\_NN=0.0001 with err=16.743902266410117 at it=19  
 \* v0\_scn\_mean = 29.449859769175433  
 \* MAE = 2.2459314274627786

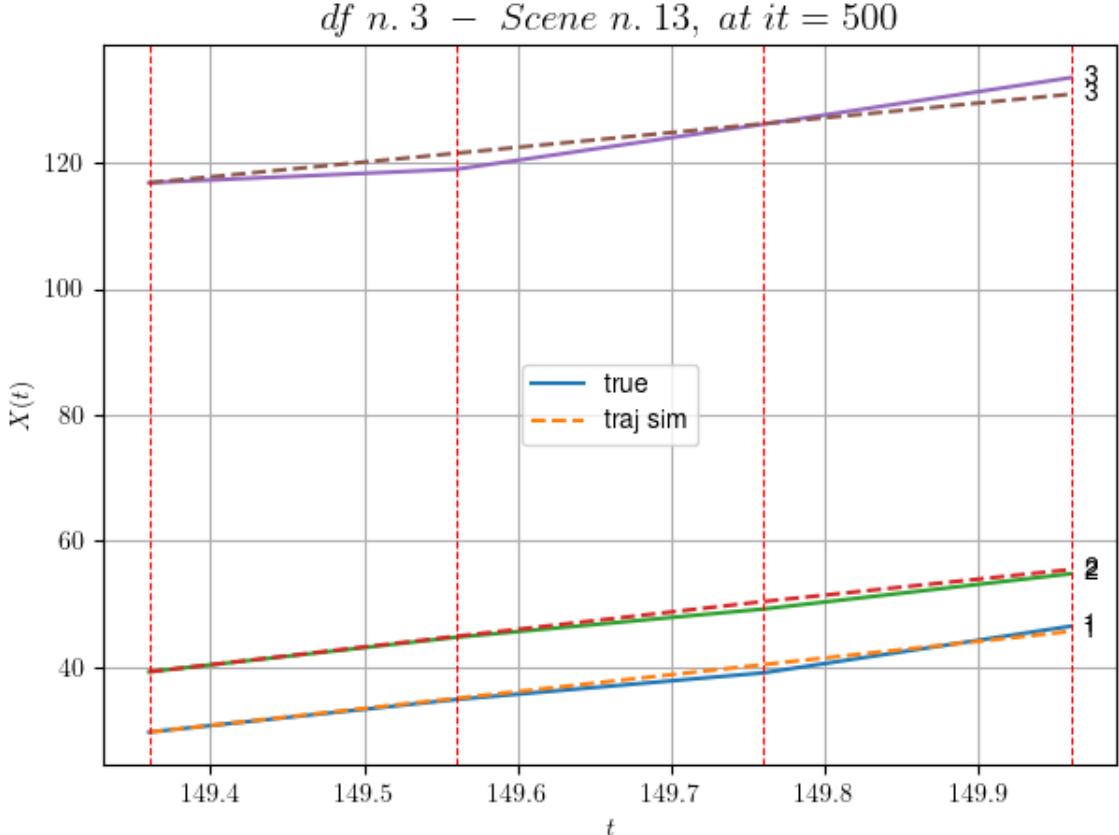
- Time interval n.0: [149.36, 149.56]  
 \* y\_true: [25.90049539 27.45094024]  
 \* v\_ann: [26.858211517333984, 28.22416114807129, 2  
 3.443555328520866]

- Time interval n.1: [149.56, 149.76]  
 \* y\_true: [21.18057417 22.42095425]  
 \* v\_ann: [26.775724411010742, 27.619882583618164, 2  
 3.443555328520866]

- Time interval n.2: [149.76, 149.96]  
 \* y\_true: [37.02126181 27.98148311]  
 \* v\_ann: [26.381460189819336, 25.430389404296875, 2  
 3.443555328520866]

\* err= 1.4775099506531788

\* Learning rate NN = 2.952449540316593e-05  
 \* diff = 6.861070352082166e-06



For scene 13/55

\* use LR\_NN=5e-05 with err=26.124437605599848 at it=19  
 \* v0\_scn\_mean = 23.83694171443966  
 \* MAE = 1.4158505990635344

---



---

- Time interval n.0: [156.16, 156.36]  
 \* y\_true: [12.56997445 35.72646923]  
 \* v\_ann: [25.856204986572266, 30.114910125732422, 3  
 6.779616906742525]

---

- Time interval n.1: [156.36, 156.56]  
 \* y\_true: [42.07610638 31.26485338]  
 \* v\_ann: [31.017988204956055, 29.250276565551758, 3  
 6.779616906742525]

---

- Time interval n.2: [156.56, 156.76]  
 \* y\_true: [30.09491831 26.35466702]  
 \* v\_ann: [31.209104537963867, 30.378307342529297, 3  
 6.779616906742525]

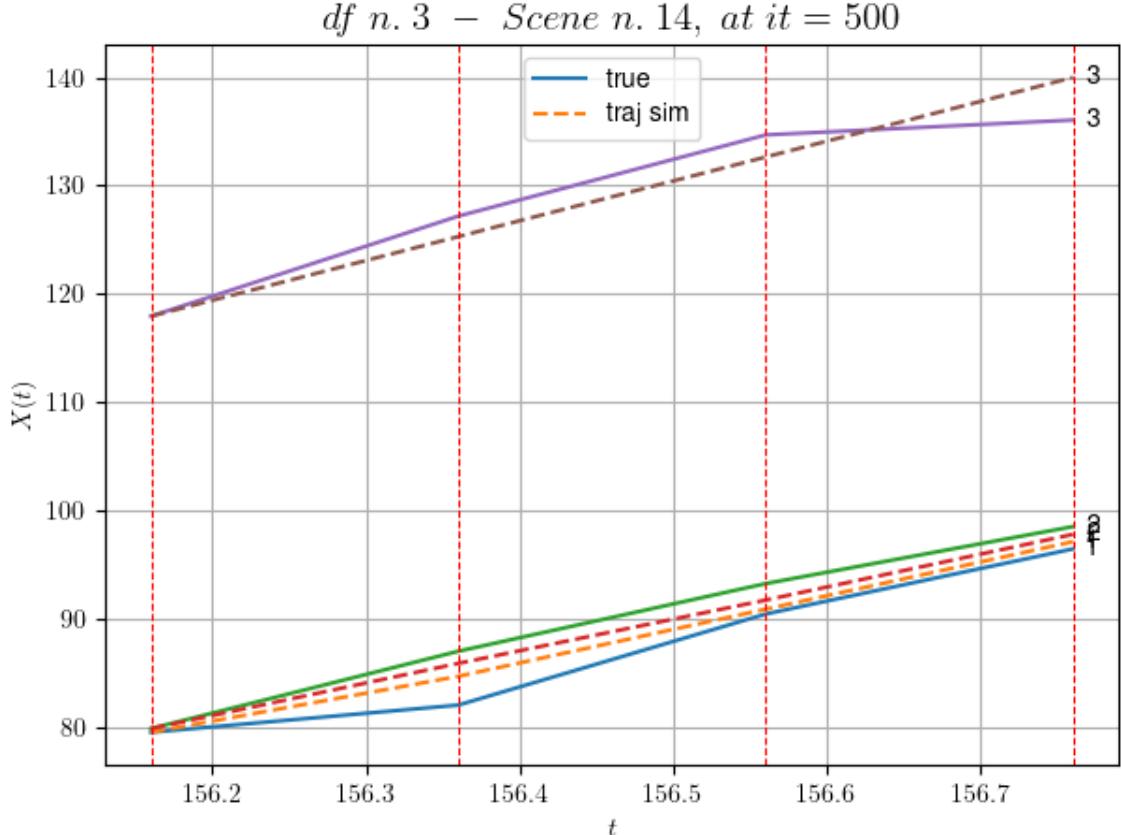
---



---

\* err= 2.9218666577751864  
 \* Learning rate NN = 2.952449540316593e-05

\* diff = 0.000576139538595033



For scene 14/55

\* use LR\_NN=5e-05 with err=31.559955621869065 at it=19  
 \* v0\_scn\_mean = 36.37284019672809  
 \* MAE = 2.6083433764649535

---



---

- Time interval n.0: [207.96, 208.16]  
 \* y\_true: [30.12104774 28.85226703]  
 \* v\_ann: [31.53212547302246, 30.977706909179688, 31.124909645190474]

---

- Time interval n.1: [208.16, 208.36]  
 \* y\_true: [31.19139939 27.73265496]  
 \* v\_ann: [29.30278205871582, 29.614343643188477, 31.124909645190474]

---

- Time interval n.2: [208.36, 208.56]  
 \* y\_true: [31.59181924 26.81292648]  
 \* v\_ann: [29.3685359954834, 29.582599639892578, 31.124909645190474]

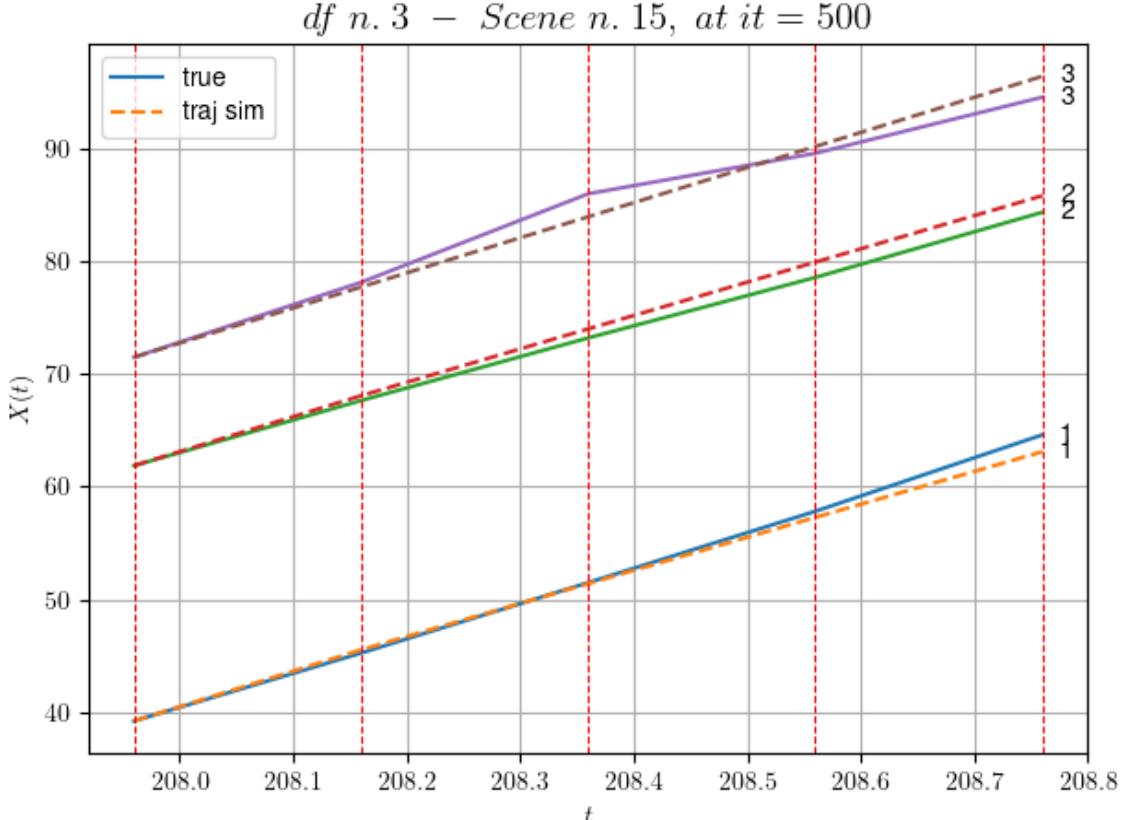
---

- Time interval n.3: [208.56, 208.76]  
 \* y\_true: [33.88244728 28.87369213]

```
* v_ann: [29.10062026977539, 29.423437118530273, 3
1.124909645190474]
```

---

```
* err= 1.0367010270854342
* Learning rate NN = 0.000478296831715852
* diff = 1.1480204168412556e-05
```



For scene 15/55

```
* use LR_NN=0.001 with err=10.149885867194646 at it=19
* v0_scn_mean = 31.057415116985243
* MAE = 0.9433197065572255
```

---



---

```
- Time interval n.0: [218.16, 218.36]
* y_true: [26.47083003 31.40159485]
* v_ann: [31.741453170776367, 33.147491455078125, 3
1.946925583263685]
```

---



---

```
- Time interval n.1: [218.36, 218.56]
* y_true: [32.09751616 29.50187244]
* v_ann: [30.39461326599121, 30.579309463500977, 3
1.946925583263685]
```

---



---

```
- Time interval n.2: [218.56, 218.76]
* y_true: [31.61167285 38.50305628]
```

```
* v_ann: [30.495718002319336, 30.786592483520508, 3
1.946925583263685]
```

---

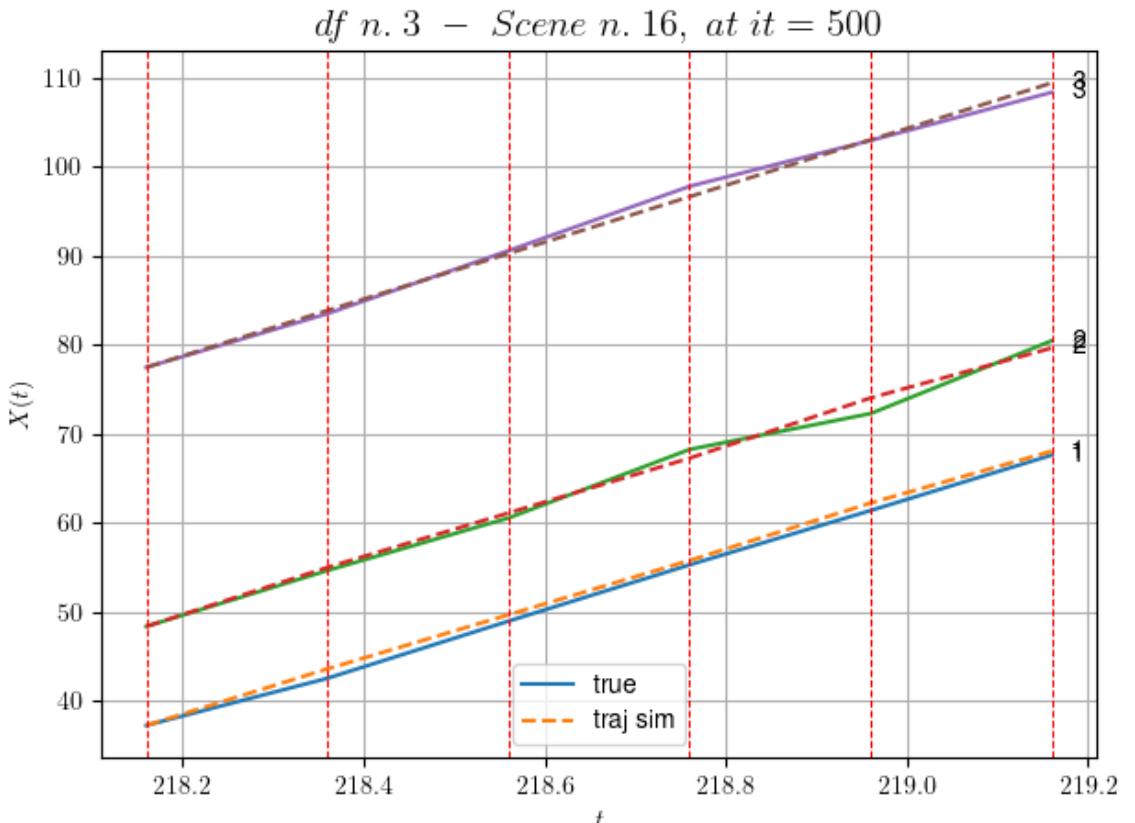
```
- Time interval n.3: [218.76, 218.96]
* y_true: [30.522016 20.15190279]
* v_ann: [32.26839065551758, 33.82798767089844, 31.
946925583263685]
```

---

```
- Time interval n.4: [218.96, 219.16]
* y_true: [31.13252968 40.9045659]
* v_ann: [29.108169555664062, 28.047367095947266, 3
1.946925583263685]
```

---

```
* err= 0.5901187097163981
* Learning rate NN = 0.0001937102060765028
* diff = 0.00019212751710170278
```



For scene 16/55

```
* use LR_NN=0.0005 with err=32.26886866836464 at it=19
* v0_scn_mean = 31.830110135680595
* MAE = 0.5537098663300832
```

---



---



---

```
- Time interval n.0: [222.96, 223.16]
* y_true: [37.21103813 39.71315438]
* v_ann: [35.216529846191406, 34.35533142089844, 3
```

1.279750687417415]

---

- Time interval n.1: [223.16, 223.36]
  - \* y\_true: [31.35126998 28.99272163]
  - \* v\_ann: [35.35069274902344, 34.0222282409668, 31.2

79750687417415]

---

- Time interval n.2: [223.36, 223.56]
  - \* y\_true: [33.72173898 31.78369531]
  - \* v\_ann: [35.205997467041016, 34.10527801513672, 3

1.279750687417415]

---

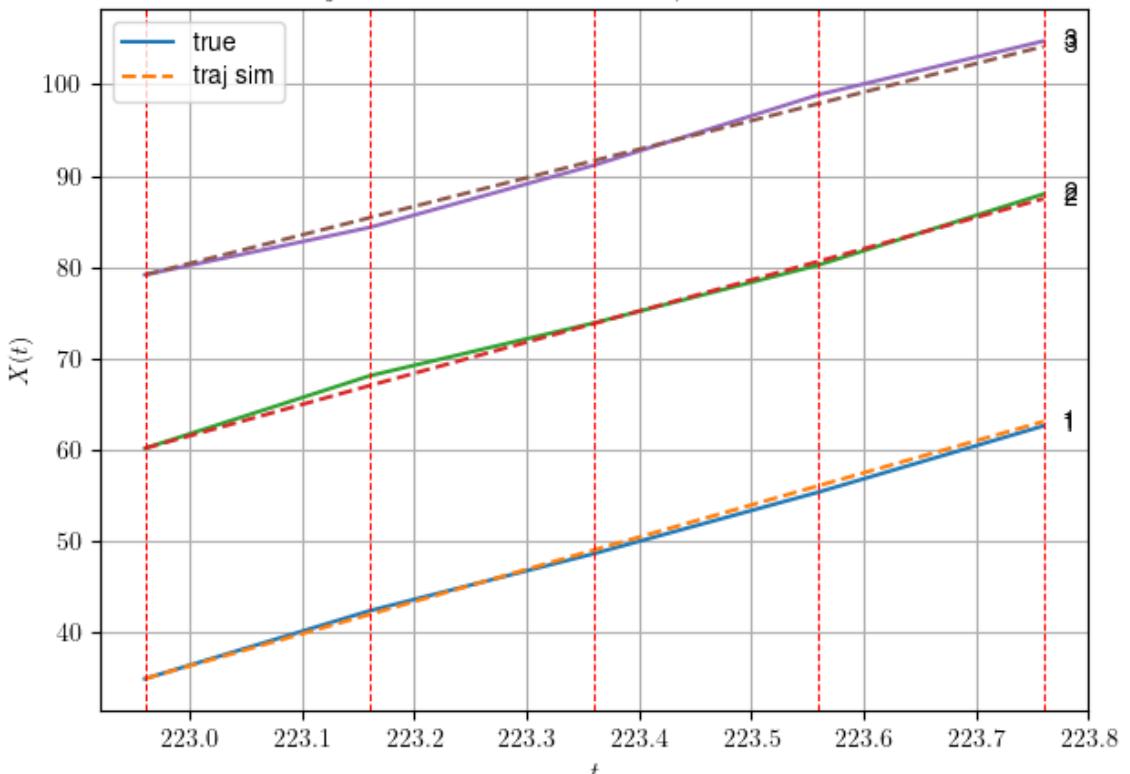
- Time interval n.3: [223.56, 223.76]
  - \* y\_true: [36.23248355 38.79526469]
  - \* v\_ann: [35.11907196044922, 34.267333984375, 31.27

9750687417415]

---

- \* err= 0.3523762670132123
- \* Learning rate NN = 4.782968062500004e-06
- \* diff = 7.67415258038362e-05

*df n. 3 – Scene n. 17, at it = 500*



For scene 17/55

- \* use LR\_NN=1e-05 with err=5.994965887148612 at it=19
- \* v0\_scn\_mean = 31.202965703630486
- \* MAE = 0.3523762670132123

```
=====
- Time interval n.0: [247.36, 247.56]
 * y_true: [24.34113117 25.37248976]
 * v_ann: [30.403980255126953, 27.066909790039062, 2
9.19954509278775]

- Time interval n.1: [247.56, 247.76]
 * y_true: [20.86113385 27.00305492]
 * v_ann: [27.76934242248535, 25.395967483520508, 2
9.19954509278775]

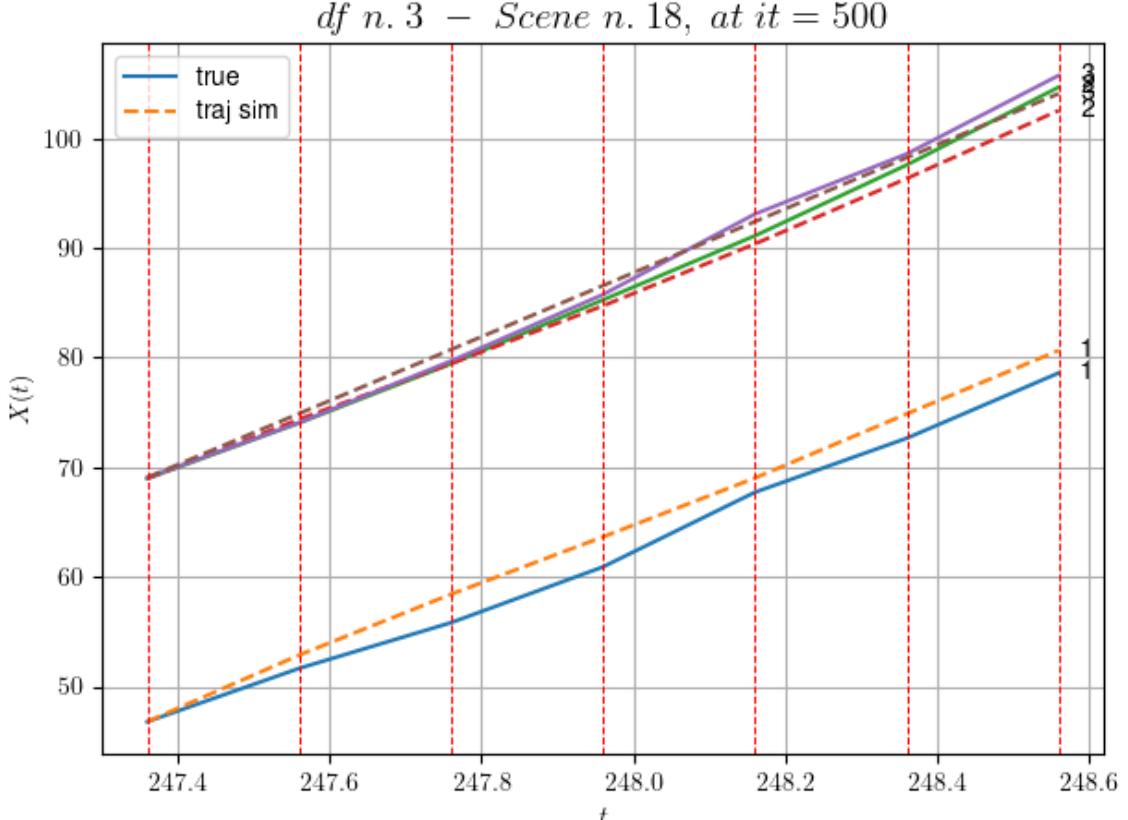
- Time interval n.2: [247.76, 247.96]
 * y_true: [25.44173909 29.15378269]
 * v_ann: [26.178987503051758, 26.343809127807617, 2
9.19954509278775]

- Time interval n.3: [247.96, 248.16]
 * y_true: [34.05263307 29.24437105]
 * v_ann: [26.848432540893555, 28.263639450073242, 2
9.19954509278775]

- Time interval n.4: [248.16, 248.36]
 * y_true: [24.6823336 32.34552948]
 * v_ann: [29.28983497619629, 29.874011993408203, 2
9.19954509278775]

- Time interval n.5: [248.36, 248.56]
 * y_true: [29.77329807 35.48696999]
 * v_ann: [28.949874877929688, 31.029584884643555, 2
9.19954509278775]

* err= 1.8746436681174197
* Learning rate NN = 0.00031381050939671695
* diff = 0.000357882377324481
```



For scene 18/55

- \* use LR\_NN=0.001 with err=31.66708504468893 at it=19
- \* v0\_scn\_mean = 29.24757235128188
- \* MAE = 1.6395723712674595

---



---

- Time interval n.0: [269.56, 269.76]
  - \* y\_true: [27.75027124 32.18076388]
  - \* v\_ann: [29.250347137451172, 29.657819747924805, 3 0.539175669712627]

---

- Time interval n.1: [269.76, 269.96]
  - \* y\_true: [33.80053503 32.77104018]
  - \* v\_ann: [29.318334579467773, 29.576631546020508, 3 0.539175669712627]

---

- Time interval n.2: [269.96, 270.16]
  - \* y\_true: [22.10049768 29.95131945]
  - \* v\_ann: [29.397445678710938, 29.726696014404297, 3 0.539175669712627]

---

- Time interval n.3: [270.16, 270.36]
  - \* y\_true: [32.40098084 29.70158012]
  - \* v\_ann: [29.411396026611328, 29.645334243774414, 3

0.539175669712627]

---

- Time interval n.4: [270.36, 270.56]
  - \* y\_true: [29.55119411 25.63174114]
  - \* v\_ann: [29.41621208190918, 29.768327713012695, 3

0.539175669712627]

---



---

- Time interval n.5: [270.56, 270.76]
  - \* y\_true: [29.3015063 30.75243246]
  - \* v\_ann: [29.31389808654785, 29.71052360534668, 30.

539175669712627]

---



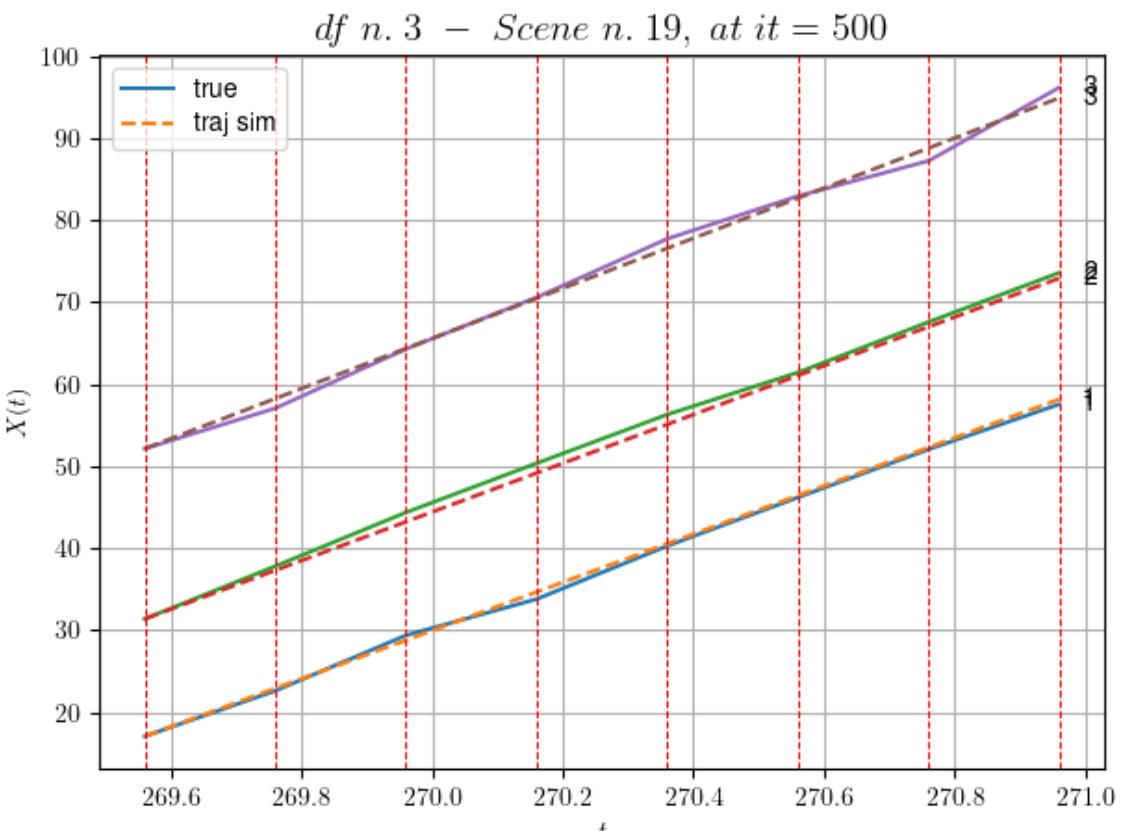
---

- Time interval n.6: [270.76, 270.96]
  - \* y\_true: [27.50174001 30.06304641]
  - \* v\_ann: [29.344846725463867, 29.60750389099121, 3

0.539175669712627]

---

- \* err= 0.5803382944496142
- \* Learning rate NN = 1.2709323527815286e-05
- \* diff = 0.000026122267122272



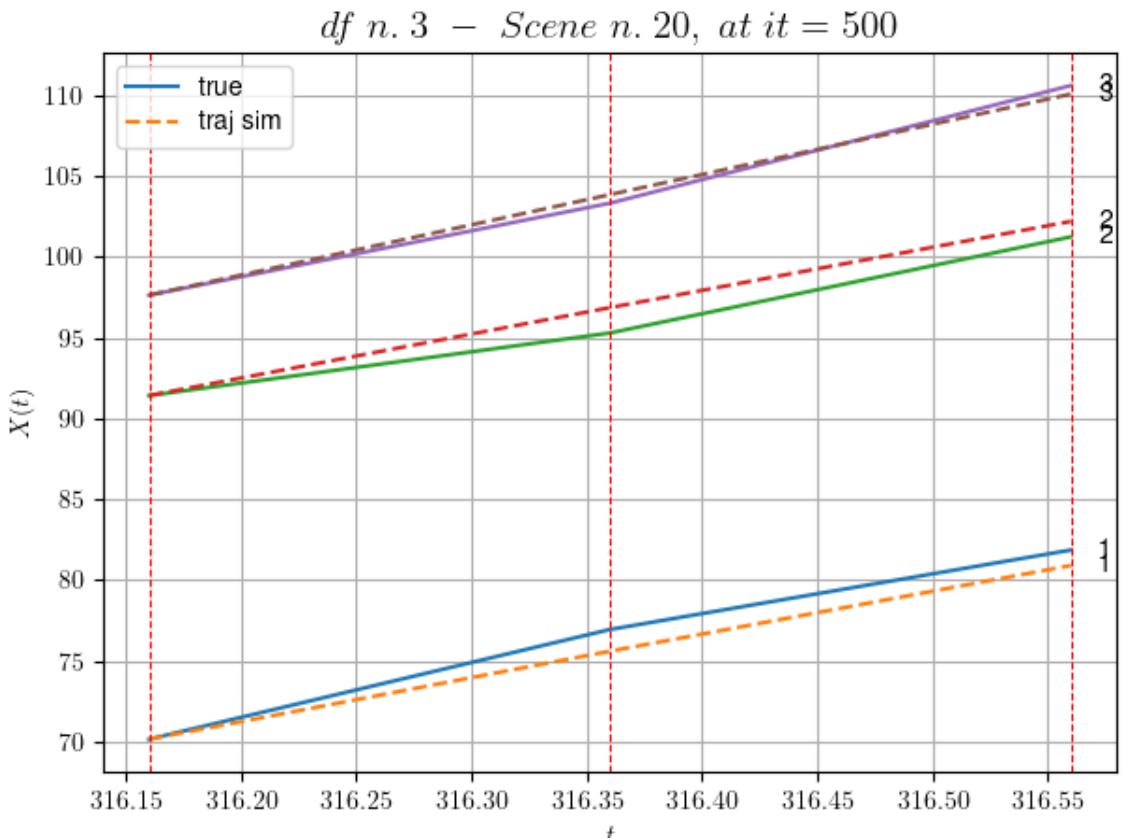
For scene 19/55

- \* use LR\_NN=5e-05 with err=6.01624957886671 at it=19
- \* v0\_scn\_mean = 30.50682515373748
- \* MAE = 0.4969015619380343

```
=====
- Time interval n.0: [316.16, 316.36]
 * y_true: [33.9635286 19.3731464]
 * v_ann: [27.250946044921875, 27.225725173950195, 3
 1.11973130725129]
```

```
=====
- Time interval n.1: [316.36, 316.56]
 * y_true: [24.60296417 29.75560281]
 * v_ann: [26.519426345825195, 26.687152862548828, 3
 1.11973130725129]
```

```
=====
* err= 0.7404259649845865
* Learning rate NN = 0.0007289999630302191
* diff = 3.1234264381563293e-06
```



For scene 20/55  
 \* use LR\_NN=0.001 with err=3.084756198217773 at it=19  
 \* v0\_scn\_mean = 31.052547479090023  
 \* MAE = 0.7404258177215631

```
=====
- Time interval n.0: [317.76, 317.96]
 * y_true: [22.24301013 28.10582296]
 * v_ann: [31.748271942138672, 30.498153686523438, 2
 8.72960650253497]
```

```

 - Time interval n.1: [317.96, 318.16]

 * y_true: [28.26433817 33.10585656]

 * v_ann: [25.061878204345703, 24.464330673217773, 2

8.72960650253497]

 - Time interval n.2: [318.16, 318.36]

 * y_true: [11.28182915 18.67354228]

 * v_ann: [32.35293960571289, 14.994230270385742, 2

8.72960650253497]

 - Time interval n.3: [318.36, 318.56]

 * y_true: [28.12514655 32.86712293]

 * v_ann: [16.62258529663086, 19.13011932373047, 28.

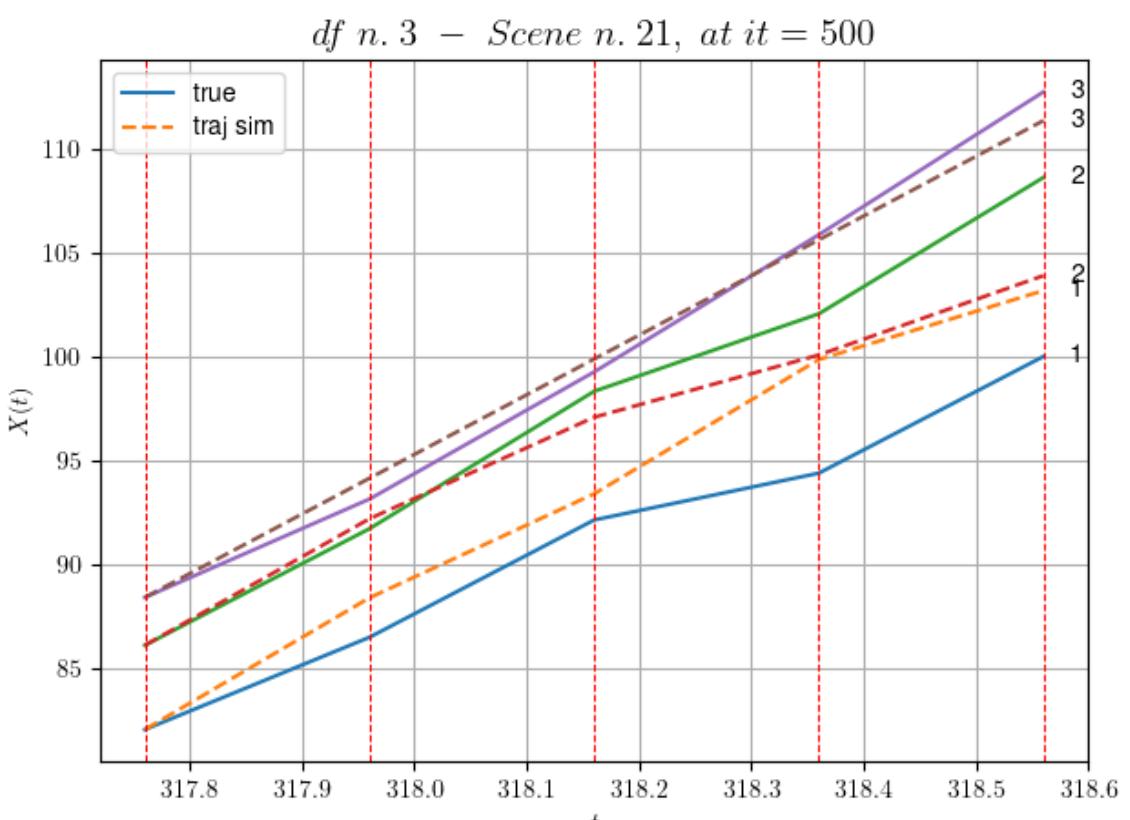
72960650253497]

 * err= 5.116925856198444

 * Learning rate NN = 0.002391484100371599

 * diff = 0.00038072361137064803

```



For scene 21/55

```

* use LR_NN=0.005 with err=17.134874847046085 at it=19
* v0_scn_mean = 28.805830055344423
* MAE = 2.80372648259644

```

```
- Time interval n.0: [325.76, 325.96]
 * y_true: [25.31057708 30.22149101]
 * v_ann: [26.635330200195312, 28.394733428955078, 3
3.13555230710681]

- Time interval n.1: [325.96, 326.16]
 * y_true: [25.23074384 33.46208613]
 * v_ann: [26.73264503479004, 28.343820571899414, 3
3.13555230710681]

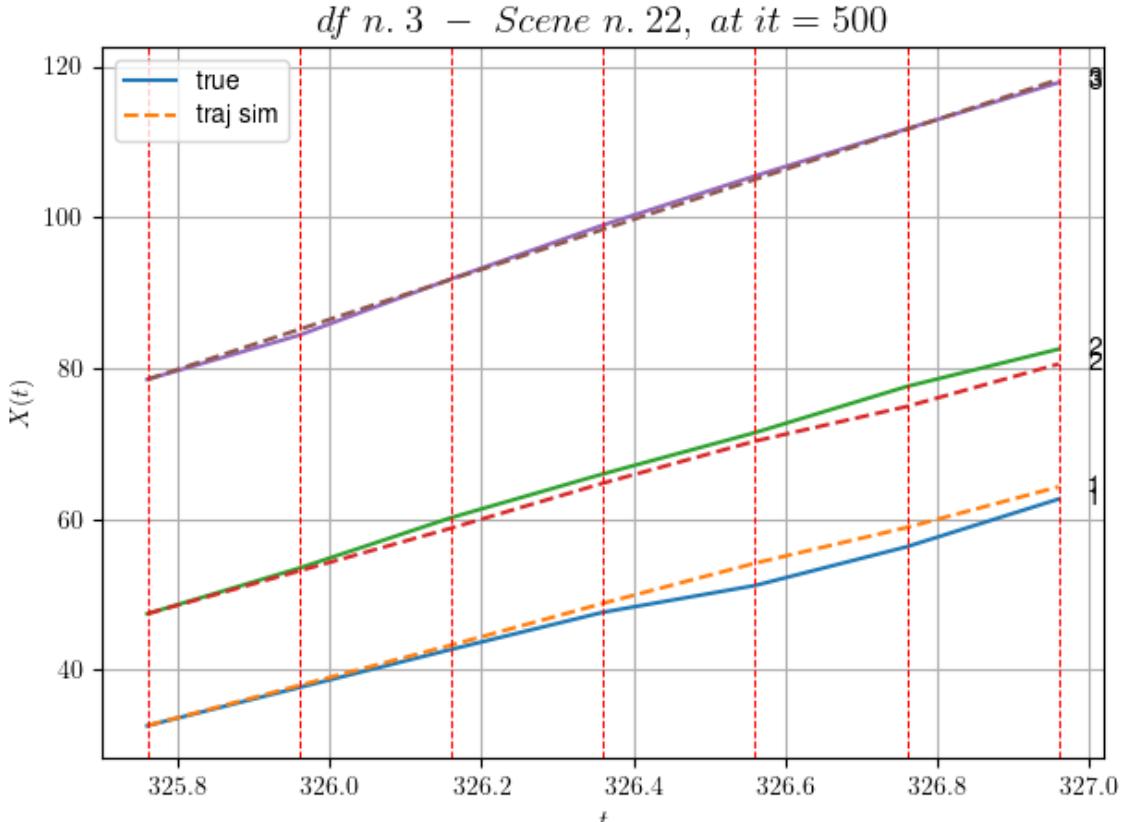
- Time interval n.2: [326.16, 326.36]
 * y_true: [24.63092838 29.01218385]
 * v_ann: [27.729719161987305, 29.822967529296875, 3
3.13555230710681]

- Time interval n.3: [326.36, 326.56]
 * y_true: [17.72077879 27.33248549]
 * v_ann: [26.587697982788086, 27.836795806884766, 3
3.13555230710681]

- Time interval n.4: [326.56, 326.76]
 * y_true: [25.71142574 30.60327071]
 * v_ann: [23.68079948425293, 22.96645164489746, 33.
13555230710681]

- Time interval n.5: [326.76, 326.96]
 * y_true: [31.6120671 24.79299826]
 * v_ann: [26.97367286682129, 28.177724838256836, 3
3.13555230710681]

* err= 1.7519669879143762
* Learning rate NN = 0.00015690525469835848
* diff = 0.014129854986107304
```



For scene 22/55

- \* use LR\_NN=0.0005 with err=11.013984586889917 at it=19
- \* v0\_scn\_mean = 32.947419309460216
- \* MAE = 0.8585609864120887

---



---

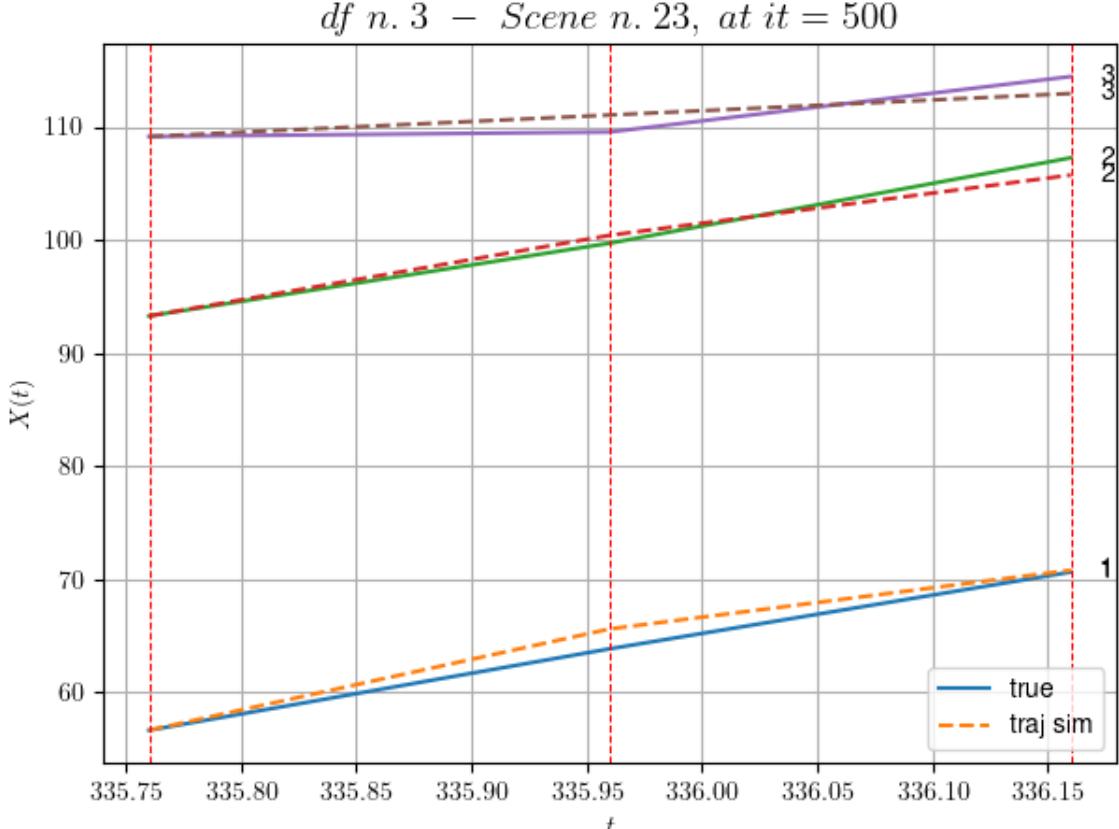
- Time interval n.0: [335.76, 335.96]
- \* y\_true: [36.00253797 32.17585284]
- \* v\_ann: [44.78330993652344, 35.66510772705078, 9.495680524399267]

---

- Time interval n.1: [335.96, 336.16]
- \* y\_true: [33.90297107 37.71766361]
- \* v\_ann: [25.932209014892578, 26.608388900756836, 9.495680524399267]

---

- \* err= 1.1584601146272246
- \* Learning rate NN = 0.00036449998151510954
- \* diff = 0.0057474204045244726



For scene 23/55

\* use LR\_NN=0.0005 with err=17.46361866218488 at it=19  
 \* v0\_scn\_mean = 10.72593877233594  
 \* MAE = 1.1284659684934912

---



---

- Time interval n.0: [371.16, 371.36]  
 \* y\_true: [24.42036896 26.80112378]  
 \* v\_ann: [27.075881958007812, 27.19964599609375, 3  
 2.53950759922653]

---

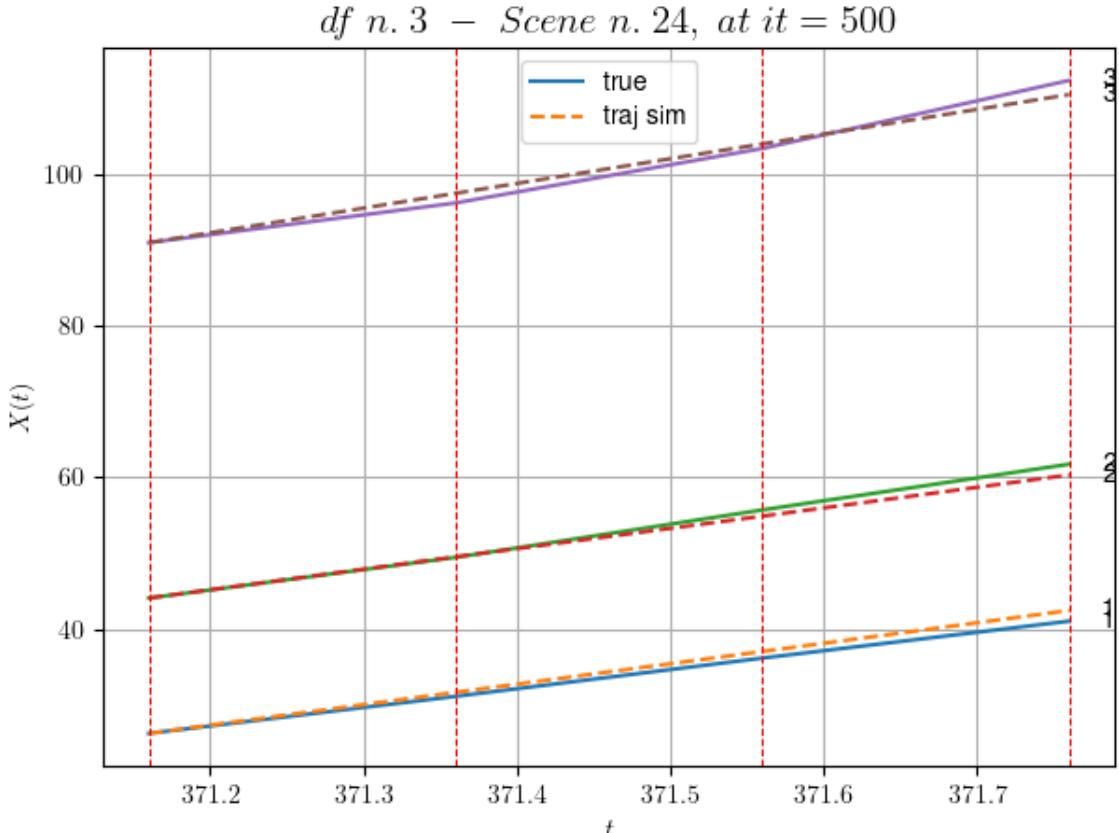
- Time interval n.1: [371.36, 371.56]  
 \* y\_true: [25.21053633 31.30165898]  
 \* v\_ann: [26.905258178710938, 26.79659652709961, 3  
 2.53950759922653]

---

- Time interval n.2: [371.56, 371.76]  
 \* y\_true: [24.36067127 30.15199262]  
 \* v\_ann: [27.06879997253418, 27.171266555786133, 3  
 2.53950759922653]

---

\* err= 0.9311195891953808  
 \* Learning rate NN = 2.952449540316593e-05  
 \* diff = 1.2747821903635881e-05



For scene 24/55

```
* use LR_NN=5e-05 with err=7.90440685070303 at it=19
* v0_scn_mean = 32.387137257290775
* MAE = 0.9304387013157753
```

---



---

```
- Time interval n.0: [387.36, 387.56]
* y_true: [32.47194771 39.46360823]
* v_ann: [29.430566787719727, 29.454484939575195, 3
3.03189808825634]
```

---

```
- Time interval n.1: [387.56, 387.76]
* y_true: [28.80212467 26.65295039]
* v_ann: [30.195592880249023, 30.667953491210938, 3
3.03189808825634]
```

---

```
- Time interval n.2: [387.76, 387.96]
* y_true: [28.30253286 24.25305315]
* v_ann: [29.867361068725586, 30.246034622192383, 3
3.03189808825634]
```

---

```
- Time interval n.3: [387.96, 388.16]
* y_true: [34.31356051 24.78356316]
* v_ann: [29.417139053344727, 29.42947006225586, 3
```

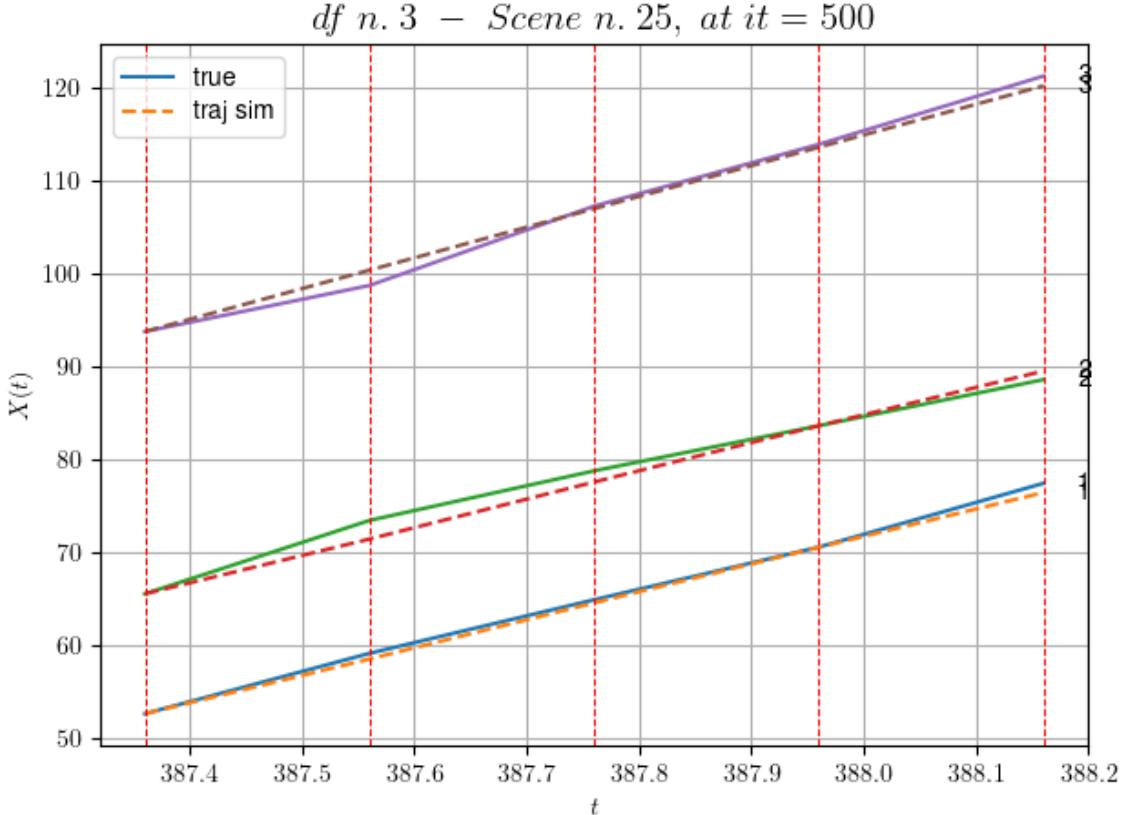
3.03189808825634]

---



---

- \* err= 0.7844771650531835
- \* Learning rate NN = 4.7829678806010634e-05
- \* diff = 0.00035051951386622093



For scene 25/55

- \* use LR\_NN=0.0001 with err=17.495144877852415 at it=19
- \* v0\_scn\_mean = 32.849984339087136
- \* MAE = 0.7821553662420552

---



---

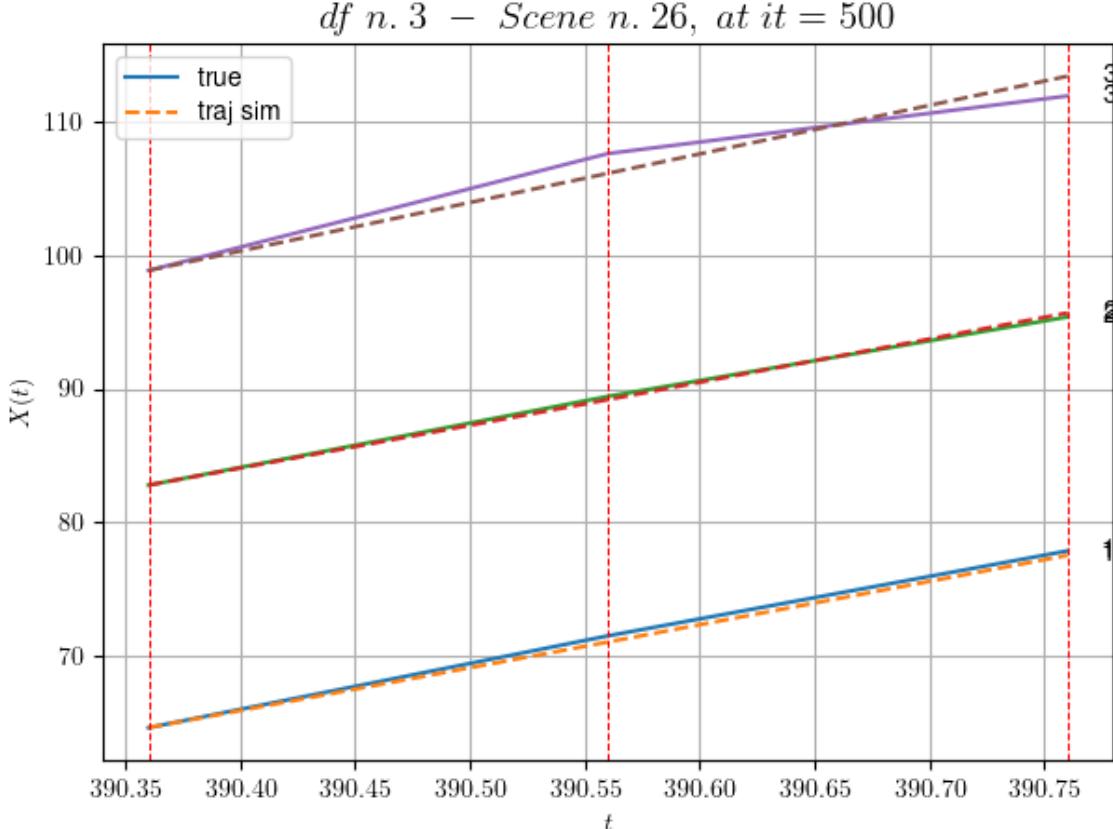
- Time interval n.0: [390.36, 390.56]
  - \* y\_true: [34.37306474 33.21473815]
  - \* v\_ann: [32.07365417480469, 32.01216506958008, 36.354260436289735]

---

- Time interval n.1: [390.56, 390.76]
  - \* y\_true: [31.79338609 29.7348149 ]
  - \* v\_ann: [32.428314208984375, 32.43998336791992, 36.354260436289735]

---

- \* err= 0.538333097132376
- \* Learning rate NN = 7.289998757187277e-05
- \* diff = 3.0832618601817074e-05



For scene 26/55

\* use LR\_NN=0.0001 with err=1.1578365824136991 at it=19  
 \* v0\_scn\_mean = 35.97300509540553  
 \* MAE = 0.49065005144417473

- Time interval n.0: [427.96, 428.16]  
 \* y\_true: [33.16108667 24.70091575]  
 \* v\_ann: [30.256389617919922, 1.1627648184244325e-2  
 2, 37.3498561754796]

- Time interval n.1: [428.16, 428.36]  
 \* y\_true: [36.08159054 35.68166414]  
 \* v\_ann: [34.48658752441406, 2.6291915527827157e-2  
 4, 37.3498561754796]

- Time interval n.2: [428.36, 428.56]  
 \* y\_true: [27.64533545 36.4184567 ]  
 \* v\_ann: [33.41707229614258, 3.888645656076285e-24,  
 37.3498561754796]

- Time interval n.3: [428.56, 428.76]  
 \* y\_true: [24.96174823 38.17283814]  
 \* v\_ann: [30.23722267150879, 2.7042319463918644e-2

4, 37.3498561754796]

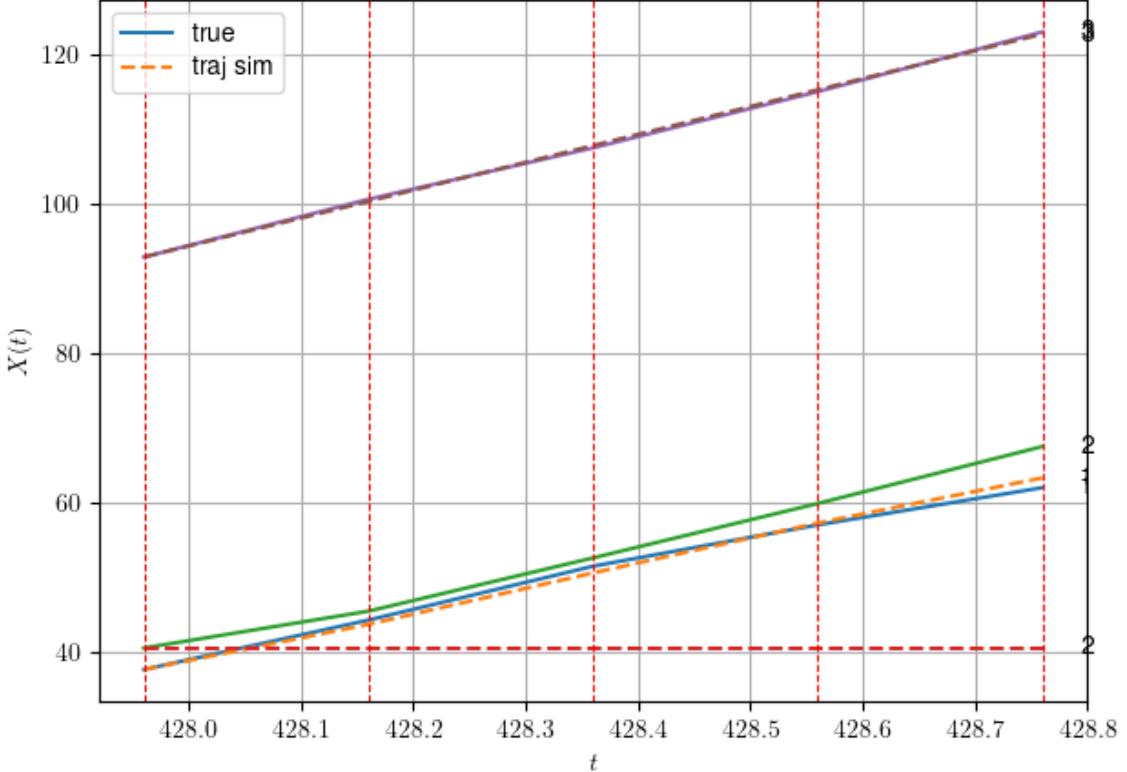
---



---

- \* err= 85.13563807843288
- \* Learning rate NN = 0.000239148415857926
- \* diff = 0.00022352953965310007

*df n. 3 – Scene n. 27, at it = 500*



For scene 27/55

- \* use LR\_NN=0.0005 with err=71.28936410323179 at it=19
- \* v0\_scn\_mean = 36.90886513494348
- \* MAE = 46.91781256053596

---



---

- Time interval n.0: [439.36, 439.56]
  - \* y\_true: [29.12388438 22.06331107]
  - \* v\_ann: [25.740026473999023, 25.73181915283203, 3 3.53637857273001]

---



---

- Time interval n.1: [439.56, 439.76]
  - \* y\_true: [38.07606081 22.99369197]
  - \* v\_ann: [25.628742218017578, 25.951385498046875, 3 3.53637857273001]

---

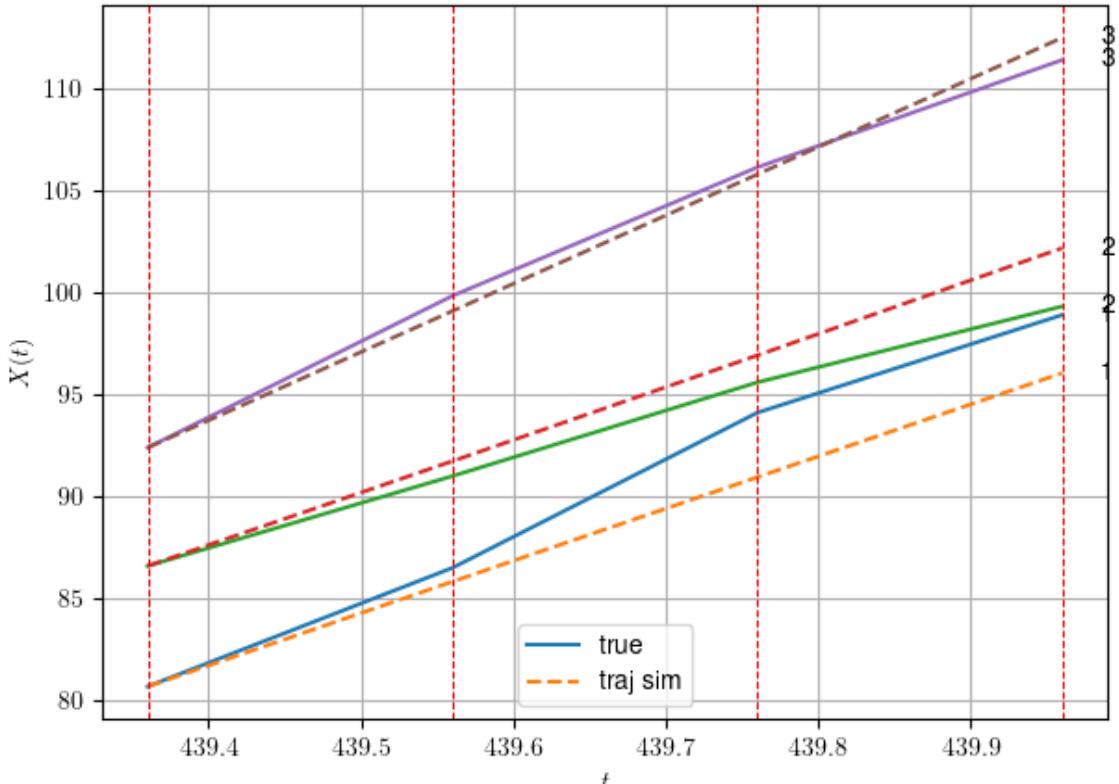


---

- Time interval n.2: [439.76, 439.96]
  - \* y\_true: [23.98424021 18.65338098]
  - \* v\_ann: [25.554899215698242, 26.336994171142578, 3 3.53637857273001]

```
* err= 2.580989747775203
* Learning rate NN = 5.904899080633186e-05
* diff = 0.002518489580433325
```

df n. 3 – Scene n. 28, at it = 500



For scene 28/55

```
* use LR_NN=0.0001 with err=14.733629886136455 at it=19
* v0_scn_mean = 33.32419601714201
* MAE = 0.845743892011194
```

---



---

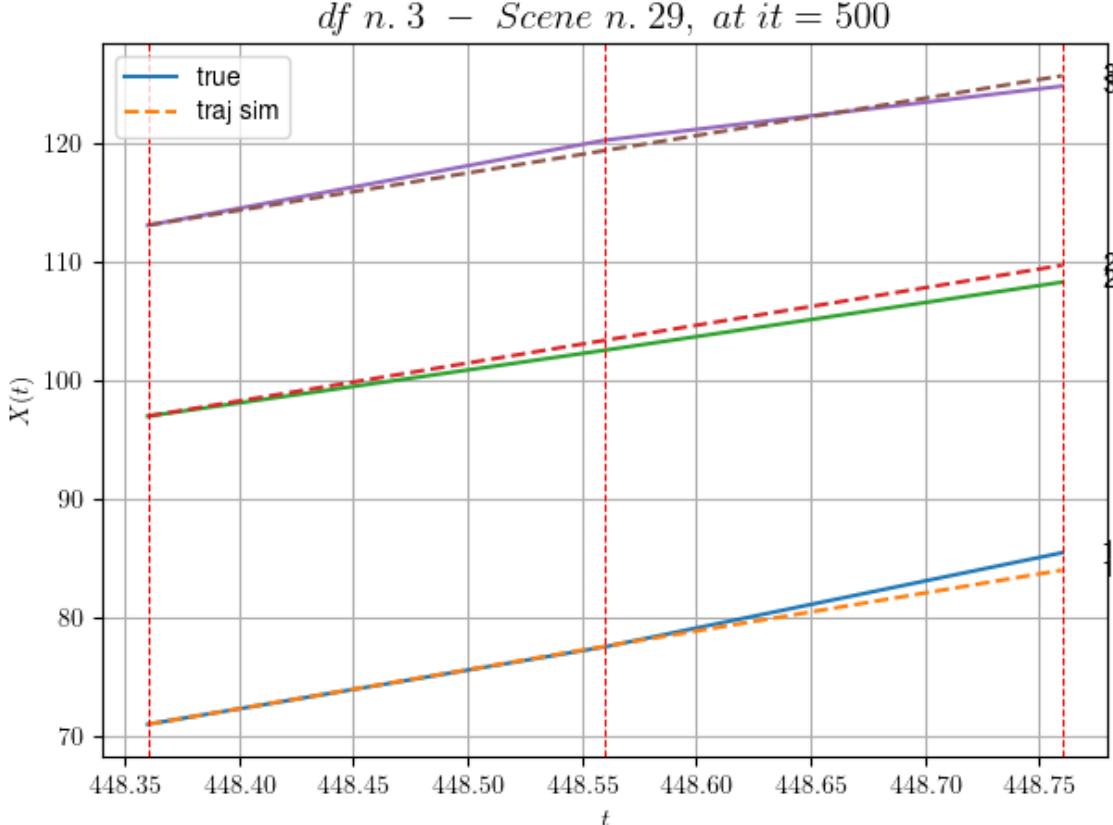
- Time interval n.0: [448.36, 448.56]  
 \* y\_true: [32.70350359 27.85524745]  
 \* v\_ann: [32.9509162902832, 32.0523681640625, 31.58  
 5048186376163]

---

- Time interval n.1: [448.56, 448.76]  
 \* y\_true: [39.76511656 28.75604876]  
 \* v\_ann: [32.17930603027344, 31.685678482055664, 3  
 1.585048186376163]

---

```
* err= 0.7137226905964659
* Learning rate NN = 7.289998757187277e-05
* diff = 0.001619901956845471
```



For scene 29/55

```
* use LR_NN=0.0001 with err=0.6101819967763985 at it=19
* v0_scn_mean = 31.48994536635971
* MAE = 0.49574753208258593
```

---



---

```
- Time interval n.0: [465.16, 465.36]
* y_true: [25.95020905 30.0319773]
* v_ann: [26.20905303955078, 26.727020263671875, 2
4.7220790651284]
```

---



---

```
- Time interval n.1: [465.36, 465.56]
* y_true: [21.30025919 28.782318]
* v_ann: [26.212636947631836, 26.75425148010254, 2
4.7220790651284]
```

---



---

```
- Time interval n.2: [465.56, 465.76]
* y_true: [22.00036741 28.59272475]
* v_ann: [26.15249252319336, 26.72136688232422, 24.
7220790651284]
```

---



---

```
- Time interval n.3: [465.76, 465.96]
* y_true: [26.90061063 23.70259195]
* v_ann: [26.100051879882812, 26.751956939697266, 2
```

4.7220790651284]

```
- Time interval n.4: [465.96, 466.16]
 * y_true: [23.75070885 23.26288454]
 * v_ann: [26.10003089904785, 26.795326232910156, 2
```

4.7220790651284]

```
- Time interval n.5: [466.16, 466.36]
 * y_true: [28.05107156 31.61450449]
 * v_ann: [26.057199478149414, 26.81451988220215, 2
```

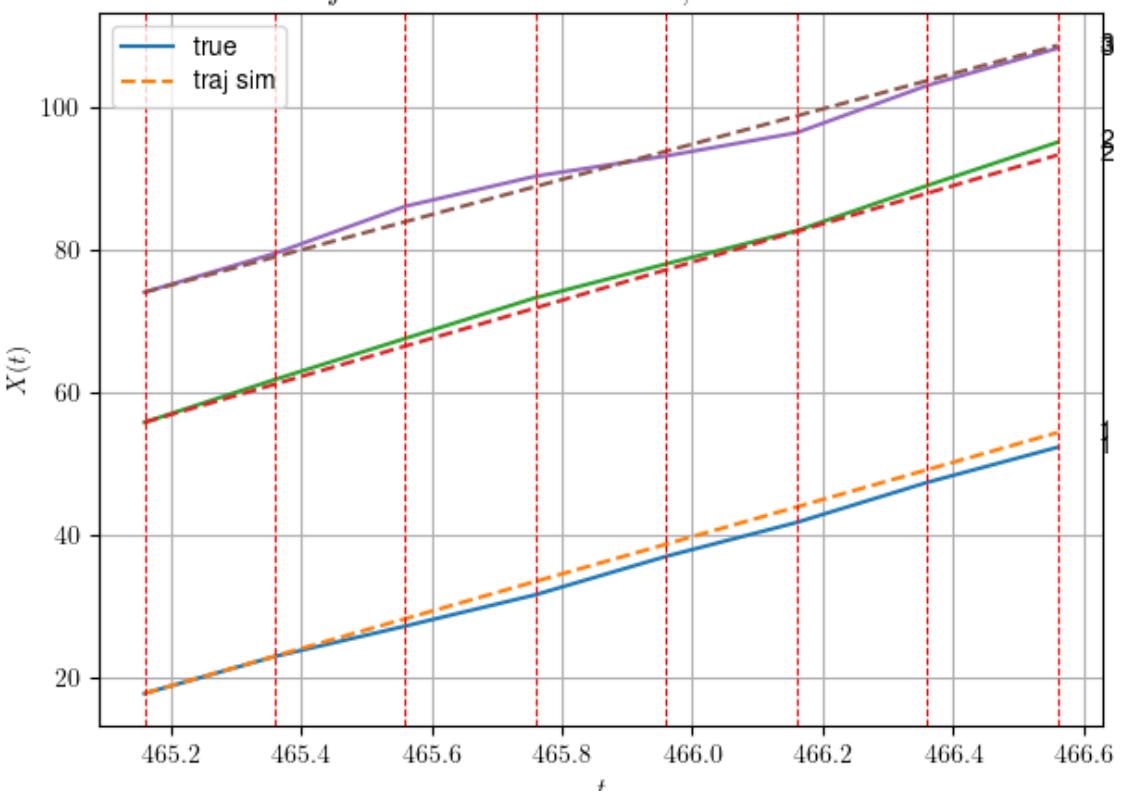
4.7220790651284]

```
- Time interval n.6: [466.36, 466.56]
 * y_true: [24.65117633 30.37492519]
 * v_ann: [26.094852447509766, 26.829065322875977, 2
```

4.7220790651284]

```
* err= 1.7488257243414722
* Learning rate NN = 2.541864660088322e-06
* diff = 0.00371320095054806044
```

*df n. 3 – Scene n. 30, at it = 500*



For scene 30/55

```
* use LR_NN=1e-05 with err=63.840055818909036 at it=19
* v0_scn_mean = 25.038754084253892
* MAE = 1.3602797161856799
```

```
=====
- Time interval n.0: [467.16, 467.36]
 * y_true: [14.52040439 29.14139959]
 * v_ann: [21.5261287689209, 19.36127281188965, 20.7
7626285260543]

- Time interval n.1: [467.36, 467.56]
 * y_true: [8.96028804 21.01119683]
 * v_ann: [20.968997955322266, 20.030086517333984, 2
0.77626285260543]

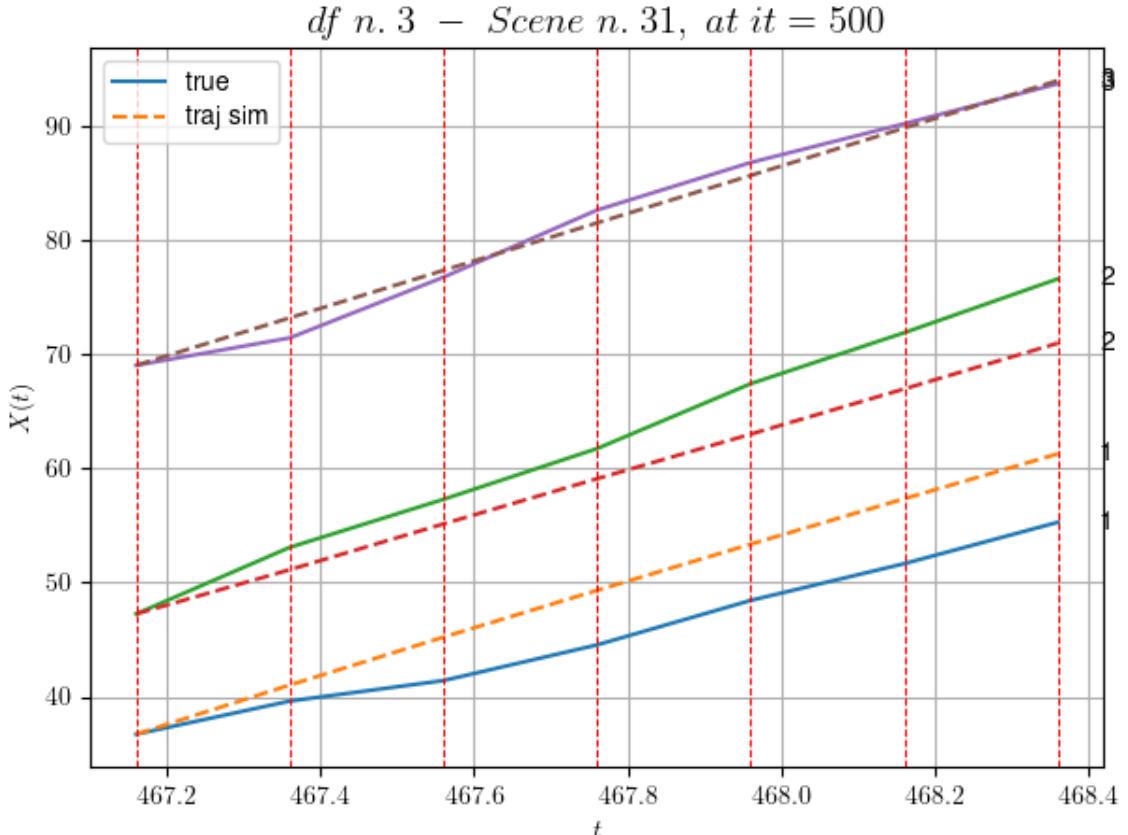
- Time interval n.2: [467.56, 467.76]
 * y_true: [15.62056342 22.22157858]
 * v_ann: [20.48106575012207, 19.7891902923584, 20.7
7626285260543]

- Time interval n.3: [467.76, 467.96]
 * y_true: [19.48080782 28.40220095]
 * v_ann: [20.219812393188477, 19.504600524902344, 2
0.77626285260543]

- Time interval n.4: [467.96, 468.16]
 * y_true: [16.10078185 22.34213456]
 * v_ann: [19.897512435913086, 19.822399139404297, 2
0.77626285260543]

- Time interval n.5: [468.16, 468.36]
 * y_true: [18.12099432 23.56241547]
 * v_ann: [19.653135299682617, 20.02469253540039, 2
0.77626285260543]

* err= 10.889447029883135
* Learning rate NN = 3.138104830213706e-06
* diff = 0.0085913243975142
```



For scene 31/55

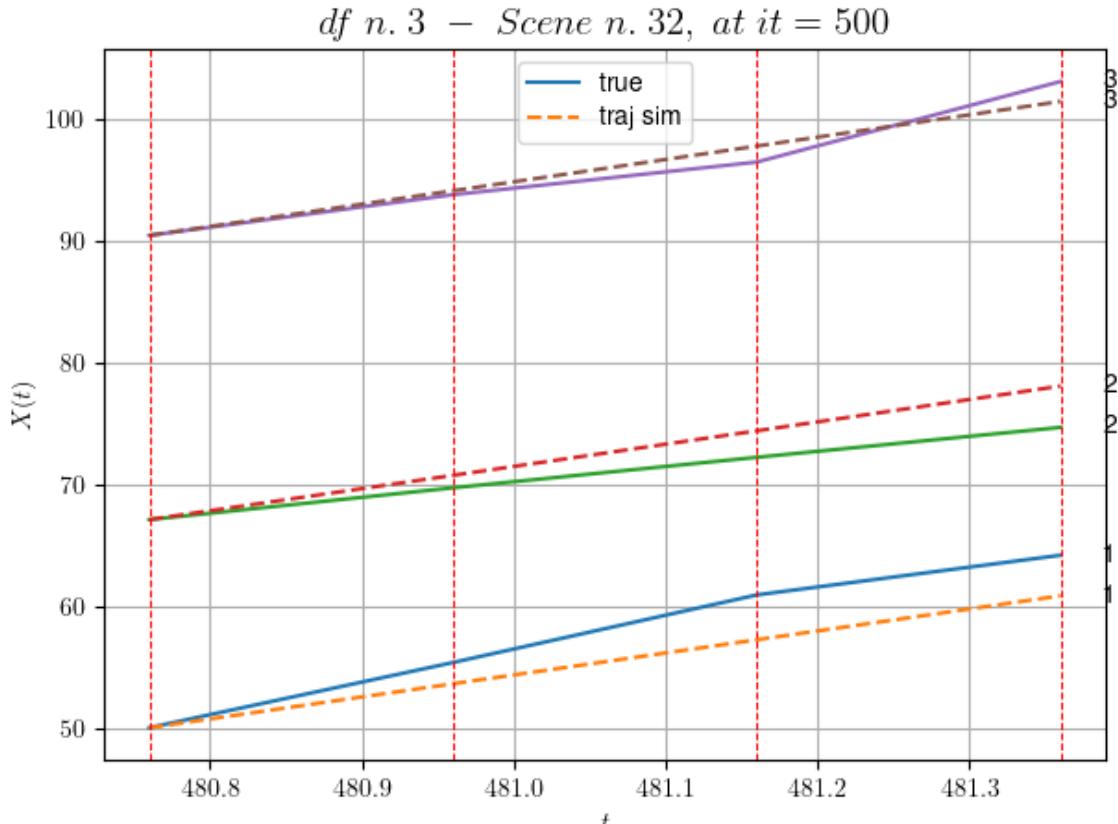
\* use LR\_NN=1e-05 with err=15.864737898613237 at it=19  
 \* v0\_scn\_mean = 21.329686667323198  
 \* MAE = 10.889447029883135

- Time interval n.0: [480.76, 480.96]  
 \* y\_true: [26.72145209 13.04113053]  
 \* v\_ann: [18.01890754699707, 18.146089553833008, 1  
 8.304841737444676]

- Time interval n.1: [480.96, 481.16]  
 \* y\_true: [27.70182882 12.50117676]  
 \* v\_ann: [18.028202056884766, 18.248708724975586, 1  
 8.304841737444676]

- Time interval n.2: [481.16, 481.36]  
 \* y\_true: [16.26121495 12.26123448]  
 \* v\_ann: [18.0208683013916, 18.345861434936523, 18.  
 304841737444676]

\* err= 4.108626155089898  
 \* Learning rate NN = 2.952449540316593e-05  
 \* diff = 0.0067966461396125055



For scene 32/55

\* use LR\_NN=5e-05 with err=15.413331369813994 at it=19  
 \* v0\_scn\_mean = 19.00655070811105  
 \* MAE = 3.230950842417977

---



---

- Time interval n.0: [487.16, 487.36]  
 \* y\_true: [ 6.3002445 28.62315801]  
 \* v\_ann: [14.73817253112793, 14.650459289550781, 2  
 3.07183162168673]

---



---

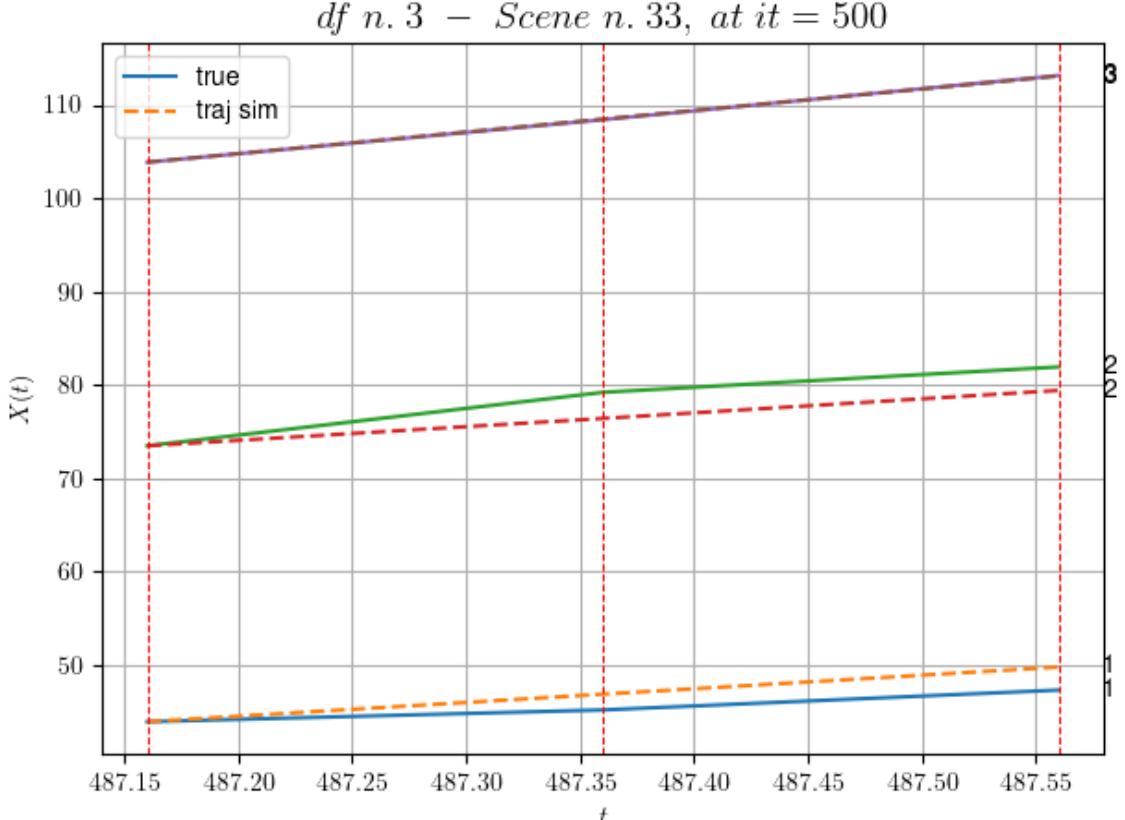
- Time interval n.1: [487.36, 487.56]  
 \* y\_true: [10.63044184 13.60161023]  
 \* v\_ann: [14.528463363647461, 15.011460304260254, 2  
 3.07183162168673]

---



---

\* err= 2.5628292991244606  
 \* Learning rate NN = 3.6449993785936385e-05  
 \* diff = 0.00019983294430447884



For scene 33/55

- \* use LR\_NN=5e-05 with err=3.894295764722394 at it=19
- \* v0\_scn\_mean = 23.487521413325737
- \* MAE = 2.5628292991244606

---



---

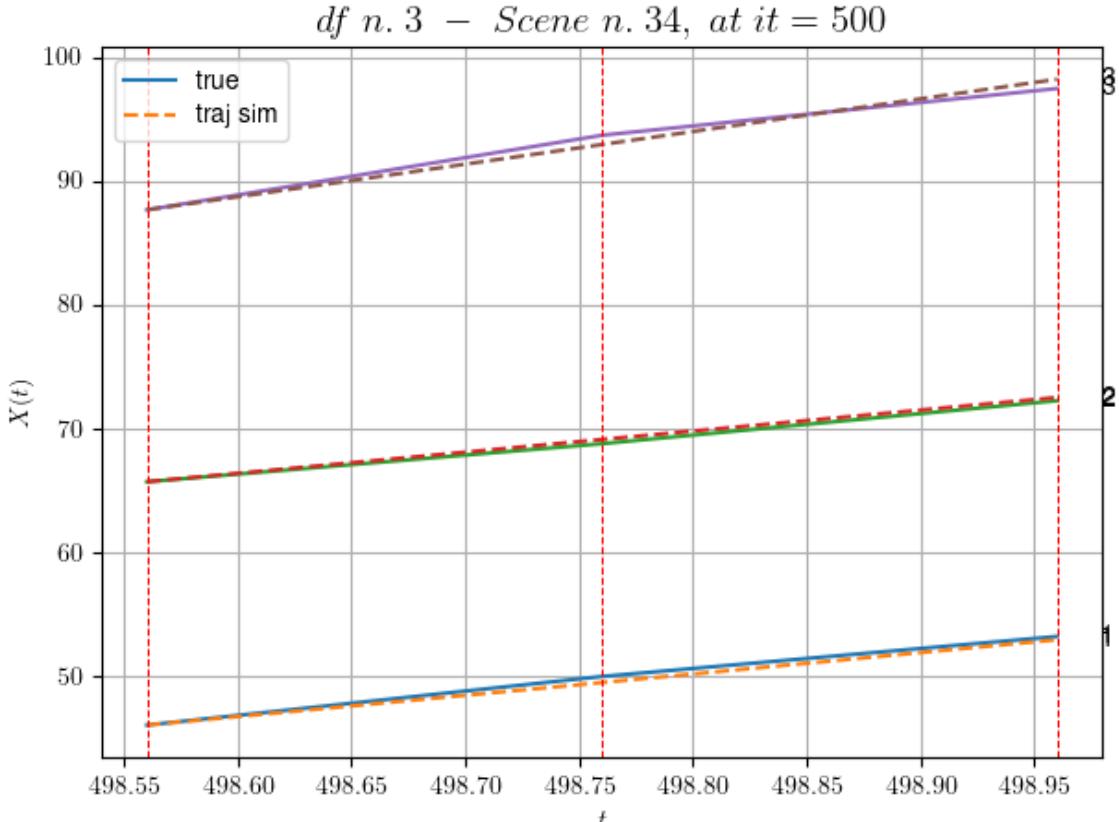
- Time interval n.0: [498.56, 498.76]
- \* y\_true: [19.66086018 15.38134444]
- \* v\_ann: [17.21827507019043, 17.097196578979492, 2  
6.404262964943456]

---

- Time interval n.1: [498.76, 498.96]
- \* y\_true: [16.17082592 17.38167269]
- \* v\_ann: [17.301057815551758, 16.987571716308594, 2  
6.404262964943456]

---

- \* err= 0.18005278723326404
- \* Learning rate NN = 7.289998757187277e-05
- \* diff = 1.3994393138122563e-05



For scene 34/55

\* use LR\_NN=0.0001 with err=0.8499944786872211 at it=19

\* v0\_scn\_mean = 26.620007025605656

\* MAE = 0.17964330857154043

---



---

- Time interval n.0: [517.96, 518.16]  
 \* y\_true: [11.01062169 17.99135838]  
 \* v\_ann: [14.709790229797363, 13.316490173339844, 1  
 3.435738688972481]

---

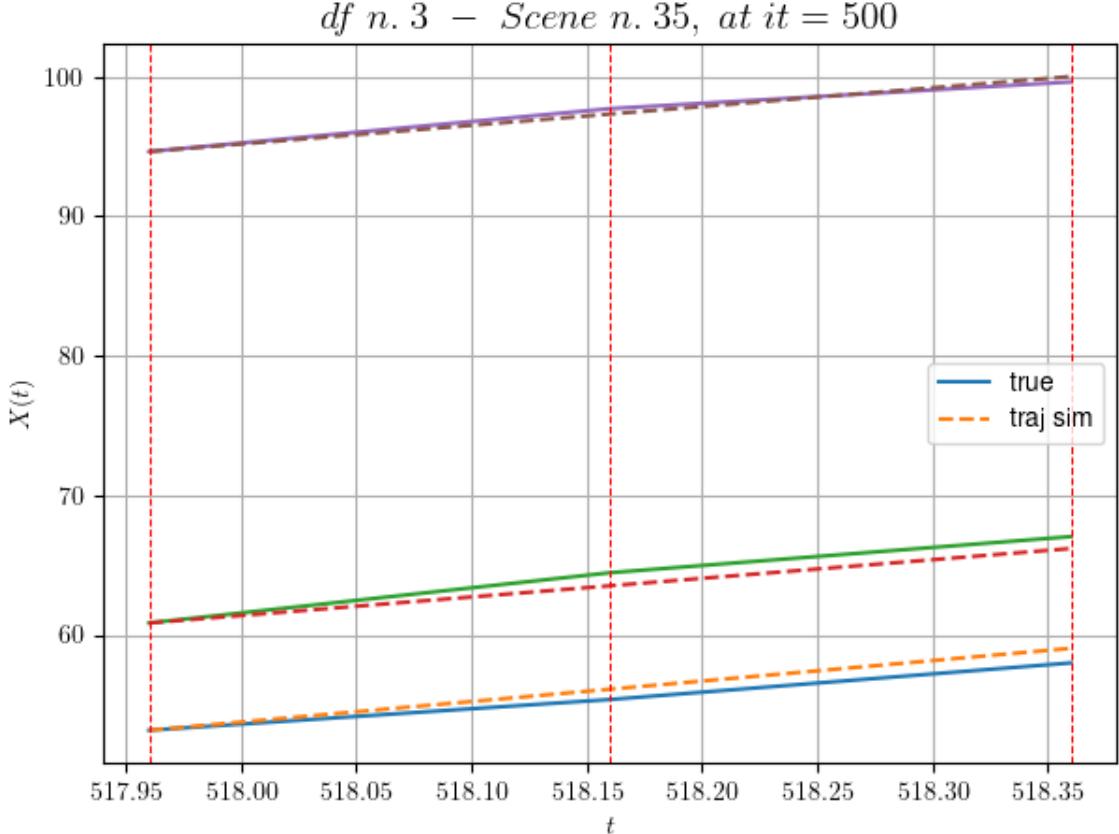
- Time interval n.1: [518.16, 518.36]  
 \* y\_true: [13.11081201 12.94110202]  
 \* v\_ann: [14.63895320892334, 13.353403091430664, 1  
 3.435738688972481]

---



---

\* err= 0.3934941101721363  
 \* Learning rate NN = 7.289998848136747e-06  
 \* diff = 0.0023283561920377505



For scene 35/55

```
* use LR_NN=1e-05 with err=7.765039696925158 at it=19
* v0_scn_mean = 14.429593623935173
* MAE = 0.3934941101721363
```

---



---

```
- Time interval n.0: [527.36, 527.56]
* y_true: [14.45064103 23.0016556]
* v_ann: [16.755578994750977, 16.77079963684082, 1
6.92090602277605]
```

---

```
- Time interval n.1: [527.56, 527.76]
* y_true: [16.14079976 10.04077962]
* v_ann: [16.869462966918945, 16.838178634643555, 1
6.92090602277605]
```

---

```
- Time interval n.2: [527.76, 527.96]
* y_true: [12.25068777 19.3317022]
* v_ann: [16.685182571411133, 16.68101692199707, 1
6.92090602277605]
```

---

```
- Time interval n.3: [527.96, 528.16]
* y_true: [17.36107311 21.34208771]
* v_ann: [16.666093826293945, 16.646535873413086, 1
```

6.92090602277605]

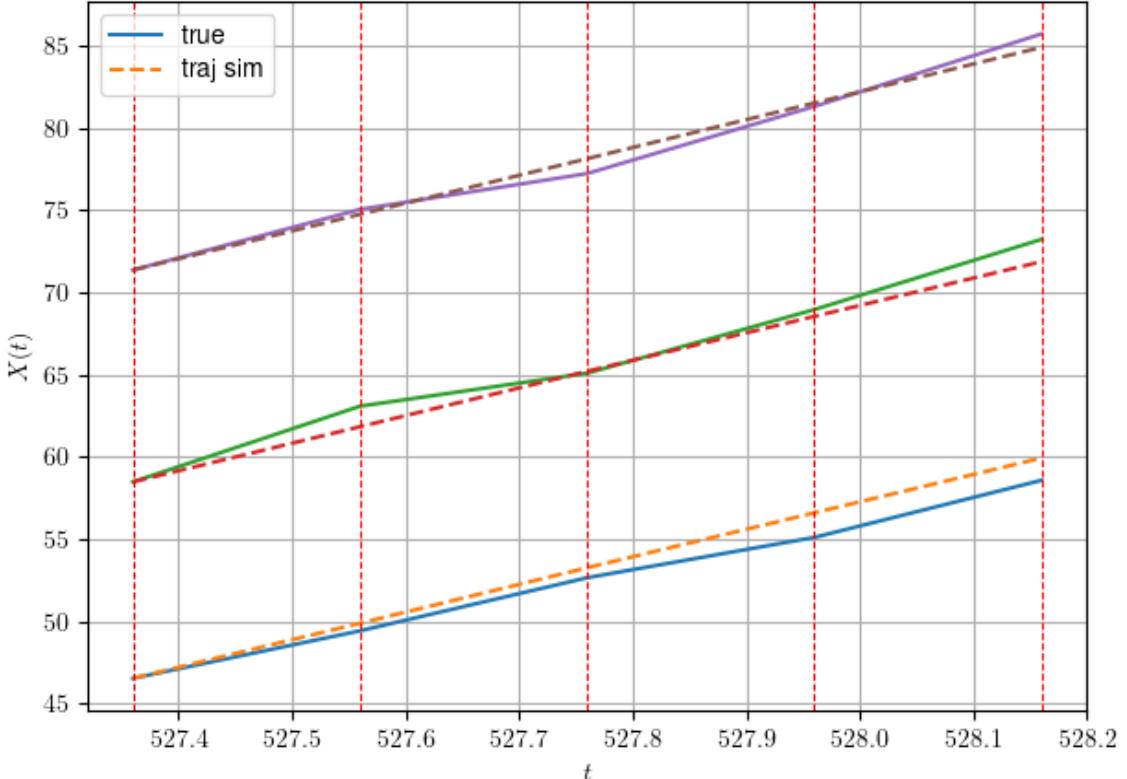
---



---

```
* err= 0.6560246326556851
* Learning rate NN = 4.7829678806010634e-05
* diff = 1.4982218798142988e-05
```

*df n. 3 – Scene n. 36, at it = 500*



For scene 36/55

```
* use LR_NN=0.0001 with err=14.089246132963106 at it=19
* v0_scn_mean = 17.70565107418615
* MAE = 0.6546255878977089
```

---



---

```
- Time interval n.0: [530.36, 530.56]
* y_true: [16.07060164 26.13260896]
* v_ann: [21.526865005493164, 20.734302520751953, 1
8.054855152783546]
```

---



---

```
- Time interval n.1: [530.56, 530.76]
* y_true: [15.14064363 18.85215172]
* v_ann: [21.830202102661133, 20.536027908325195, 1
8.054855152783546]
```

---



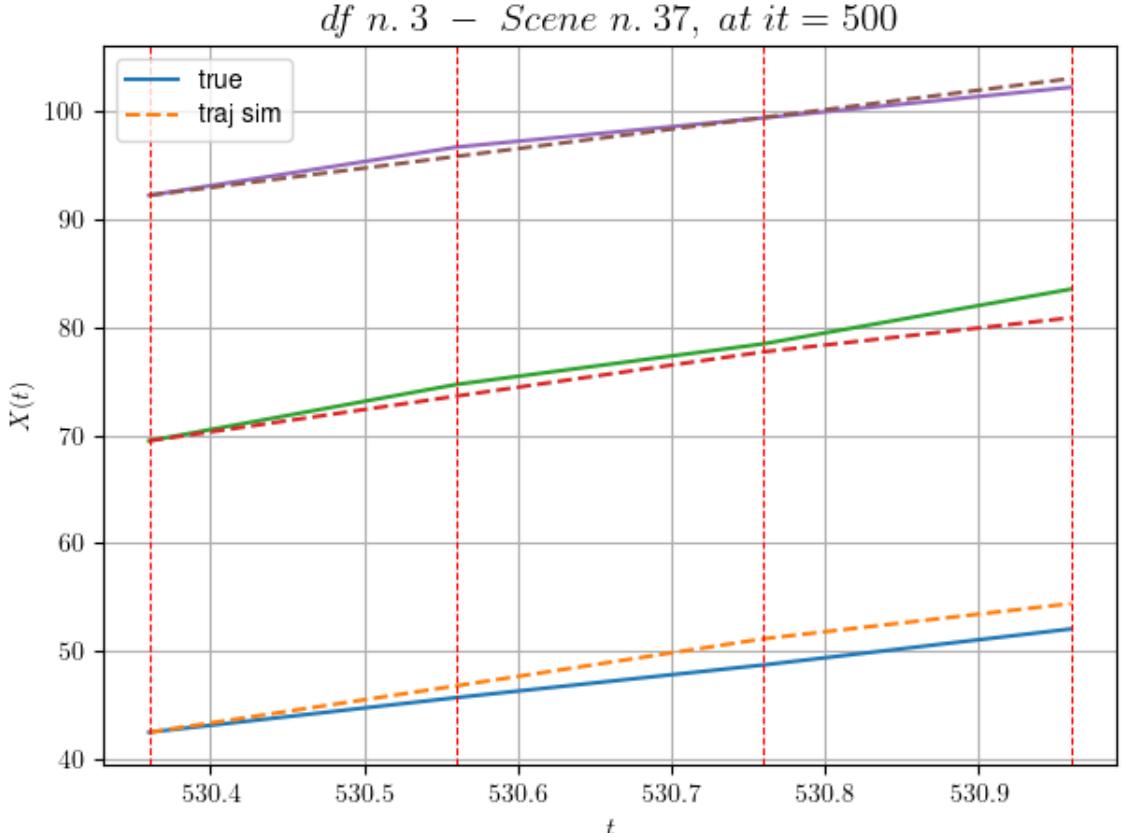
---

```
- Time interval n.2: [530.76, 530.96]
* y_true: [16.69081323 25.36324467]
* v_ann: [16.313936233520508, 15.808170318603516, 1
8.054855152783546]
```

```

* err= 1.9006803839802435
* Learning rate NN = 0.0005904899444431067
* diff = 0.00032890018140840915

```



For scene 37/55

```

* use LR_NN=0.001 with err=10.952601854523108 at it=19
* v0_scn_mean = 18.771563307305808
* MAE = 1.9006803839802435

```

- 
- 
- Time interval n.0: [576.56, 576.76]
    - \* y\_true: [22.12000755 22.50086521]
    - \* v\_ann: [22.858675003051758, 22.765478134155273, 2  
1.516688146761762]
- 
- 
- Time interval n.1: [576.76, 576.96]
    - \* y\_true: [22.90003133 17.69083 ]
    - \* v\_ann: [22.77206802368164, 22.714797973632812, 2  
1.516688146761762]
- 
- 
- Time interval n.2: [576.96, 577.16]
    - \* y\_true: [24.57008129 24.8113942 ]
    - \* v\_ann: [22.35478401184082, 22.441787719726562, 2  
1.516688146761762]

```

- Time interval n.3: [577.16, 577.36]

 * y_true: [26.44016601 28.10183764]

 * v_ann: [22.730587005615234, 22.684120178222656, 2

 1.516688146761762]

- Time interval n.4: [577.36, 577.56]

 * y_true: [27.01028631 17.73134123]

 * v_ann: [23.479228973388672, 23.122711181640625, 2

 1.516688146761762]

- Time interval n.5: [577.56, 577.76]

 * y_true: [28.59045436 12.12102827]

 * v_ann: [23.29180335998535, 23.06852912902832, 21.

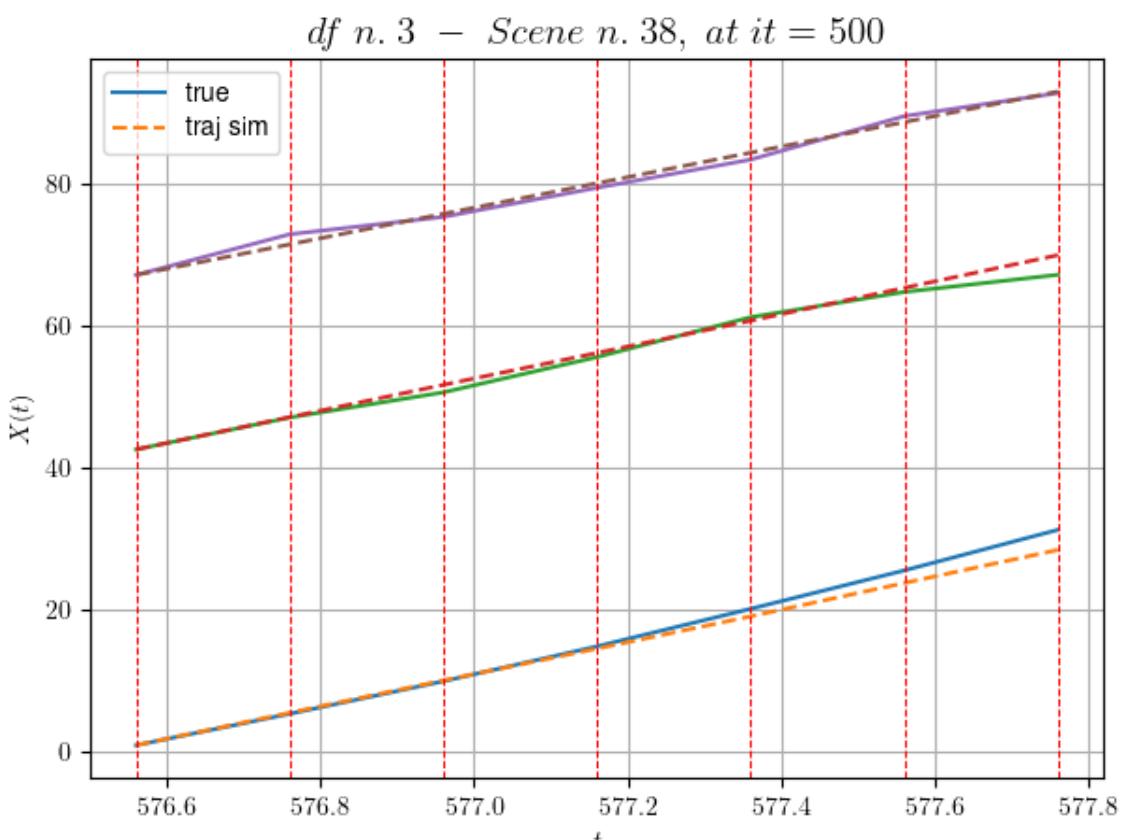
 516688146761762]

* err= 1.2593262155634546

* Learning rate NN = 3.138104875688441e-05

* diff = 0.0018624659816506295

```



For scene 38/55  
 \* use LR\_NN=0.0001 with err=19.41466406402441 at it=19  
 \* v0\_scn\_mean = 22.0256864770734  
 \* MAE = 0.9952872474474947

```
=====
- Time interval n.0: [579.56, 579.76]
 * y_true: [21.03058275 42.18516565]
 * v_ann: [26.13119888305664, 25.60287094116211, 25.
35840446347007]

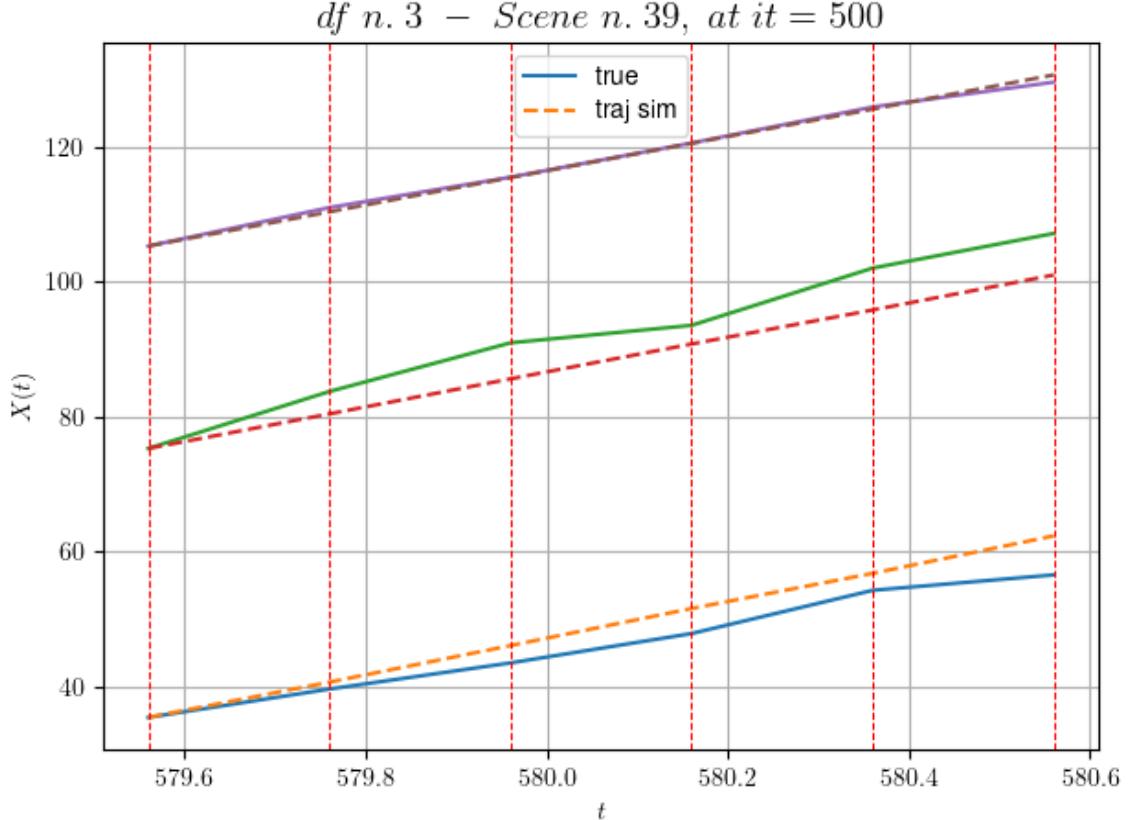
- Time interval n.1: [579.76, 579.96]
 * y_true: [19.36065083 36.06520173]
 * v_ann: [27.100433349609375, 25.942792892456055, 2
5.35840446347007]

- Time interval n.2: [579.96, 580.16]
 * y_true: [21.76088956 12.96224398]
 * v_ann: [27.482730865478516, 25.84236717224121, 2
5.35840446347007]

- Time interval n.3: [580.16, 580.36]
 * y_true: [32.02164742 42.42773504]
 * v_ann: [26.03355598449707, 25.18842315673828, 25.
35840446347007]

- Time interval n.4: [580.36, 580.56]
 * y_true: [11.44064385 25.66536311]
 * v_ann: [27.794601440429688, 25.9501953125, 25.358
40446347007]

* err= 10.362527970252208
* Learning rate NN = 1.9371018424862996e-05
* diff = 0.018736549947767855
```



For scene 39/55

- \* use LR\_NN=5e-05 with err=36.82332813484461 at it=19
- \* v0\_scn\_mean = 25.63689998726476
- \* MAE = 10.362527970252208

---



---

- Time interval n.0: [592.16, 592.36]
  - \* y\_true: [ 4.45046478 21.56401461]
  - \* v\_ann: [15.996208190917969, 15.810656547546387, 2 4.70998074865545]

---

- Time interval n.1: [592.36, 592.56]
  - \* y\_true: [14.40168088 21.61284101]
  - \* v\_ann: [13.952507972717285, 15.387102127075195, 2 4.70998074865545]

---

- Time interval n.2: [592.56, 592.76]
  - \* y\_true: [14.40168088 22.933287 ]
  - \* v\_ann: [14.162346839904785, 15.788703918457031, 2 4.70998074865545]

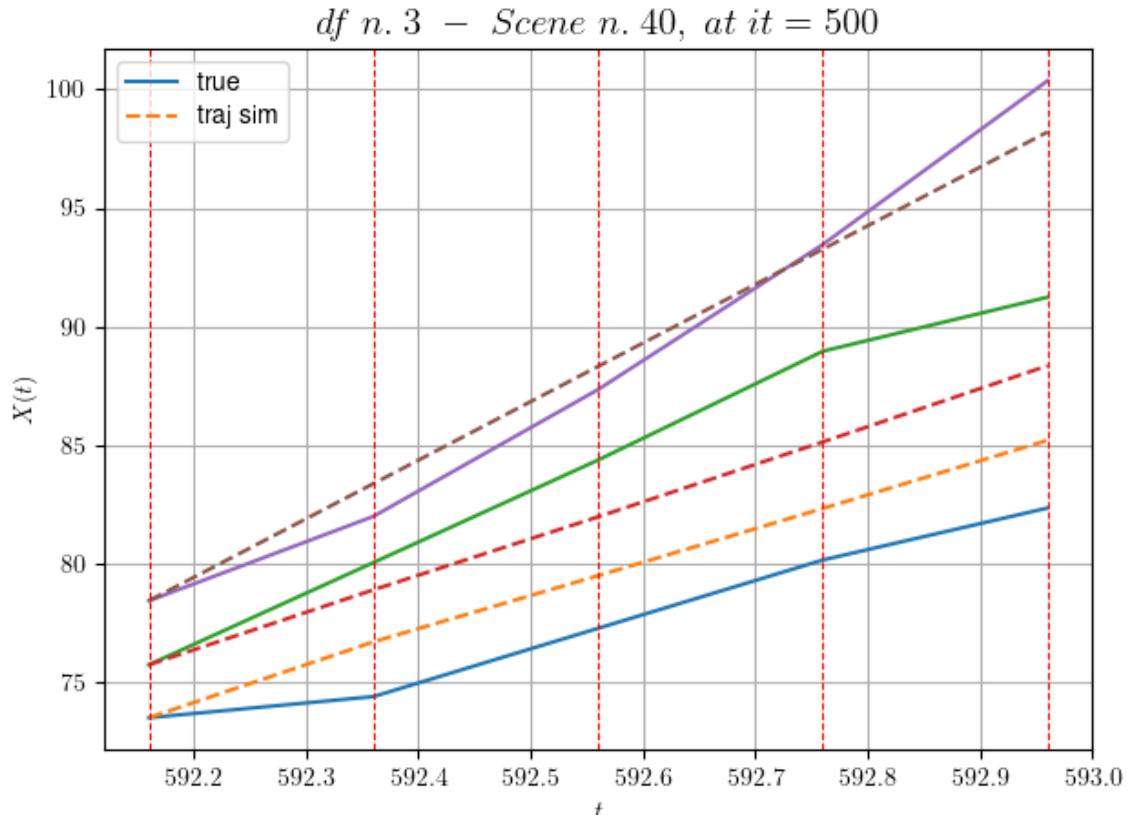
---

- Time interval n.3: [592.76, 592.96]
  - \* y\_true: [10.94538603 11.39186219]
  - \* v\_ann: [14.369261741638184, 16.06428337097168, 2 4.70998074865545]

```

* err= 4.049206167367885
* Learning rate NN = 0.000478296831715852
* diff = 0.0021973105569985663

```



For scene 40/55

```

* use LR_NN=0.001 with err=13.724633150181107 at it=19
* v0_scn_mean = 25.027381666226187
* MAE = 3.673193236965569

```

For scene 41/55

```

* use LR_NN=0.0001 with err=3.867202612171896 at it=19
* v0_scn_mean = 29.16889517454463
* MAE = 0.09617001477590403

```

---

- Time interval n.0: [31.36, 31.56]
  - \* y\_true: [24.92105739 19.11766565 26.56610692]
  - \* v\_ ann: [3.45536525538771e-22, 20.614519119262695, 0.0, 30.917174059156032]

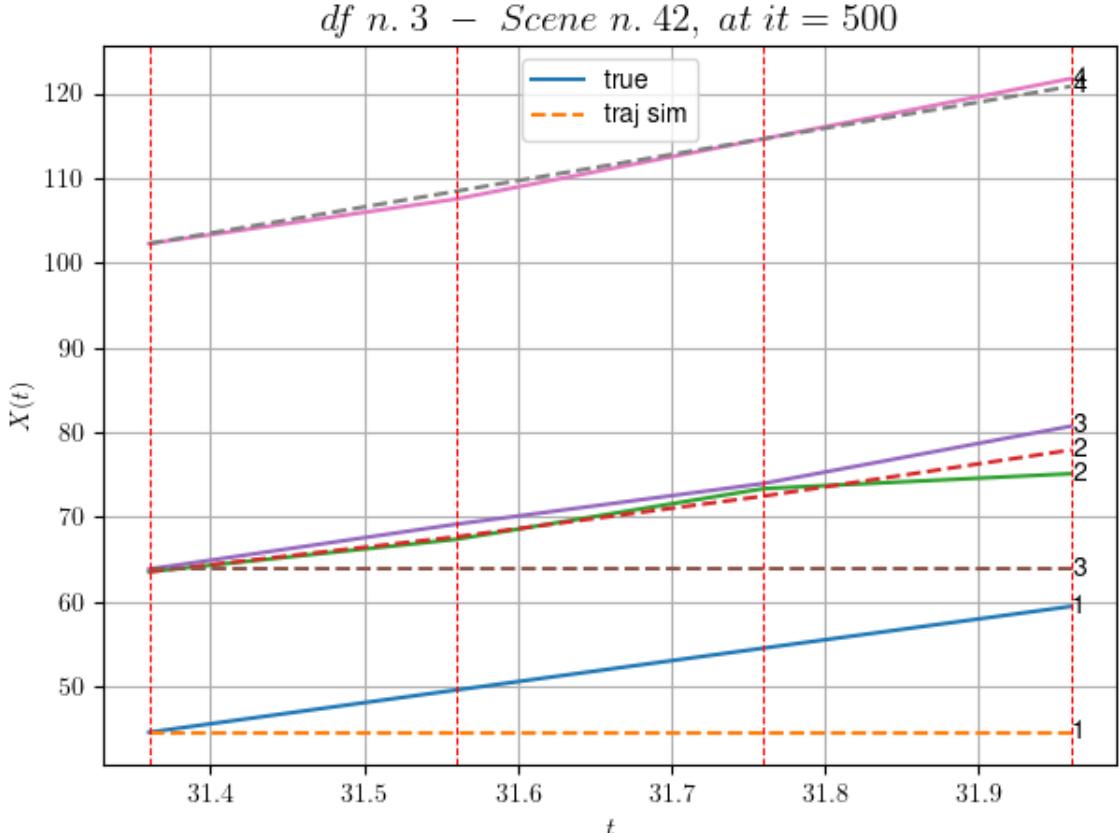
---

- Time interval n.1: [31.56, 31.76]
  - \* y\_true: [24.72130541 29.91666352 24.00857353]

```
* v_ann: [6.113469764148517e-21, 23.99949645996093
8, 0.0, 30.917174059156032]
```

```
- Time interval n.2: [31.76, 31.96]
* y_true: [24.58151426 8.80091982 33.80389928]
* v_ann: [4.704321647405315e-22, 27.19604873657226
6, 0.0, 30.917174059156032]
```

```
* err= 48.09408884798871
* Learning rate NN = 0.0005904899444431067
* diff = 0.0005027250312067056
```



For scene 42/55

```
* use LR_NN=0.001 with err=13.857944653380272 at it=19
* v0_scn_mean = 30.8438031190292
* MAE = 48.09408884798871
```

For scene 43/55

```
* use LR_NN=0.0001 with err=15.295244997076233 at it=19
* v0_scn_mean = 24.856984575228964
* MAE = 93.4500974006281
```

For scene 44/55

```
* use LR_NN=0.0005 with err=9.649950759758559 at it=19
* v0_scn_mean = 33.4870317483745
* MAE = 35.74466581964972
```

```
=====
=====
```

For scene 45/55

```
* use LR_NN=5e-05 with err=111.1912937935576 at it=19
* v0_scn_mean = 26.438967850391887
* MAE = 301.711347874356
```

```
=====
=====
```

- Time interval n.0: [94.36, 94.56]

```
* y_true: [33.70387327 38.57908217 21.70251029]
```

```
* v_ann: [30.235994338989258, 30.970043182373047, 3
0.25063705444336, 29.526156065335083]
```

```

```

- Time interval n.1: [94.56, 94.76]

```
* y_true: [29.14386677 24.50535727 32.05702124]
```

```
* v_ann: [31.902631759643555, 28.054079055786133, 3
1.913368225097656, 29.526156065335083]
```

```

```

- Time interval n.2: [94.76, 94.96]

```
* y_true: [29.96461386 30.28702151 28.36707369]
```

```
* v_ann: [26.868907928466797, 30.293045043945312, 2
7.058639526367188, 29.526156065335083]
```

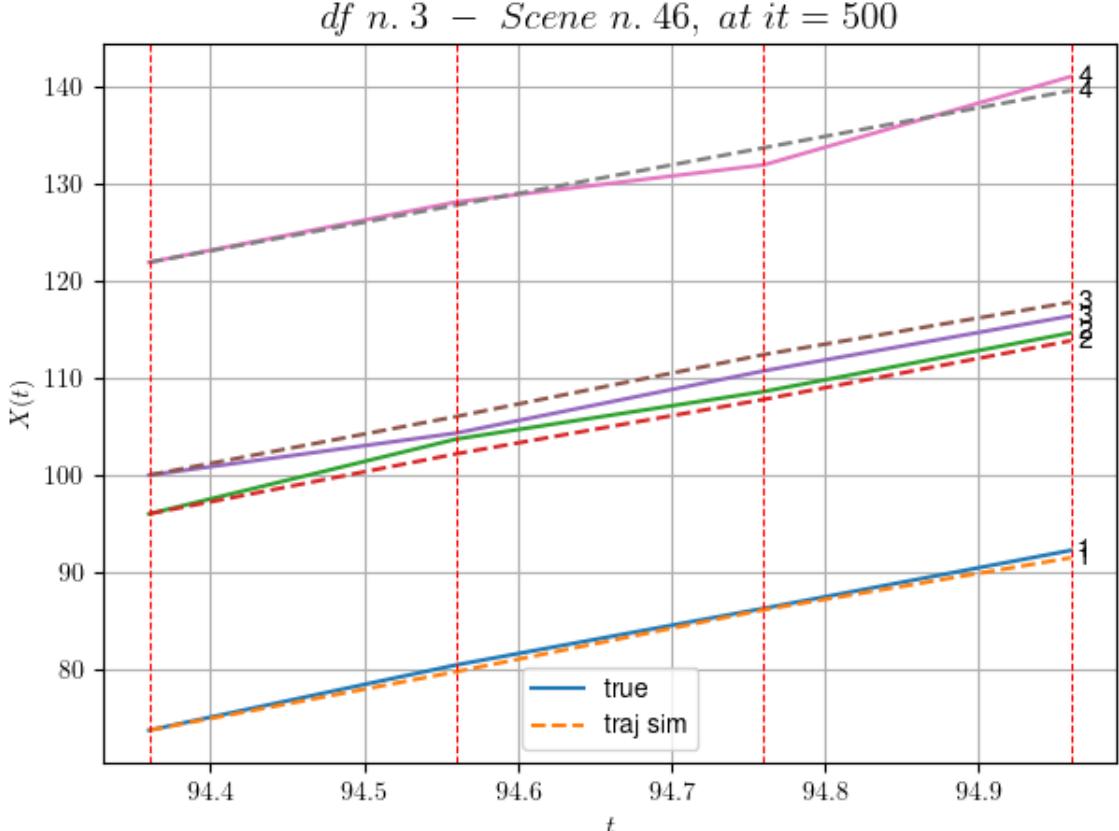
```

```

```
* err= 1.1127336740410088
```

```
* Learning rate NN = 0.0005904899444431067
```

```
* diff = 0.00011043367913998736
```



For scene 46/55

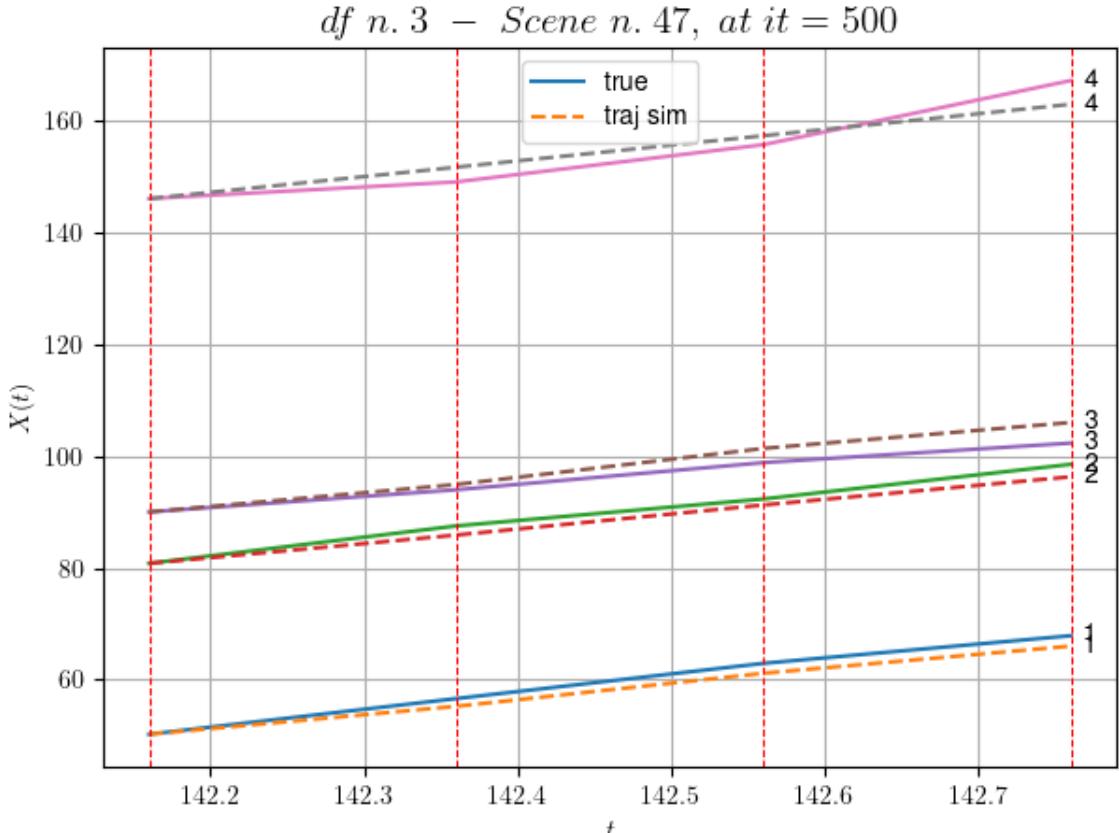
\* use LR\_NN=0.001 with err=23.616839246843583 at it=19  
 \* v0\_scn\_mean = 29.56406203815751  
 \* MAE = 1.1118852193430566

- Time interval n.0: [142.16, 142.36]  
 \* y\_true: [31.90177154 33.47450881 19.84324761]  
 \* v\_ann: [24.962711334228516, 25.307514190673828, 2  
 4.551773071289062, 28.12123774853805]

- Time interval n.1: [142.36, 142.56]  
 \* y\_true: [31.50218522 24.08376432 24.27420294]  
 \* v\_ann: [29.59285545349121, 26.896223068237305, 3  
 2.2631950378418, 28.12123774853805]

- Time interval n.2: [142.56, 142.76]  
 \* y\_true: [24.70204715 30.9853993 17.45337402]  
 \* v\_ann: [24.26807403564453, 25.170028686523438, 2  
 3.186038970947266, 28.12123774853805]

\* err= 4.109236745088992  
 \* Learning rate NN = 0.0002952449722215533  
 \* diff = 0.0002251165558542212



For scene 47/55

- \* use LR\_NN=0.0005 with err=33.285294140370034 at it=19
- \* v0\_scn\_mean = 28.271532614914054
- \* MAE = 3.396622819132239

---



---

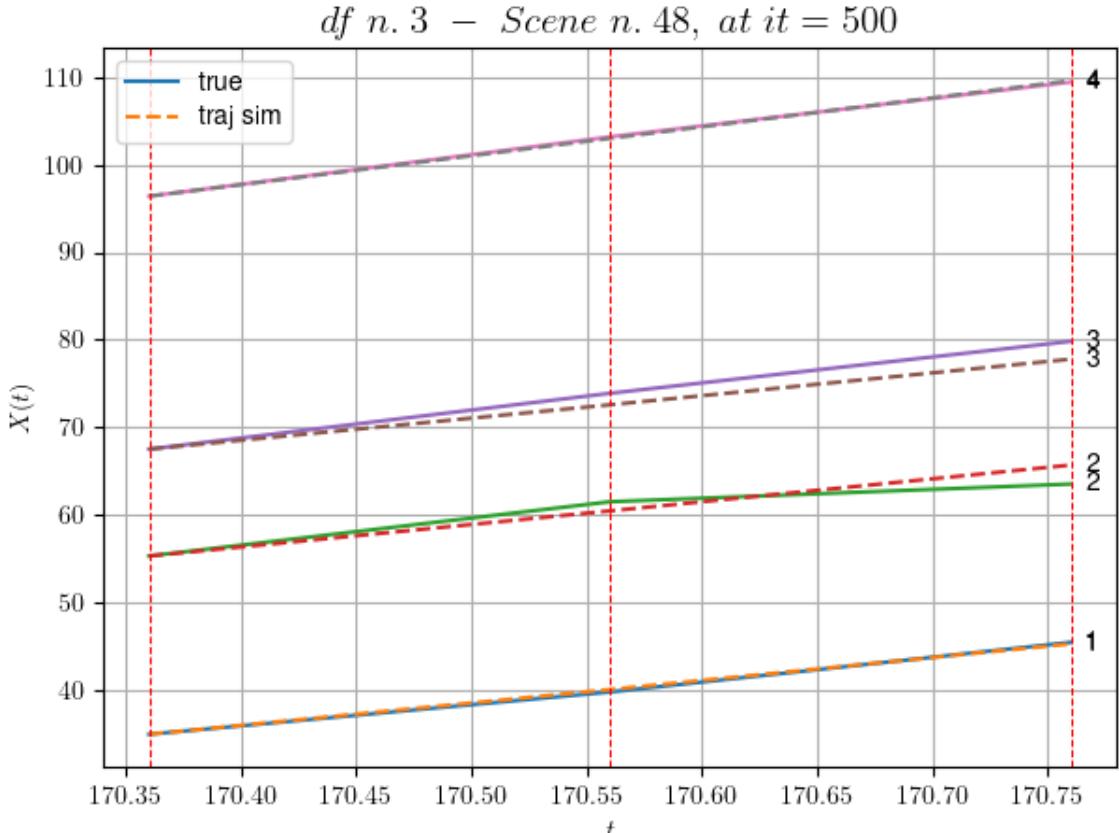
- Time interval n.0: [170.36, 170.56]
- \* y\_true: [24.1106547 30.95205085 31.86307572]
- \* v\_ann: [25.517810821533203, 25.73199462890625, 2  
5.29376983642578, 32.9965399356572]

---

- Time interval n.1: [170.56, 170.76]
- \* y\_true: [28.33103197 10.10076519 29.63331411]
- \* v\_ann: [26.088491439819336, 26.150175094604492, 2  
6.038528442382812, 32.9965399356572]

---

- \* err= 0.9842870896593714
- \* Learning rate NN = 7.289998757187277e-05
- \* diff = 0.00010670166363735412



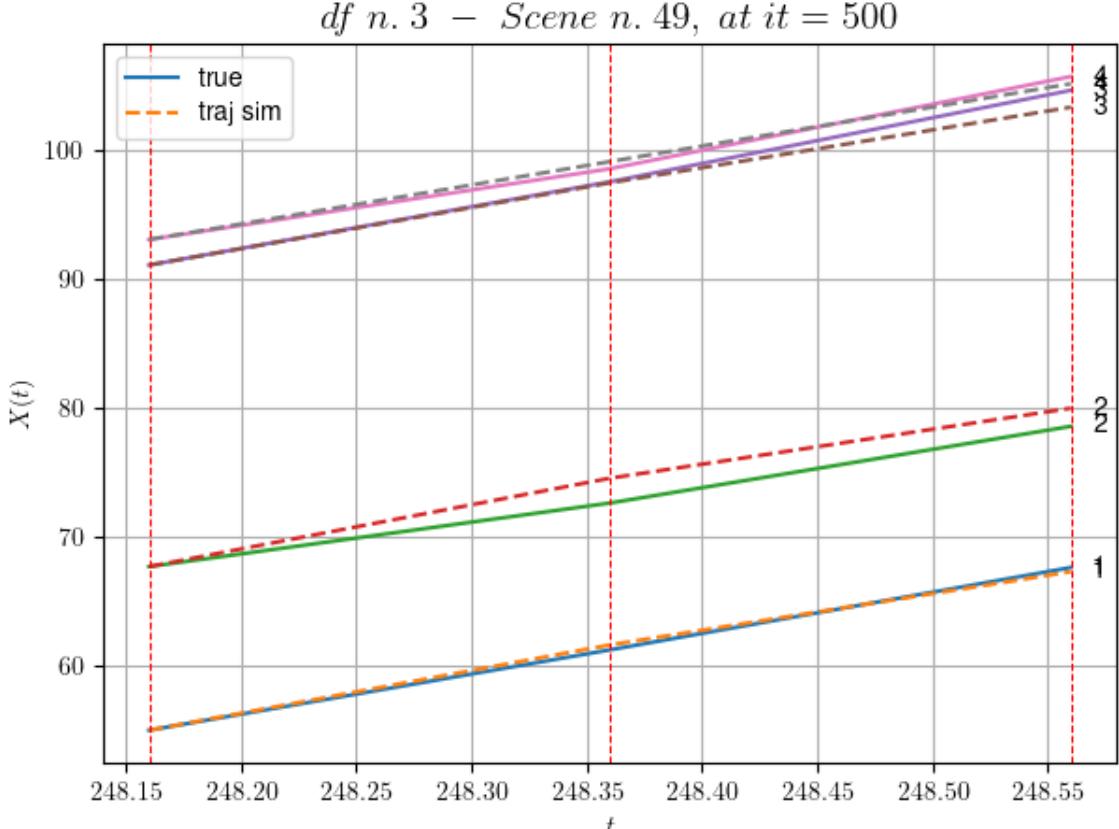
For scene 48/55

\* use LR\_NN=0.0001 with err=2.0645531297932855 at it=19  
 \* v0\_scn\_mean = 32.756826491941844  
 \* MAE = 0.9692867406438517

- Time interval n.0: [248.16, 248.36]  
 \* y\_true: [31.21204442 24.6823336 32.34552948]  
 \* v\_ann: [33.11838912963867, 34.31699752807617, 31.  
 919675827026367, 30.248970609827303]

- Time interval n.1: [248.36, 248.56]  
 \* y\_true: [31.9625999 29.77329807 35.48696999]  
 \* v\_ann: [28.435468673706055, 27.164430618286133, 2  
 9.34561538696289, 30.248970609827303]

\* err= 0.6905018197055556  
 \* Learning rate NN = 0.0007289999630302191  
 \* diff = 8.003788346910845e-05



For scene 49/55

```
* use LR_NN=0.001 with err=16.800883747900055 at it=19
* v0_scn_mean = 30.229053771224315
* MAE = 0.6905018197055556
```

---



---

```
- Time interval n.0: [320.56, 320.76]
* y_true: [27.61038846 20.60122903 24.07186814]
* v_ann: [29.554227828979492, 29.113828659057617, 2
9.516653060913086, 28.130140949142373]
```

---

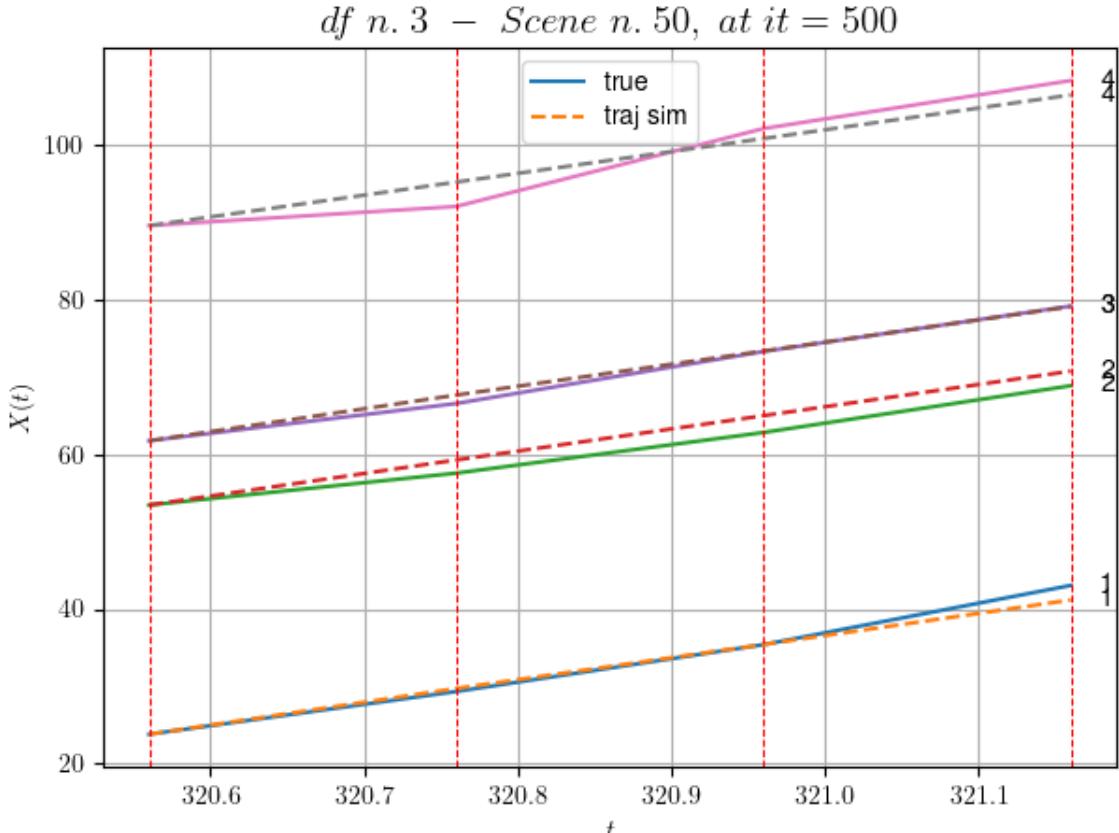
```
- Time interval n.1: [320.76, 320.96]
* y_true: [30.26064275 26.25184013 33.56317876]
* v_ann: [28.423316955566406, 28.609994888305664, 2
8.450061798095703, 28.130140949142373]
```

---

```
- Time interval n.2: [320.96, 321.16]
* y_true: [38.25114958 30.20253063 29.36323845]
* v_ann: [28.727413177490234, 28.751588821411133, 2
8.725419998168945, 28.130140949142373]
```

---

```
* err= 1.94342153166452
* Learning rate NN = 5.904899080633186e-05
* diff = 0.00015695715303265523
```



For scene 50/55

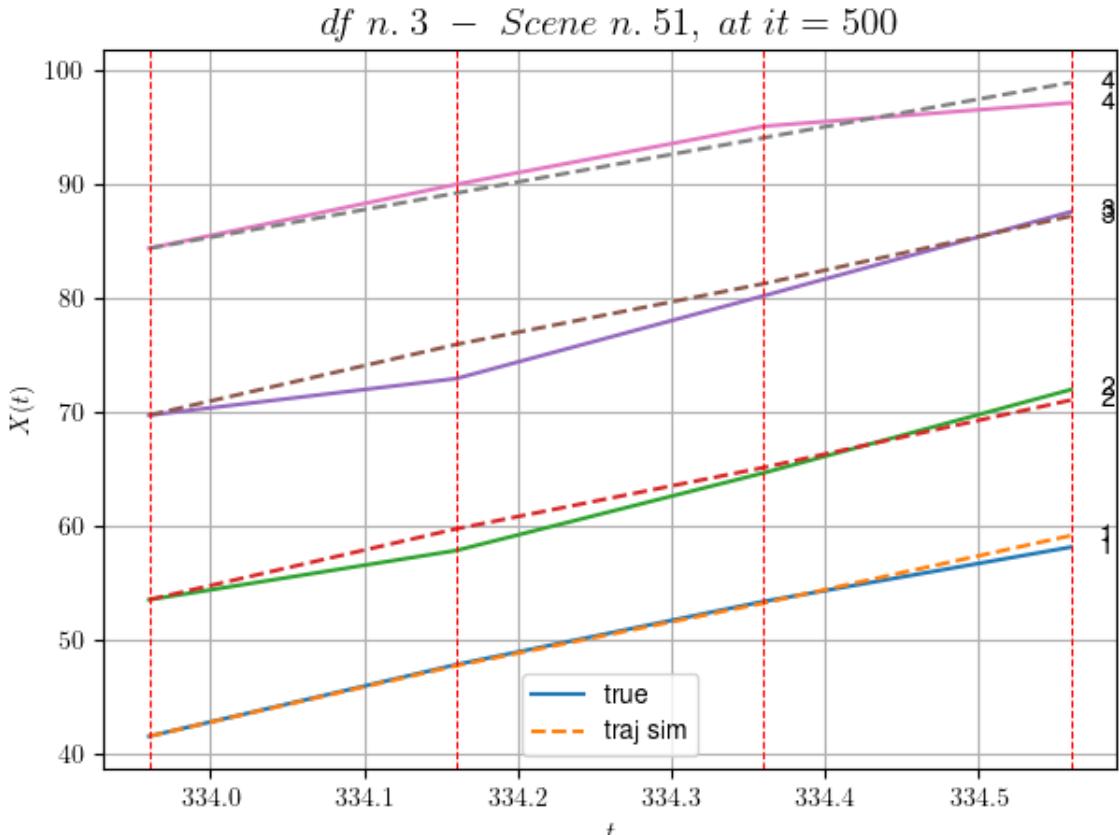
\* use LR\_NN=0.0001 with err=8.242925706272047 at it=19  
 \* v0\_scn\_mean = 28.279723588442334  
 \* MAE = 1.9393095158422677

- Time interval n.0: [333.96, 334.16]  
 \* y\_true: [31.40121985 21.58136302 16.05156144]  
 \* v\_ann: [30.902175903320312, 31.067554473876953, 3  
 1.00662612915039, 24.218775367788176]

- Time interval n.1: [334.16, 334.36]  
 \* y\_true: [27.67132891 33.9725354 36.25406589]  
 \* v\_ann: [27.422834396362305, 26.842042922973633, 2  
 6.61810302734375, 24.218775367788176]

- Time interval n.2: [334.36, 334.56]  
 \* y\_true: [23.81145278 36.52334008 36.85496039]  
 \* v\_ann: [29.63083839416504, 29.56892204284668, 29.  
 578506469726562, 24.218775367788176]

\* err= 1.2955705811863156  
 \* Learning rate NN = 0.0002952449722215533  
 \* diff = 6.053697748709119e-05



For scene 51/55

\* use LR\_NN=0.0005 with err=4.457854954287859 at it=19  
 \* v0\_scn\_mean = 24.68125452549613  
 \* MAE = 1.2753707101566625

---



---

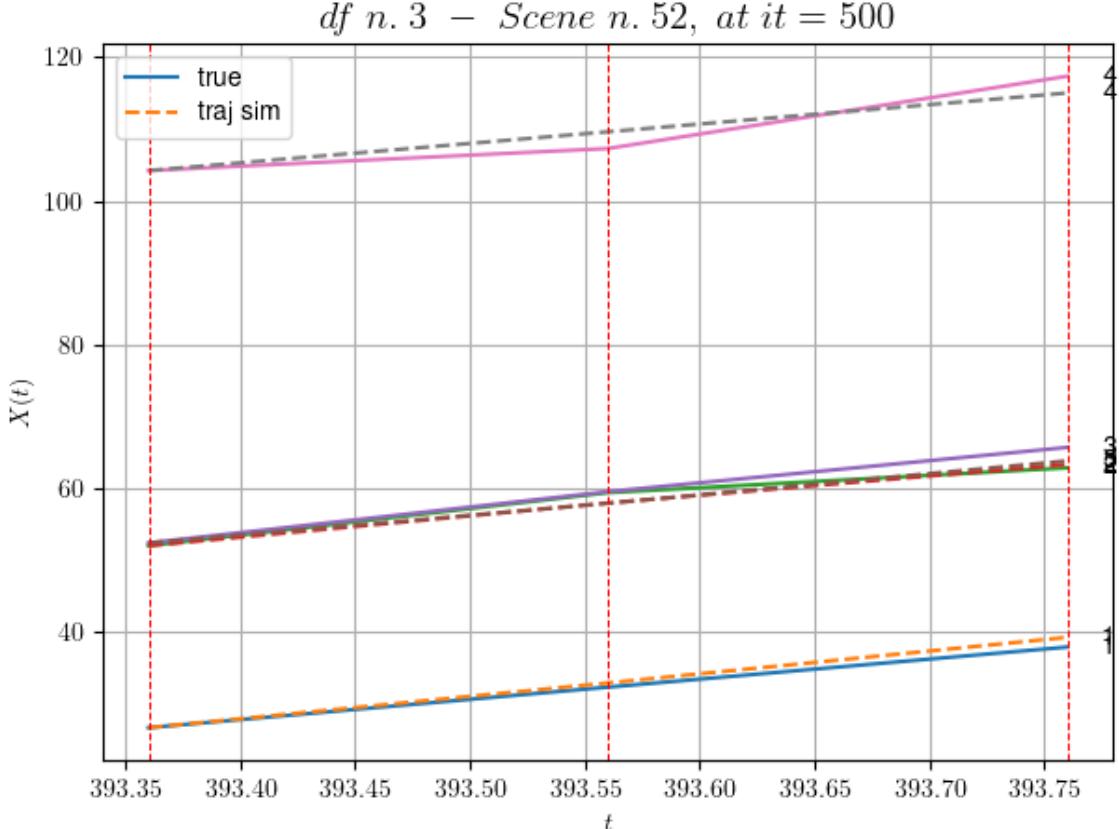
- Time interval n.0: [393.36, 393.56]  
 \* y\_true: [28.21049617 36.91227562 35.66212709]  
 \* v\_ann: [31.128501892089844, 29.731895446777344, 27.547775268554688, 27.00629353640526]

---

- Time interval n.1: [393.56, 393.76]  
 \* y\_true: [27.89067116 17.24119841 30.82238865]  
 \* v\_ann: [31.753711700439453, 26.868942260742188, 29.536069869995117, 27.00629353640526]

---

\* err= 1.7928117293868953  
 \* Learning rate NN = 3.6449993785936385e-05  
 \* diff = 0.0008463934148077445



For scene 52/55

```
* use LR_NN=5e-05 with err=15.962716930816775 at it=19
* v0_scn_mean = 27.245780311576155
* MAE = 1.7499180408874762
```

---



---

```
- Time interval n.0: [521.76, 521.96]
* y_true: [10.54036018 15.07054541 11.30098461]
* v_ann: [16.3176212310791, 15.284062385559082, 15.
807945251464844, 17.247787667045795]
```

---

```
- Time interval n.1: [521.96, 522.16]
* y_true: [20.11080333 12.92054275 19.50185752]
* v_ann: [15.296140670776367, 13.925865173339844, 1
4.632492065429688, 17.247787667045795]
```

---

```
- Time interval n.2: [522.16, 522.36]
* y_true: [16.31074126 16.85079656 12.50130097]
* v_ann: [13.200047492980957, 15.057026863098145, 1
5.610130310058594, 17.247787667045795]
```

---

```
- Time interval n.3: [522.36, 522.56]
* y_true: [11.43058292 15.20080004 9.15100954]
* v_ann: [14.338268280029297, 15.260416030883789, 1
```

5.596416473388672, 17.247787667045795]

---

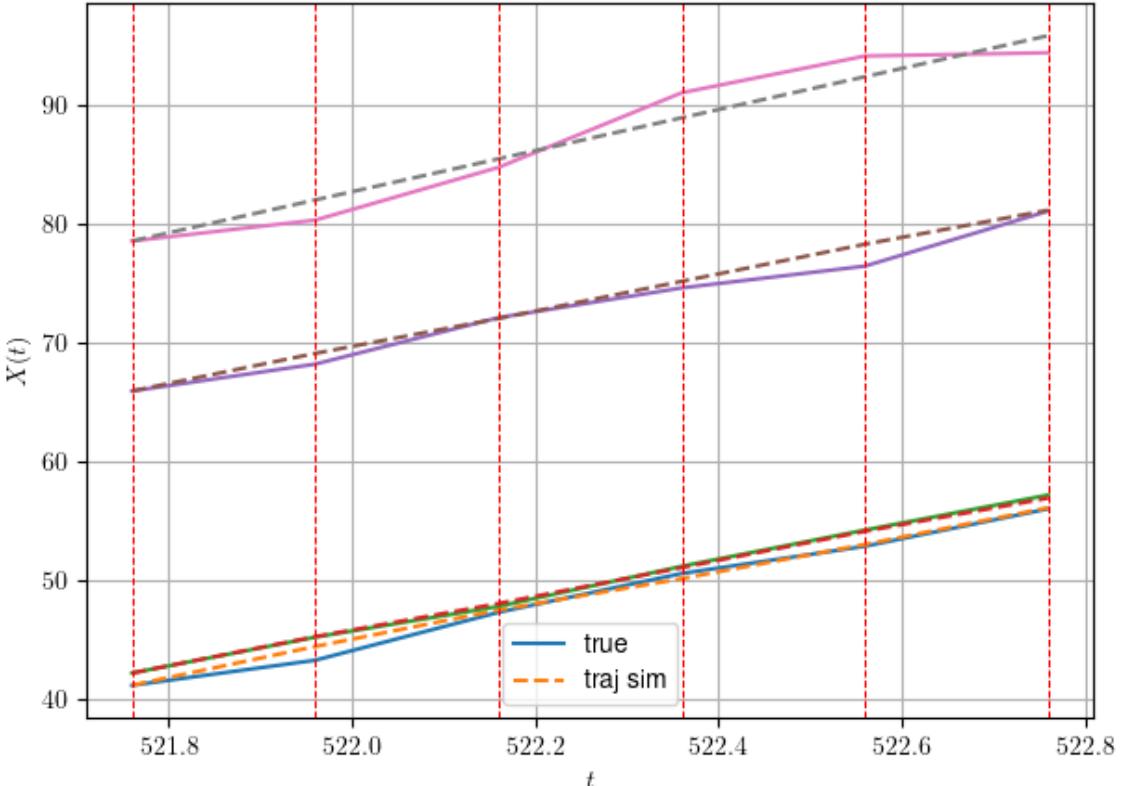
- Time interval n.4: [522.56, 522.76]
  - \* y\_true: [15.72089895 14.72089277 23.10276913]
  - \* v\_ann: [15.421785354614258, 13.961126327514648, 1

4.278084754943848, 17.247787667045795]

---

- \* err= 0.7965789433164754
- \* Learning rate NN = 0.0003874204121530056
- \* diff = 0.00036713366900920086

*df n. 3 – Scene n. 53, at it = 500*



For scene 53/55

- \* use LR\_NN=0.001 with err=27.366379198209714 at it=19
- \* v0\_scn\_mean = 18.267923156298487
- \* MAE = 0.79258212779392

---



---

- Time interval n.0: [95.36, 95.56]
  - \* y\_true: [30.52238998 38.21809619 31.62683865 21.8

1676128]

- \* v\_ann: [26.805986404418945, 27.575883865356445, 2

7.129547119140625, 27.590084075927734, 33.35137428698117]

---



---

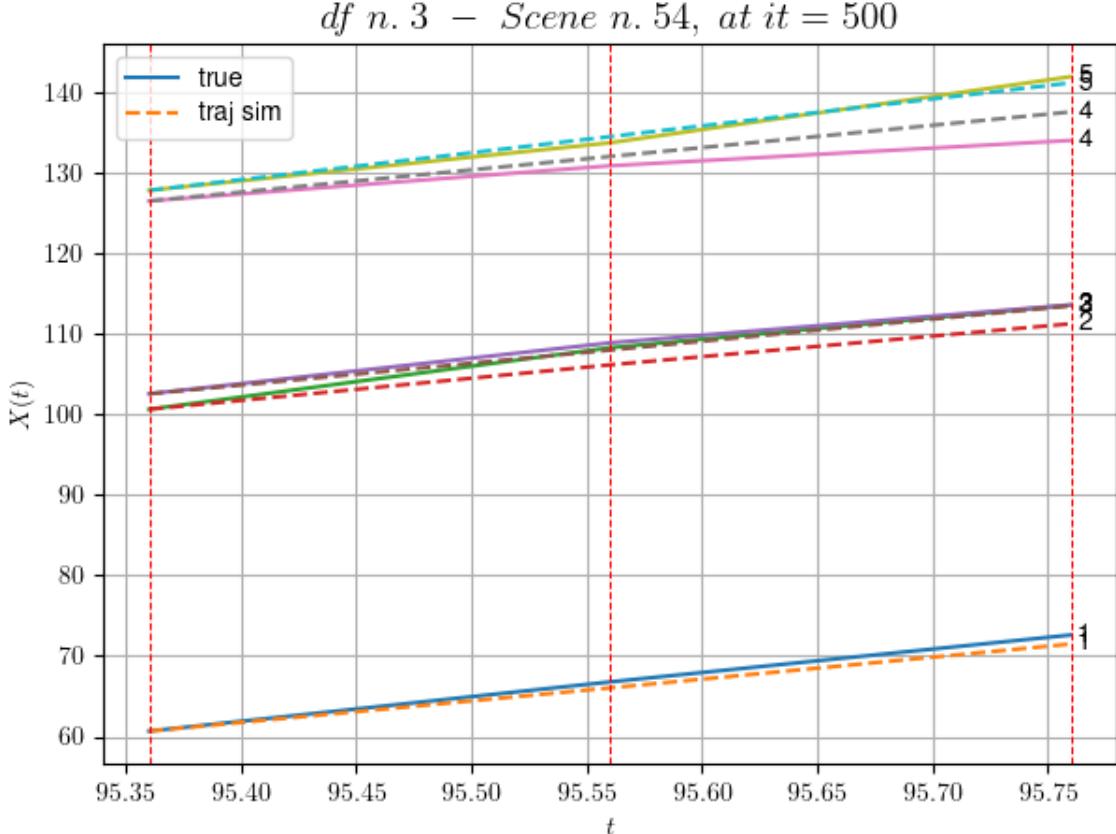
- Time interval n.1: [95.56, 95.76]
  - \* y\_true: [29.11270185 26.43618159 23.59563306 15.7

3527867]

```
* v_ann: [27.231870651245117, 25.51639175415039, 2
7.45304298400879, 27.669979095458984, 33.35137428698117]
```

---

```
* err= 1.838105509110808
* Learning rate NN = 3.6449993785936385e-05
* diff = 0.00022429505023269236
```



For scene 54/55

```
* use LR_NN=5e-05 with err=17.625644401743948 at it=19
* v0_scn_mean = 33.01637687613962
* MAE = 1.8172774281333548
```

---



---

For df=3 with 55 scenes, time taken: 802.06

---



---



---



---



---



---



---

In df n.4/10 we have 30 scenes

---



---



---



---

For scene 0/30

```
* use LR_NN=0.001 with err=11.179946855977002 at it=19
* v0_scn_mean = 35.57728272363734
* MAE = 1.8426587696383636
```

---



---

```

 - Time interval n.0: [19.84, 20.04]
 * y_true: [38.50393497 35.76621737]
 * v_ann: [30.683015823364258, 29.376604080200195, 2
 6.058966670570243]

```

---

```

 - Time interval n.1: [20.04, 20.24]
 * y_true: [14.10165462 33.63672046]
 * v_ann: [31.8531436920166, 29.823869705200195, 26.
 058966670570243]

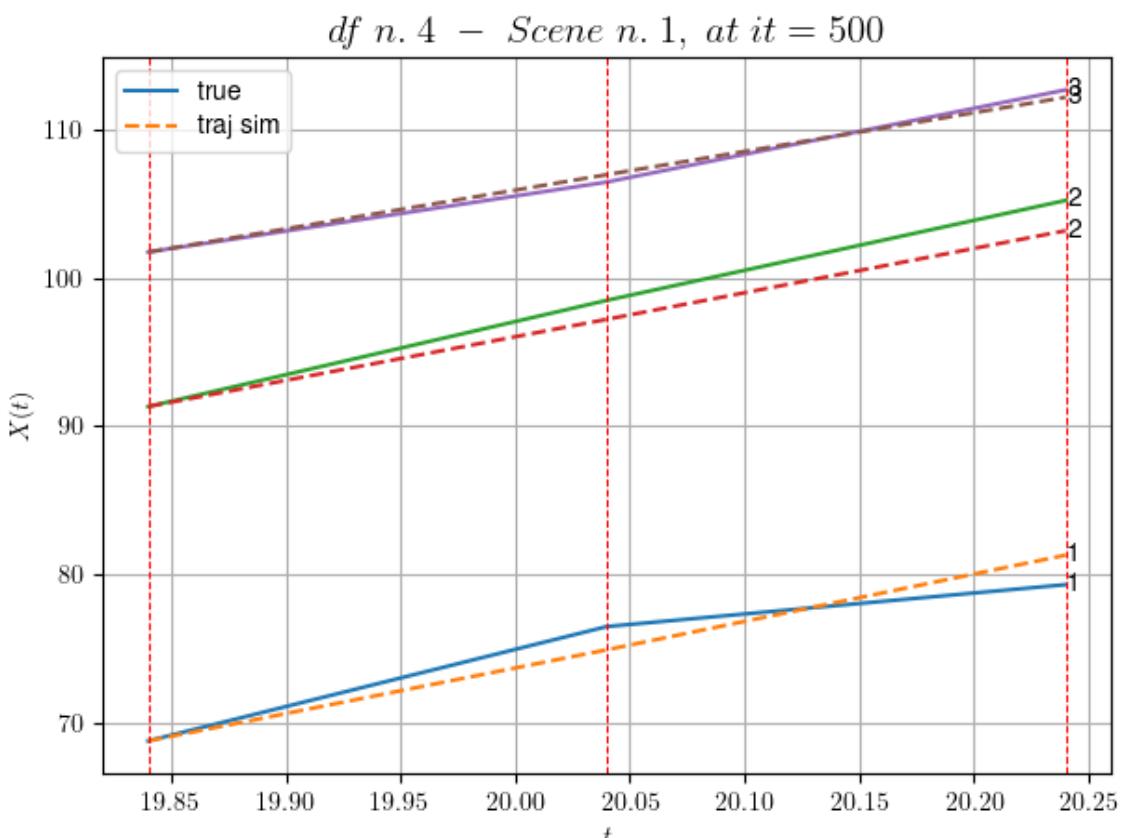
```

---

```

 * err= 1.409077842838589
 * Learning rate NN = 7.289998757187277e-05
 * diff = 0.00026586489675506364

```



For scene 1/30

```

* use LR_NN=0.0001 with err=10.322727500107861 at it=19
* v0_scn_mean = 26.29542849339211
* MAE = 1.409077842838589

```

---



---

```

 - Time interval n.0: [23.64, 23.84]
 * y_true: [16.50112189 27.57447859]
 * v_ann: [16.048765182495117, 18.04239273071289, 2
 5.97457555941862]

```

```

 - Time interval n.1: [23.84, 24.04]

 * y_true: [13.80103575 15.46275359]

 * v_ann: [19.438325881958008, 14.568106651306152, 2

5.97457555941862]

 - Time interval n.2: [24.04, 24.24]

 * y_true: [18.55153987 13.07248815]

 * v_ann: [16.715253829956055, 18.606822967529297, 2

5.97457555941862]

 - Time interval n.3: [24.24, 24.44]

 * y_true: [15.75144675 20.6942352]

 * v_ann: [15.843093872070312, 18.05963897705078, 2

5.97457555941862]

 - Time interval n.4: [24.44, 24.64]

 * y_true: [8.80086699 23.00509018]

 * v_ann: [16.96404266357422, 18.208297729492188, 2

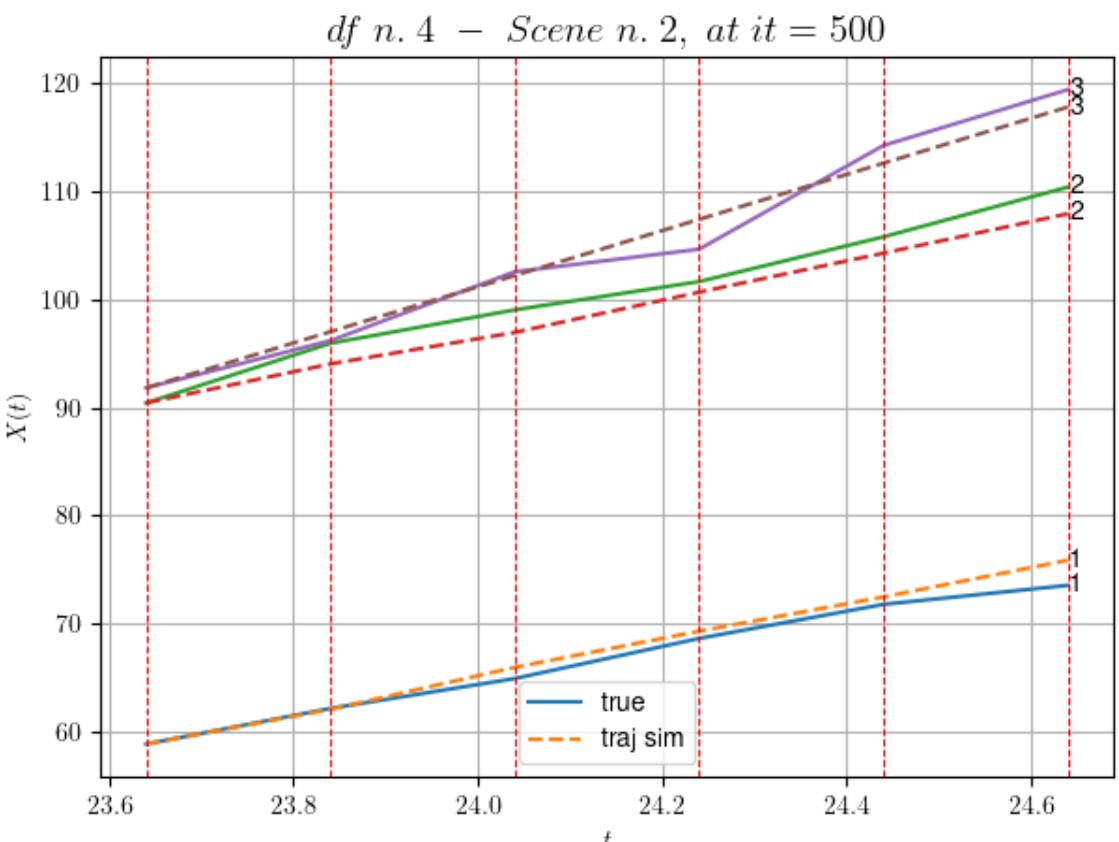
5.97457555941862]

 * err= 2.131370895099181

 * Learning rate NN = 0.0003874204121530056

 * diff = 0.00020389447112822978

```



For scene 2/30  
\* use LR\_NN=0.001 with err=35.51123144413574 at it=19  
\* v0\_scn\_mean = 26.216100845120646  
\* MAE = 2.131370895099181

=====

- Time interval n.0: [80.24, 80.44]  
\* y\_true: [20.8407888 28.56113721]  
\* v\_ann: [24.21347999572754, 27.2984561920166, 22.3  
6777427387432]

-----

- Time interval n.1: [80.44, 80.64]  
\* y\_true: [28.49133895 28.481454 ]  
\* v\_ann: [26.72922706604004, 26.470346450805664, 2  
2.36777427387432]

-----

- Time interval n.2: [80.64, 80.84]  
\* y\_true: [29.84173661 32.11200361]  
\* v\_ann: [27.0053653717041, 27.24660301208496, 22.3  
6777427387432]

-----

- Time interval n.3: [80.84, 81.04]  
\* y\_true: [10.79069268 21.14157827]  
\* v\_ann: [27.585399627685547, 28.608539581298828, 2  
2.36777427387432]

-----

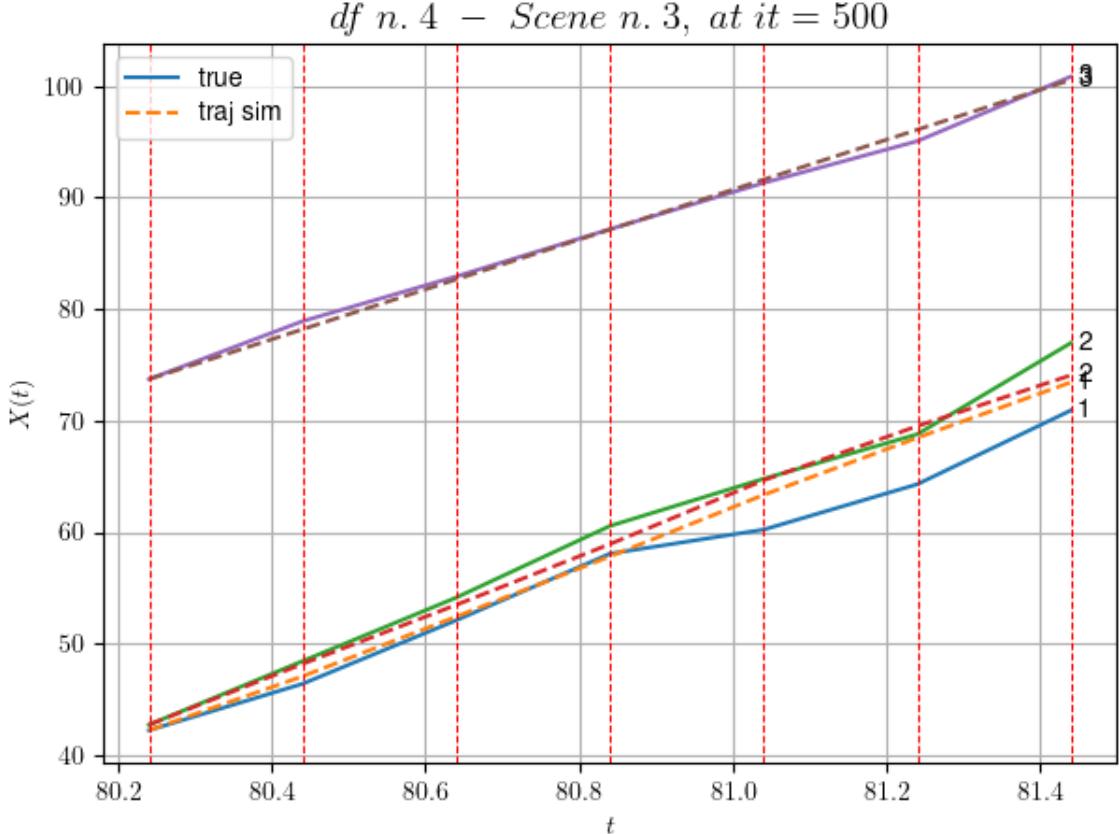
- Time interval n.4: [81.04, 81.24]  
\* y\_true: [20.33152897 19.96178137]  
\* v\_ann: [25.618682861328125, 24.282821655273438, 2  
2.36777427387432]

-----

- Time interval n.5: [81.24, 81.44]  
\* y\_true: [33.14293198 40.94411969]  
\* v\_ann: [24.883562088012695, 22.841955184936523, 2  
2.36777427387432]

-----

\* err= 2.282610180746502  
\* Learning rate NN = 0.00015690525469835848  
\* diff = 0.00041021868677137974



For scene 3/30

```
* use LR_NN=0.0005 with err=79.67023021063272 at it=19
* v0_scn_mean = 22.82570747477153
* MAE = 2.2817801225771333
```

---



---

```
- Time interval n.0: [89.04, 89.24]
* y_true: [19.34082001 24.8230577]
* v_ann: [19.678977966308594, 20.508455276489258, 3
2.775431632602555]
```

---

```
- Time interval n.1: [89.24, 89.44]
* y_true: [14.120693 17.32233598]
* v_ann: [19.680551528930664, 20.567548751831055, 3
2.775431632602555]
```

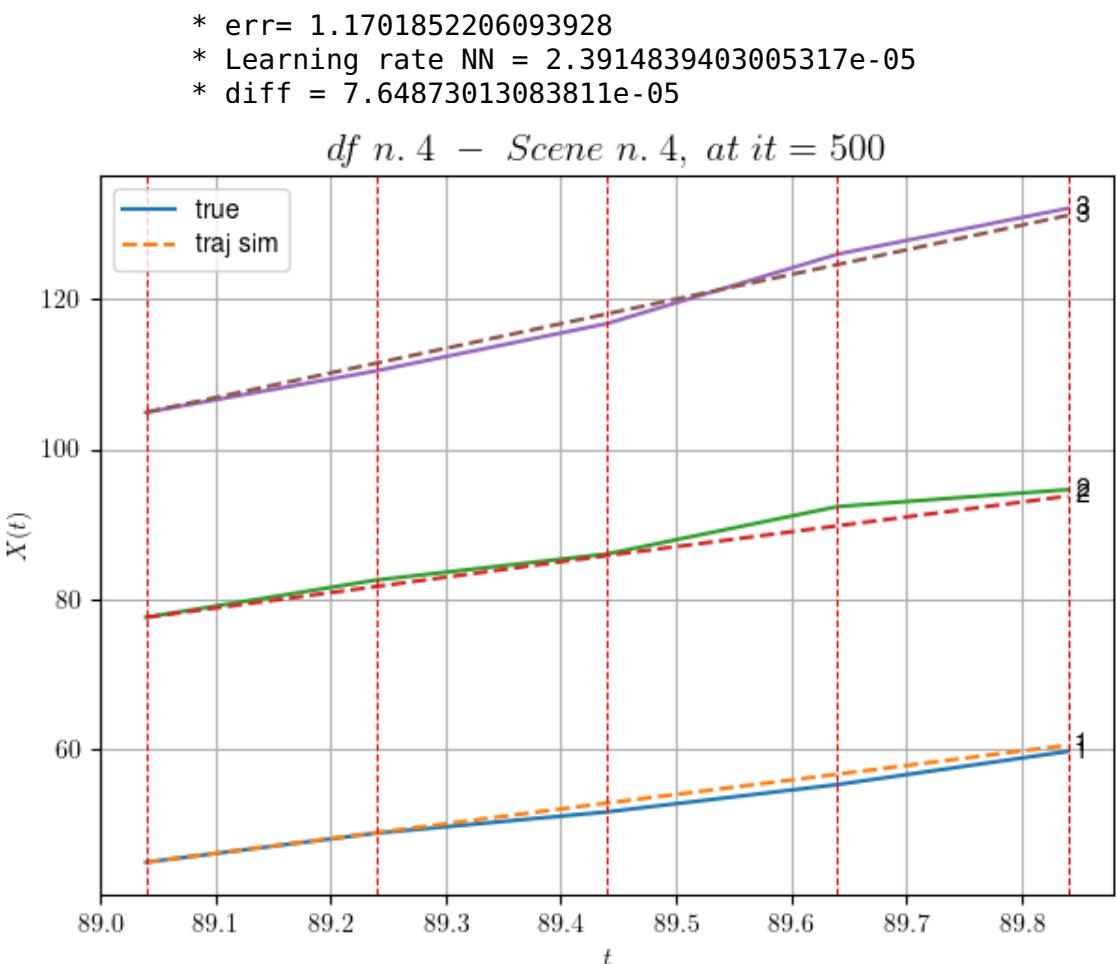
---

```
- Time interval n.2: [89.44, 89.64]
* y_true: [18.19104002 31.50485669]
* v_ann: [19.194894790649414, 19.785709381103516, 3
2.775431632602555]
```

---

```
- Time interval n.3: [89.64, 89.84]
* y_true: [22.07139916 11.31182118]
* v_ann: [19.296051025390625, 19.802352905273438, 3
```

2.775431632602555]



For scene 4/30

```

* use LR_NN=5e-05 with err=3.986003285196908 at it=19
* v0_scn_mean = 32.60890585925713
* MAE = 1.165687565475272

```

---



---

```

- Time interval n.0: [96.44, 96.64]
 * y_true: [16.86045215 20.08121647]
 * v_ann: [19.215253829956055, 19.161806106567383, 1
8.401280606024518]

```

---



---

```

- Time interval n.1: [96.64, 96.84]
 * y_true: [17.24055532 8.93061591]
 * v_ann: [19.028491973876953, 18.95493507385254, 1
8.401280606024518]

```

---



---

```

- Time interval n.2: [96.84, 97.04]
 * y_true: [21.11081641 16.18118624]
 * v_ann: [17.64668083190918, 17.160236358642578, 1

```

8.401280606024518]

---

- Time interval n.3: [97.04, 97.24]
  - \* y\_true: [26.9212791 14.46120094]
  - \* v\_ann: [17.975452423095703, 17.540224075317383, 1]

8.401280606024518]

---

- Time interval n.4: [97.24, 97.44]
  - \* y\_true: [17.07093447 27.60253797]
  - \* v\_ann: [18.695056915283203, 18.389476776123047, 1]

8.401280606024518]

---

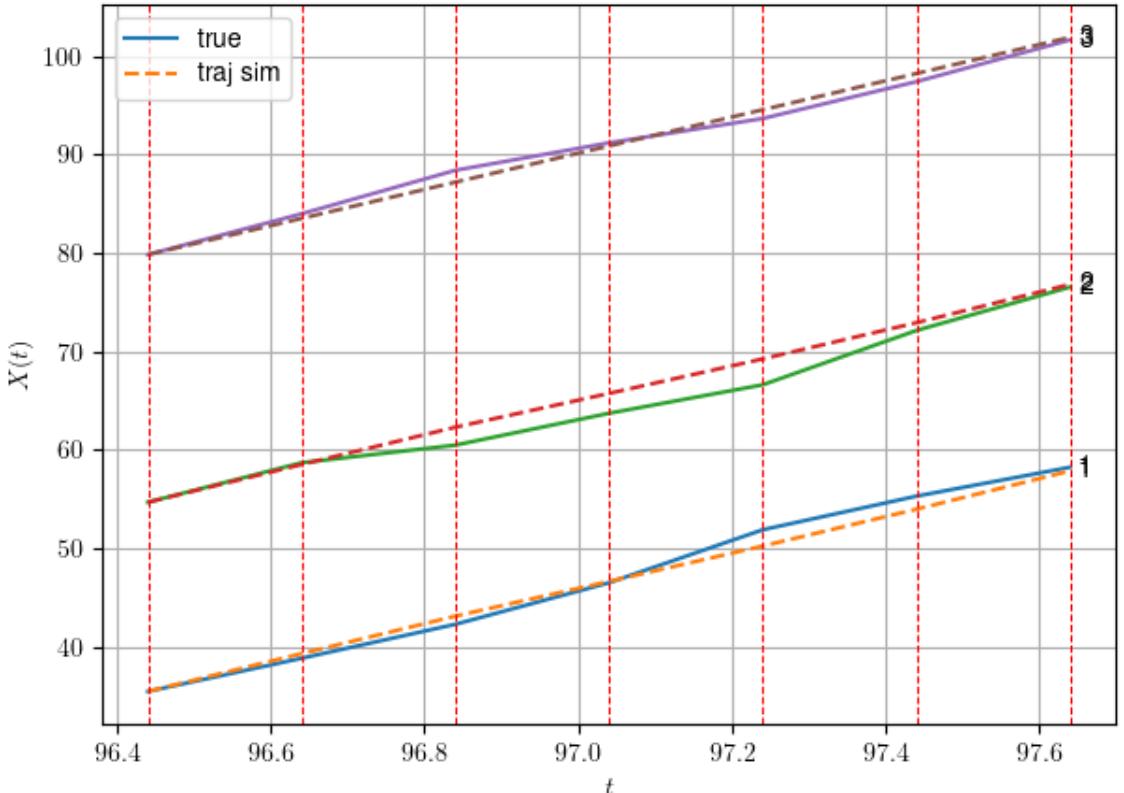
- Time interval n.5: [97.44, 97.64]
  - \* y\_true: [14.70092006 22.05229805]
  - \* v\_ann: [19.492185592651367, 19.473308563232422, 1]

8.401280606024518]

---

- \* err= 1.1397461256380241
- \* Learning rate NN = 0.00015690525469835848
- \* diff = 0 0012337070206252018

*df n. 4 – Scene n. 5, at it = 500*



For scene 5/30

- \* use LR\_NN=0.0005 with err=31.513920297028992 at it=19
- \* v0\_scn\_mean = 19.097203248905664
- \* MAE = 1.1397461256380241

```
=====
- Time interval n.0: [182.24, 182.44]
 * y_true: [18.61043577 13.125309]
 * v_ann: [19.45586395263672, 20.225282669067383, 2
0.773199567272325]

- Time interval n.1: [182.44, 182.64]
 * y_true: [12.51734154 21.64870909]
 * v_ann: [17.250568389892578, 17.870973587036133, 2
0.773199567272325]

- Time interval n.2: [182.64, 182.84]
 * y_true: [15.03048681 24.29091592]
 * v_ann: [18.906147003173828, 17.488353729248047, 2
0.773199567272325]

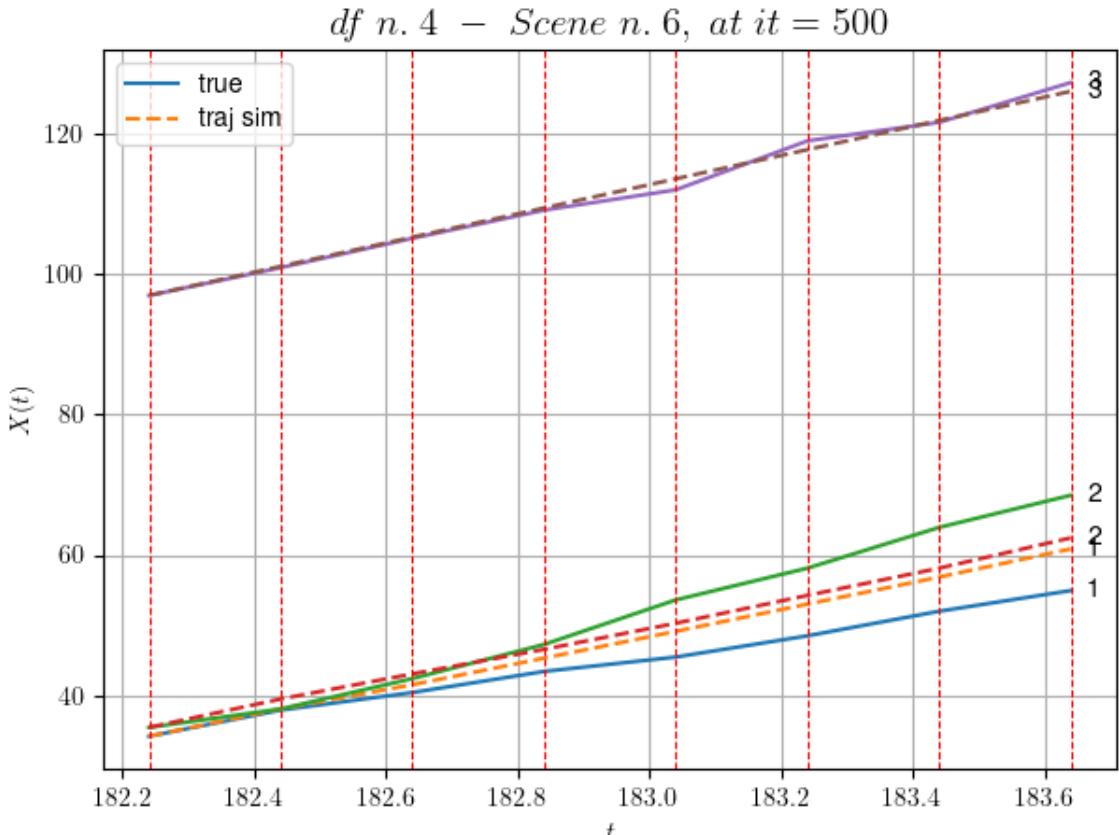
- Time interval n.3: [182.84, 183.04]
 * y_true: [10.23036632 31.71160501]
 * v_ann: [19.065759658813477, 18.580188751220703, 2
0.773199567272325]

- Time interval n.4: [183.04, 183.24]
 * y_true: [15.12061978 22.63128316]
 * v_ann: [19.39582061767578, 19.844337463378906, 2
0.773199567272325]

- Time interval n.5: [183.24, 183.44]
 * y_true: [17.50081627 28.99215837]
 * v_ann: [19.26189422607422, 19.365449905395508, 2
0.773199567272325]

- Time interval n.6: [183.44, 183.64]
 * y_true: [14.74077551 22.90183379]
 * v_ann: [20.064424514770508, 21.602245330810547, 2
0.773199567272325]

* err= 8.448124931538192
* Learning rate NN = 0.00012709324073512107
* diff = 0.00044131795279334085
```



For scene 6/30

- \* use LR\_NN=0.0005 with err=60.603148795917626 at it=19
- \* v0\_scn\_mean = 21.32680717897259
- \* MAE = 8.401189348009614

---



---

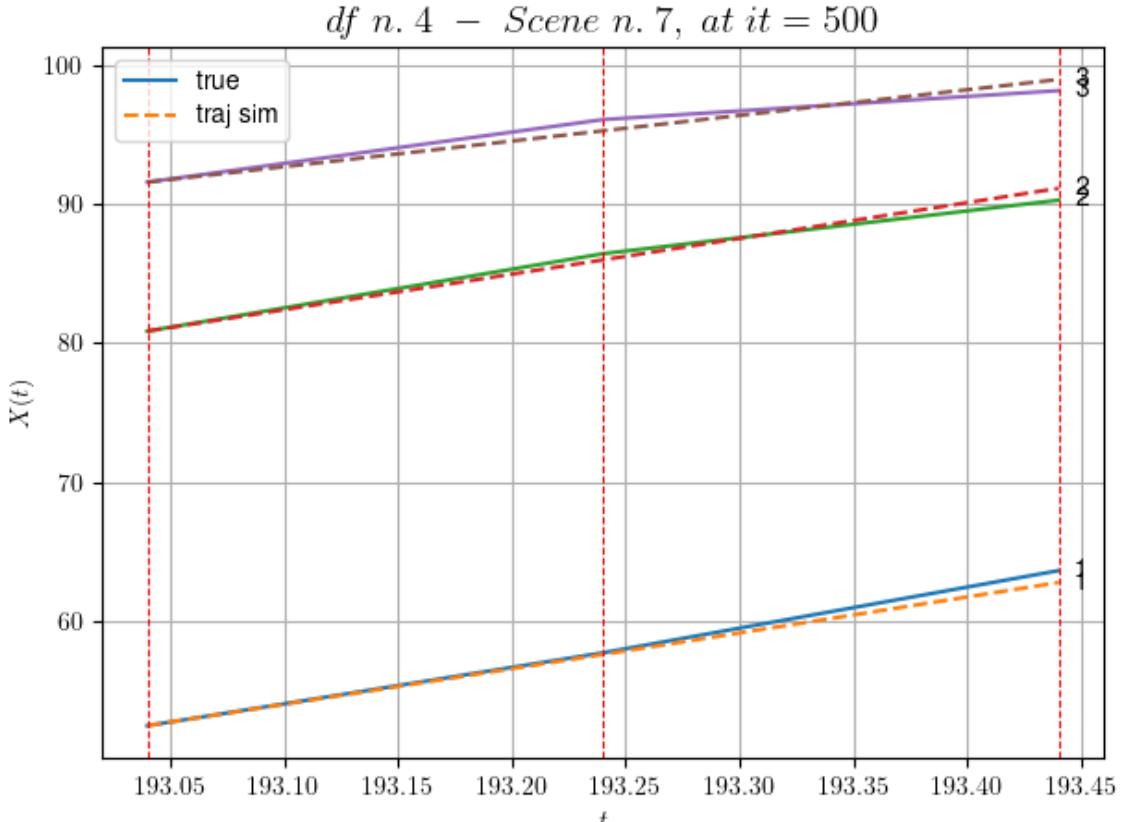
- Time interval n.0: [193.04, 193.24]
- \* y\_true: [26.28155868 27.90372348]
- \* v\_ann: [25.670917510986328, 25.671768188476562, 1  
8.506528748462262]

---

- Time interval n.1: [193.24, 193.44]
- \* y\_true: [29.63205884 19.30286837]
- \* v\_ann: [25.942365646362305, 25.82093048095703, 1  
8.506528748462262]

---

- \* err= 0.3325253083104276
- \* Learning rate NN = 7.289998757187277e-05
- \* diff = 5.83130598835746e-06



For scene 7/30

- \* use LR\_NN=0.0001 with err=7.777719624969746 at it=19
- \* v0\_scn\_mean = 19.19613650752283
- \* MAE = 0.32170424047286633

---



---

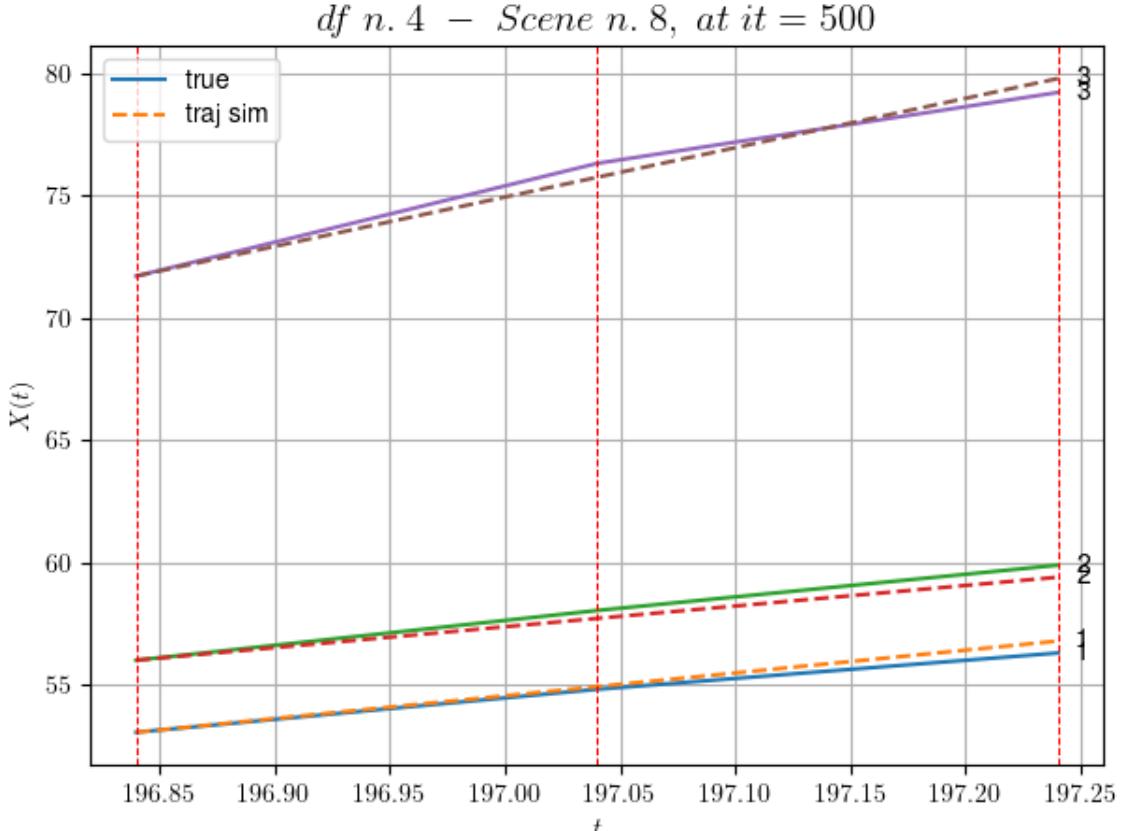
- Time interval n.0: [196.84, 197.04]
- \* y\_true: [ 8.77046468 10.16548364]
- \* v\_ann: [9.325089454650879, 8.555535316467285, 20.188773230043527]

---

- Time interval n.1: [197.04, 197.24]
- \* y\_true: [7.43042623 9.26246532]
- \* v\_ann: [9.32291030883789, 8.415403366088867, 20.188773230043527]

---

- \* err= 0.13820658247620898
- \* Learning rate NN = 3.6449993785936385e-05
- \* diff = 0.0005731319465301921



For scene 8/30

- \* use LR\_NN=5e-05 with err=3.254395287250921 at it=19
- \* v0\_scn\_mean = 20.777446395737982
- \* MAE = 0.13820658247620898

---



---

- Time interval n.0: [222.84, 223.04]
- \* y\_true: [19.28108097 23.47419597]
- \* v\_ann: [16.56396484375, 17.20235824584961, 30.10792866273029]

---

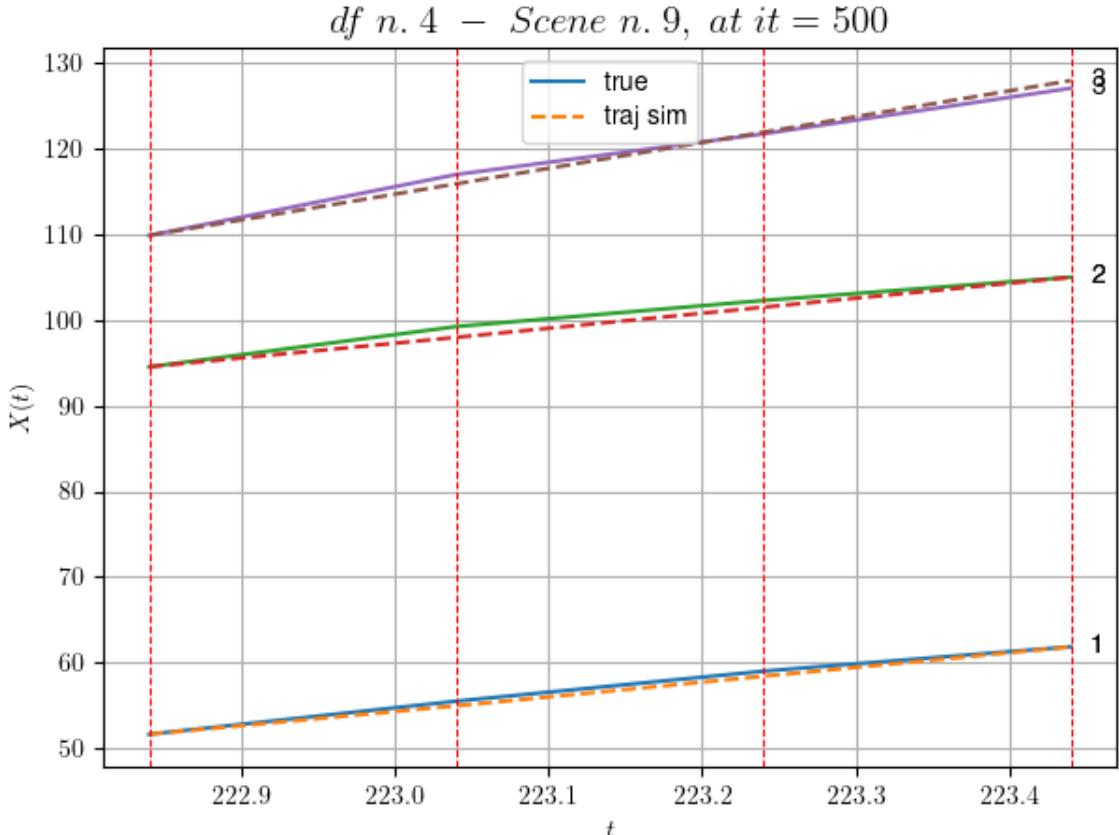
- Time interval n.1: [223.04, 223.24]
- \* y\_true: [17.49110618 15.20291758]
- \* v\_ann: [17.265331268310547, 17.565895080566406, 30.10792866273029]

---

- Time interval n.2: [223.24, 223.44]
- \* y\_true: [14.25100604 13.59283886]
- \* v\_ann: [17.101675033569336, 17.441638946533203, 30.10792866273029]

---

- \* err= 0.4035809578096623
- \* Learning rate NN = 5.904899080633186e-05
- \* diff = 1.299361874179672e-05



For scene 9/30

\* use LR\_NN=0.0001 with err=5.67731277306003 at it=19  
 \* v0\_scn\_mean = 30.101452947812113  
 \* MAE = 0.40129341281319175

- Time interval n.0: [224.84, 225.04]  
 \* y\_true: [17.10046829 25.29311811]  
 \* v\_ann: [19.355670928955078, 19.76413917541504, 1  
 5.713677130054883]

- Time interval n.1: [225.04, 225.24]  
 \* y\_true: [17.70062553 10.9614656 ]  
 \* v\_ann: [19.37917137145996, 19.828298568725586, 1  
 5.713677130054883]

- Time interval n.2: [225.24, 225.44]  
 \* y\_true: [22.57087879 26.33405568]  
 \* v\_ann: [19.269927978515625, 19.778709411621094, 1  
 5.713677130054883]

- Time interval n.3: [225.44, 225.64]  
 \* y\_true: [16.35079439 22.81365517]  
 \* v\_ann: [19.381315231323242, 19.844594955444336, 1

5.713677130054883]

- Time interval n.4: [225.64, 225.84]  
\* y\_true: [20.8811317 16.55300892]  
\* v\_ann: [19.3682804107666, 19.842239379882812, 15.  
5.713677130054883]

- Time interval n.5: [225.84, 226.04]  
\* y\_true: [16.52103304 29.98602504]  
\* v\_ann: [19.36016845703125, 19.848222732543945, 1  
5.713677130054883]

- Time interval n.6: [226.04, 226.24]  
\* y\_true: [18.95135857 18.46388585]  
\* v\_ann: [19.421842575073242, 18.556594848632812, 1  
5.713677130054883]

- Time interval n.7: [226.24, 226.44]  
\* y\_true: [20.26160248 17.75418412]  
\* v\_ann: [19.408409118652344, 19.88782501220703, 1  
5.713677130054883]

- Time interval n.8: [226.44, 226.64]  
\* y\_true: [16.68150299 14.60353303]  
\* v\_ann: [19.401630401611328, 19.316621780395508, 1  
5.713677130054883]

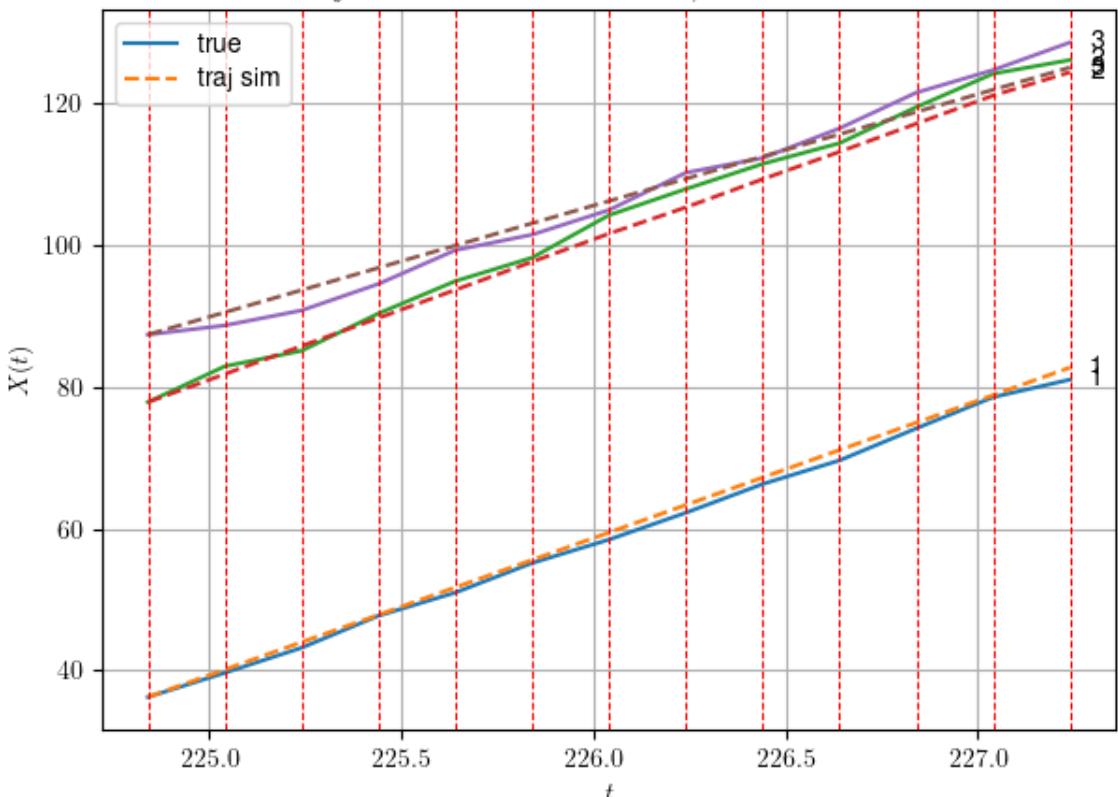
- Time interval n.9: [226.64, 226.84]  
\* y\_true: [22.62228992 25.47686963]  
\* v\_ann: [19.314815521240234, 19.855226516723633, 1  
5.713677130054883]

- Time interval n.10: [226.84, 227.04]  
\* y\_true: [22.04244959 23.58655245]  
\* v\_ann: [19.423250198364258, 19.892383575439453, 1  
5.713677130054883]

- Time interval n.11: [227.04, 227.24]  
\* y\_true: [12.37151499 9.65291202]  
\* v\_ann: [19.503795623779297, 16.392690658569336, 1  
5.713677130054883]

```
* err= 2.629663399630679
* Learning rate NN = 8.862932190822903e-06
* diff = 0.001250702100700021
```

*df n. 4 – Scene n. 10, at it = 500*



For scene 10/30

```
* use LR_NN=0.0001 with err=310.5417536535188 at it=19
* v0_scn_mean = 16.57085586082653
* MAE = 2.629663399630679
```

---



---

- Time interval n.0: [230.84, 231.04]
  - \* y\_true: [ 5.64695095 17.97864337]
  - \* v\_ann: [11.800326347351074, 14.066070556640625, 2 3.322723002586326]
  
- Time interval n.1: [231.04, 231.24]
  - \* y\_true: [ 5.72513489 21.19066695]
  - \* v\_ann: [14.20763111114502, 13.739714622497559, 2 3.322723002586326]
  
- Time interval n.2: [231.24, 231.44]
  - \* y\_true: [ 6.01015392 28.29114422]
  - \* v\_ann: [14.108494758605957, 13.636277198791504, 2 3.322723002586326]
  
- Time interval n.3: [231.44, 231.64]

```

* y_true: [6.20016661 18.85086271]
* v_ann: [14.485482215881348, 14.375133514404297, 2
3.322723002586326]

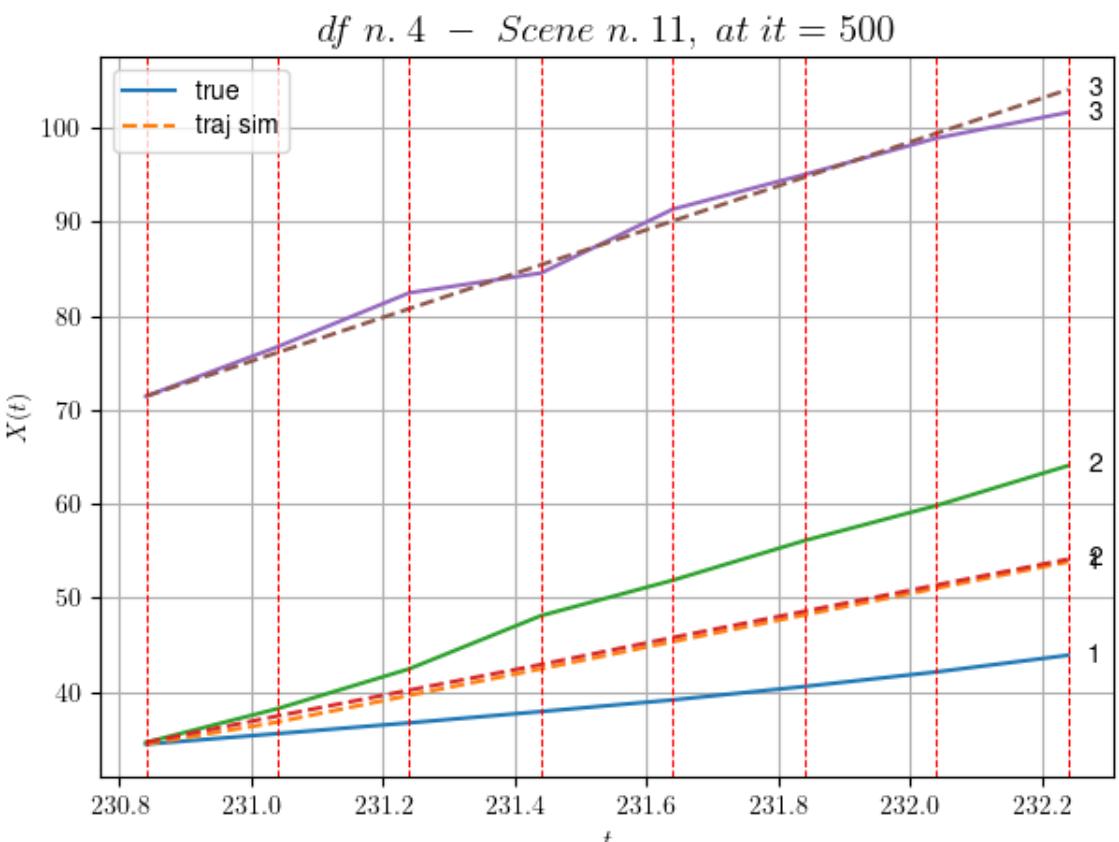
- Time interval n.4: [231.64, 231.84]
* y_true: [7.13021091 21.11121983]
* v_ann: [14.203778266906738, 13.944853782653809, 2
3.322723002586326]

- Time interval n.5: [231.84, 232.04]
* y_true: [7.75024044 18.61116554]
* v_ann: [14.187104225158691, 13.968917846679688, 2
3.322723002586326]

- Time interval n.6: [232.04, 232.24]
* y_true: [8.87530762 21.24160102]
* v_ann: [14.023189544677734, 13.763623237609863, 2
3.322723002586326]

* err= 25.60935389377113
* Learning rate NN = 0.00012709324073512107
* diff = 7.109444076647264e-05

```



For scene 11/30

\* use LR\_NN=0.0005 with err=20.775635989450198 at it=19  
\* v0\_scn\_mean = 23.723359322636156

\* MAE = 25.440311791977123

```
=====
=====
- Time interval n.0: [233.84, 234.04]
* y_true: [14.14101026 12.7012637]
* v_ann: [21.275606155395508, 22.00739097595215, 2
1.46280647198845]

- Time interval n.1: [234.04, 234.24]
* y_true: [26.43219185 20.11227439]
* v_ann: [19.840967178344727, 19.93757438659668, 2
1.46280647198845]

- Time interval n.2: [234.24, 234.44]
* y_true: [22.40209801 33.22429882]
* v_ann: [20.370908737182617, 20.782438278198242, 2
1.46280647198845]

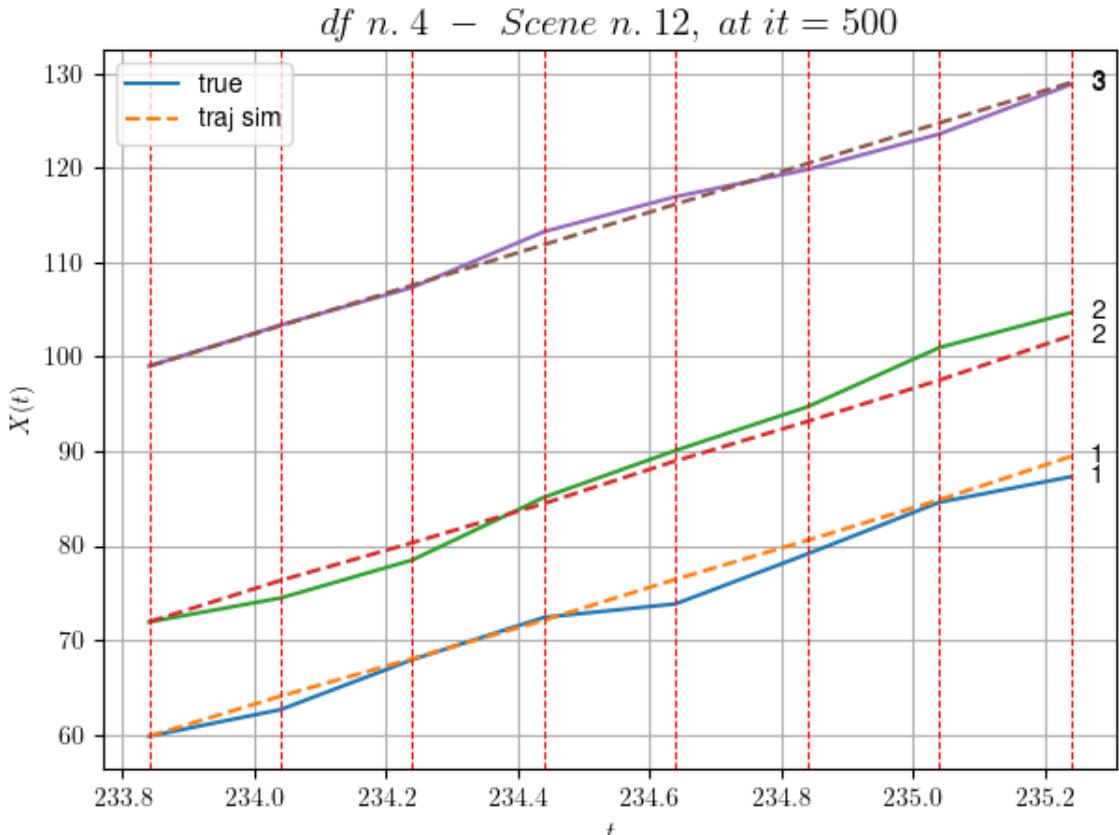
- Time interval n.3: [234.44, 234.64]
* y_true: [7.15071478 24.83361026]
* v_ann: [21.674259185791016, 22.593801498413086, 2
1.46280647198845]

- Time interval n.4: [234.64, 234.84]
* y_true: [26.44301464 23.06377261]
* v_ann: [20.621559143066406, 20.87911605834961, 2
1.46280647198845]

- Time interval n.5: [234.84, 235.04]
* y_true: [27.303494 31.34578132]
* v_ann: [21.388946533203125, 21.835111618041992, 2
1.46280647198845]

- Time interval n.6: [235.04, 235.24]
* y_true: [13.58189317 18.51369375]
* v_ann: [23.006885528564453, 23.574399948120117, 2
1.46280647198845]

* err= 2.031977356822702
* Learning rate NN = 0.00012709324073512107
* diff = 0.0017011554027979159
```



For scene 12/30

- \* use LR\_NN=0.0005 with err=32.174024611480895 at it=19
- \* v0\_scn\_mean = 21.975037700367597
- \* MAE = 2.022044025144613

---



---

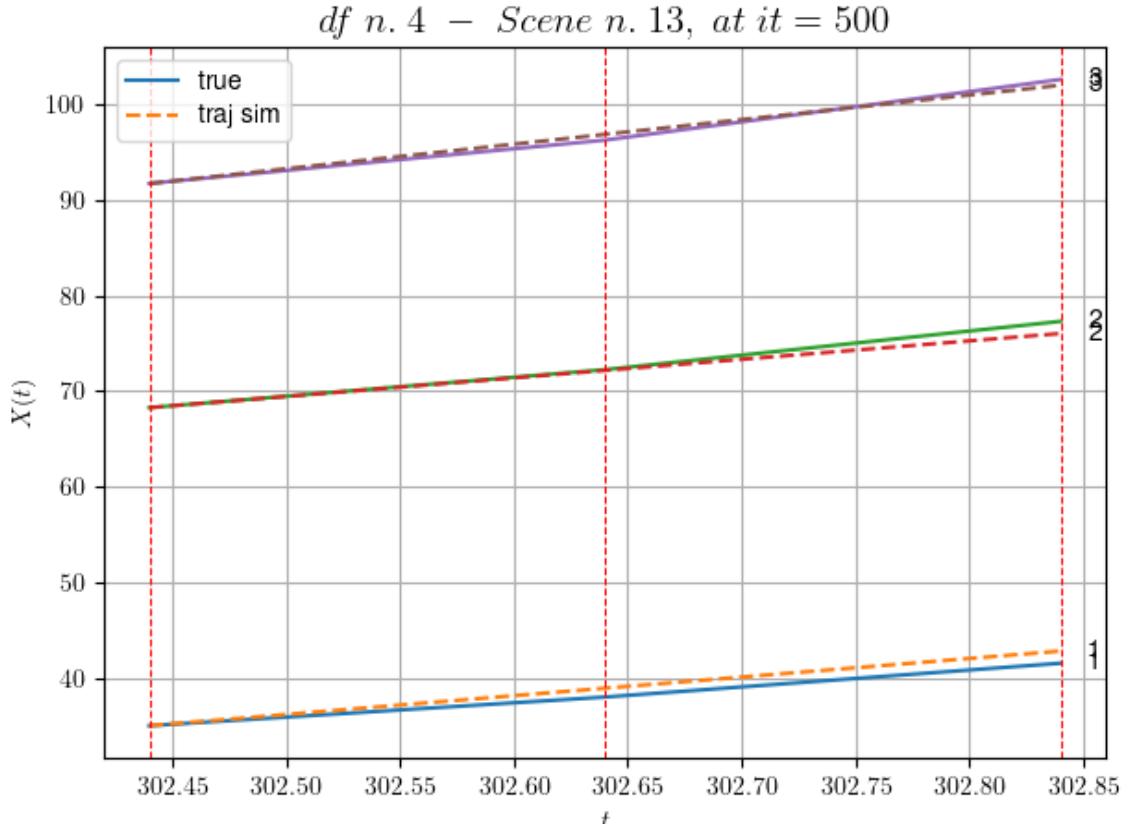
- Time interval n.0: [302.44, 302.64]  
 \* y\_true: [15.00036276 19.90190261]  
 \* v\_ann: [19.646638870239258, 19.500661849975586, 2  
 5.74453823302906]

---

- Time interval n.1: [302.64, 302.84]  
 \* y\_true: [17.72492583 25.30273749]  
 \* v\_ann: [19.460145950317383, 19.348461151123047, 2  
 5.74453823302906]

---

\* err= 0.5377528897086511  
 \* Learning rate NN = 3.6449993785936385e-05  
 \* diff = 0.00030761749508223524



For scene 13/30

- \* use LR\_NN=5e-05 with err=2.141419469271979 at it=19
  - \* v0\_scn\_mean = 25.999865747986018
  - \* MAE = 0.5060851824070426
- 
- 

For scene 14/30

- \* use LR\_NN=0.0001 with err=1.004450036918577 at it=19
  - \* v0\_scn\_mean = 28.343745731432374
  - \* MAE = 0.5404203599316294
- 
- 

- Time interval n.0: [422.64, 422.84]  
 \* y\_true: [18.36052369 19.91162557]  
 \* v\_ann: [25.21493148803711, 24.55207633972168, 27.  
 545089607776774]

---

- Time interval n.1: [422.84, 423.04]  
 \* y\_true: [28.40107569 15.51150308]  
 \* v\_ann: [24.65763282775879, 24.19086456298828, 27.  
 545089607776774]

---

- Time interval n.2: [423.04, 423.24]

```

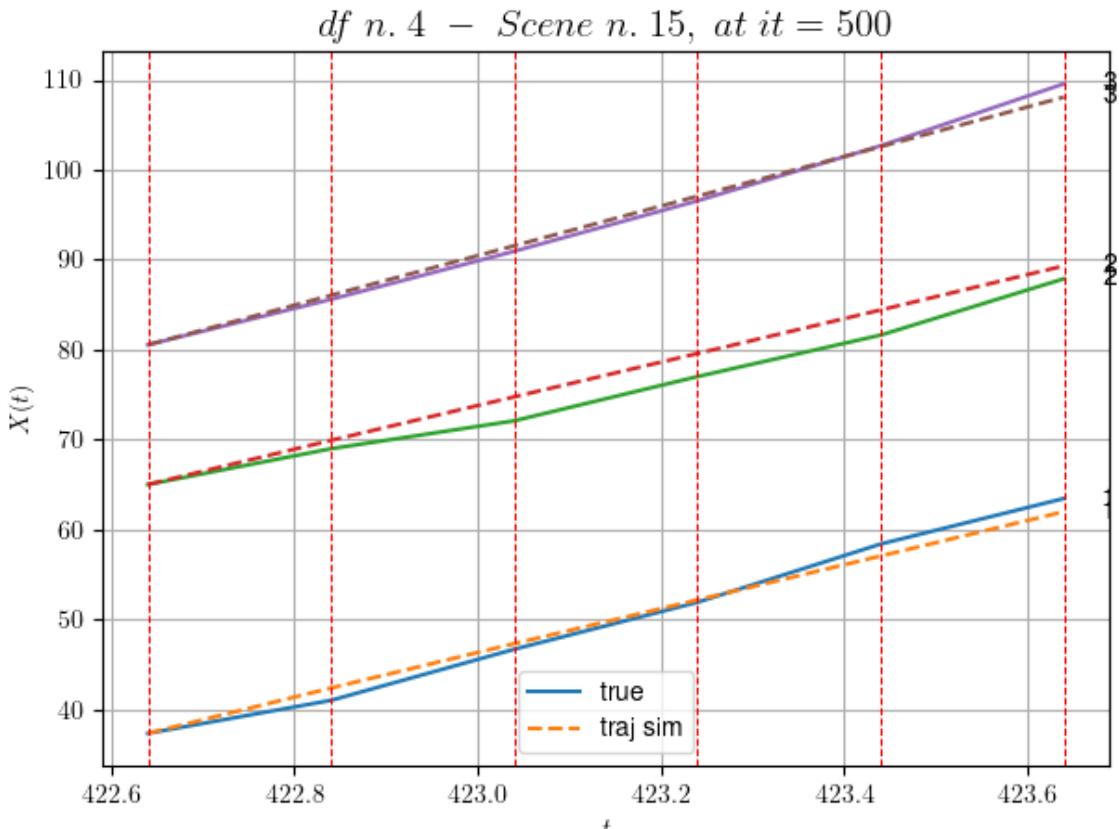
* y_true: [26.09121176 24.58263804]
* v_ann: [24.31828498840332, 24.088275909423828, 2
7.545089607776774]

- Time interval n.3: [423.24, 423.44]
* y_true: [32.41191994 23.07275882]
* v_ann: [24.410463333129883, 24.200916290283203, 2
7.545089607776774]

- Time interval n.4: [423.44, 423.64]
* y_true: [25.31178577 31.31439465]
* v_ann: [24.642353057861328, 24.542482376098633, 2
7.545089607776774]

* err= 1.8716091905058125
* Learning rate NN = 3.874203684972599e-05
* diff = 0.00025111171051773025

```



For scene 15/30

```

* use LR_NN=0.0001 with err=2.7653767398772344 at it=19
* v0_scn_mean = 27.692384121089994
* MAE = 1.8619282250888167
=====
```

```

- Time interval n.0: [440.44, 440.64]
* y_true: [23.50209477 27.05306951]
```

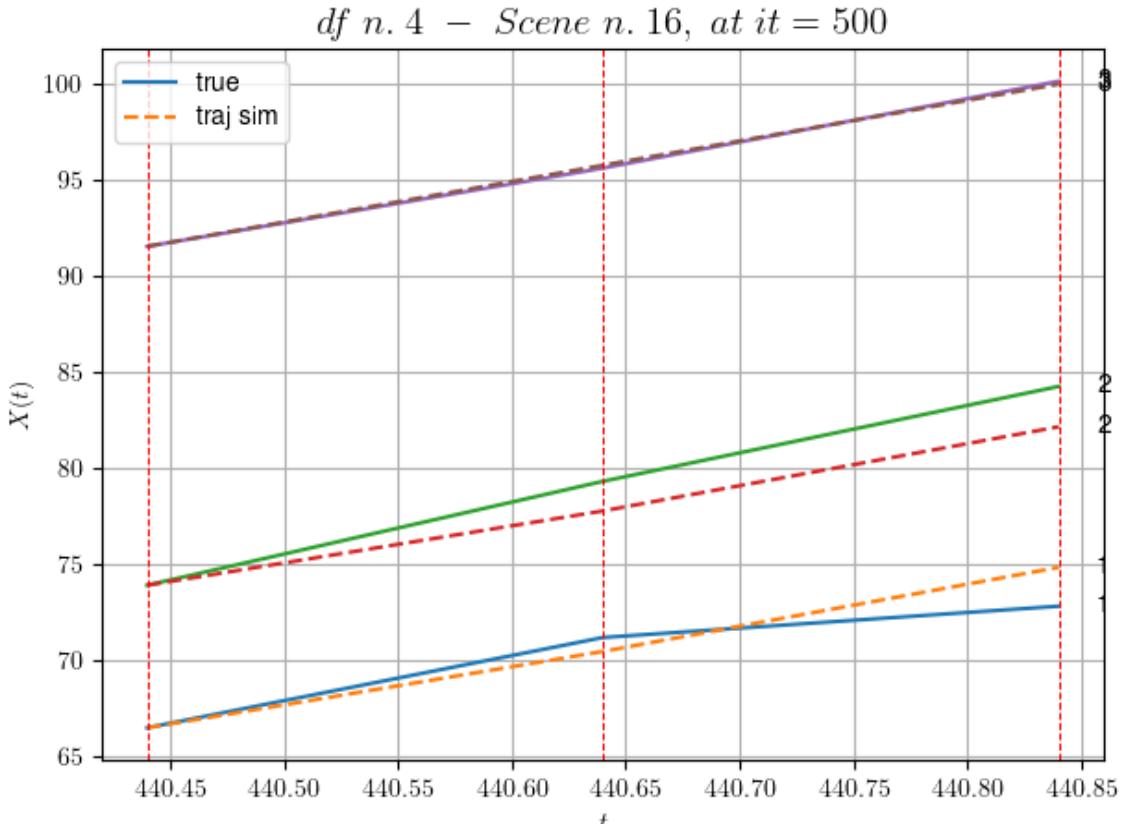
\* v\_ann: [19.86853790283203, 19.3396053314209, 21.1  
26994497572838]

---

- Time interval n.1: [440.64, 440.84]  
\* y\_true: [ 8.15079495 24.70319187]  
\* v\_ann: [21.905202865600586, 21.915170669555664, 2  
1.126994497572838]

---

\* err= 1.273550160977085  
\* Learning rate NN = 0.00036449998151510954  
\* diff = 0.0001582539825071283



For scene 16/30

\* use LR\_NN=0.0005 with err=2.8170153630957167 at it=19  
\* v0\_scn\_mean = 21.659374429339618  
\* MAE = 1.273550160977085

---



---

- Time interval n.0: [459.64, 459.84]  
\* y\_true: [ 8.02057991 18.30147717]  
\* v\_ann: [17.82303810119629, 21.155261993408203, 2  
1.749477605227383]

---

- Time interval n.1: [459.84, 460.04]  
\* y\_true: [15.90126261 32.50305135]

```

* v_ann: [16.65268898010254, 19.02912139892578, 21.
749477605227383]

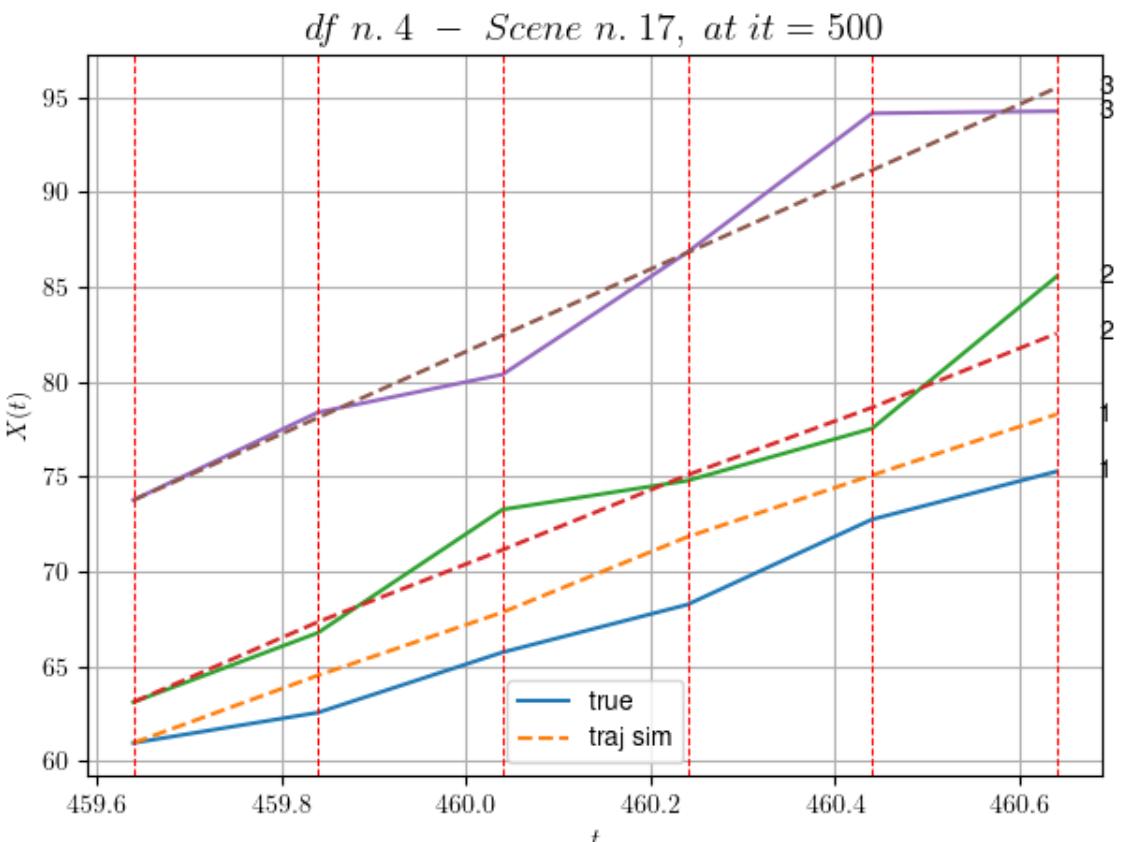
- Time interval n.2: [460.04, 460.24]
* y_true: [12.56106954 7.60079575]
* v_ann: [19.86585235595703, 19.709272384643555, 2
1.749477605227383]

- Time interval n.3: [460.24, 460.44]
* y_true: [22.47215871 13.7515264]
* v_ann: [16.24578857421875, 17.80044174194336, 21.
749477605227383]

- Time interval n.4: [460.44, 460.64]
* y_true: [12.66130245 40.10510628]
* v_ann: [16.081628799438477, 19.53973388671875, 2
1.749477605227383]

* err= 3.6459229413568353
* Learning rate NN = 0.0003874204121530056
* diff = 0 0054977987799924508

```



For scene 17/30

```

* use LR_NN=0.001 with err=11.439036077207911 at it=19
* v0_scn_mean = 22.244508578483227
* MAE = 3.6459229413568353

```

```
=====
=====
- Time interval n.0: [493.84, 494.04]
 * y_true: [22.94003108 21.75102788]
 * v_ann: [22.779563903808594, 23.0482177734375, 20.
43694163915572]

- Time interval n.1: [494.04, 494.24]
 * y_true: [17.14085991 24.35137427]
 * v_ann: [22.726713180541992, 22.98316764831543, 2
0.43694163915572]

- Time interval n.2: [494.24, 494.44]
 * y_true: [21.88131212 25.00167951]
 * v_ann: [22.575233459472656, 22.698110580444336, 2
0.43694163915572]

- Time interval n.3: [494.44, 494.64]
 * y_true: [18.45125037 31.00249487]
 * v_ann: [22.656078338623047, 22.798194885253906, 2
0.43694163915572]

- Time interval n.4: [494.64, 494.84]
 * y_true: [23.98189292 7.35066295]
 * v_ann: [22.903196334838867, 22.926719665527344, 2
0.43694163915572]

- Time interval n.5: [494.84, 495.04]
 * y_true: [24.94226236 24.20238954]
 * v_ann: [22.194337844848633, 22.195375442504883, 2
0.43694163915572]

- Time interval n.6: [495.04, 495.24]
 * y_true: [23.43243252 31.70363737]
 * v_ann: [22.395832061767578, 22.457067489624023, 2
0.43694163915572]

- Time interval n.7: [495.24, 495.44]
 * y_true: [28.10335872 24.95329593]
 * v_ann: [22.869415283203125, 22.973159790039062, 2
0.43694163915572]
```

```

- Time interval n.8: [495.44, 495.64]

* y_true: [18.99250639 15.85230368]

* v_ann: [23.1726131439209, 23.284698486328125, 20.

43694163915572]

```

```

- Time interval n.9: [495.64, 495.84]

* y_true: [13.12188353 36.00587838]

* v_ann: [22.65748405456543, 22.718828201293945, 2

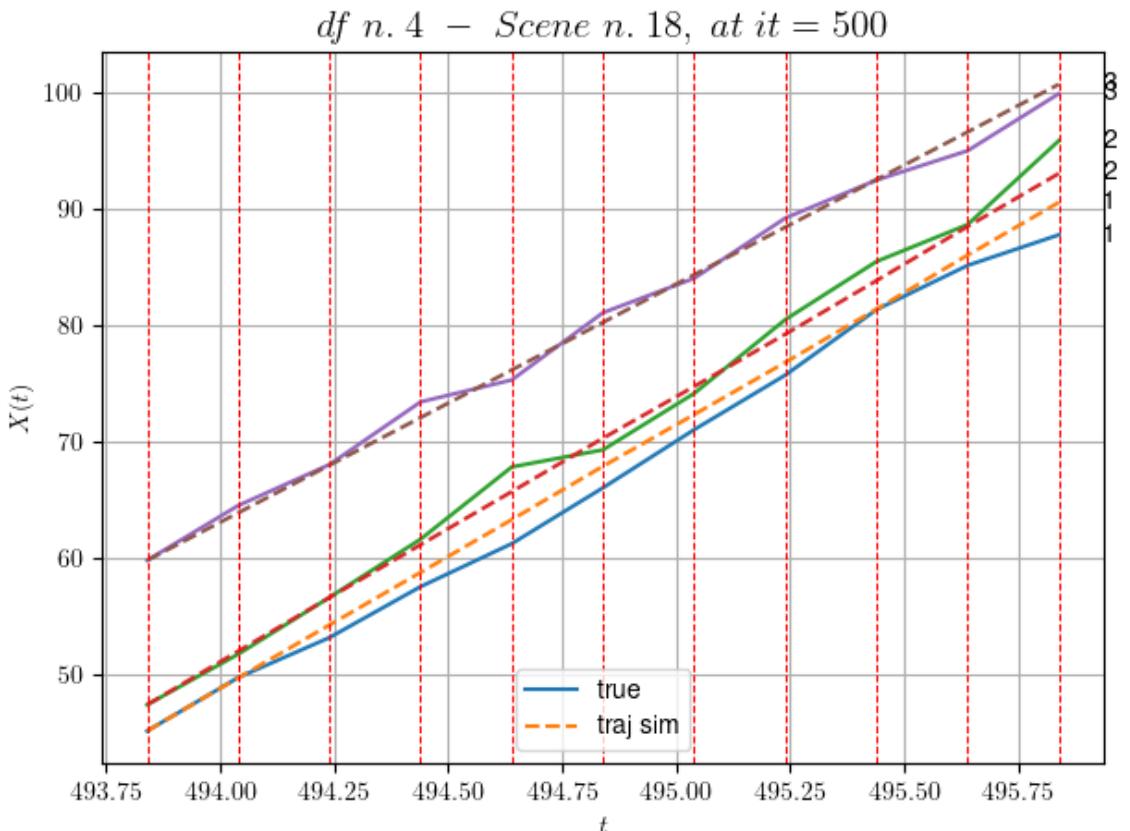
0.43694163915572]

```

```

* err= 1.4464722535069516

* Learning rate NN = 0.00013508510892279446
```



For scene 18/30

```

* use LR_NN=0.001 with err=76.74973312883039 at it=19

* v0_scn_mean = 21.01072471144573

* MAE = 1.4444843984049278
=====
```

```

- Time interval n.0: [520.04, 520.24]

* y_true: [17.72000935 17.53021327]

* v_ann: [20.7780818939209, 21.102079391479492, 25.

96280732717844]

```

```
- Time interval n.1: [520.24, 520.44]
 * y_true: [21.19003079 20.68032877]
 * v_ann: [20.692712783813477, 20.981393814086914, 2
5.96280732717844]

- Time interval n.2: [520.44, 520.64]
 * y_true: [20.95006602 20.21041565]
 * v_ann: [20.69289779663086, 20.982973098754883, 2
5.96280732717844]

- Time interval n.3: [520.64, 520.84]
 * y_true: [19.83010584 22.72061589]
 * v_ann: [20.683353424072266, 20.996217727661133, 2
5.96280732717844]

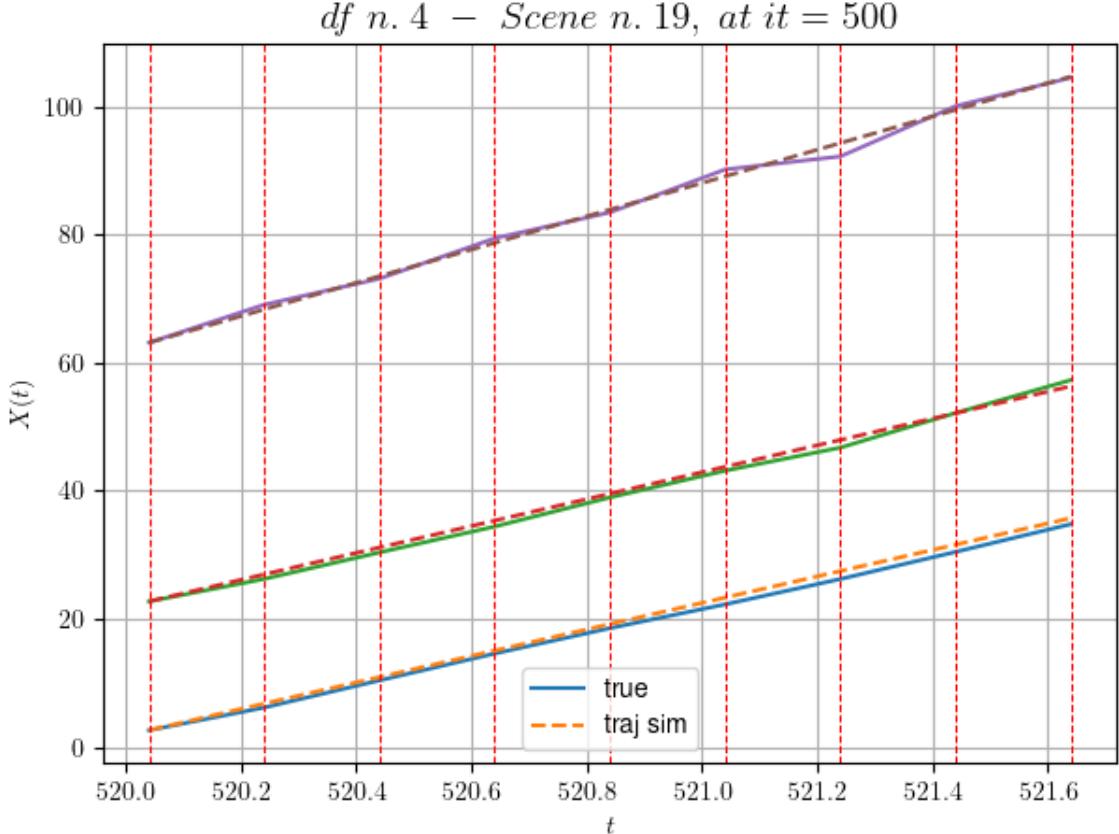
- Time interval n.4: [520.84, 521.04]
 * y_true: [18.57015207 20.87066157]
 * v_ann: [20.70096778869629, 21.009803771972656, 2
5.96280732717844]

- Time interval n.5: [521.04, 521.24]
 * y_true: [19.76022757 18.03074501]
 * v_ann: [20.674488067626953, 20.977294921875, 25.9
6280732717844]

- Time interval n.6: [521.24, 521.44]
 * y_true: [21.18033214 27.03127071]
 * v_ann: [20.61509895324707, 20.84975242614746, 25.
96280732717844]

- Time interval n.7: [521.44, 521.64]
 * y_true: [21.65044512 25.69152055]
 * v_ann: [20.721569061279297, 21.060611724853516, 2
5.96280732717844]

* err= 0.6802907588931303
* Learning rate NN = 1.029455233947374e-05
* diff = 0.00020180787762660183
```



For scene 19/30

\* use LR\_NN=5e-05 with err=29.366574887179667 at it=19  
 \* v0\_scn\_mean = 26.20503870628576  
 \* MAE = 0.6778972693719368

---



---

For scene 20/30

\* use LR\_NN=0.001 with err=15.394797869678674 at it=19  
 \* v0\_scn\_mean = 21.203846457204907  
 \* MAE = 0.3429676332028971

---



---

- Time interval n.0: [554.64, 554.84]  
 \* y\_true: [16.3871362 34.43556815]  
 \* v\_ann: [23.448305130004883, 22.944772720336914, 2  
 0.440727818765286]

---

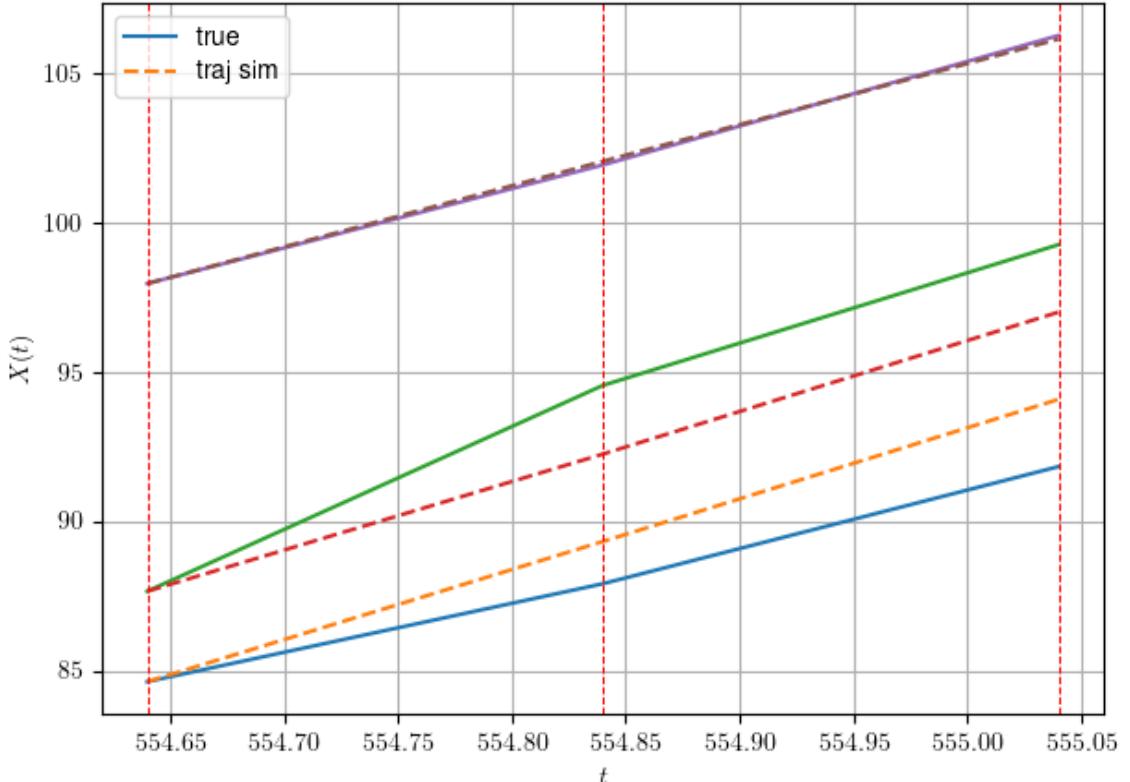
- Time interval n.1: [554.84, 555.04]  
 \* y\_true: [19.58824641 23.53414882]  
 \* v\_ann: [23.77619743347168, 23.742216110229492, 2  
 0.440727818765286]

---

\* err= 1.9399013363507756

\* Learning rate NN = 0.00036449998151510954  
 \* diff = 4.122941672934921e-05

*df n. 4 – Scene n. 21, at it = 500*



For scene 21/30

\* use LR\_NN=0.0005 with err=2.4779399435601053 at it=19  
 \* v0\_scn\_mean = 21.014283720448795  
 \* MAE = 1.9390602192362072

---



---

For scene 22/30

\* use LR\_NN=0.001 with err=13.357580001768497 at it=19  
 \* v0\_scn\_mean = 16.40201186363881  
 \* MAE = 0.17129367151899158

---



---

- Time interval n.0: [575.04, 575.24]  
 \* y\_true: [25.50060057 18.90068968]  
 \* v\_ann: [-5.930454335612012e-06, 0.0, 24.54562150740248]

---

- Time interval n.1: [575.24, 575.44]  
 \* y\_true: [27.95087423 28.65128625]  
 \* v\_ann: [-0.00023504327691625804, 0.0, 24.54562150740248]

---

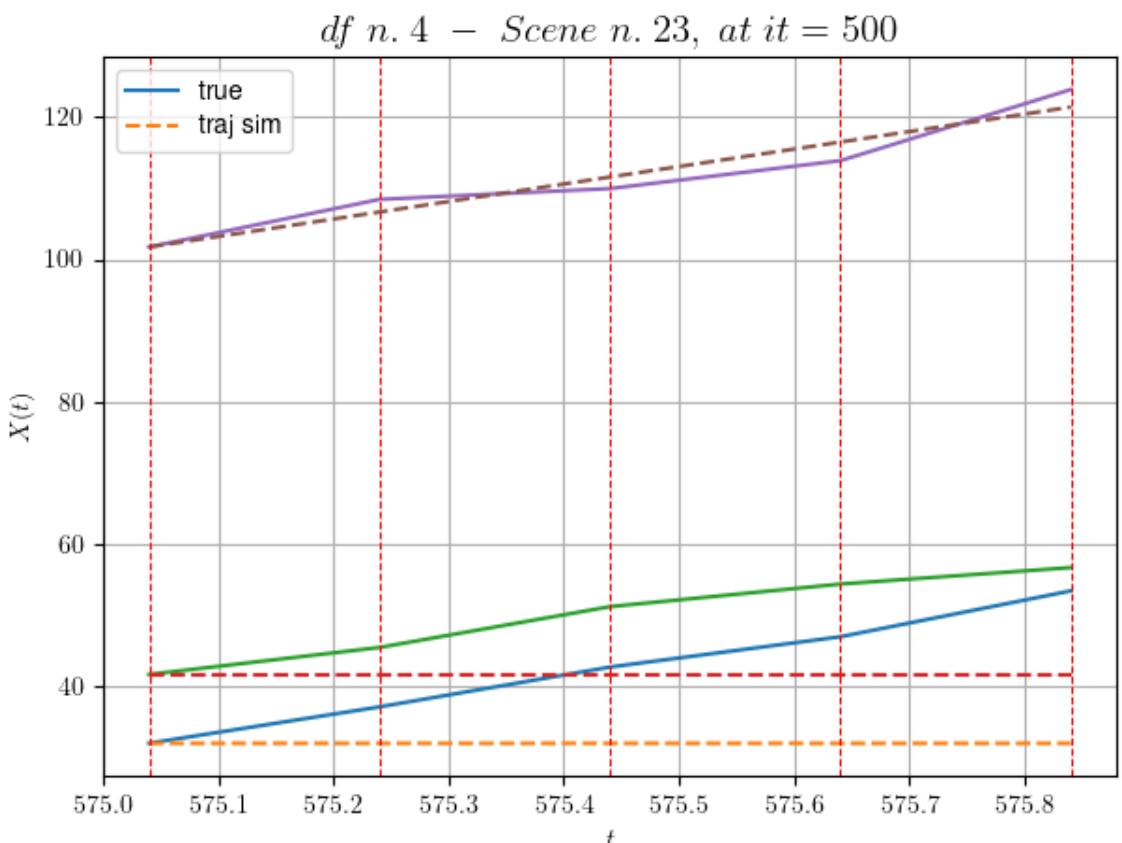
- Time interval n.2: [575.44, 575.64]  
 \* y\_true: [21.25083564 15.85084753]  
 \* v\_ann: [-0.00015905142936389893, 0.0, 24.54562150  
 740248]

---

- Time interval n.3: [575.64, 575.84]  
 \* y\_true: [32.20158375 11.5506833 ]  
 \* v\_ann: [-0.003210951341316104, 0.0, 24.5456215074  
 0248]

---

\* err= 88.63779690920545  
 \* Learning rate NN = 0.000239148415857926  
 \* diff = 2.887610629898063e-05



For scene 23/30  
 \* use LR\_NN=0.0005 with err=43.840047281493206 at it=19  
 \* v0\_scn\_mean = 24.87288397206772  
 \* MAE = 20.667242925278345

---



---

- Time interval n.0: [313.84, 314.04]  
 \* y\_true: [15.70108851 23.28855659 11.30165534]  
 \* v\_ann: [0.2761825621128082, 1.3423058244074876e-2  
 1, 1.8430425418126758e-27, 26.41552952480452]

---



---

```

 - Time interval n.1: [314.04, 314.24]
 * y_true: [25.15198981 24.43240479 30.10483754]
 * v_ann: [0.009607899934053421, 1.2495742918962137e
-18, 2.8055006453561174e-31, 26.41552952480452]

```

---

```

 - Time interval n.2: [314.24, 314.44]
 * y_true: [27.30252596 23.75264682 40.35752125]
 * v_ann: [0.014269951730966568, 4.941828687867248e-
20, 8.485241836438902e-30, 26.41552952480452]

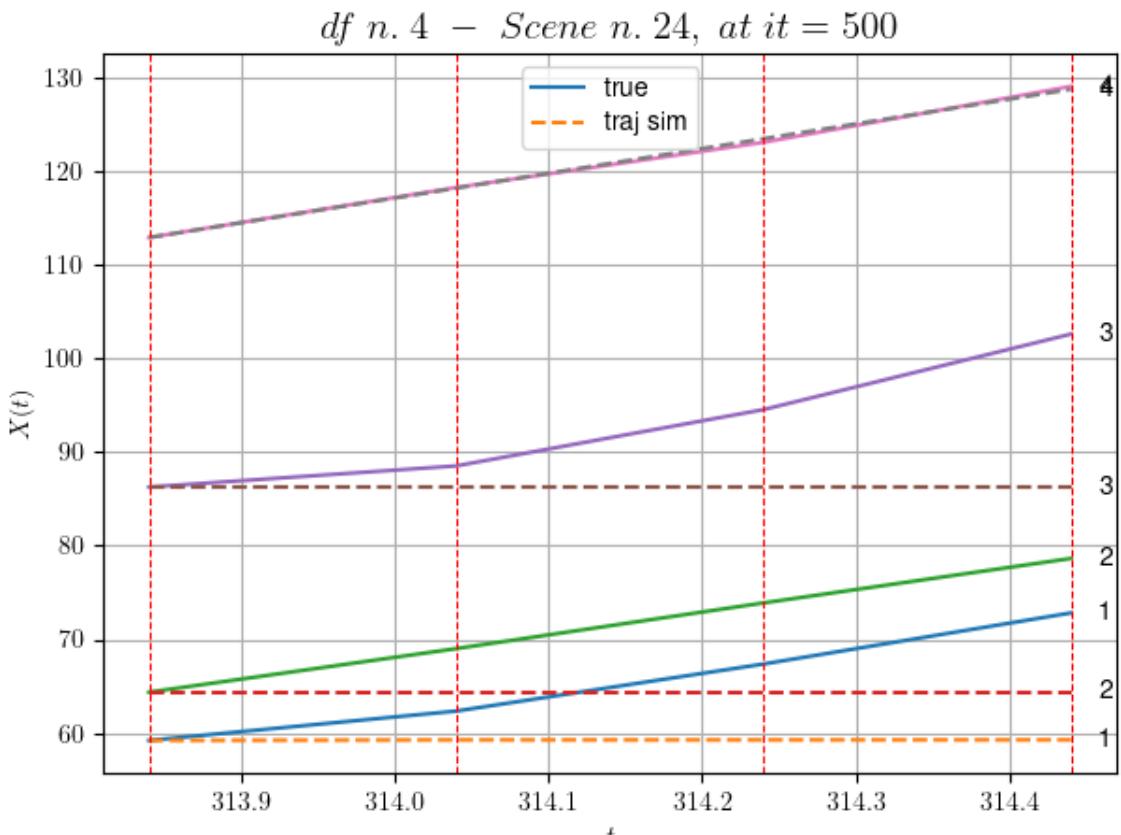
```

---

```

* err= 57.37537324938424
* Learning rate NN = 2.952449540316593e-05
* diff = 0.007887541245011676

```



For scene 24/30

```

* use LR_NN=5e-05 with err=9.858776353734306 at it=19
* v0_scn_mean = 26.70227549847877
* MAE = 57.37537324938424

```

---

For scene 25/30

```

* use LR_NN=0.001 with err=3.1908331613829644 at it=19
* v0_scn_mean = 26.89993983273832
* MAE = 0.13052673937761283

```

---

```

 - Time interval n.0: [462.64, 462.84]
 * y_true: [21.60177307 15.7113741 22.90372044]
 * v_ann: [19.190885543823242, 18.421775817871094, 1
9.152816772460938, 31.352447205664888]
```

---

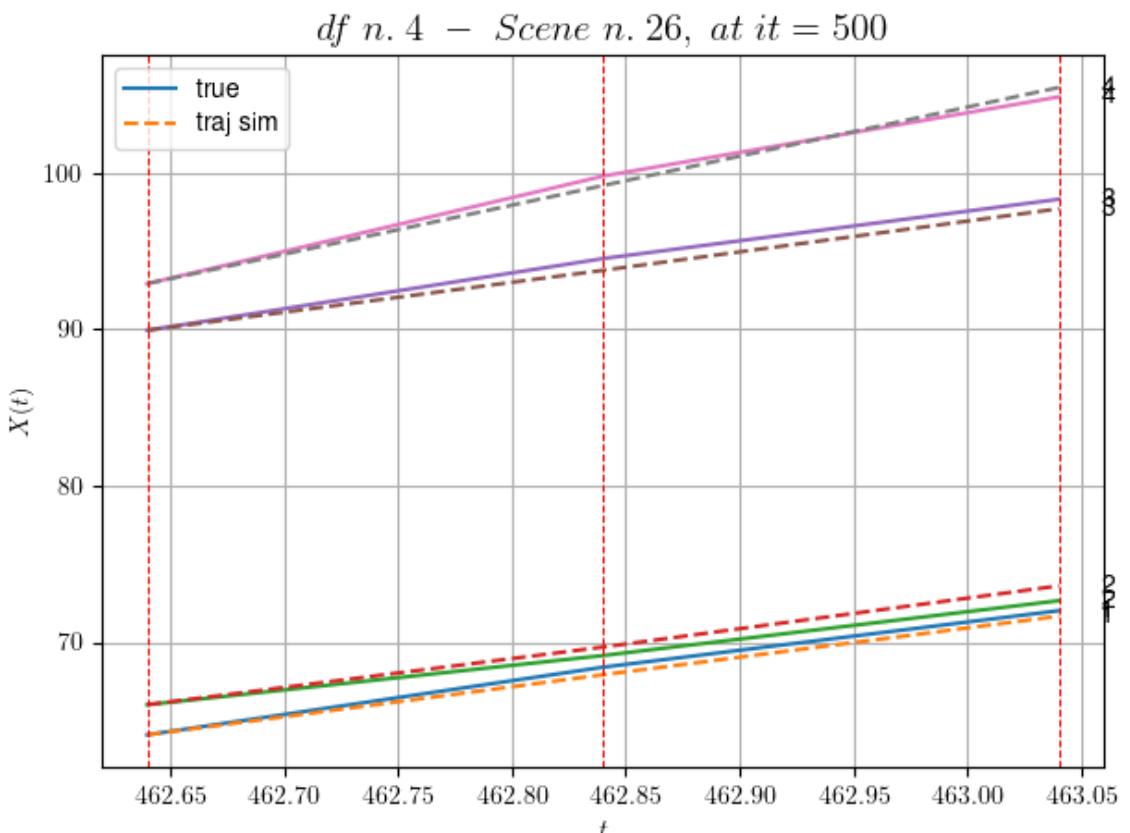
```

 - Time interval n.1: [462.84, 463.04]
 * y_true: [18.06167929 17.53172974 18.9633766]
 * v_ann: [18.711198806762695, 19.554088592529297, 1
9.673860549926758, 31.352447205664888]
```

---

```

 * err= 0.2667285316269632
 * Learning rate NN = 0.0007289999630302191
 * diff = 0.0001328095670871665
```



For scene 26/30

```

* use LR_NN=0.001 with err=10.040844435885708 at it=19
* v0_scn_mean = 31.24425583025306
* MAE = 0.2667285316269632
```

---



---

```

 - Time interval n.0: [495.24, 495.44]
 * y_true: [12.91123632 28.10335872 24.95329593]
 * v_ann: [22.503116607666016, 22.494857788085938, 2
2.549381256103516, 16.437805482235913]
```

---

```

- Time interval n.1: [495.44, 495.64]

 * y_true: [9.32105302 18.99250639 15.85230368]

 * v_ann: [22.429868698120117, 22.387189865112305, 2

 2.415719985961914, 16.437805482235913]

- Time interval n.2: [495.64, 495.84]

 * y_true: [38.46439916 13.12188353 36.00587838]

 * v_ann: [20.683979034423828, 20.979379653930664, 2

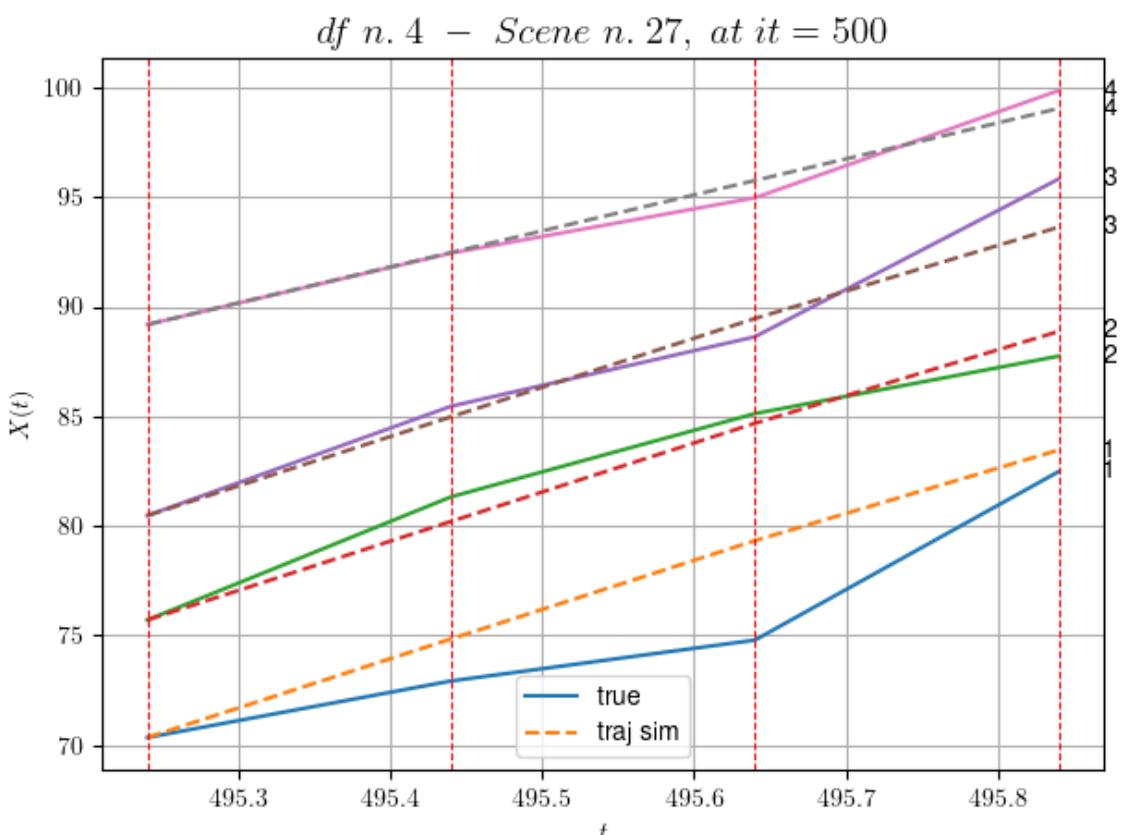
 0.85674476623535, 16.437805482235913]

* err= 2.1897912608955674

* Learning rate NN = 0.0002952449722215533

* diff = 7.512123200070775e-05

```



For scene 27/30  
 \* use LR\_NN=0.0005 with err=10.263623244129237 at it=19  
 \* v0\_scn\_mean = 17.5227369104831  
 \* MAE = 2.17838409638013

---

---

---

---

---

```

- Time interval n.0: [541.84, 542.04]

 * y_true: [15.49040827 18.57067001 15.06113134]

 * v_ann: [18.87526512145996, 18.971206665039062, 1

 8.969297409057617, 25.31159160096281]

```

---

---

---

---

---

```

 - Time interval n.1: [542.04, 542.24]

 * y_true: [18.02057424 22.22093452 14.29121645]

 * v_ann: [18.08013916015625, 17.536727905273438, 1

 7.448976516723633, 25.31159160096281]

 - Time interval n.2: [542.24, 542.44]

 * y_true: [23.32090187 15.10072652 30.16295254]

 * v_ann: [18.217426300048828, 17.886085510253906, 1

 7.723403930664062, 25.31159160096281]

 - Time interval n.3: [542.44, 542.64]

 * y_true: [17.96079787 19.72113387 17.42186984]

 * v_ann: [19.73752212524414, 20.814298629760742, 2

 1.035709381103516, 25.31159160096281]

 - Time interval n.4: [542.64, 542.84]

 * y_true: [20.261096 21.55138585 14.58174174]

 * v_ann: [19.003883361816406, 19.23647689819336, 1

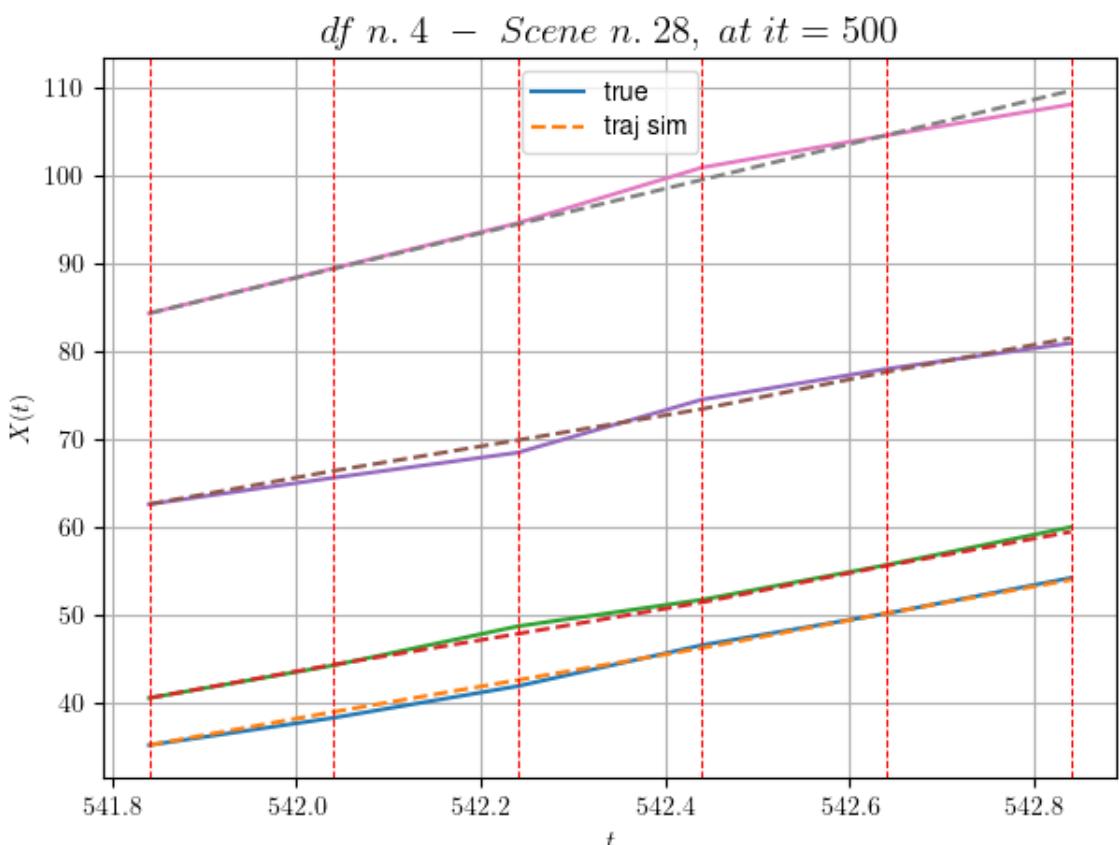
 9.295297622680664, 25.31159160096281]

 * err= 0.4534362197607149

 * Learning rate NN = 0.0003874204121530056

 * diff = 8.109180916759939e-07

```



For scene 28/30

\* use LR\_NN=0.001 with err=18.00332878454354 at it=19

\* v0\_scn\_mean = 25.686649016184994

\* MAE = 0.4534362089866931

---



---

- Time interval n.0: [559.04, 559.24]

\* y\_true: [23.32160164 21.40183754 23.15354324]

\* v\_ann: [16.83442497253418, 15.744711875915527, 1  
6.823156356811523, 21.820834052468292]

---



---

- Time interval n.1: [559.24, 559.44]

\* y\_true: [16.34126249 10.38103794 18.30306556]

\* v\_ann: [20.31061363220215, 21.048208236694336, 2  
0.31859588623047, 21.820834052468292]

---



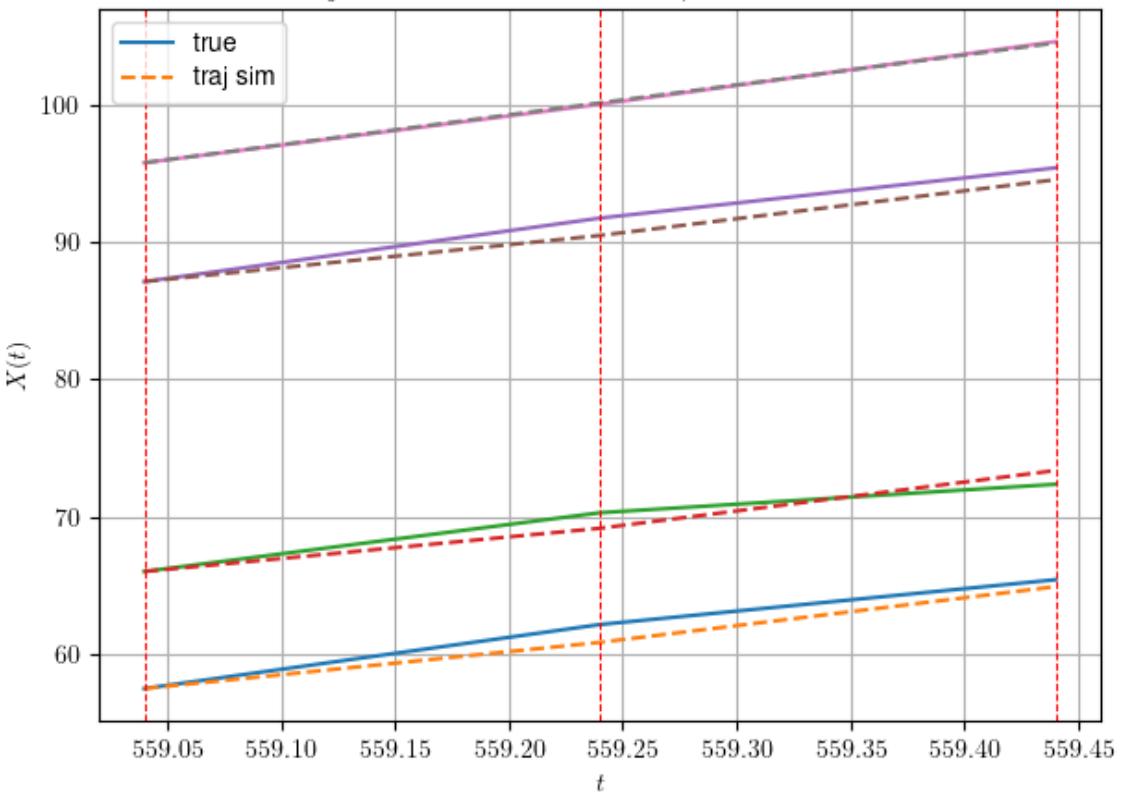
---

\* err= 0.549175749806712

\* Learning rate NN = 0.0007289999630302191

\* diff = 3.3532706168459825e-05

*df n. 4 – Scene n. 29, at it = 500*



For scene 29/30

\* use LR\_NN=0.001 with err=5.824513112831869 at it=19

\* v0\_scn\_mean = 22.475140712184025

\* MAE = 0.5434379754714463

```
For df=4 with 30 scenes, time taken: 486.68
=====

=====

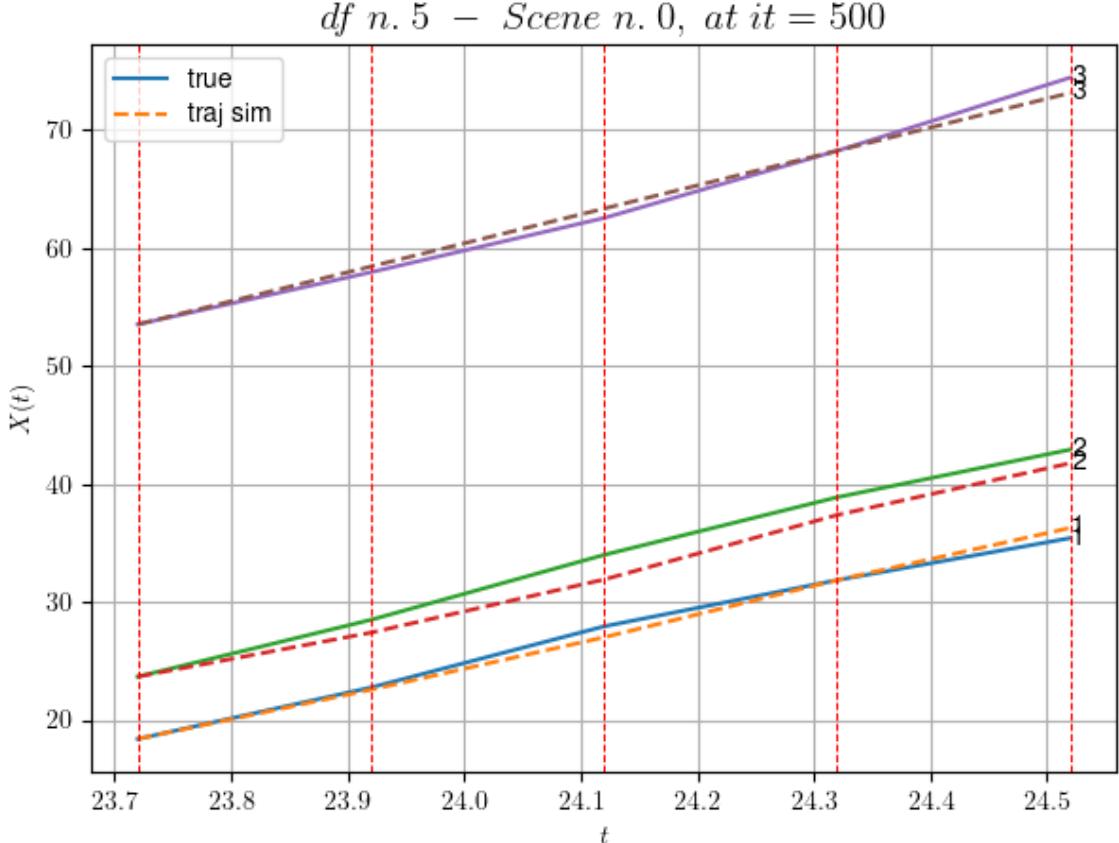
***** In df n.5/10 we have 14 scenes *****
***** -----
- Time interval n.0: [23.72, 23.92]
 * y_true: [21.79018354 24.07032953]
 * v_ann: [20.856121063232422, 18.644102096557617, 2
4.53480373451933]

- Time interval n.1: [23.92, 24.12]
 * y_true: [25.91031727 27.52052784]
 * v_ann: [22.22669792175293, 22.516698837280273, 2
4.53480373451933]

- Time interval n.2: [24.12, 24.32]
 * y_true: [19.61033273 24.42062846]
 * v_ann: [24.244138717651367, 27.340242385864258, 2
4.53480373451933]

- Time interval n.3: [24.32, 24.52]
 * y_true: [17.8304062 20.21066815]
 * v_ann: [22.136096954345703, 21.960561752319336, 2
4.53480373451933]

* err= 0.8862992974851744
* Learning rate NN = 0.000478296831715852
* diff = 9.475369657463428e-05
```



For scene 0/14

- \* use LR\_NN=0.001 with err=18.807999618818467 at it=19
- \* v0\_scn\_mean = 24.862715265072737
- \* MAE = 0.39296603992649337

---



---

- Time interval n.0: [28.12, 28.32]
  - \* y\_true: [22.39001619 28.9506918 ]
  - \* v\_ann: [26.420509338378906, 25.969501495361328, 2 5.37938379248384]

---



---

- Time interval n.1: [28.32, 28.52]
  - \* y\_true: [21.14004613 26.65085251]
  - \* v\_ann: [26.485200881958008, 25.859363555908203, 2 5.37938379248384]

---



---

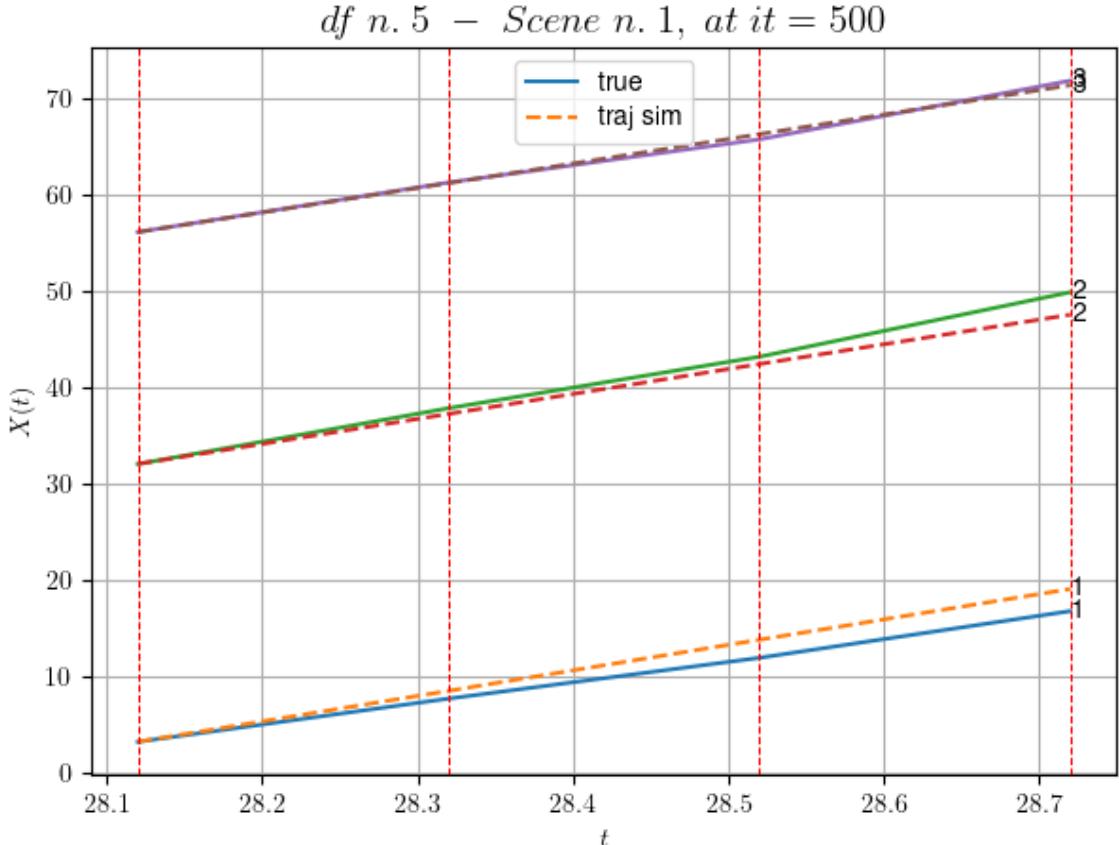
- Time interval n.2: [28.52, 28.72]
  - \* y\_true: [24.23010561 33.45140848]
  - \* v\_ann: [26.32306480407715, 25.575101852416992, 2 5.37938379248384]

---



---

- \* err= 1.3587938094257241
- \* Learning rate NN = 2.952449540316593e-05
- \* diff = 0.0008262756576866703



For scene 1/14

\* use LR\_NN=5e-05 with err=4.83998467655235 at it=19  
 \* v0\_scn\_mean = 25.656620557479105  
 \* MAE = 1.3587938094257241

---



---

- Time interval n.0: [146.52, 146.72]  
 \* y\_true: [32.70054419 14.69037585]  
 \* v\_ann: [24.688940048217773, 24.69503402709961, 3  
 3.247185278122785]

---

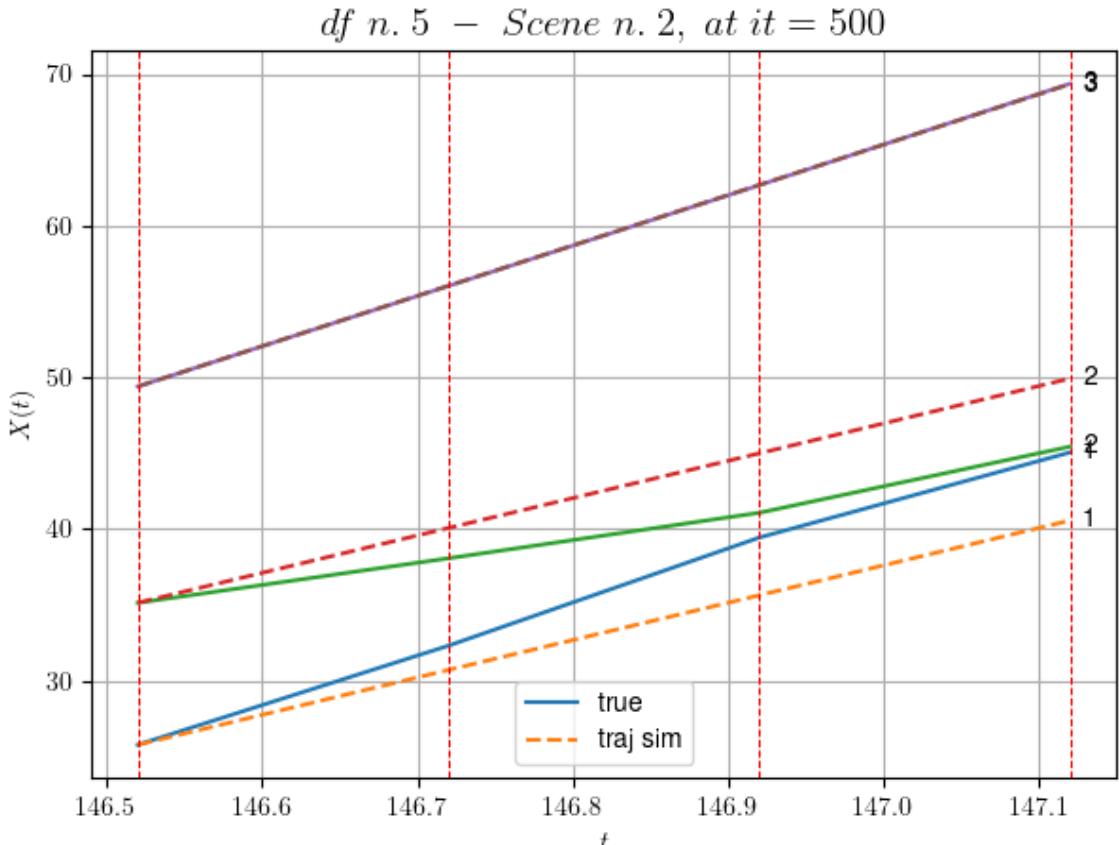
- Time interval n.1: [146.72, 146.92]  
 \* y\_true: [35.65090038 15.01046474]  
 \* v\_ann: [24.632797241210938, 24.61324691772461, 3  
 3.247185278122785]

---

- Time interval n.2: [146.92, 147.12]  
 \* y\_true: [28.09191726 21.83491468]  
 \* v\_ann: [24.670440673828125, 24.676456451416016, 3  
 3.247185278122785]

---

\* err= 6.396356533003563  
 \* Learning rate NN = 5.904899080633186e-05  
 \* diff = 1.1863103130949071e-05



For scene 2/14

- \* use LR\_NN=0.0001 with err=26.78211761192762 at it=19
- \* v0 scn mean = 33.05235430722718
- \* MAE = 6.395203249576839

---



---

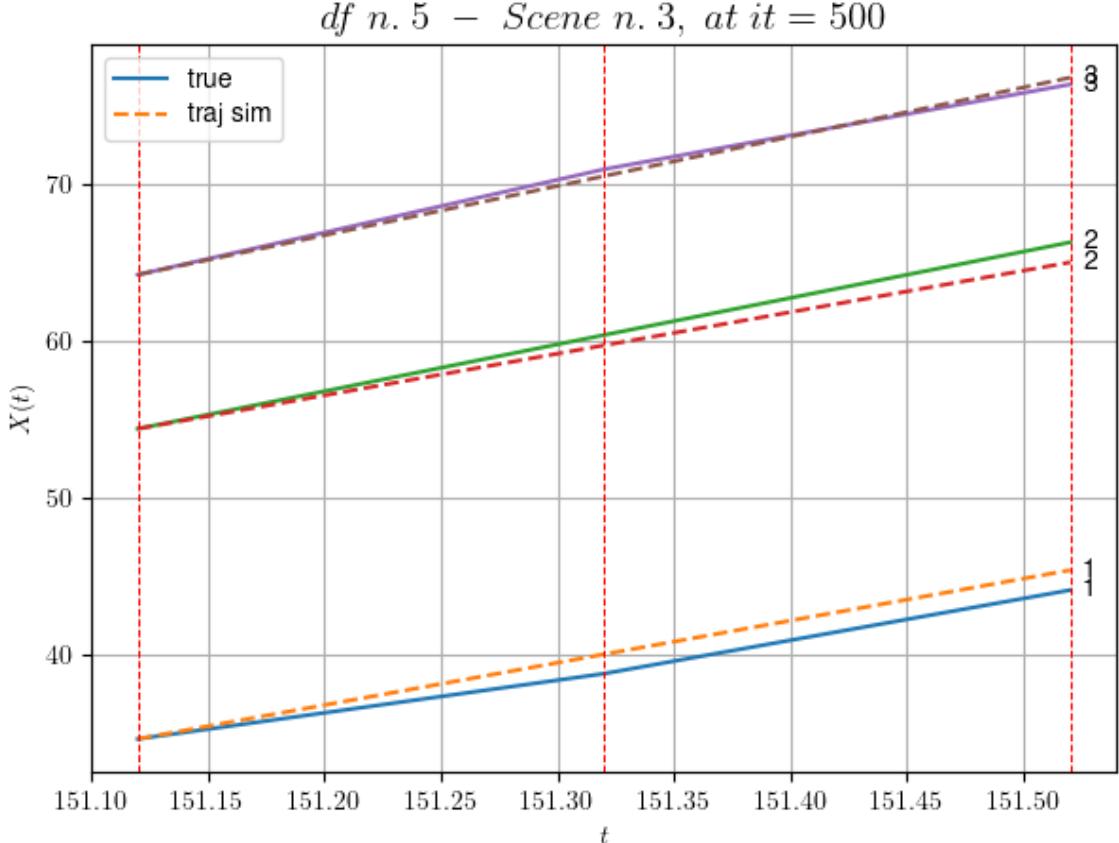
- Time interval n.0: [151.12, 151.32]
- \* y\_true: [20.88055844 29.97204611]
- \* v\_ann: [27.069801330566406, 26.66956901550293, 3  
1.516138737958254]

---

- Time interval n.1: [151.32, 151.52]
- \* y\_true: [26.72089495 29.6522691 ]
- \* v\_ann: [26.91231346130371, 26.553726196289062, 3  
1.516138737958254]

---

- \* err= 0.6242761019571154
- \* Learning rate NN = 7.289998757187277e-05
- \* diff = 0.00014269584908610522



For scene 3/14

- \* use LR\_NN=0.0001 with err=6.068149990156404 at it=19
- \* v0\_scn\_mean = 31.42517048175186
- \* MAE = 0.6242761019571154

---



---

- Time interval n.0: [177.32, 177.52]
  - \* y\_true: [23.78017477 21.57540501]
  - \* v\_ann: [26.518571853637695, 26.9080867767334, 26.180378384786312]

---



---

- Time interval n.1: [177.52, 177.72]
  - \* y\_true: [28.99044664 21.37044807]
  - \* v\_ann: [25.719371795654297, 25.934185028076172, 26.180378384786312]

---



---

- Time interval n.2: [177.72, 177.92]
  - \* y\_true: [30.9005134 20.55062028]
  - \* v\_ann: [25.55668067932129, 25.787242889404297, 26.180378384786312]

---



---

- Time interval n.3: [177.92, 178.12]
  - \* y\_true: [25.28069635 21.93575232]
  - \* v\_ann: [25.507387161254883, 25.829612731933594, 26.180378384786312]

---



---

6.180378384786312]

---

- Time interval n.4: [178.12, 178.32]
  - \* y\_true: [23.87574209 27.4762805 ]
  - \* v\_ann: [25.192209243774414, 25.323177337646484, 2

6.180378384786312]

---

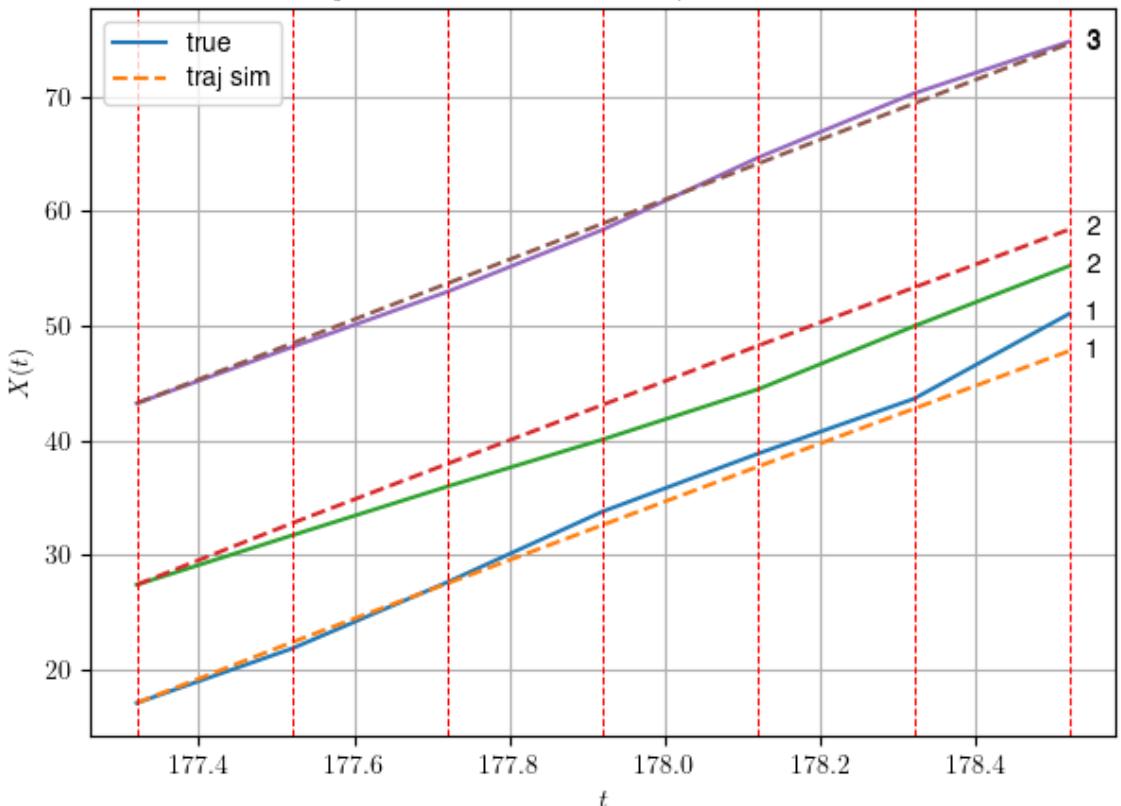
- Time interval n.5: [178.32, 178.52]
  - \* y\_true: [37.1766426 26.34131635]
  - \* v\_ann: [25.259185791015625, 25.430633544921875, 2

6.180378384786312]

---

- \* err= 3.169839846030877
- \* Learning rate NN = 0.00015690525469835848
- \* diff = 0.0008208103326281524

*df n. 5 – Scene n. 4, at it = 500*



For scene 4/14

- \* use LR\_NN=0.0005 with err=38.12453300486558 at it=19
- \* v0\_scn\_mean = 26.40955551020643
- \* MAE = 3.169839846030877

---



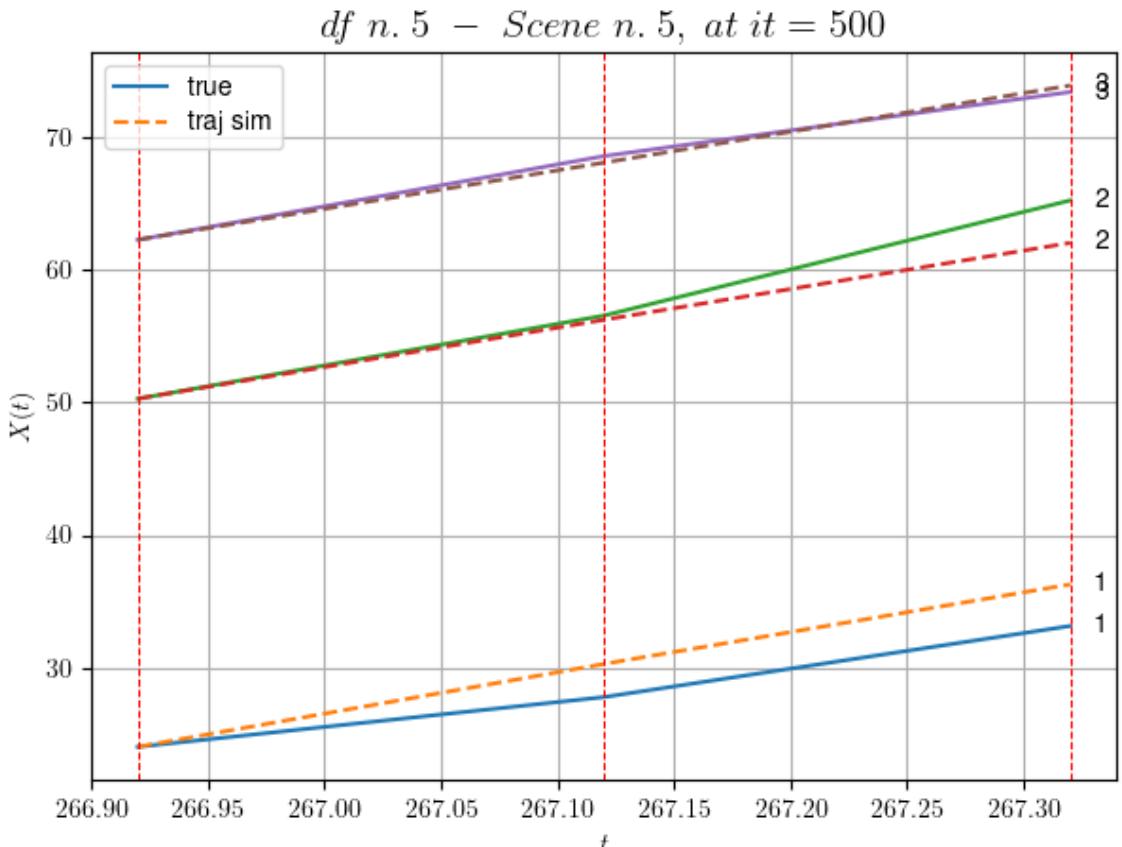
---

- Time interval n.0: [266.92, 267.12]
  - \* y\_true: [18.75024149 31.34179995]
  - \* v\_ann: [31.23928451538086, 29.75361442565918, 29.

08570162592711]

```
- Time interval n.1: [267.12, 267.32]
 * y_true: [26.80047756 43.40316595]
 * v_ann: [29.985702514648438, 28.974130630493164, 2
9.08570162592711]
```

```
* err= 2.9906734770426557
* Learning rate NN = 7.289998757187277e-05
* diff = 0.0007553870508187899
```



For scene 5/14

```
* use LR_NN=0.0001 with err=13.597625772160571 at it=19
* v0_scn_mean = 29.140559487320715
* MAE = 2.9906734770426557
```

```
=====
=====
- Time interval n.0: [316.92, 317.12]
 * y_true: [22.23560763 28.12633872]
 * v_ann: [25.356300354003906, 25.05804443359375, 2
2.342045861211076]
```

```
=====
=====
- Time interval n.1: [317.12, 317.32]
 * y_true: [22.67586827 27.74684297]
 * v_ann: [25.27185821533203, 25.131521224975586, 2
```

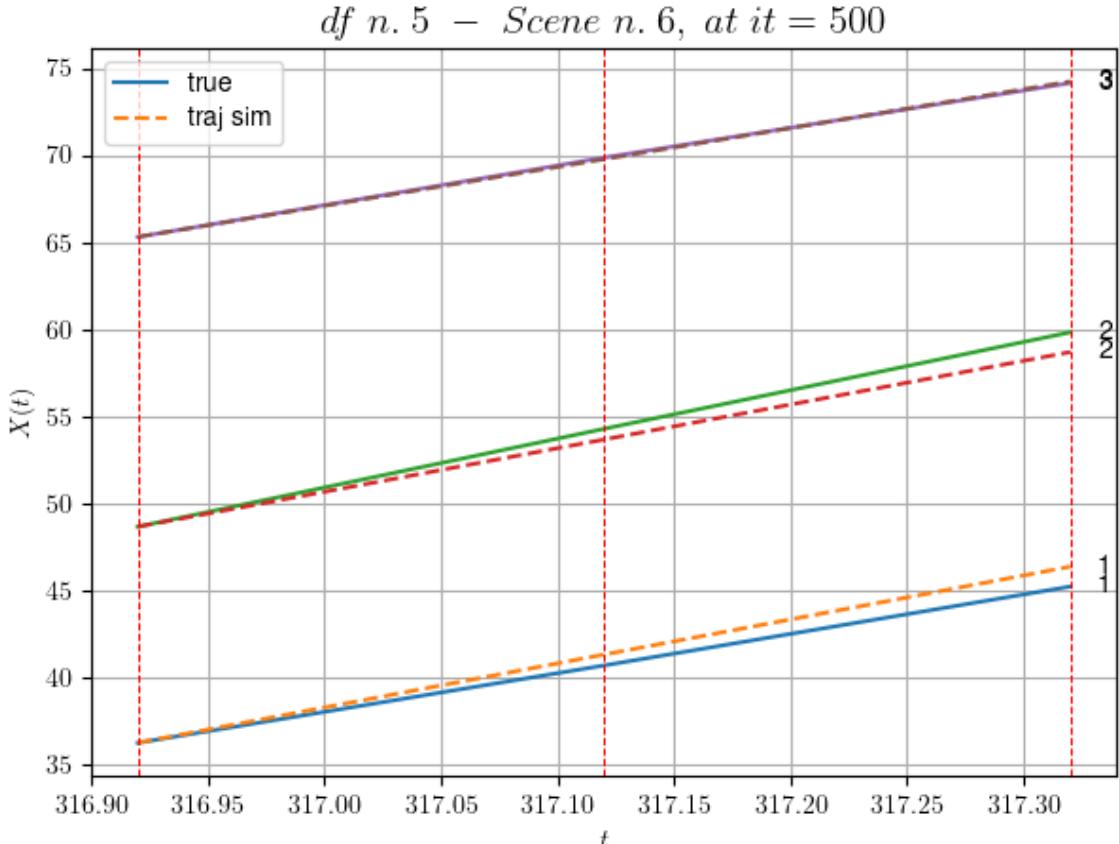
2.342045861211076]

---



---

- \* err= 0.3759062259874235
- \* Learning rate NN = 7.289998757187277e-05
- \* diff = 0.00019787418176192562



For scene 6/14

- \* use LR\_NN=0.0001 with err=1.3465354140445163 at it=19
- \* v0\_scn\_mean = 22.801522765712672
- \* MAE = 0.3759062259874235

---



---

For scene 7/14

- \* use LR\_NN=0.001 with err=7.4897671639655945 at it=19
- \* v0\_scn\_mean = 27.555695130781448
- \* MAE = 0.03148994573100535

---



---

For scene 8/14

- \* use LR\_NN=0.0001 with err=1.8825743779662731 at it=19
- \* v0\_scn\_mean = 35.04615696757802
- \* MAE = 0.0060751678952886065

---



---

```
- Time interval n.0: [338.52, 338.72]
 * y_true: [22.83038671 20.44060351]
 * v_ann: [23.92376708984375, 23.957143783569336, 2
7.853928426095845]

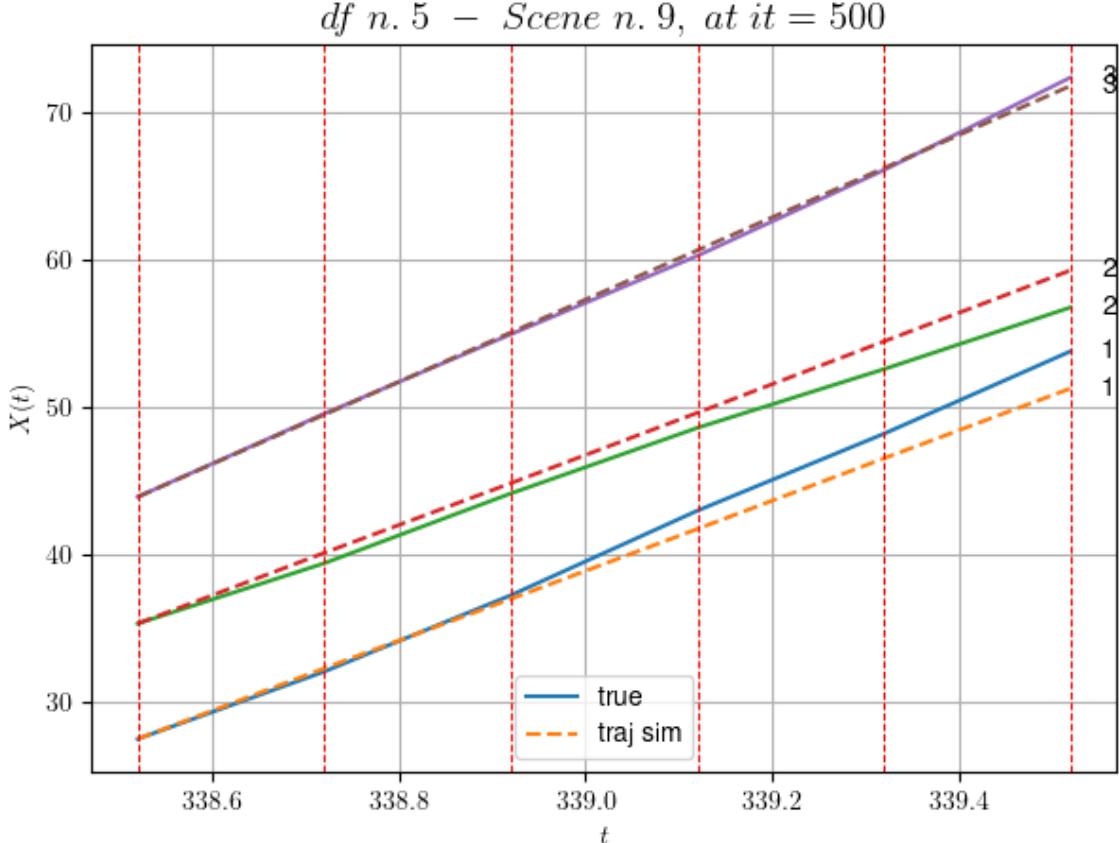
- Time interval n.1: [338.72, 338.92]
 * y_true: [25.85061095 23.65082523]
 * v_ann: [23.527868270874023, 23.610492706298828, 2
7.853928426095845]

- Time interval n.2: [338.92, 339.12]
 * y_true: [28.6708889 22.23087004]
 * v_ann: [23.705322265625, 23.84926986694336, 27.85
3928426095845]

- Time interval n.3: [339.12, 339.32]
 * y_true: [26.0610325 19.88098798]
 * v_ann: [23.9160213470459, 24.205751419067383, 27.
853928426095845]

- Time interval n.4: [339.32, 339.52]
 * y_true: [27.9415295 20.92126982]
 * v_ann: [23.695350646972656, 24.064966201782227, 2
7.853928426095845]

* err= 1.2855662480959091
* Learning rate NN = 0.0001937102060765028
* diff = 0.00010769862476323055
```



For scene 9/14

```
* use LR_NN=0.0005 with err=12.813183070136965 at it=19
* v0_scn_mean = 27.98269262417596
* MAE = 1.2481768543972727
```

---



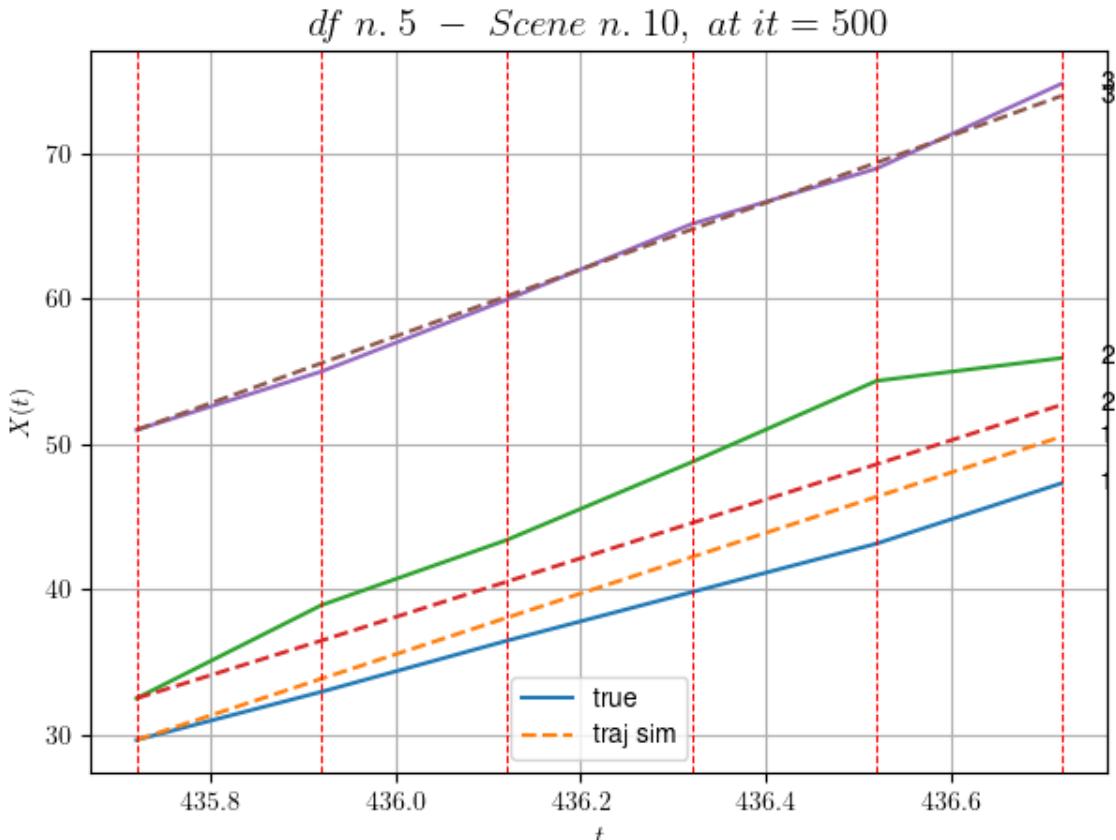
---

- Time interval n.0: [435.72, 435.92]
  - \* y\_true: [16.6003121 32.10080247]
  - \* v\_ann: [21.094200134277344, 19.898164749145508, 2  
3.00226947805257]
- Time interval n.1: [435.92, 436.12]
  - \* y\_true: [17.55040576 22.4007406 ]
  - \* v\_ann: [20.972911834716797, 20.24947166442871, 2  
3.00226947805257]
- Time interval n.2: [436.12, 436.32]
  - \* y\_true: [16.72550921 26.8011085 ]
  - \* v\_ann: [20.88528060913086, 20.19339942932129, 23.  
00226947805257]
- Time interval n.3: [436.32, 436.52]
  - \* y\_true: [16.72550921 28.00144696]
  - \* v\_ann: [20.7835636138916, 20.26071548461914, 23.0

0226947805257]

```
- Time interval n.4: [436.52, 436.72]
 * y_true: [20.80081615 7.85046318]
 * v_ann: [20.69715690612793, 20.467084884643555, 2
3.00226947805257]
```

```
* err= 5.906331121842545
* Learning rate NN = 3.874203684972599e-05
* diff = 4.425006076669291e-05
```



For scene 10/14

```
* use LR_NN=0.0001 with err=15.330085781194 at it=19
* v0_scn_mean = 23.422132995186203
* MAE = 5.897732516870291
```

```
=====
=====
- Time interval n.0: [565.12, 565.32]
 * y_true: [12.82514463 16.9507403]
 * v_ann: [15.595727920532227, 16.257122039794922, 2
0.750313634270984]
```

```
=====
=====
- Time interval n.1: [565.32, 565.52]
 * y_true: [14.2510345 19.19106683]
 * v_ann: [15.40905475616455, 16.097808837890625, 2
```

0.750313634270984]

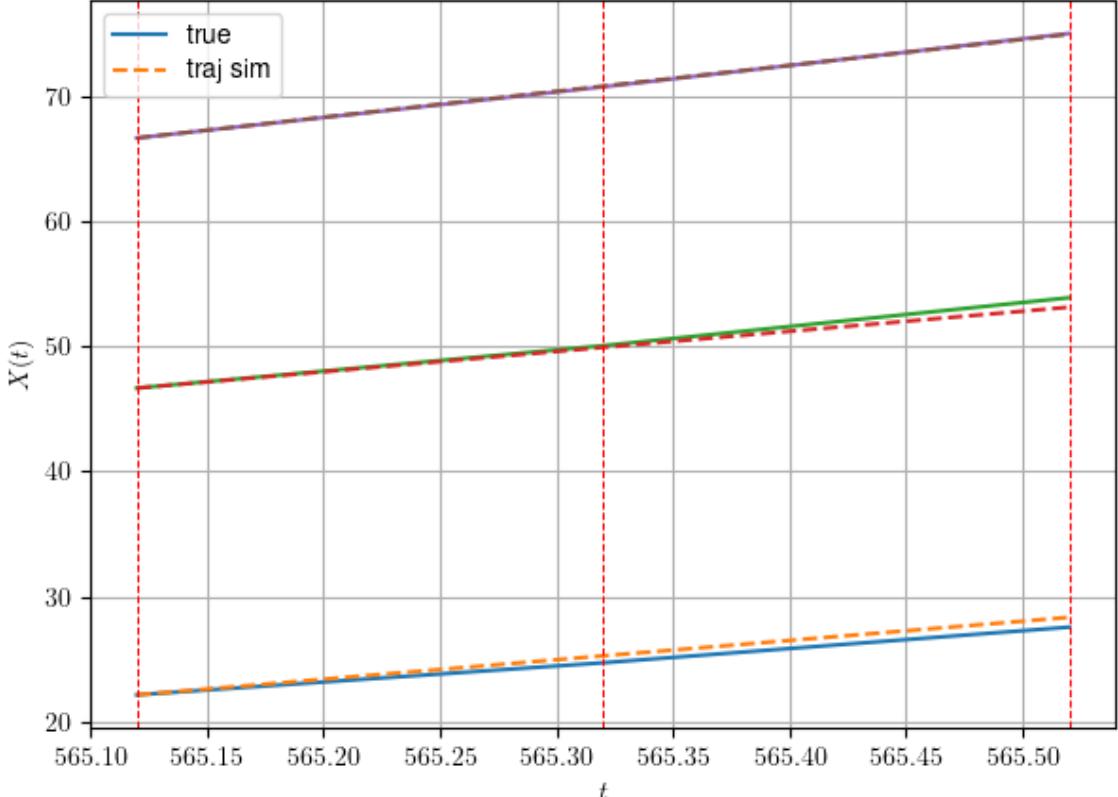
---



---

- \* err= 0.16945803516105595
- \* Learning rate NN = 3.6449993785936385e-05
- \* diff = 0.00025232363085006537

*df n. 5 – Scene n. 11, at it = 500*



For scene 11/14

- \* use LR\_NN=5e-05 with err=2.5463955619549257 at it=19
- \* v0\_scn\_mean = 21.30529440092378
- \* MAE = 0.1569204803839287

---



---

For scene 12/14

- \* use LR\_NN=0.0001 with err=3.627545479917547 at it=19
- \* v0\_scn\_mean = 21.768162114368643
- \* MAE = 0.0960990265505679

---



---

For scene 13/14

- \* use LR\_NN=0.0005 with err=6.799668494198788 at it=19
- \* v0\_scn\_mean = 26.503177016630833
- \* MAE = 0.7627250950709612

---



---

```
For df=5 with 14 scenes, time taken: 163.07
=====

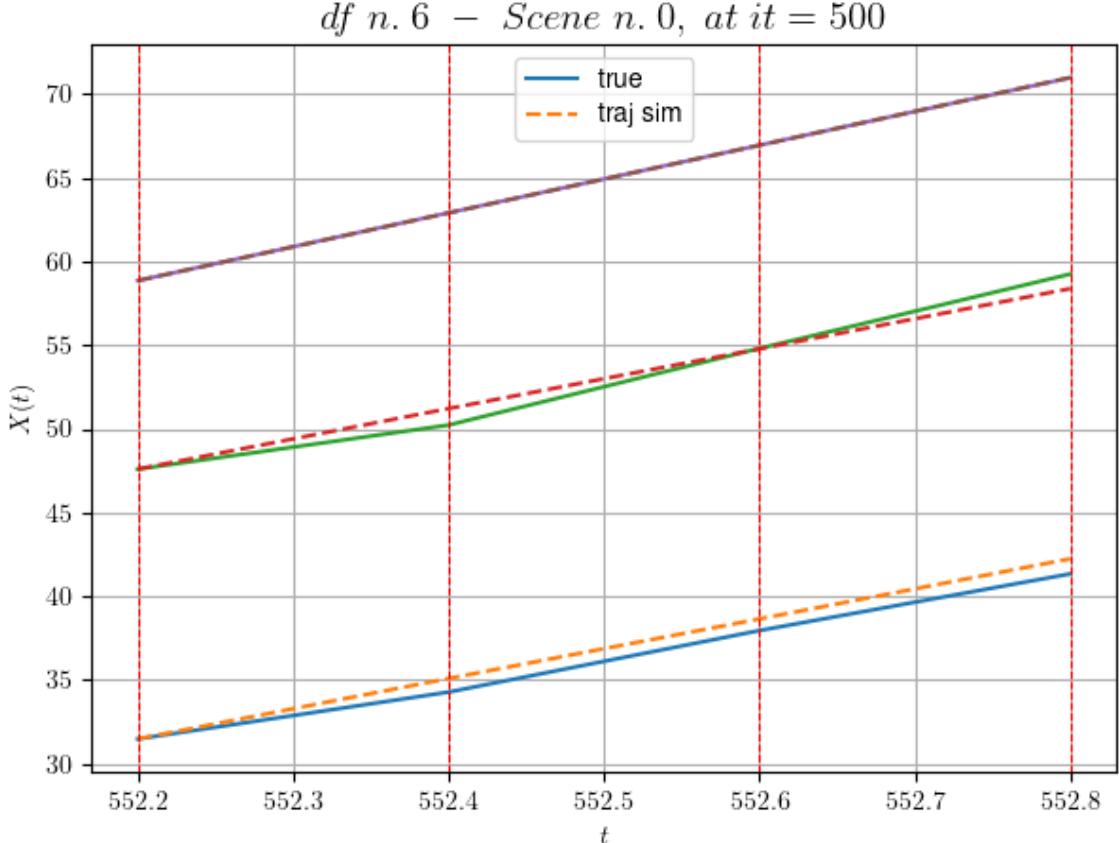
=====

***** In df n.6/10 we have 3 scenes *****
***** -----
***** - Time interval n.0: [552.20, 552.40]
***** * y_true: [14.01030513 13.18063102]
***** * v_ann: [18.079513549804688, 18.105934143066406, 2
0.233205039551706]

***** - Time interval n.1: [552.40, 552.60]
***** * y_true: [18.39048446 22.9012939]
***** * v_ann: [17.795576095581055, 17.83934783935547, 2
0.233205039551706]

***** - Time interval n.2: [552.60, 552.80]
***** * y_true: [16.95052919 22.22132939]
***** * v_ann: [17.969470977783203, 18.0081729888916, 20.
233205039551706]

* err= 0.30673621529406514
* Learning rate NN = 5.904899080633186e-05
* diff = 0.0008605852901324984
```



For scene 0/3

- \* use LR\_NN=0.0001 with err=5.875487029823702 at it=19
- \* v0\_scn\_mean = 20.819212298670717
- \* MAE = 0.25487050601192923

---



---

For scene 1/3

- \* use LR\_NN=0.0005 with err=6.39767619115453 at it=19
- \* v0\_scn\_mean = 24.25909281168321
- \* MAE = 0.2595068161153089

---



---

- Time interval n.0: [554.00, 554.20]
  - \* y\_true: [20.50061186 21.35116733 22.20133365]
  - \* v\_ann: [21.744056701660156, 21.7176570892334, 21.73249626159668, 23.647050620331658]

---



---

- Time interval n.1: [554.20, 554.40]
  - \* y\_true: [18.86075328 25.85180384 21.5614577 ]
  - \* v\_ann: [21.718578338623047, 21.699527740478516, 21.709901809692383, 23.647050620331658]

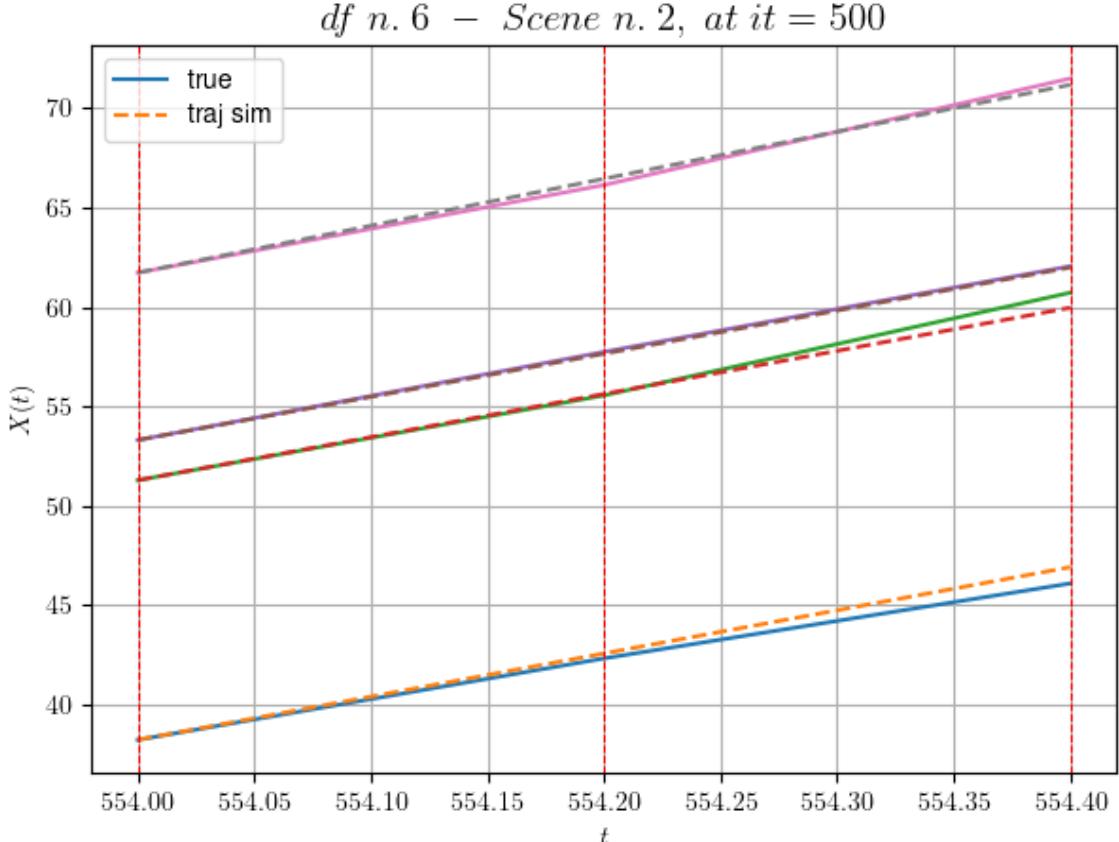
---



---

\* err= 0.1273771602149693

\* Learning rate NN = 7.28999875187277e-05  
 \* diff = 4.342979367852329e-05



For scene 2/3

\* use LR\_NN=0.0001 with err=7.186110733085738 at it=19  
 \* v0\_scn\_mean = 24.155265897368043  
 \* MAE = 0.1273771602149693

---



---

For df=6 with 3 scenes, time taken: 29.26

---



---



---



---



---



---

In df n.7/10 we have 8 scenes

---



---

- Time interval n.0: [38.56, 38.76]  
 \* y\_true: [34.50899027 34.29923068]  
 \* v\_ann: [31.238964080810547, 32.156803131103516, 2  
 8.990010590084875]

---

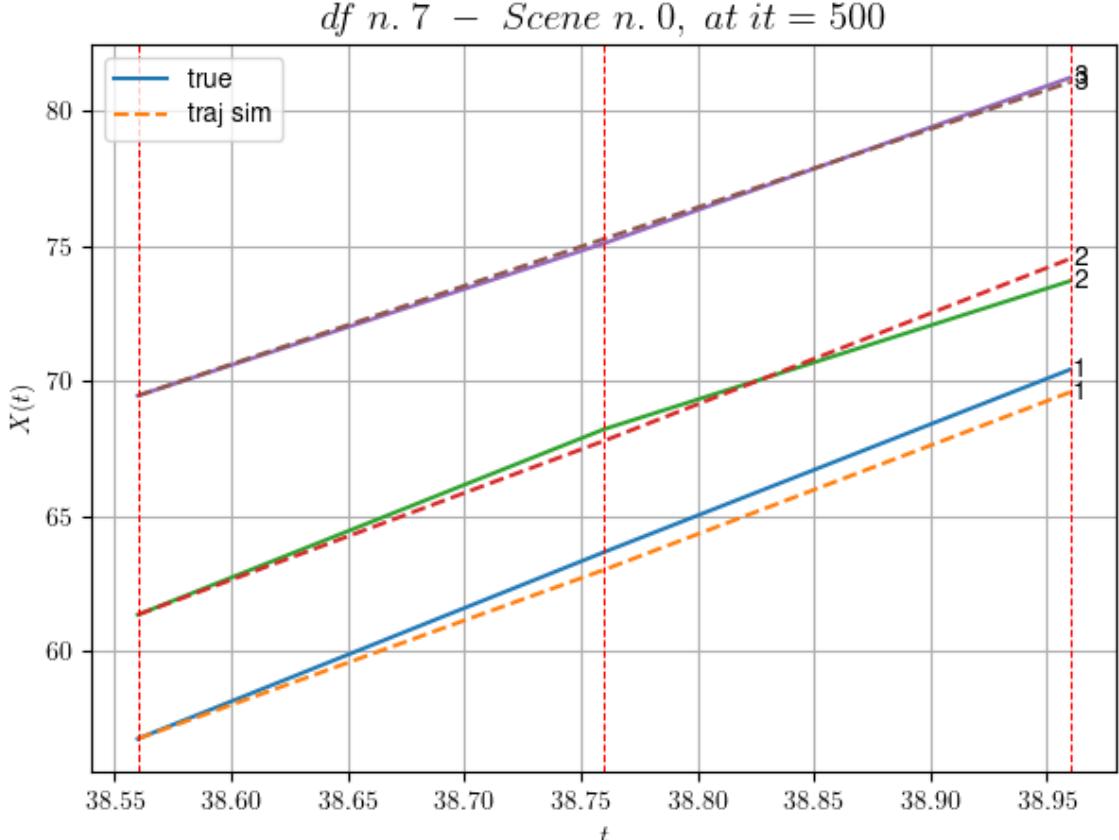
- Time interval n.1: [38.76, 38.96]  
 \* y\_true: [33.76780394 27.40980382]  
 \* v\_ann: [32.85527801513672, 33.66547393798828, 28.  
 990010590084875]

---

```

* err= 0.226956365070768
* Learning rate NN = 0.0007289999630302191
* diff = 3.1036578089504996e-06

```



For scene 0/8

```

* use LR_NN=0.001 with err=3.3386495909649736 at it=19
* v0_scn_mean = 29.050609909333442
* MAE = 0.2251491263022374

```

- Time interval n.0: [39.76, 39.96]
  - \* y\_true: [22.5368218 26.50901133]
  - \* v\_ann: [27.05002784729004, 7.504191712470742e-12, 28.629752721377105]

---

- Time interval n.1: [39.96, 40.16]
  - \* y\_true: [27.13488394 22.34107329]
  - \* v\_ann: [23.947847366333008, 9.07984364778569e-12, 28.629752721377105]

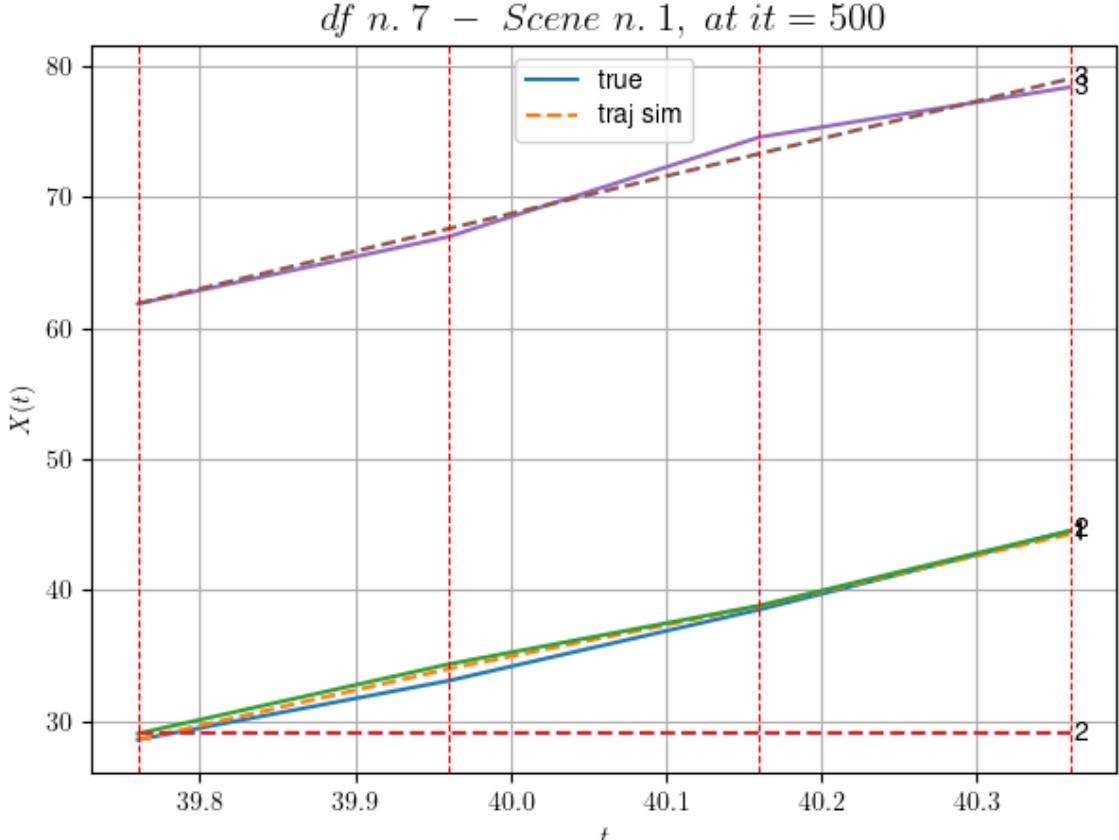
---

- Time interval n.2: [40.16, 40.36]
  - \* y\_true: [29.97962766 28.56631616]
  - \* v\_ann: [27.513002395629883, 1.5318467523096901e-13, 28.629752721377105]

```

* err= 30.55022572695741
* Learning rate NN = 0.0005904899444431067
* diff = 2.8734970765498247e-05

```



For scene 1/8

```

* use LR_NN=0.001 with err=22.747067525104537 at it=19
* v0_scn_mean = 28.71196749657335
* MAE = 4.28951457032242

```

- Time interval n.0: [45.96, 46.16]
  - \* y\_true: [25.63954073 32.24792255]
  - \* v\_ann: [28.432161331176758, 28.616350173950195, 2  
1.679366296074974]

---



---

- Time interval n.1: [46.16, 46.36]
  - \* y\_true: [27.5623729 28.76269973]
  - \* v\_ann: [28.445531845092773, 28.800527572631836, 2  
1.679366296074974]

---

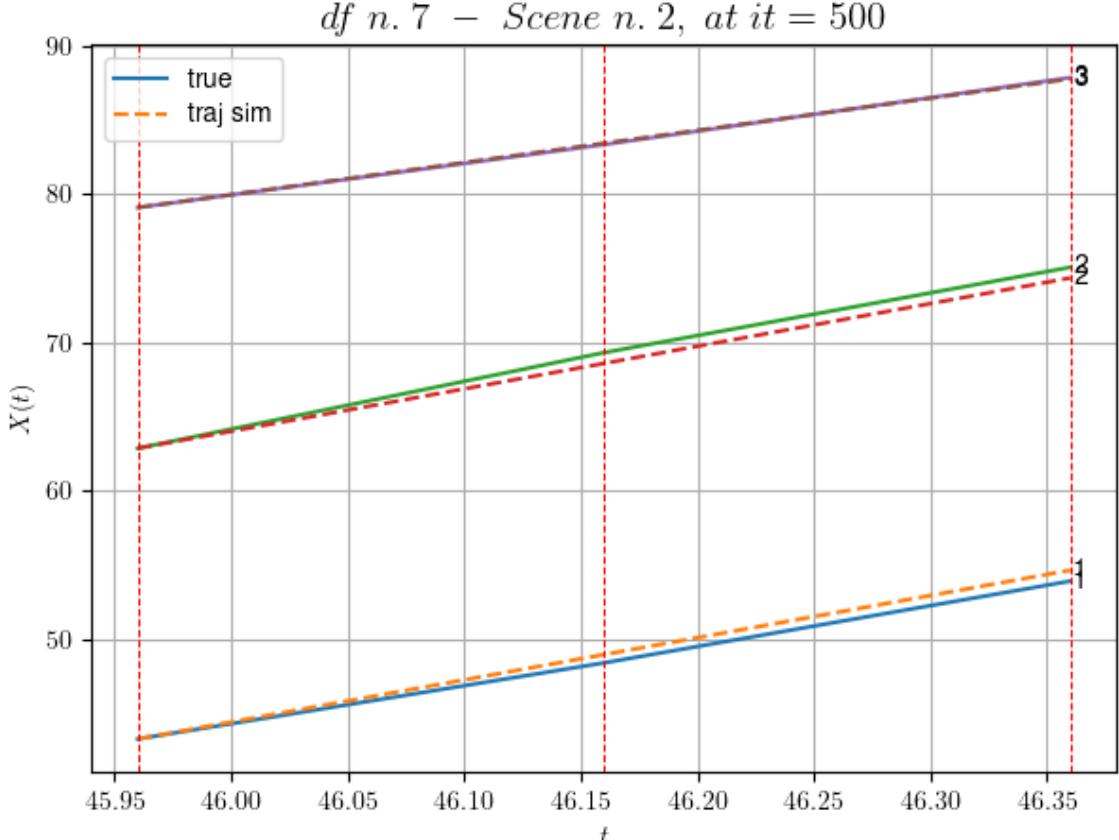


---

```

* err= 0.21260846454886587
* Learning rate NN = 7.289998757187277e-05
* diff = 0.0003960425639660814

```



For scene 2/8

- \* use LR\_NN=0.0001 with err=3.1503561450990696 at it=19
- \* v0\_scn\_mean = 22.178603944732036
- \* MAE = 0.18510375690455058

---



---

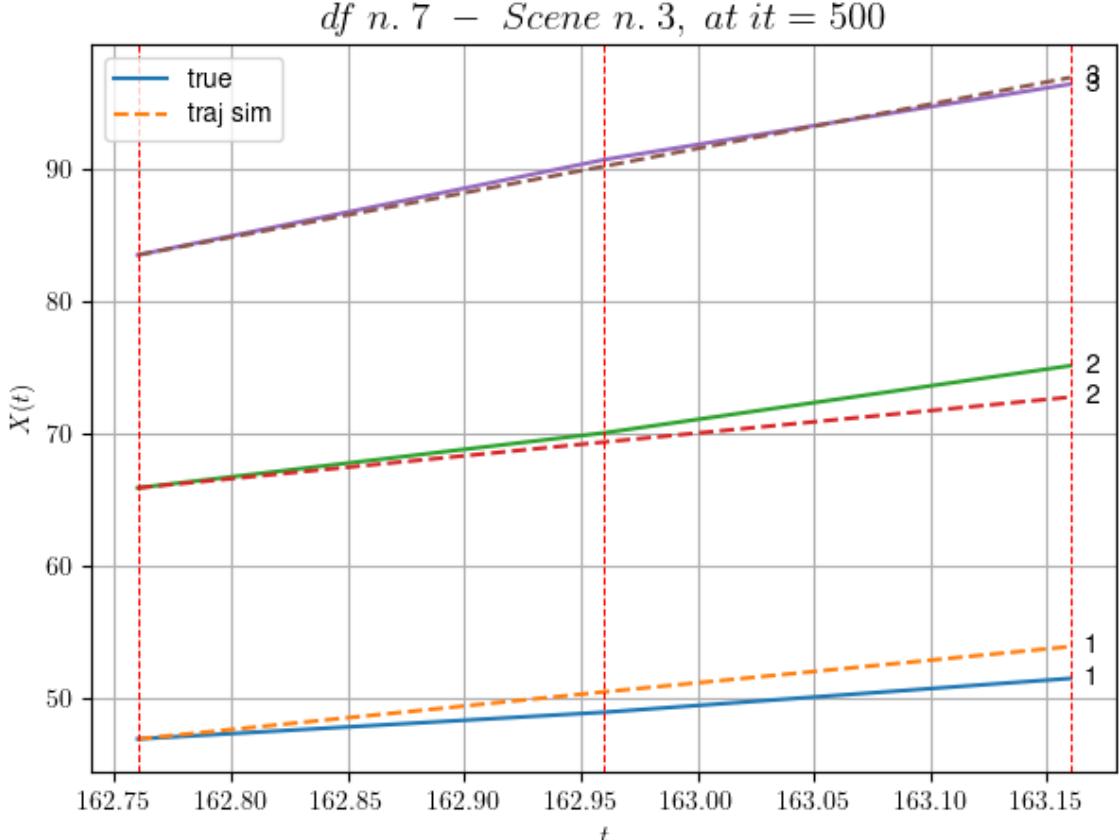
- Time interval n.0: [162.76, 162.96]
- \* y\_true: [10.08699654 20.77195672]
- \* v\_ann: [17.78299331665039, 17.306896209716797, 3.51455461644857]

---

- Time interval n.1: [162.96, 163.16]
- \* y\_true: [12.77745535 25.37230132]
- \* v\_ann: [17.113563537597656, 16.96690559387207, 3.51455461644857]

---

- \* err= 1.6409219360099507
- \* Learning rate NN = 0.00036449998151510954
- \* diff = 0.00048414761063142464



For scene 3/8

- \* use LR\_NN=0.0005 with err=1.9583901266056387 at it=19
- \* v0\_scn\_mean = 33.30368149725758
- \* MAE = 1.5765168569161265

---



---

- Time interval n.0: [165.76, 165.96]
- \* y\_true: [14.62535373 14.97522028]
- \* v\_ann: [14.593655586242676, 13.275838851928711, 2  
7.262209824915317]

---



---

- Time interval n.1: [165.96, 166.16]
- \* y\_true: [14.90483904 10.97892299]
- \* v\_ann: [14.64985466003418, 13.811112403869629, 2  
7.262209824915317]

---



---

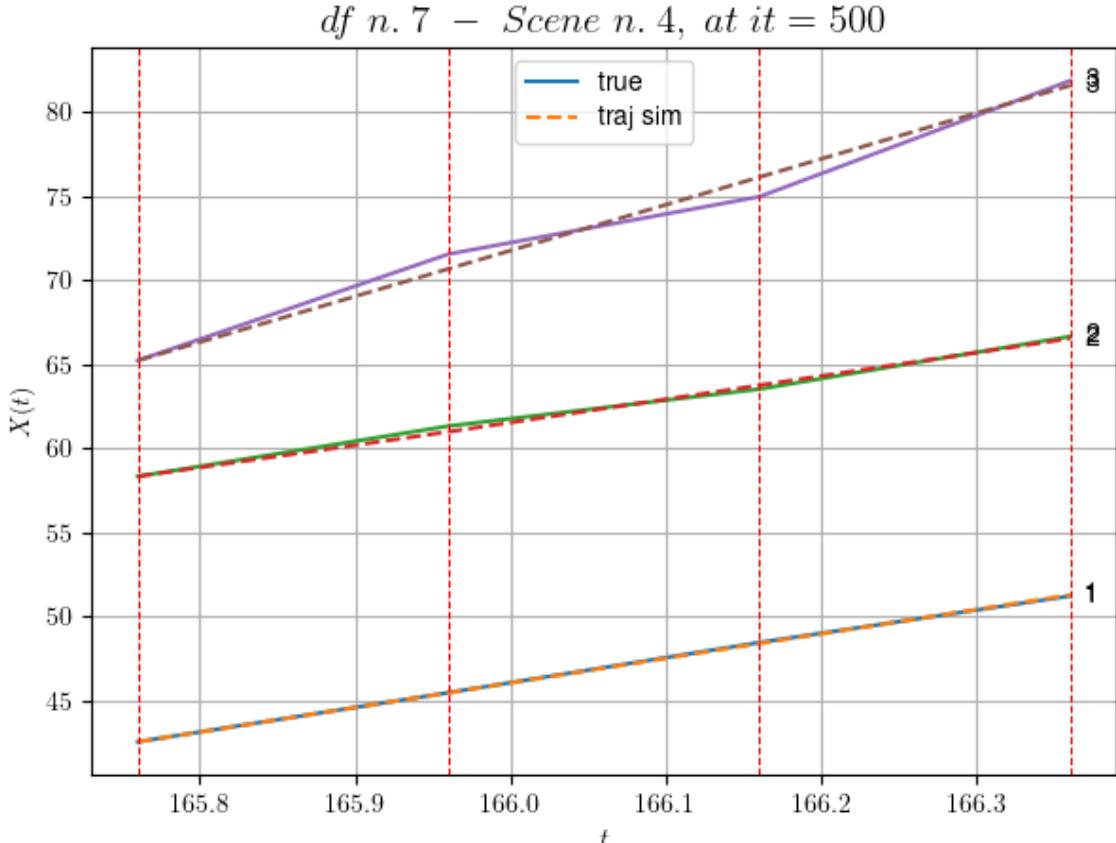
- Time interval n.2: [166.16, 166.36]
- \* y\_true: [13.82116599 15.66867879]
- \* v\_ann: [14.454638481140137, 13.920585632324219, 2  
7.262209824915317]

---



---

- \* err= 0.19947816076556393
- \* Learning rate NN = 5.904899080633186e-05
- \* diff = 0.00010688884839668567



For scene 4/8

```
* use LR_NN=0.0001 with err=1.5226566945627467 at it=19
* v0_scn_mean = 27.426477112500226
* MAE = 0.19947816076556393
```

---



---

```
- Time interval n.0: [188.16, 188.36]
 * y_true: [18.26365072 21.2472937]
 * v_ann: [20.777904510498047, 21.150493621826172, 2
4.898608242941734]
```

---

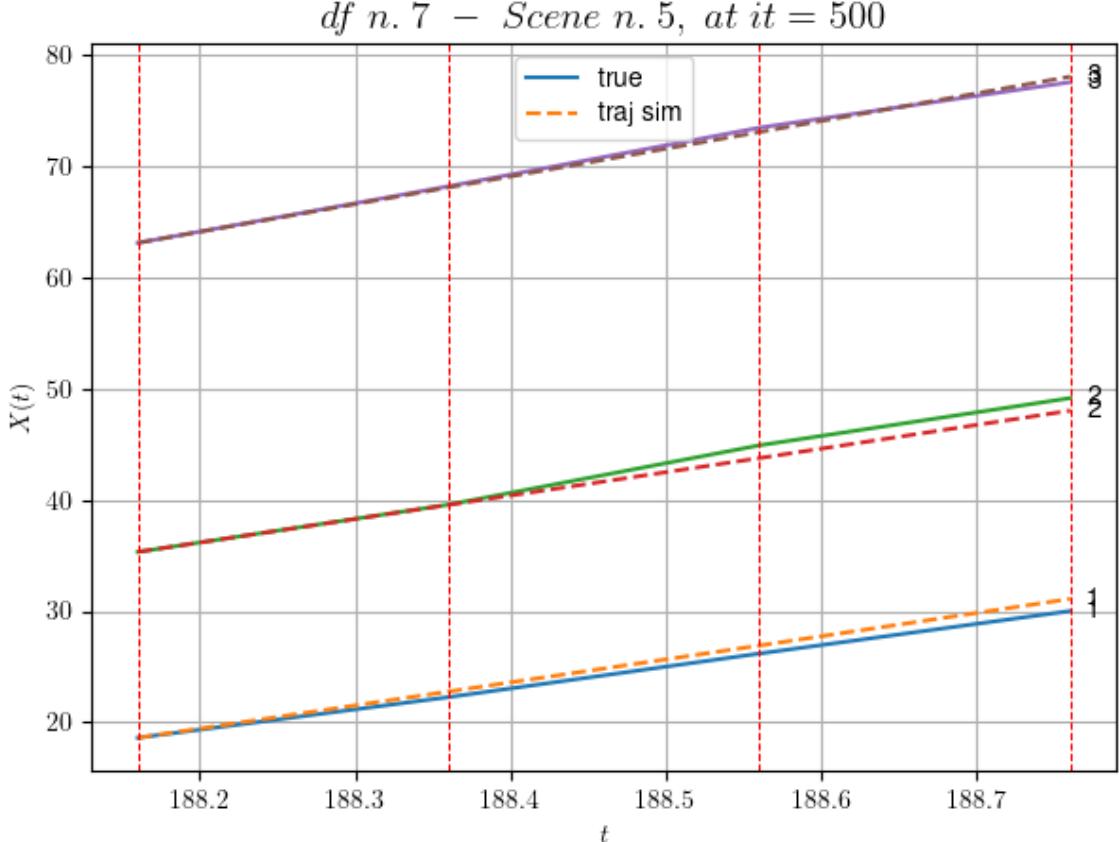
```
- Time interval n.1: [188.36, 188.56]
 * y_true: [19.58083161 26.63811802]
 * v_ann: [20.673917770385742, 21.002117156982422, 2
4.898608242941734]
```

---

```
- Time interval n.2: [188.56, 188.76]
 * y_true: [19.1135942 21.22632097]
 * v_ann: [20.956037521362305, 21.325164794921875, 2
4.898608242941734]
```

---

```
* err= 0.41323819546160384
* Learning rate NN = 5.904899080633186e-05
* diff = 0.0019882614354603256
```



For scene 5/8

- \* use LR\_NN=0.0001 with err=2.1343990373060513 at it=19
- \* v0\_scn\_mean = 25.204691519323934
- \* MAE = 0.18605277137253448

---

For scene 6/8

- \* use LR\_NN=0.001 with err=3.1508297232557005 at it=19
- \* v0\_scn\_mean = 26.87299931299269
- \* MAE = 0.17153120528970348

---

- Time interval n.0: [166.56, 166.76]
  - \* y\_true: [17.24164345 15.73752306 15.58083022]
  - \* v\_ann: [17.9459285736084, 17.85818099975586, 17.896377563476562, 17.368635969066236]

---

- Time interval n.1: [166.76, 166.96]
  - \* y\_true: [18.38470966 27.72552812 9.3330177 ]
  - \* v\_ann: [17.291889190673828, 17.491413116455078, 17.39327049255371, 17.368635969066236]

---

- Time interval n.2: [166.96, 167.16]

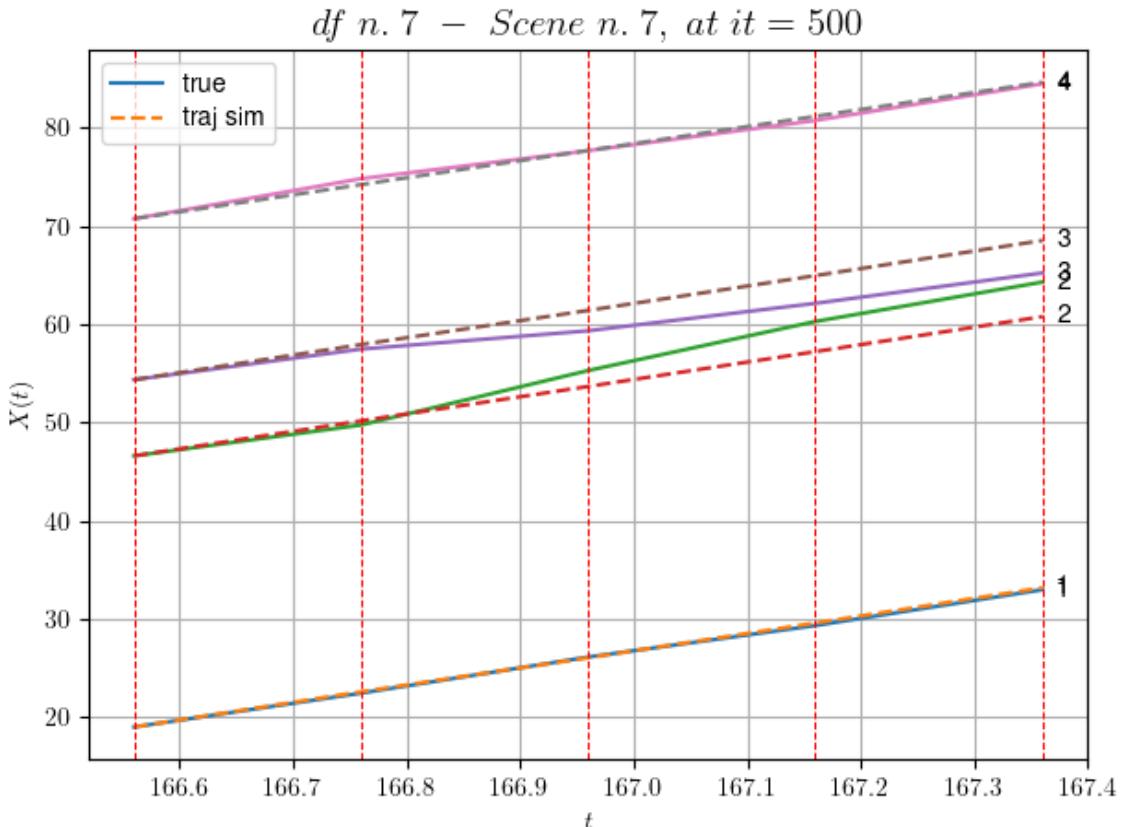
```

* y_true: [16.02323775 24.97208403 13.98221987]
* v_ann: [17.707124710083008, 17.725980758666992, 1
7.715248107910156, 17.368635969066236]

- Time interval n.3: [167.16, 167.36]
* y_true: [18.26534189 20.06151439 15.46259314]
* v_ann: [17.956218719482422, 17.829240798950195, 1
7.901439666748047, 17.368635969066236]

* err= 2.4381471776857424
* Learning rate NN = 0.000239148415857926
* diff = 5.045533564285165e-07

```



For scene 7/8

```

* use LR_NN=0.0005 with err=25.95467419026304 at it=19
* v0_scn_mean = 18.379103987412577
* MAE = 2.427789603341439

```

---



---

For df=7 with 8 scenes, time taken: 84.40

---



---



---



---



---



---



---



---



---



---

In df n.8/10 we have 21 scenes

---



---

```

For scene 0/21
* use LR_NN=0.001 with err=18.371592398410318 at it=19
* v0_scn_mean = 18.485331341279725
* MAE = 1.574379513476331

=====
=====

For scene 1/21
* use LR_NN=0.001 with err=10.518212344898176 at it=19
* v0_scn_mean = 30.143749855389448
* MAE = 0.8185585232306506

=====
=====

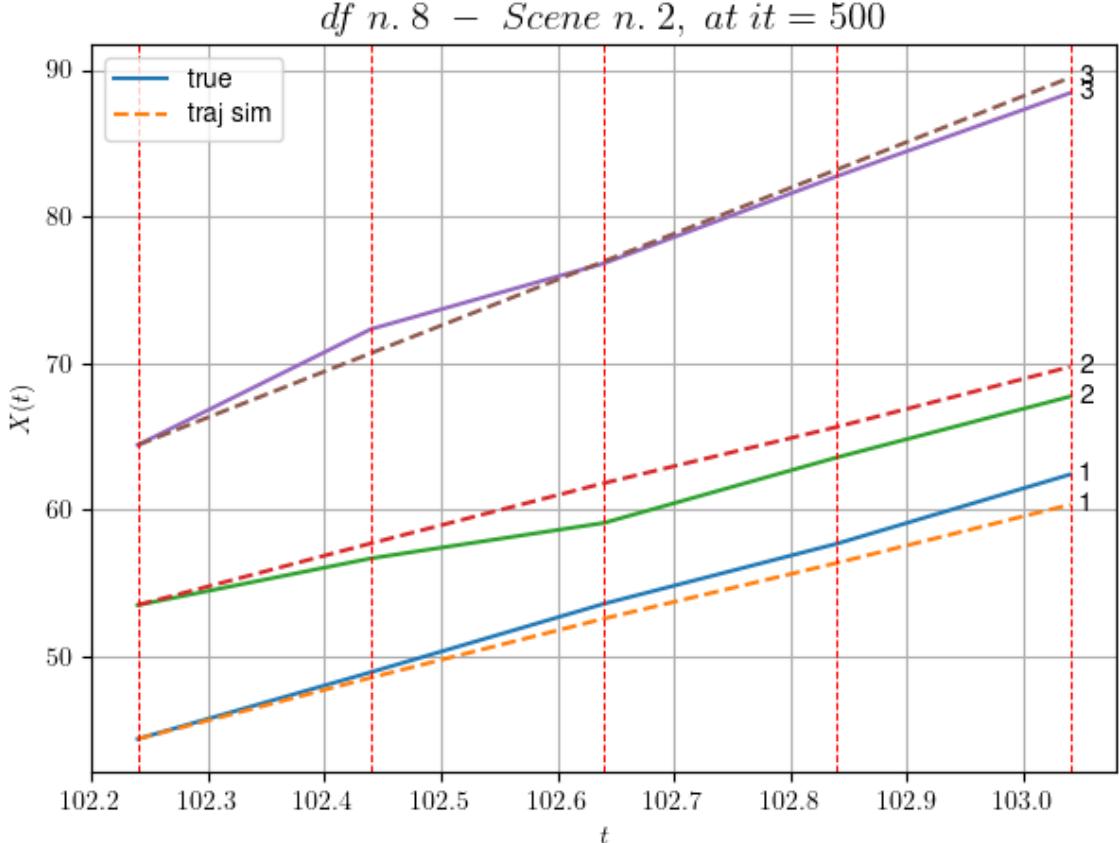
- Time interval n.0: [102.24, 102.44]
* y_true: [22.78095819 15.94092959]
* v_ann: [20.920564651489258, 21.055166244506836, 3
1.34829198332158]

- Time interval n.1: [102.44, 102.64]
* y_true: [23.36120187 12.10080168]
* v_ann: [20.147825241088867, 20.567148208618164, 3
1.34829198332158]

- Time interval n.2: [102.64, 102.84]
* y_true: [20.51121756 22.37162153]
* v_ann: [19.015596389770508, 19.18939781188965, 3
1.34829198332158]

- Time interval n.3: [102.84, 103.04]
* y_true: [23.62167761 20.76175162]
* v_ann: [19.89938735961914, 20.50737190246582, 31.
34829198332158]

* err= 1.8673790173054288
* Learning rate NN = 0.000478296831715852
* diff = 3.656274268659665e-05
```



For scene 2/21

- \* use LR\_NN=0.001 with err=11.60474701747552 at it=19
- \* v0\_scn\_mean = 31.26739452485778
- \* MAE = 1.783862422869891

---



---

- Time interval n.0: [108.84, 109.04]
- \* y\_true: [17.9810803 26.65193678]
- \* v\_ann: [20.7329044342041, 20.572742462158203, 20.549015112613212]

---

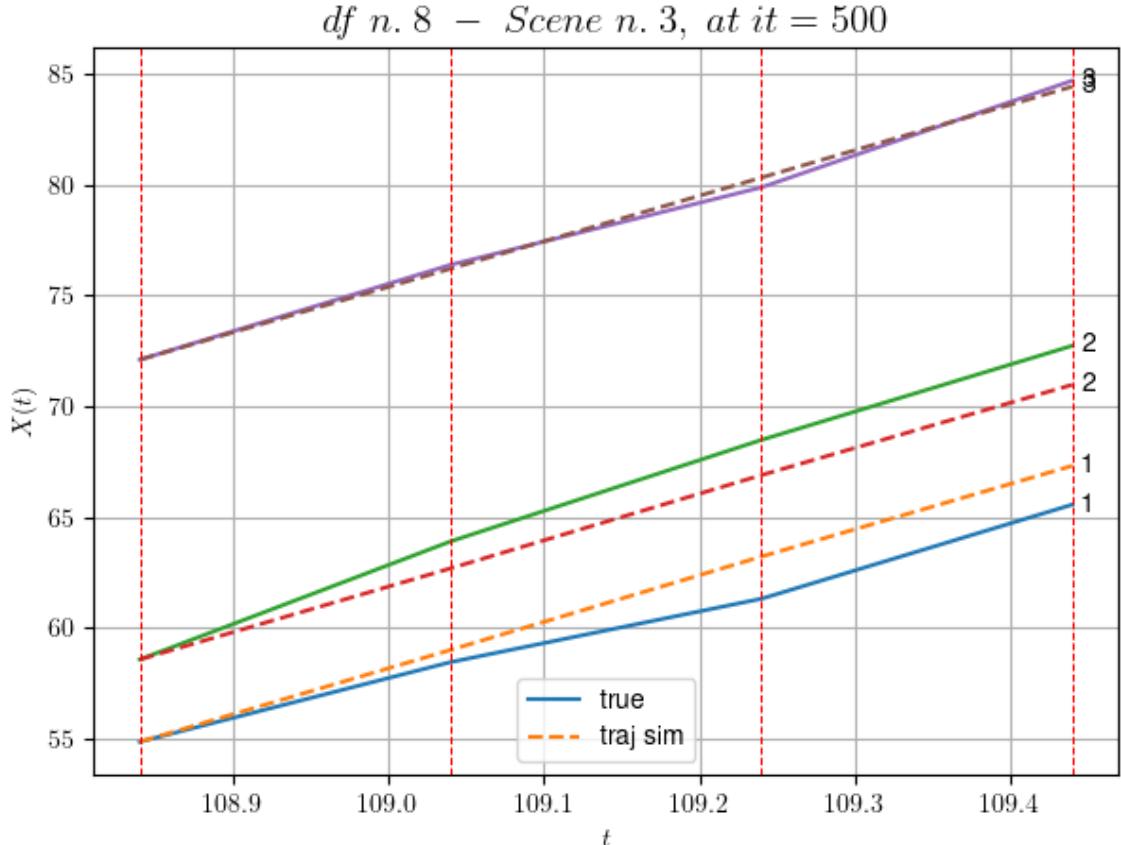
- Time interval n.1: [109.04, 109.24]
- \* y\_true: [14.30252156 22.9019425 ]
- \* v\_ann: [21.07093048095703, 21.04238510131836, 20.549015112613212]

---

- Time interval n.2: [109.24, 109.44]
- \* y\_true: [21.24158827 21.25204953]
- \* v\_ann: [20.48781394958496, 20.392839431762695, 20.549015112613212]

---

- \* err= 1.1994694153195447
- \* Learning rate NN = 0.0002952449722215533
- \* diff = 6.708048820436296e-05



For scene 3/21

```
* use LR_NN=0.0005 with err=6.216532274259541 at it=19
* v0_scn_mean = 21.116073781527636
* MAE = 1.1994694153195447
```

---



---

For scene 4/21

```
* use LR_NN=0.0001 with err=9.865437552133068 at it=19
* v0_scn_mean = 40.15922415153377
* MAE = 0.06904410133874331
```

---



---

- Time interval n.0: [215.24, 215.44]
  - \* y\_true: [ 1.34614625 10.42531549]
  - \* v\_ann: [17.938976287841797, 18.86319351196289, 15.100689610550234]

---

- Time interval n.1: [215.44, 215.64]
  - \* y\_true: [18.28906766 10.32533879]
  - \* v\_ann: [16.17198371887207, 15.69545841217041, 15.100689610550234]

---

- Time interval n.2: [215.64, 215.84]

```

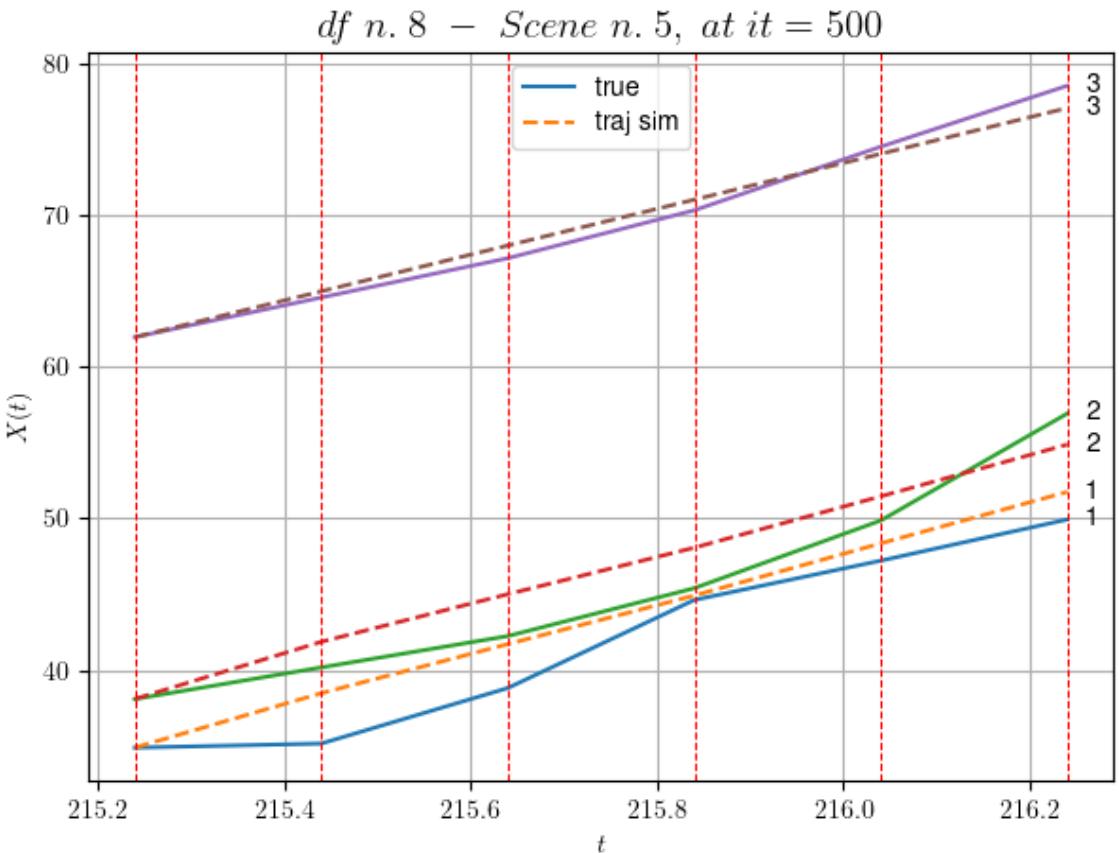
* y_true: [29.02100933 15.78058213]
* v_ann: [16.002477645874023, 15.321327209472656, 1
5.100689610550234]

- Time interval n.3: [215.84, 216.04]
* y_true: [12.95052595 22.3009853]
* v_ann: [17.1934814453125, 16.913908004760742, 15.
100689610550234]

- Time interval n.4: [216.04, 216.24]
* y_true: [13.56563519 35.25195514]
* v_ann: [16.948759078979492, 17.062572479248047, 1
5.100689610550234]

* err= 2.8961471152034868
* Learning rate NN = 0.0001937102060765028
* diff = 8.653968006866464e-05

```



For scene 5/21  
\* use LR\_NN=0.0005 with err=42.37318941056455 at it=19  
\* v0\_scn\_mean = 15.99464756497043  
\* MAE = 2.86453745150858

---



---

- Time interval n.0: [222.64, 222.84]

```

* y_true: [3.4148313 7.54419185]
* v_ann: [5.825660228729248, 5.6741485595703125, 1
2.428538122911196]

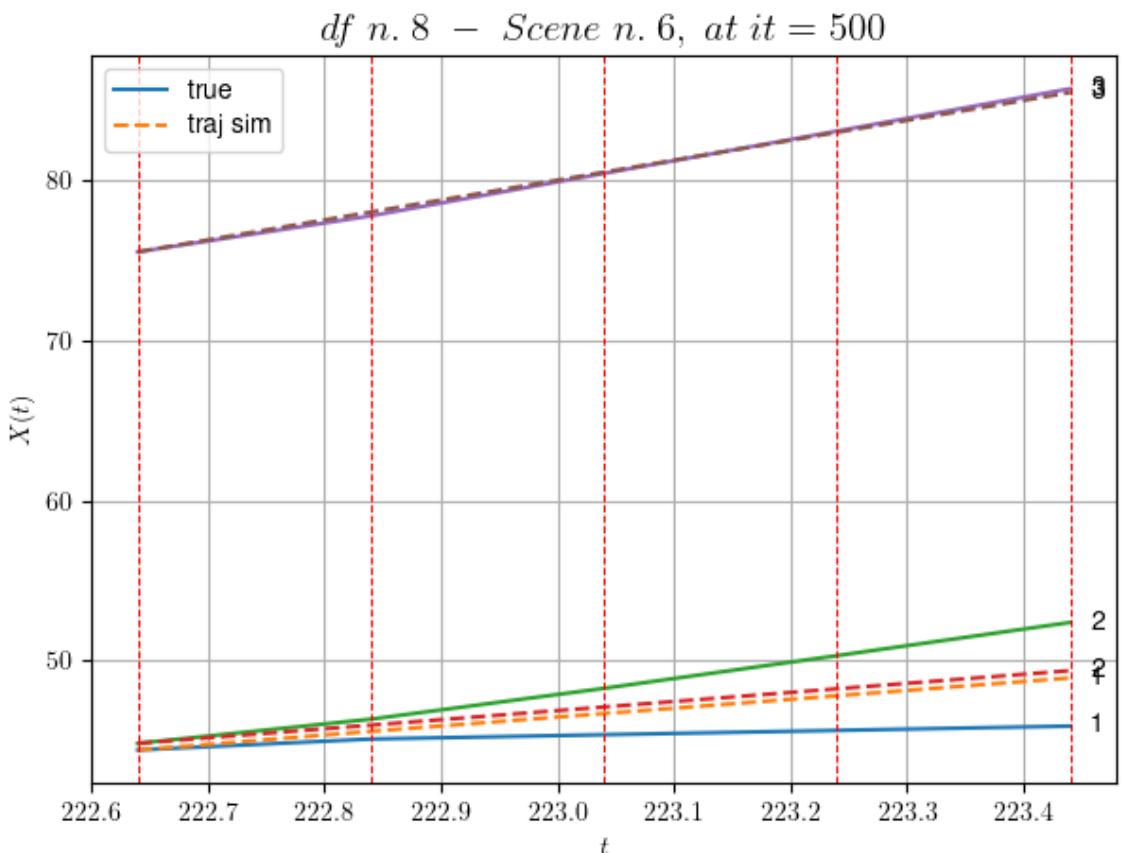
- Time interval n.1: [222.84, 223.04]
* y_true: [1.34614625 9.61287691]
* v_ann: [5.546846389770508, 5.668469429016113, 12.
428538122911196]

- Time interval n.2: [223.04, 223.24]
* y_true: [1.34614625 10.20300693]
* v_ann: [5.541724681854248, 5.6668381690979, 12.42
8538122911196]

- Time interval n.3: [223.24, 223.44]
* y_true: [1.34614625 10.35053943]
* v_ann: [5.5541605949401855, 5.675107479095459, 1
2.428538122911196]

* err= 2.040479420645144
* Learning rate NN = 4.7829678806010634e-05
* diff = 0.00021848113442990424

```



For scene 6/21  
\* use LR\_NN=0.0001 with err=25.224996863069162 at it=19  
\* v0\_scn\_mean = 13.482825046615995

\* MAE = 2.040479420645144

```
=====
=====
- Time interval n.0: [225.24, 225.44]
 * y_true: [9.85023046 1.34614625]
 * v_ann: [9.008173942565918, 9.006799697875977, 13.
143683398703374]

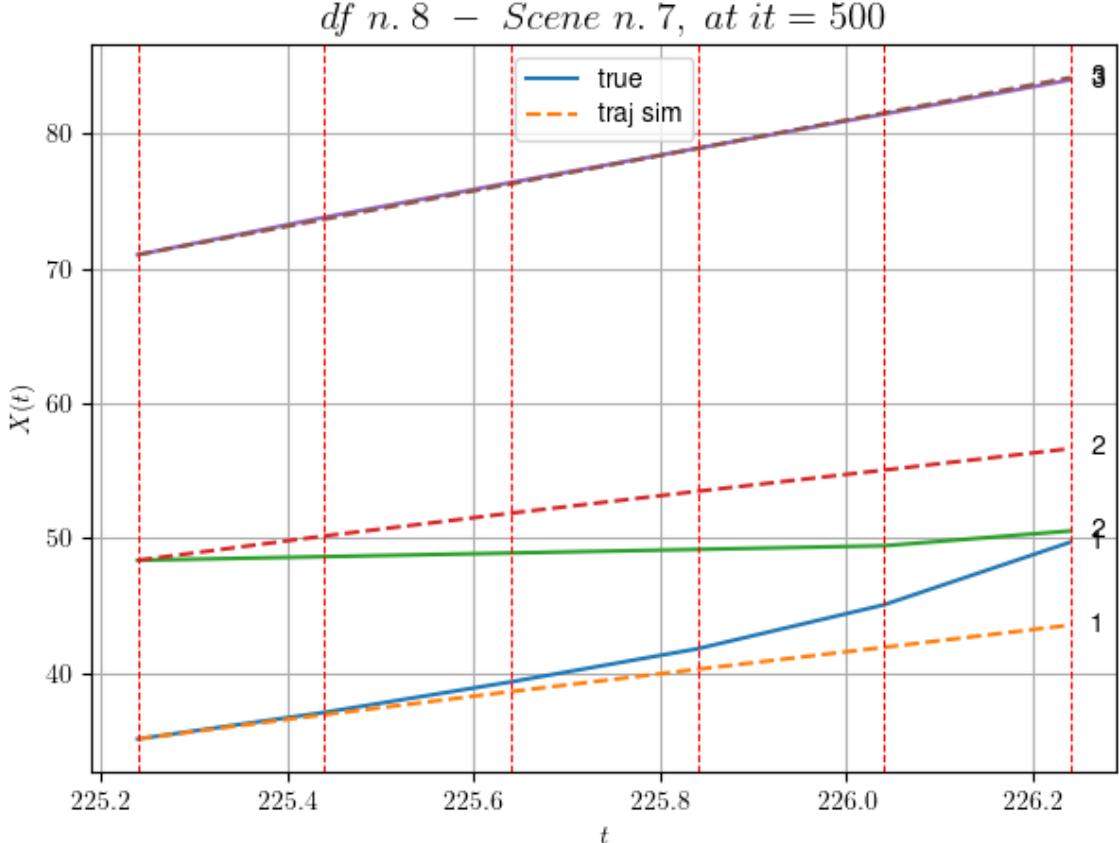
- Time interval n.1: [225.44, 225.64]
 * y_true: [11.30531094 1.34614625]
 * v_ann: [8.547262191772461, 8.460152626037598, 13.
143683398703374]

- Time interval n.2: [225.64, 225.84]
 * y_true: [12.27536459 1.34614625]
 * v_ann: [8.280534744262695, 8.101520538330078, 13.
143683398703374]

- Time interval n.3: [225.84, 226.04]
 * y_true: [16.30233516 1.34614625]
 * v_ann: [8.133066177368164, 7.863464832305908, 13.
143683398703374]

- Time interval n.4: [226.04, 226.24]
 * y_true: [23.251759 5.49560672]
 * v_ann: [8.26658821105957, 7.971789836883545, 13.1
43683398703374]

* err= 8.280051604131716
* Learning rate NN = 0.0001937102060765028
* diff = 0.0014777823913654231
```



For scene 7/21

```
* use LR_NN=0.0005 with err=51.60751730786308 at it=19
* v0_scn_mean = 14.15506163796901
* MAE = 8.11085248729835
```

---



---

- Time interval n.0: [227.04, 227.24]
  - \* y\_true: [ 1.34614625 11.86069537]
  - \* v\_ann: [7.882734298706055, 8.46770191192627, 26.24315546538644]
  
- Time interval n.1: [227.24, 227.44]
  - \* y\_true: [ 1.34614625 11.90074479]
  - \* v\_ann: [6.185292720794678, 6.41986083984375, 26.24315546538644]
  
- Time interval n.2: [227.44, 227.64]
  - \* y\_true: [ 1.34614625 14.03099458]
  - \* v\_ann: [6.581168174743652, 6.916792392730713, 26.24315546538644]
  
- Time interval n.3: [227.64, 227.84]
  - \* y\_true: [ 1.34614625 15.45116111]
  - \* v\_ann: [7.792473316192627, 8.326367378234863, 26.24315546538644]

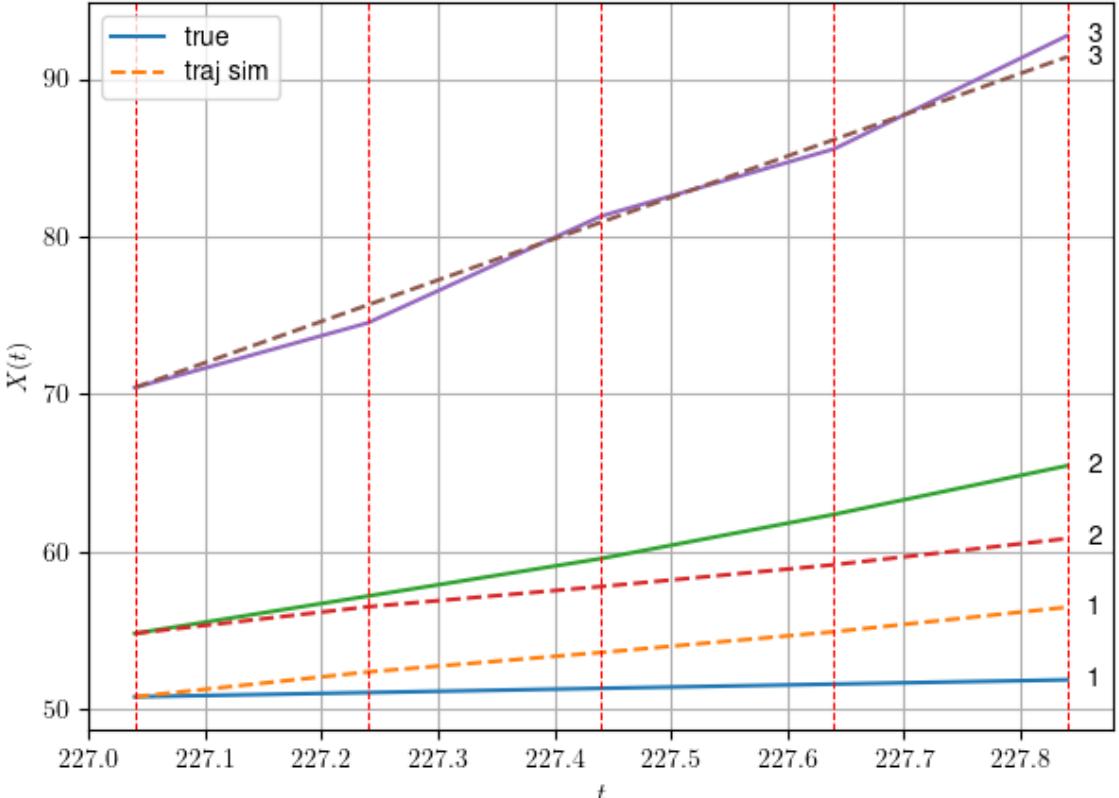
24315546538644]

```

* err= 5.200299993178208
* Learning rate NN = 0.002391484100371599
* diff = 0.0003624958149650581

```

*df n. 8 – Scene n. 8, at it = 500*



For scene 8/21

```

* use LR_NN=0.005 with err=2.9544092144057 at it=19
* v0_scn_mean = 26.468565968789253
* MAE = 5.200299993178208

```

---



---



---

- Time interval n.0: [237.64, 237.84]  
\* y\_true: [17.80043487 10.22573725]  
\* v\_ann: [15.340243339538574, 15.040434837341309, 2  
9.702967492374658]

---



---



---

- Time interval n.1: [237.84, 238.04]  
\* y\_true: [20.29063338 11.60088234]  
\* v\_ann: [14.748440742492676, 14.743426322937012, 2  
9.702967492374658]

---



---

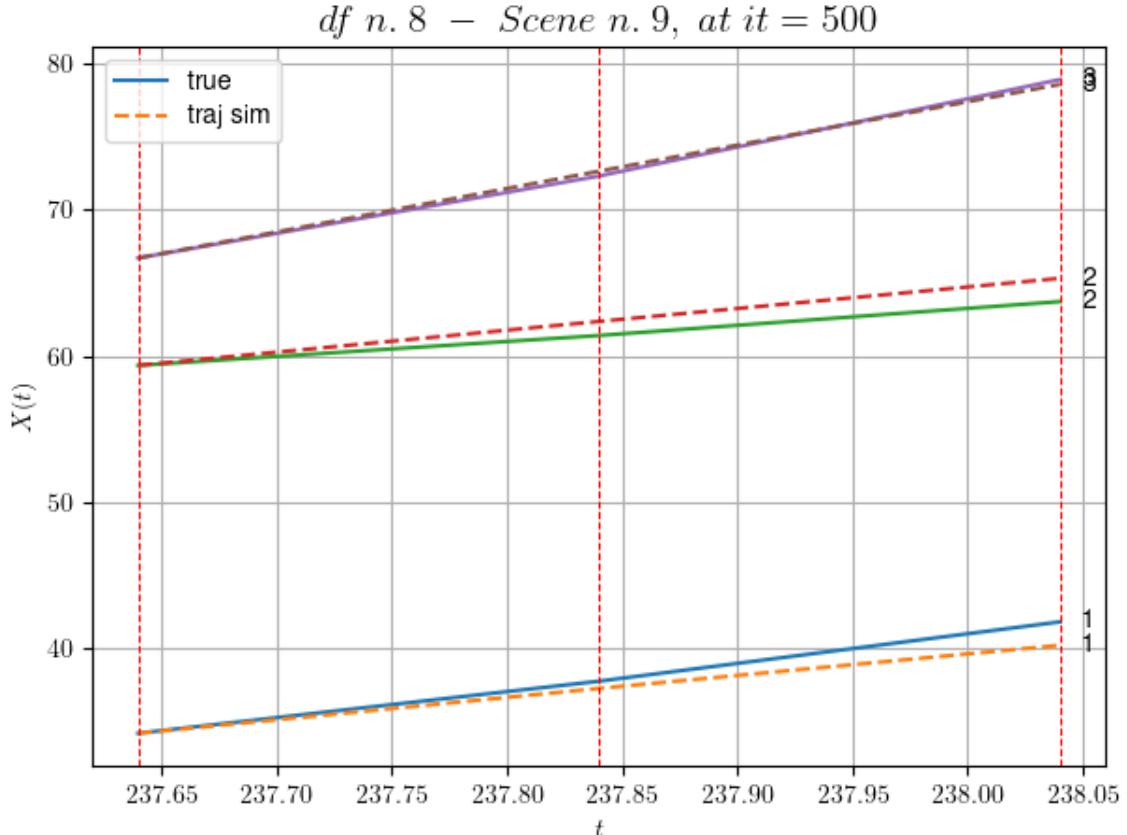


---

```

* err= 0.7201642777527213
* Learning rate NN = 0.00036449998151510954
* diff = 2.711166123270381e-06

```



For scene 9/21

- \* use LR\_NN=0.0005 with err=0.4430219452428619 at it=19
- \* v0\_scn\_mean = 29.720789429496193
- \* MAE = 0.3169736686177312

---



---

- Time interval n.0: [239.84, 240.04]
- \* y\_true: [16.30079237 13.85576065]
- \* v\_ann: [16.27547836303711, 17.774566650390625, 3 0.131239538599125]

---



---

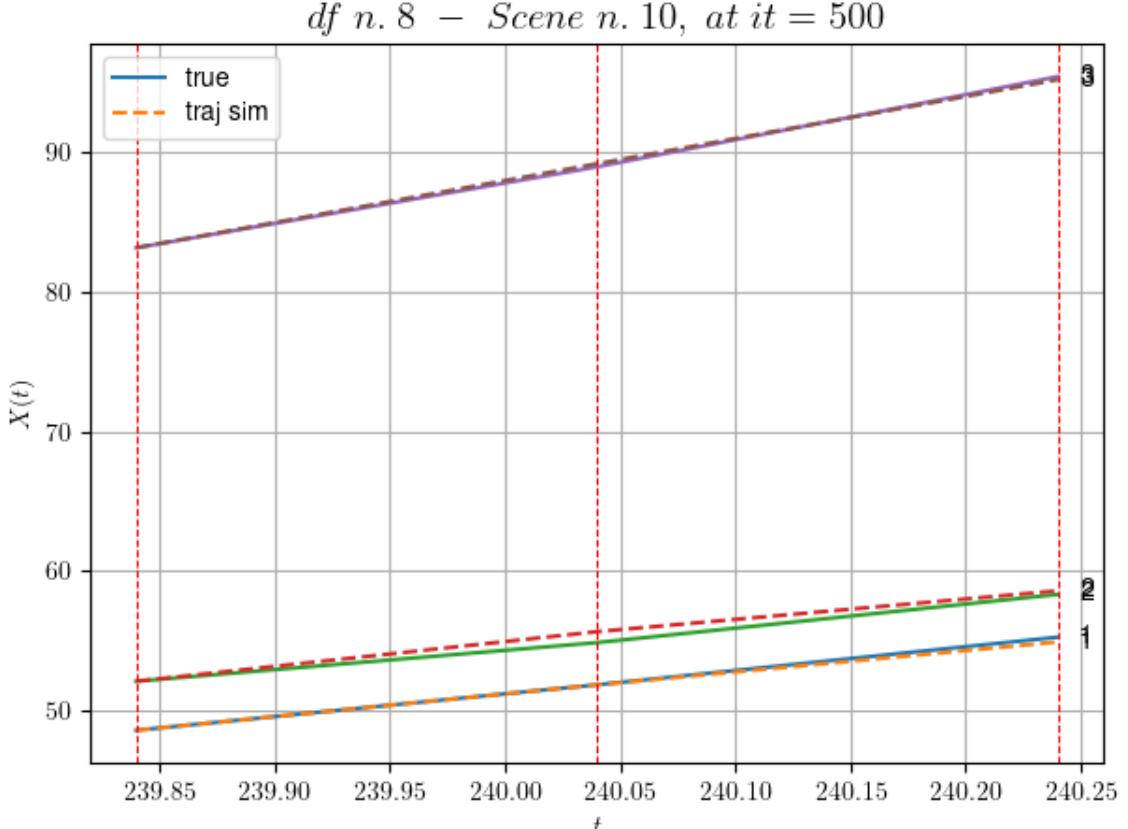
- Time interval n.1: [240.04, 240.24]
- \* y\_true: [17.06097057 17.27611431]
- \* v\_ann: [15.367045402526855, 14.640766143798828, 3 0.131239538599125]

---



---

- \* err= 0.10000404142882181
- \* Learning rate NN = 0.0007289999630302191
- \* diff = 2.2816890486970776e-05



For scene 10/21

```
* use LR_NN=0.001 with err=4.943842588319512 at it=19
* v0_scn_mean = 30.12336517217552
* MAE = 0.08863483321703797
```

---



---

- Time interval n.0: [243.44, 243.64]
  - \* y\_true: [18.26109982 7.28715228]
  - \* v\_ann: [13.862165451049805, 13.68597412109375, 1  
6.742914270051116]

---

- Time interval n.1: [243.64, 243.84]
  - \* y\_true: [23.05153691 9.06731774]
  - \* v\_ann: [13.798233032226562, 13.483455657958984, 1  
6.742914270051116]

---

- Time interval n.2: [243.84, 244.04]
  - \* y\_true: [10.52334632 16.05532609]
  - \* v\_ann: [13.270442008972168, 13.856132507324219, 1  
6.742914270051116]

---

- Time interval n.3: [244.04, 244.24]
  - \* y\_true: [ 8.51398229 17.08146048]
  - \* v\_ann: [14.070012092590332, 13.792000770568848, 1  
6.742914270051116]

6.742914270051116]

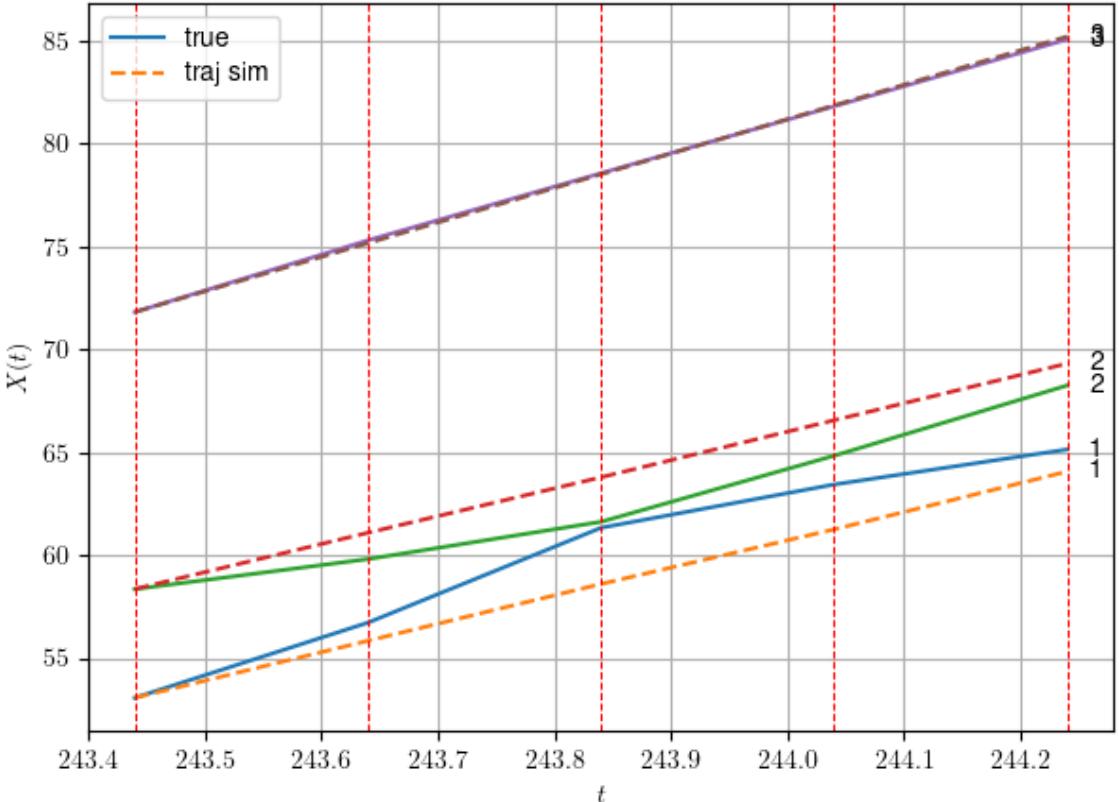
---



---

- \* err= 1.6397139375608176
- \* Learning rate NN = 0.000239148415857926
- \* diff = 0.000146870598532578

*df n. 8 – Scene n. 11, at it = 500*



For scene 11/21

- \* use LR\_NN=0.0005 with err=26.150701925166995 at it=19
- \* v0 scn mean = 17.538338818633438
- \* MAE = 1.629277951963557

---



---

- Time interval n.0: [251.64, 251.84]
  - \* y\_true: [14.32016282 17.2315068 ]
  - \* v\_ann: [15.15280818939209, 16.37755584716797, 19.824906088024562]

---



---

- Time interval n.1: [251.84, 252.04]
  - \* y\_true: [20.34029568 17.65159646]
  - \* v\_ann: [15.392487525939941, 16.393985748291016, 19.824906088024562]

---



---

- Time interval n.2: [252.04, 252.24]
  - \* y\_true: [20.93040622 16.61174803]
  - \* v\_ann: [17.395957946777344, 16.805505752563477, 19.824906088024562]

9.824906088024562]

---

- Time interval n.3: [252.24, 252.44]
  - \* y\_true: [20.66049541 16.35178592]
  - \* v\_ann: [18.24762535095215, 17.044004440307617, 1]

9.824906088024562]

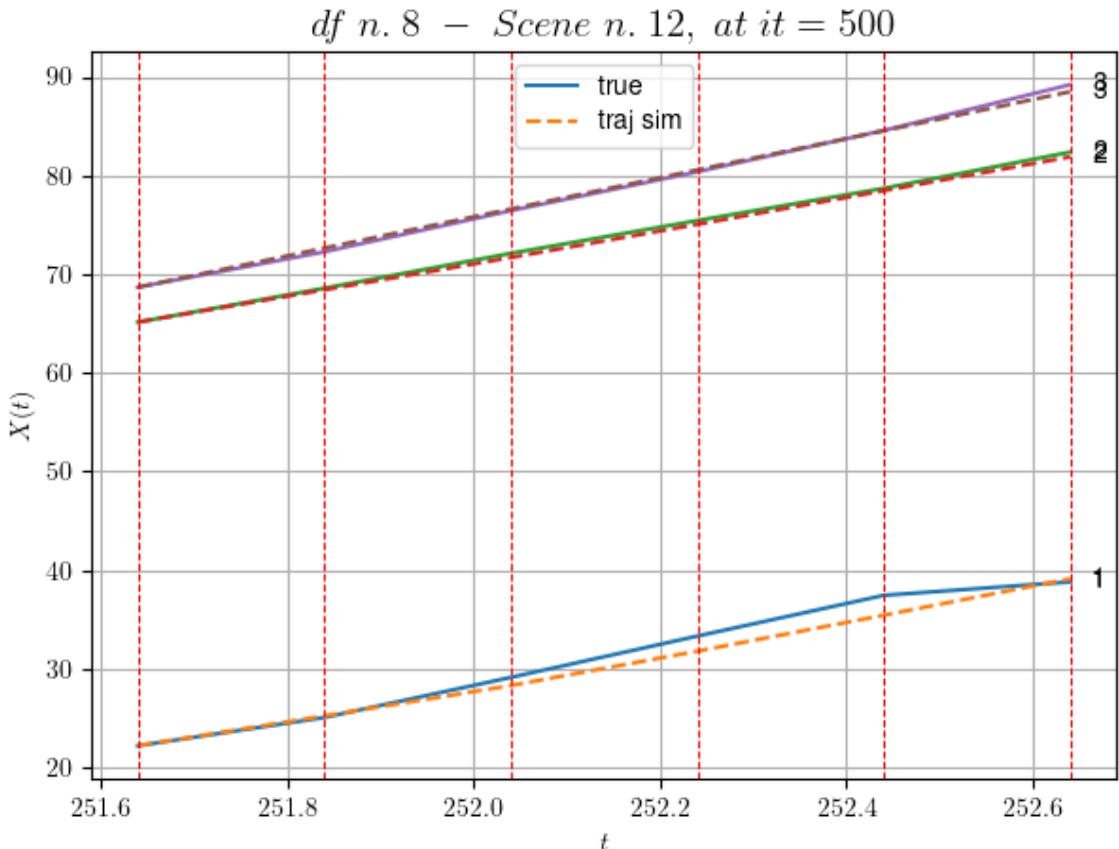
---

- Time interval n.4: [252.44, 252.64]
  - \* y\_true: [ 6.80019415 18.37232882]
  - \* v\_ann: [18.490219116210938, 17.17644500732422, 1]

9.824906088024562]

---

- \* err= 0.47624492757527026
- \* Learning rate NN = 0.0001937102060765028
- \* diff = 2.2054294548212727e-05



For scene 12/21

- \* use LR\_NN=0.0005 with err=32.663725879899175 at it=19
- \* v0\_scn\_mean = 20.435411265903188
- \* MAE = 0.46952887322755216

---



---

- Time interval n.0: [290.84, 291.04]
  - \* y\_true: [10.67508652 21.71084933]
  - \* v\_ann: [15.833250045776367, 17.73630714416504, 2]

5.378244279774428]

---

- Time interval n.1: [291.04, 291.24]
  - \* y\_true: [ 9.47510968 18.71084105]
  - \* v\_ann: [15.496484756469727, 16.926410675048828, 2

5.378244279774428]

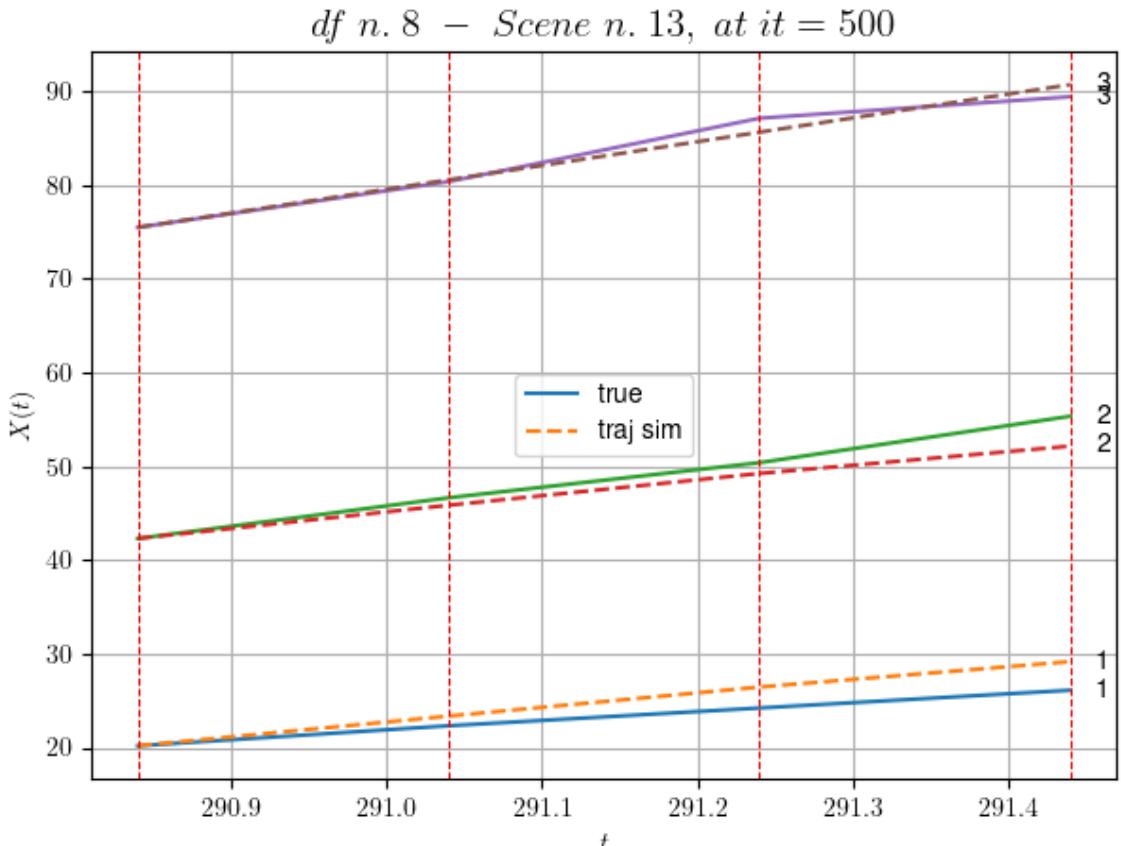
---

- Time interval n.2: [291.24, 291.44]
  - \* y\_true: [ 9.47510968 24.76138307]
  - \* v\_ann: [13.565208435058594, 14.590593338012695, 2

5.378244279774428]

---

- \* err= 2.6195724148592388
- \* Learning rate NN = 0.0005904899444431067
- \* diff = 0.0008670083512267723



For scene 13/21

- \* use LR\_NN=0.001 with err=2.3519529612637906 at it=19
- \* v0\_scn\_mean = 25.655549415481183
- \* MAE = 2.54861730567892

---



---

- Time interval n.0: [350.64, 350.84]
  - \* y\_true: [14.24956692 9.34769854]
  - \* v\_ann: [15.986568450927734, 17.193889617919922, 2

```
4.017556031659407]
```

```


- Time interval n.1: [350.84, 351.04]
* y_true: [4.06677119 24.77080184]
* v_ann: [15.470817565917969, 16.07859992980957, 2
4.017556031659407]
```

```


- Time interval n.2: [351.04, 351.24]
* y_true: [15.46321179 18.97073364]
* v_ann: [15.388016700744629, 15.659767150878906, 2
4.017556031659407]
```

```

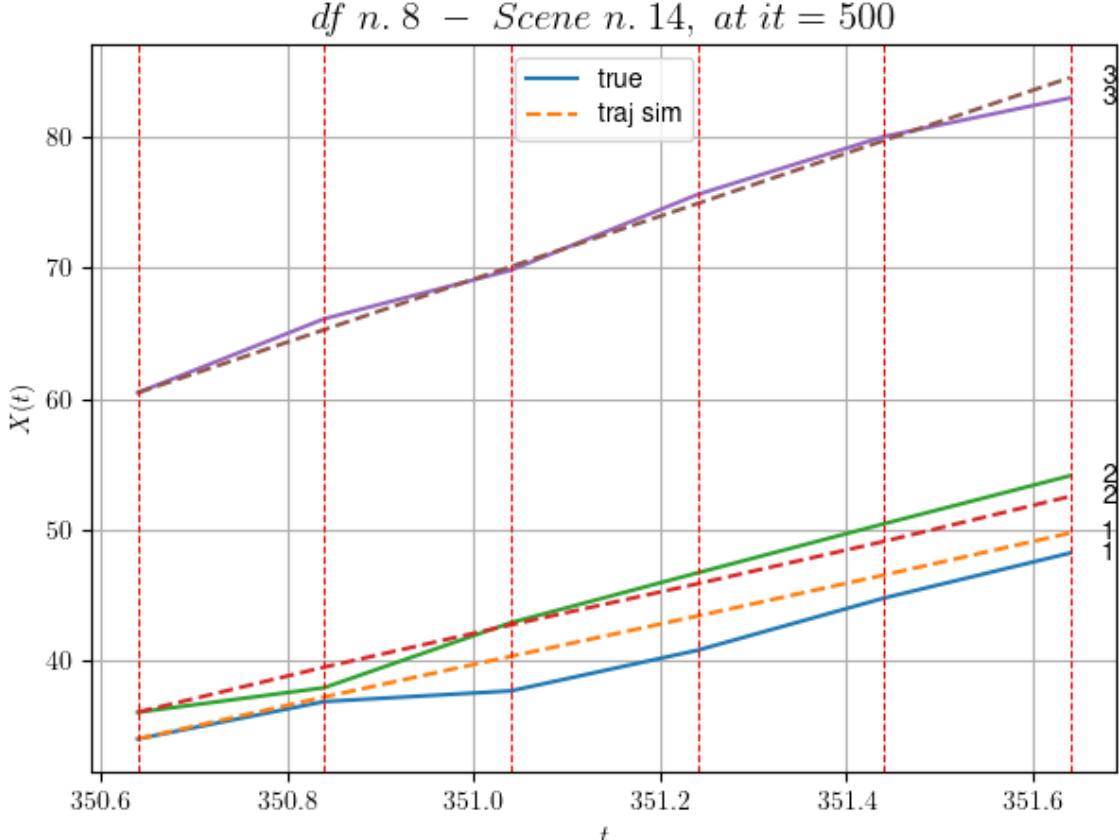

- Time interval n.3: [351.24, 351.44]
* y_true: [19.89069297 18.71086293]
* v_ann: [15.607858657836914, 16.142866134643555, 2
4.017556031659407]
```

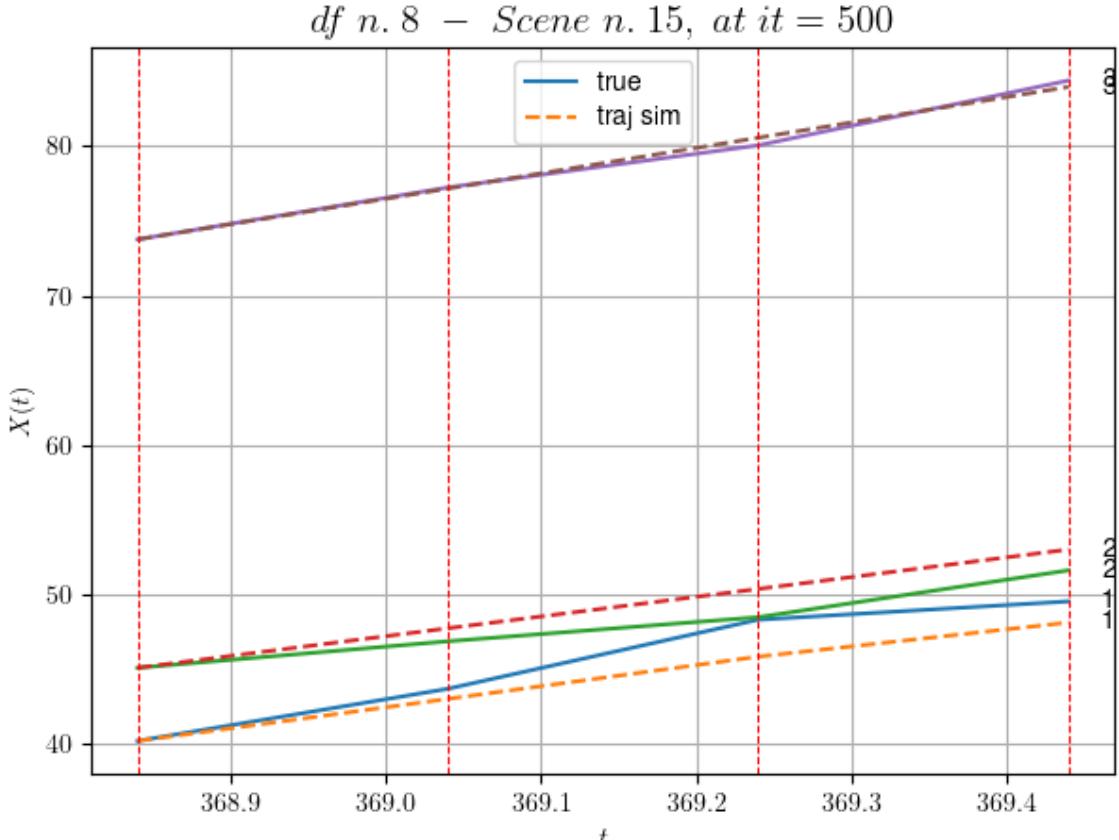
```


- Time interval n.4: [351.44, 351.64]
* y_true: [17.2007296 18.34097485]
* v_ann: [16.043516159057617, 17.186107635498047, 2
4.017556031659407]
```

```


* err= 1.692521963916823
* Learning rate NN = 0.0001937102060765028
* diff = 5.789961137425692e-06
```





For scene 15/21

- \* use LR\_NN=5e-05 with err=18.92650083844642 at it=19
- \* v0\_scn\_mean = 17.791290697638402
- \* MAE = 1.2755721787690666

---



---

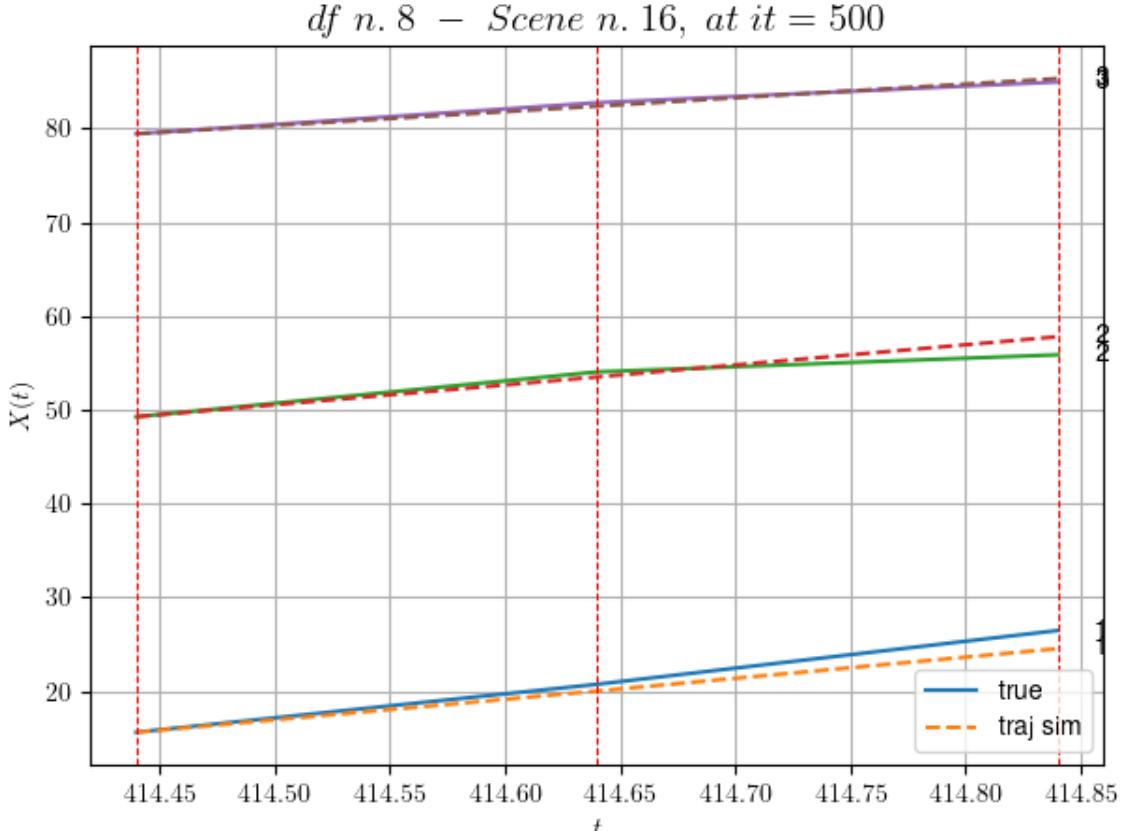
- Time interval n.0: [414.44, 414.64]
  - \* y\_true: [25.58017481 23.93124381]
  - \* v\_ann: [21.986499786376953, 21.207151412963867, 1 4.740228637605618]

---

- Time interval n.1: [414.64, 414.84]
  - \* y\_true: [28.7103211 9.12051681]
  - \* v\_ann: [22.60698699951172, 21.497323989868164, 1 4.740228637605618]

---

- \* err= 0.9530577519318651
- \* Learning rate NN = 7.289998757187277e-05
- \* diff = 0.0003285493751014057



For scene 16/21

```
* use LR_NN=0.0001 with err=6.0993184688931095 at it=19
* v0_scn_mean = 15.6558142342186
* MAE = 0.9530577519318651
```

---



---

- Time interval n.0: [477.84, 478.04]
  - \* y\_true: [17.90015387 15.74042221]
  - \* v\_ann: [18.845304489135742, 19.073678970336914, 2 1.268159302177377]
  
- Time interval n.1: [478.04, 478.24]
  - \* y\_true: [18.02021575 17.32056356]
  - \* v\_ann: [18.180635452270508, 18.049663543701172, 2 1.268159302177377]
  
- Time interval n.2: [478.24, 478.44]
  - \* y\_true: [20.95033635 22.3908747 ]
  - \* v\_ann: [18.054283142089844, 17.845239639282227, 2 1.268159302177377]
  
- Time interval n.3: [478.44, 478.64]
  - \* y\_true: [19.80040923 17.17076636]
  - \* v\_ann: [19.180265426635742, 19.669727325439453, 2 1.268159302177377]

1.268159302177377]

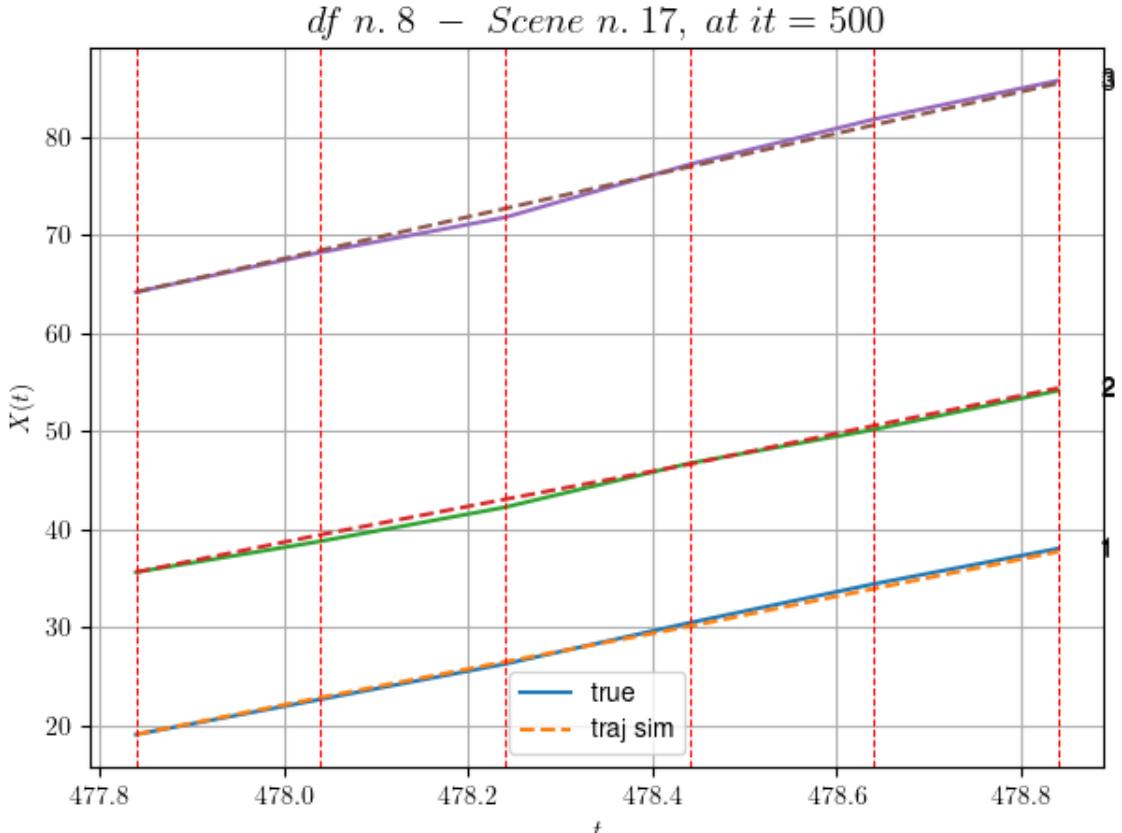
---

- Time interval n.4: [478.64, 478.84]
  - \* y\_true: [18.07046469 19.89107551]
  - \* v\_ann: [18.85194206237793, 19.173208236694336, 2

1.268159302177377]

---

- \* err= 0.18035206097109854
- \* Learning rate NN = 0.0001937102060765028
- \* diff = 0.00015087233669788813



For scene 17/21

- \* use LR\_NN=0.0005 with err=16.31037227188159 at it=19
- \* v0\_scn\_mean = 21.792069352006095
- \* MAE = 0.18035206097109854

---



---

- Time interval n.0: [522.64, 522.84]
  - \* y\_true: [ 6.78505349 16.71042372]
  - \* v\_ann: [13.520483016967773, 13.970891952514648, 2

5.15597288259511]

---

- Time interval n.1: [522.84, 523.04]
  - \* y\_true: [ 7.85007105 23.28071684]
  - \* v\_ann: [13.392621994018555, 13.71708869934082, 2

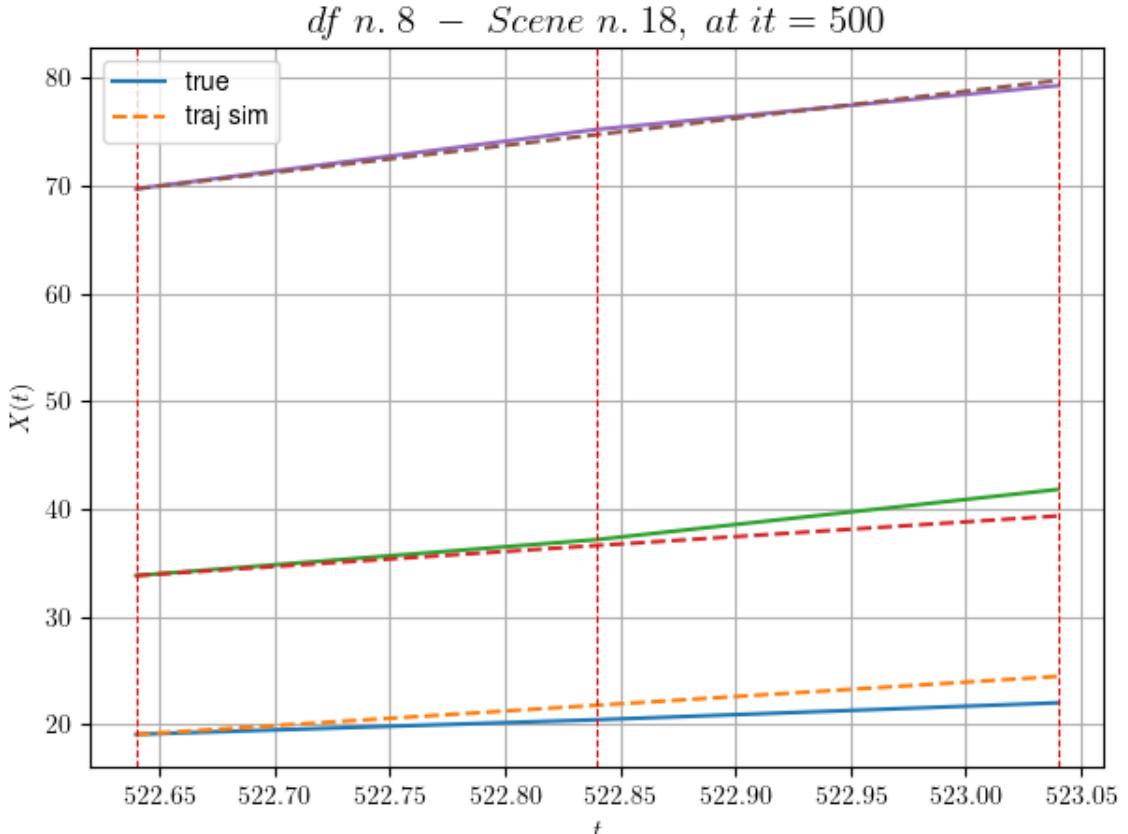
5.15597288259511]

---



---

```
* err= 1.630505149618825
* Learning rate NN = 7.289998757187277e-05
* diff = 0 0006512601057621735
```



For scene 18/21

```
* use LR_NN=0.0001 with err=0.8965906413964806 at it=19
* v0_scn_mean = 25.446614292152383
* MAE = 1.630505149618825
```

- 
- 
- Time interval n.0: [593.04, 593.24]
    - \* y\_true: [18.14041096 18.46062677]
    - \* v\_ann: [18.914791107177734, 19.223154067993164, 2
    - 0.297836048726605]
- 
- Time interval n.1: [593.24, 593.44]
    - \* y\_true: [15.67042287 23.16095213]
    - \* v\_ann: [18.790084838867188, 18.95753288269043, 2
    - 0.297836048726605]
- 
- Time interval n.2: [593.44, 593.64]
    - \* y\_true: [13.25043489 21.00101152]
    - \* v\_ann: [19.180334091186523, 19.147859573364258, 2
    - 0.297836048726605]

```

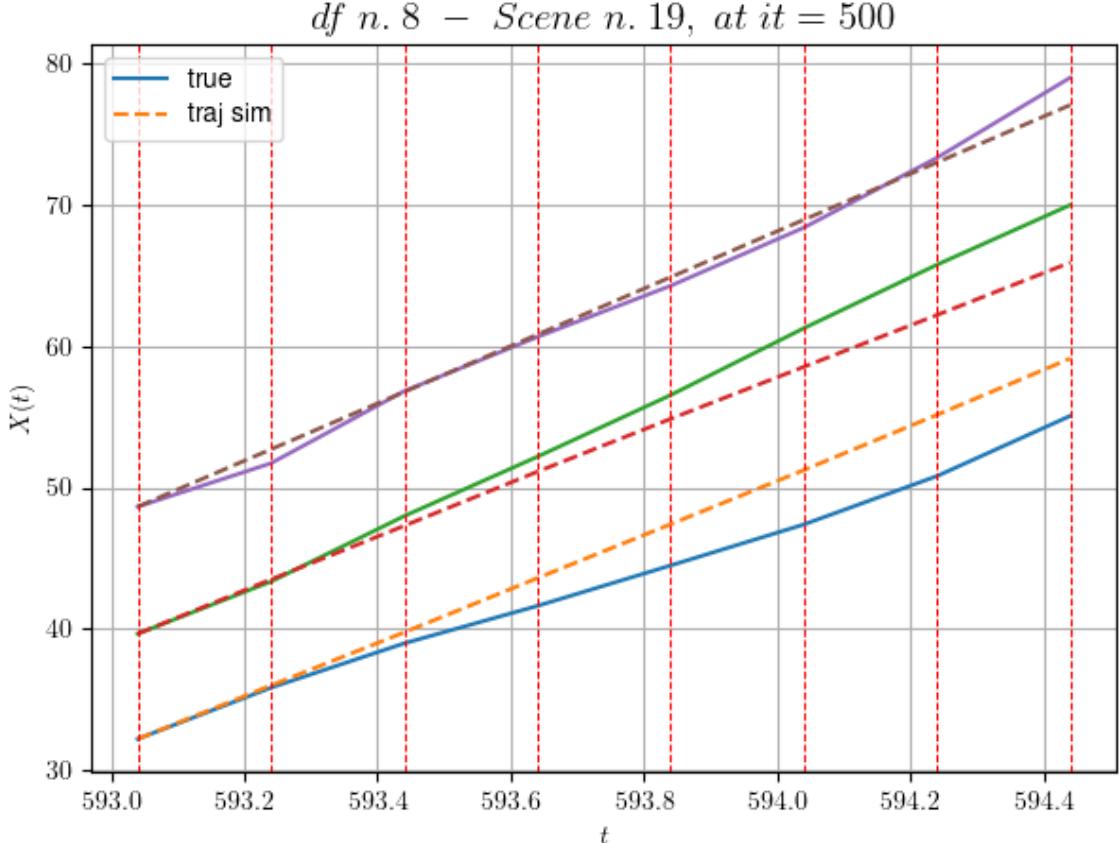

 - Time interval n.3: [593.64, 593.84]
 * y_true: [14.30052292 21.80126526]
 * v_ann: [19.0690975189209, 18.690889358520508, 20.
297836048726605]

 - Time interval n.4: [593.84, 594.04]
 * y_true: [14.50059166 23.66159236]
 * v_ann: [19.159561157226562, 18.40144157409668, 2
0.297836048726605]

 - Time interval n.5: [594.04, 594.24]
 * y_true: [17.13492662 22.4617536]
 * v_ann: [19.54291343688965, 18.342668533325195, 2
0.297836048726605]

 - Time interval n.6: [594.24, 594.44]
 * y_true: [21.29116558 21.12188145]
 * v_ann: [19.923381805419922, 18.57277488708496, 2
0.297836048726605]

 * err= 4.572094094704397
 * Learning rate NN = 0.00025418648147024214
 * diff = 0.0010566229702382302
```



For scene 19/21

- \* use LR\_NN=0.001 with err=30.395169762779066 at it=19
- \* v0\_scn\_mean = 20.879965450195847
- \* MAE = 4.553894304817577

---



---

- Time interval n.0: [256.44, 256.64]
  - \* y\_true: [ 7.48303167 10.07767618 21.73093279]
  - \* v\_ann: [12.842981338500977, 13.708869934082031, 1  
5.3892240524292, 17.10425867466612]

---

- Time interval n.1: [256.64, 256.84]
  - \* y\_true: [13.09283525 13.17831107 21.42106847]
  - \* v\_ann: [15.299448013305664, 16.56810760498047, 1  
5.14578628540039, 17.10425867466612]

---

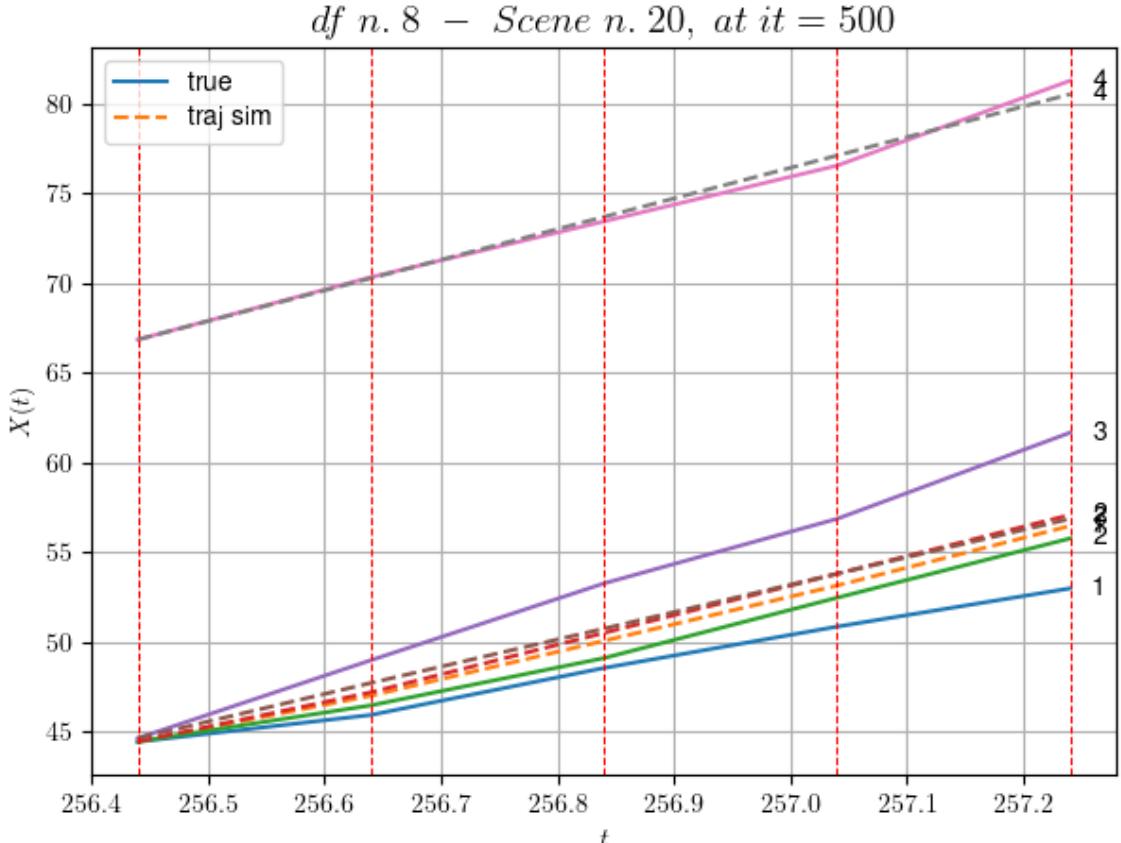
- Time interval n.2: [256.84, 257.04]
  - \* y\_true: [11.5255681 16.82586504 17.99104223]
  - \* v\_ann: [15.403718948364258, 16.47712516784668, 1  
5.313864707946777, 17.10425867466612]

---

- Time interval n.3: [257.04, 257.24]
  - \* y\_true: [10.66053629 16.53589178 24.03163218]
  - \* v\_ann: [16.635009765625, 16.429126739501953, 15.3

15423965454102, 17.10425867466612]

```
* err= 3.408083062153512
* Learning rate NN = 0.000239148415857926
* diff = 1.2502891840959762e-05
```



For scene 20/21

\* use LR\_NN=0.0005 with err=21.180999428546222 at it=19  
\* v0\_scn\_mean = 18.13587601624603  
\* MAE = 3.3931084806535745

For df=8 with 21 scenes. time taken: 295.86

In df n.9/10 we have 9 scenes

For scene 0/9

\* use LR\_NN=0.0005 with err=32.1344012662293 at it=19  
\* v0\_scn\_mean = 29.1397597739685  
\* MAF = 1.5466599476006895

For scene 1/9  
\* use LR\_NN=0.001 with err=14.43102449297295 at it=19  
\* v0\_scn\_mean = 32.53807527316806  
\* MAE = 0.15147579819752563

=====

=====

- Time interval n.0: [37.80, 38.00]  
\* y\_true: [21.35828745 27.25004814]  
\* v\_ann: [22.821439743041992, 22.565141677856445, 2  
3.639051069297995]

-----

- Time interval n.1: [38.00, 38.20]  
\* y\_true: [19.23626153 17.91519282]  
\* v\_ann: [22.882570266723633, 22.561187744140625, 2  
3.639051069297995]

-----

- Time interval n.2: [38.20, 38.40]  
\* y\_true: [24.96063116 28.62771944]  
\* v\_ann: [22.792186737060547, 22.54825782775879, 2  
3.639051069297995]

-----

- Time interval n.3: [38.40, 38.60]  
\* y\_true: [24.1844348 25.71934895]  
\* v\_ann: [22.895444869995117, 22.59248161315918, 2  
3.639051069297995]

-----

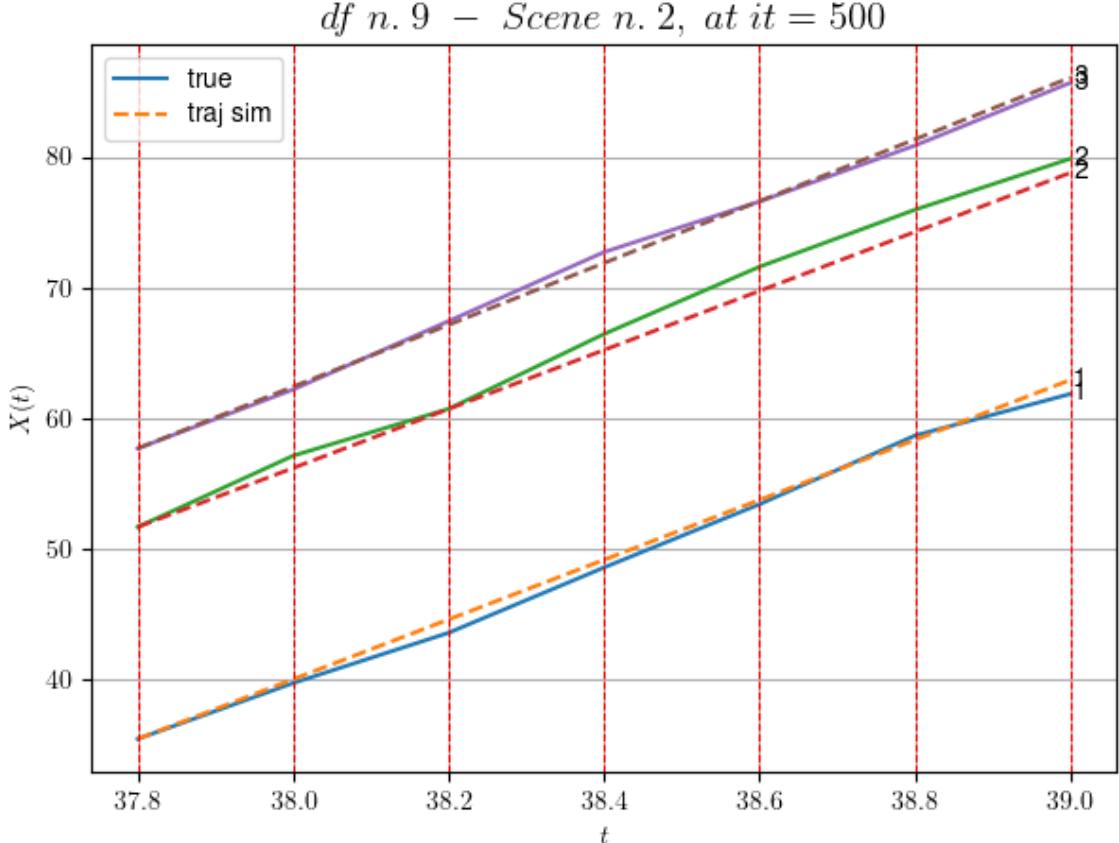
- Time interval n.4: [38.60, 38.80]  
\* y\_true: [26.26418379 21.80127307]  
\* v\_ann: [22.949901580810547, 22.58667755126953, 2  
3.639051069297995]

-----

- Time interval n.5: [38.80, 39.00]  
\* y\_true: [15.9216195 19.51476921]  
\* v\_ann: [22.949934005737305, 22.599870681762695, 2  
3.639051069297995]

-----

\* err= 0.6602261482678488  
\* Learning rate NN = 1.5690524378442205e-05  
\* diff = 0.00017778835944670668



For scene 2/9

- \* use LR\_NN=5e-05 with err=43.32684778422157 at it=19
  - \* v0\_scn\_mean = 24.020707719547264
  - \* MAE = 0.5261349937528195
- 
- 

For scene 3/9

- \* use LR\_NN=0.0005 with err=5.61244480904934 at it=19
  - \* v0\_scn\_mean = 19.51365445239287
  - \* MAE = 0.16657150381448
- 
- 

- Time interval n.0: [117.80, 118.00]  
 \* y\_true: [26.21501314 26.51617559]  
 \* v\_ann: [21.347457885742188, 18.75166130065918, 3  
 2.947825633500955]

---

- Time interval n.1: [118.00, 118.20]  
 \* y\_true: [24.27291409 32.45579962]  
 \* v\_ann: [26.82329559326172, 29.24357795715332, 32.  
 947825633500955]

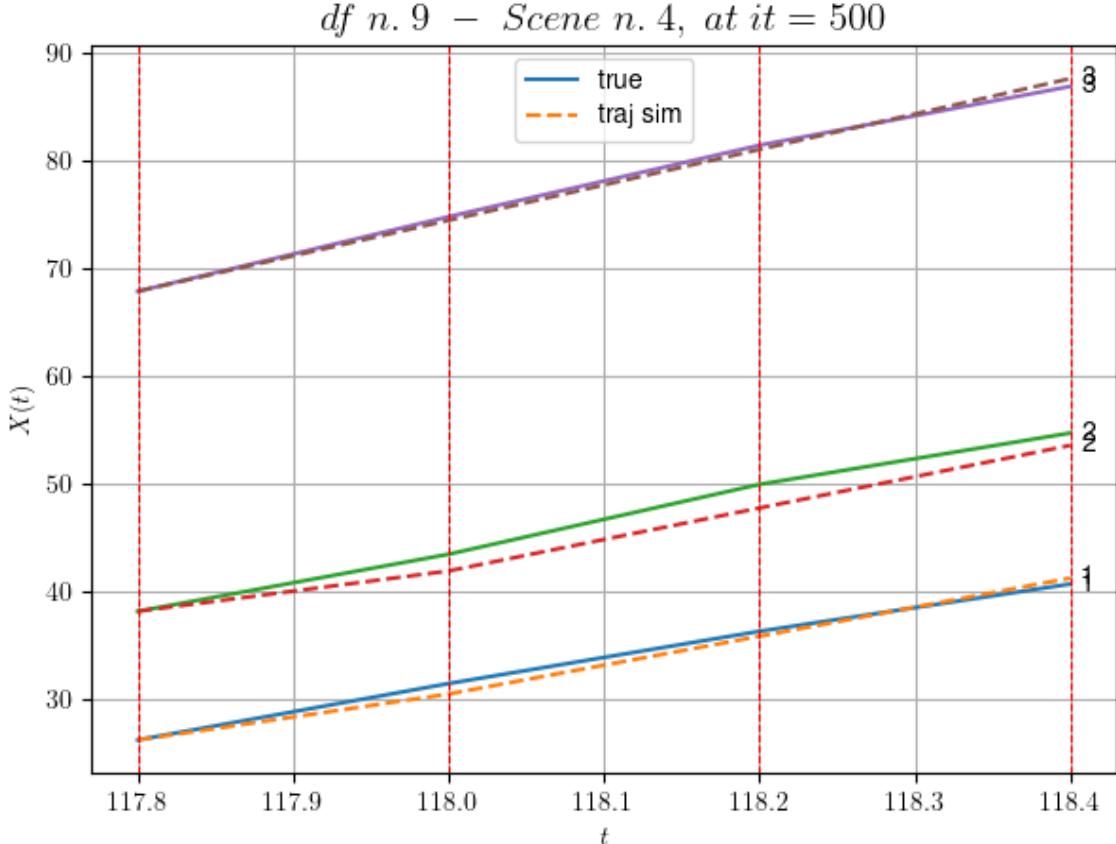
---

- Time interval n.2: [118.20, 118.40]

```
* y_true: [21.96072195 23.86482679]
* v_ann: [27.02815818786621, 29.096227645874023, 3
2.947825633500955]
```

---

```
* err= 0.9015614122074878
* Learning rate NN = 0.0005904899444431067
* diff = 0.0008070458989001272
```



For scene 4/9

```
* use LR_NN=0.001 with err=6.886651904431326 at it=19
* v0_scn_mean = 32.77095622784205
* MAE = 0.16698677345484425
```

---



---

```
- Time interval n.0: [119.20, 119.40]
* y_true: [23.20444186 22.52067771]
* v_ann: [25.012983322143555, 24.963626861572266, 2
6.734589830538415]
```

---



---

```
- Time interval n.1: [119.40, 119.60]
* y_true: [27.39348249 26.5570173]
* v_ann: [24.88011932373047, 24.864133834838867, 2
6.734589830538415]
```

---

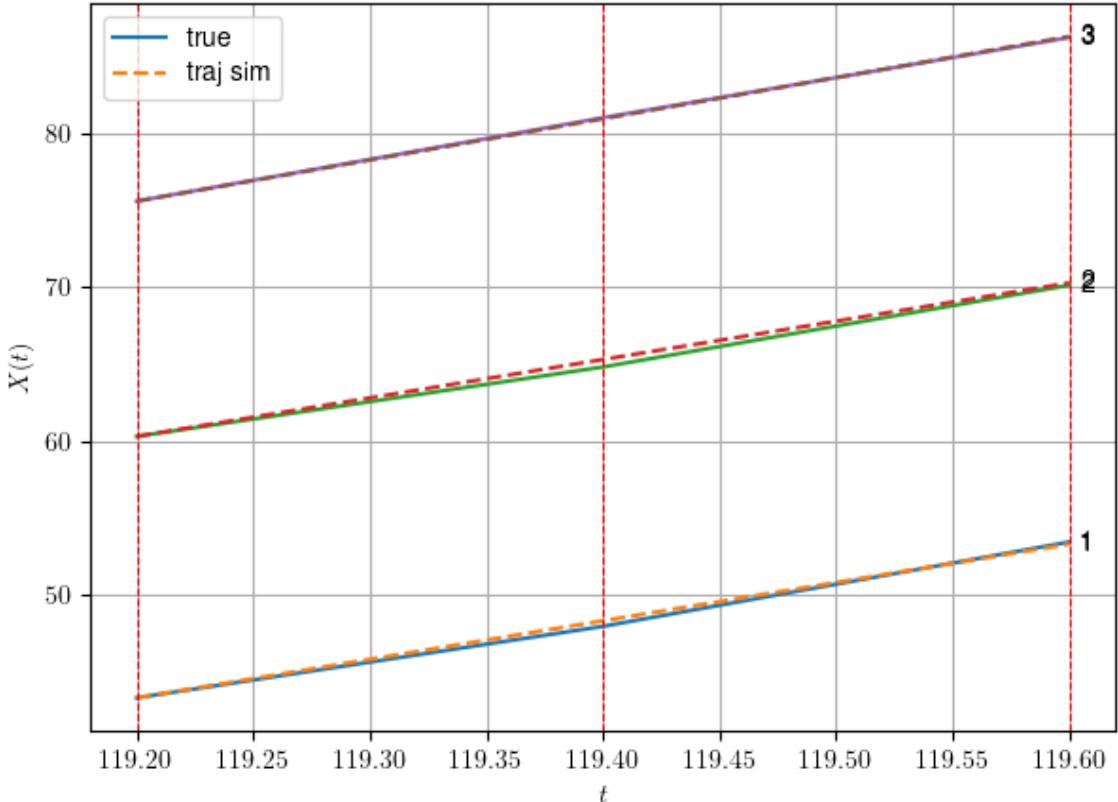


---

```
* err= 0.04696993205232436
```

\* Learning rate NN = 3.6449993785936385e-05  
 \* diff = 1.14779476260915e-05

*df n. 9 – Scene n. 5, at it = 500*



For scene 5/9

\* use LR\_NN=5e-05 with err=0.289893492507095 at it=19  
 \* v0\_scn\_mean = 26.930514294096287  
 \* MAE = 0.046861626391472073

---



---

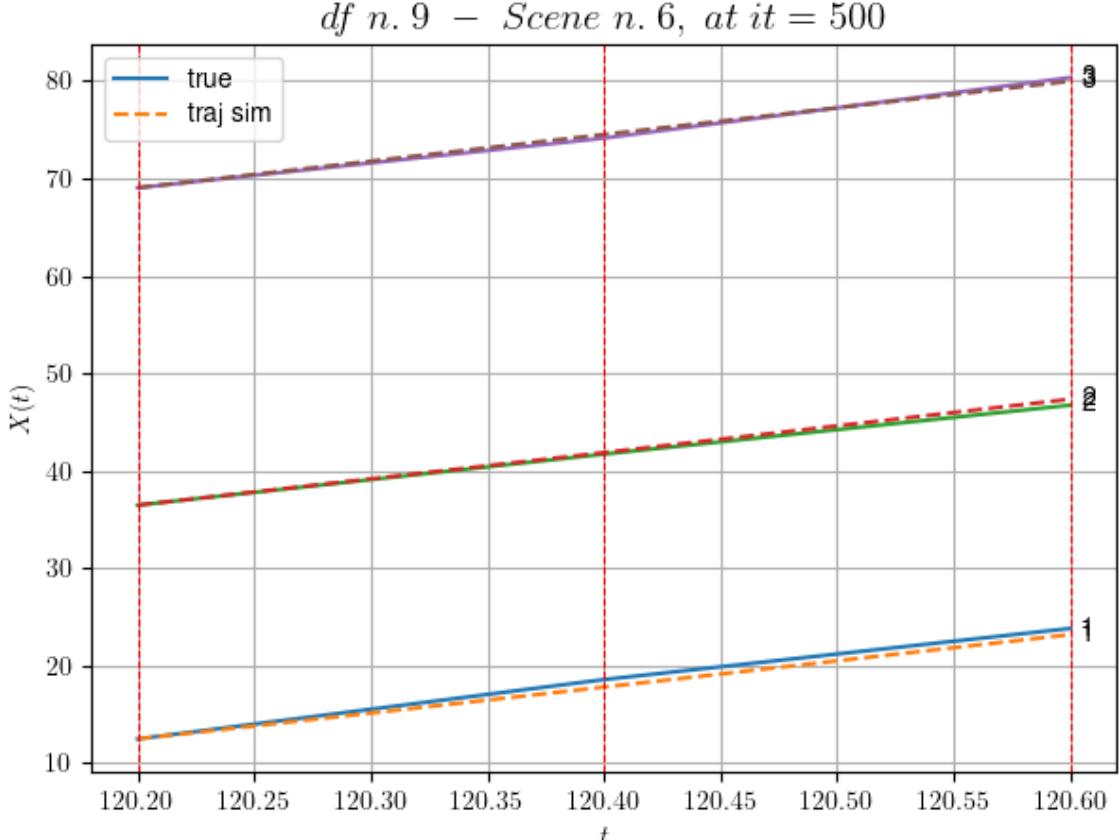
- Time interval n.0: [120.20, 120.40]  
 \* y\_true: [30.48045094 26.16776015]  
 \* v\_ann: [26.620695114135742, 26.951452255249023, 2  
 7.348987307571367]

---

- Time interval n.1: [120.40, 120.60]  
 \* y\_true: [26.23623075 25.12734403]  
 \* v\_ann: [26.947019577026367, 27.41741180419922, 2  
 7.348987307571367]

---

\* err= 0.18624595610762043  
 \* Learning rate NN = 7.289998757187277e-05  
 \* diff = 0.00019481491691716868



For scene 6/9

- \* use LR\_NN=0.0001 with err=1.5638484888984614 at it=19
- \* v0\_scn\_mean = 27.508047950092358
- \* MAE = 0.18624595610762043

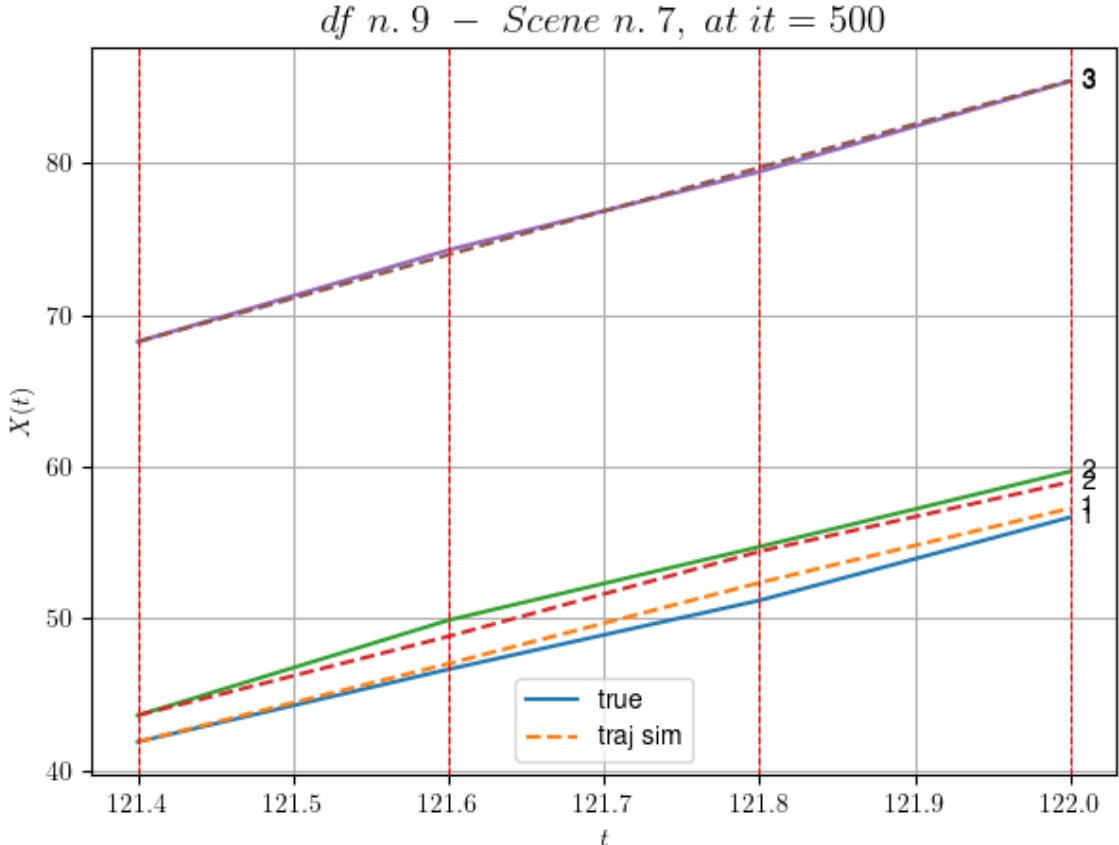
---



---

- Time interval n.0: [121.40, 121.60]
  - \* y\_true: [23.88369588 31.34452269]
  - \* v\_ann: [25.738128662109375, 26.003591537475586, 28.65752843457773]
- Time interval n.1: [121.60, 121.80]
  - \* y\_true: [22.66516063 24.1738881 ]
  - \* v\_ann: [26.64726448059082, 27.933258056640625, 28.65752843457773]
- Time interval n.2: [121.80, 122.00]
  - \* y\_true: [27.39865086 24.79107704]
  - \* v\_ann: [24.503816604614258, 22.917430877685547, 28.65752843457773]

\* err= 0.311394035775206  
 \* Learning rate NN = 0.0005904899444431067  
 \* diff = 1.1974758683697129e-05



For scene 7/9

```
* use LR_NN=0.001 with err=13.100067237518948 at it=19
* v0_scn_mean = 28.738076668229063
* MAE = 0.2577412921253321
```

---



---

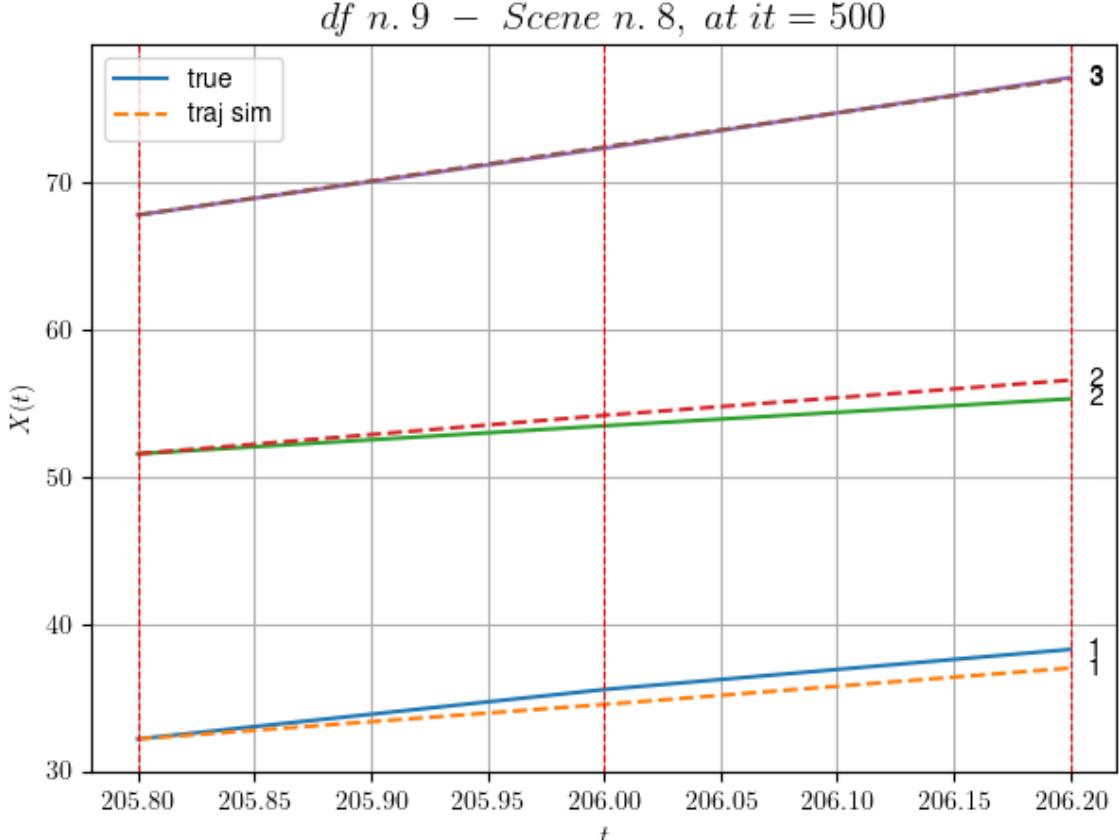
```
- Time interval n.0: [205.80, 206.00]
* y_true: [16.81767795 9.52209489]
* v_ann: [11.749828338623047, 13.070384979248047, 2
3.158651176006803]
```

---

```
- Time interval n.1: [206.00, 206.20]
* y_true: [13.65726133 9.1692133]
* v_ann: [12.388751029968262, 11.998455047607422, 2
3.158651176006803]
```

---

```
* err= 0.5312614860992954
* Learning rate NN = 3.6449993785936385e-05
* diff = 8.620933896075211e-05
```



For scene 8/9

- \* use LR\_NN=5e-05 with err=1.3150653814226467 at it=19
- \* v0\_scn\_mean = 23.569131798284804
- \* MAE = 0.5312614860992954

---



---

For df=9 with 9 scenes, time taken: 96.23

---



---

In df n.10/10 we have 22 scenes

---



---

- Time interval n.0: [25.72, 25.92]
- \* y\_true: [19.85100065 23.2716 ]
- \* v\_ann: [23.80762481689453, 23.447040557861328, 1 9.70878358322816]

---



---

- Time interval n.1: [25.92, 26.12]
- \* y\_true: [21.59125574 29.46240542]
- \* v\_ann: [23.617061614990234, 23.329425811767578, 1 9.70878358322816]

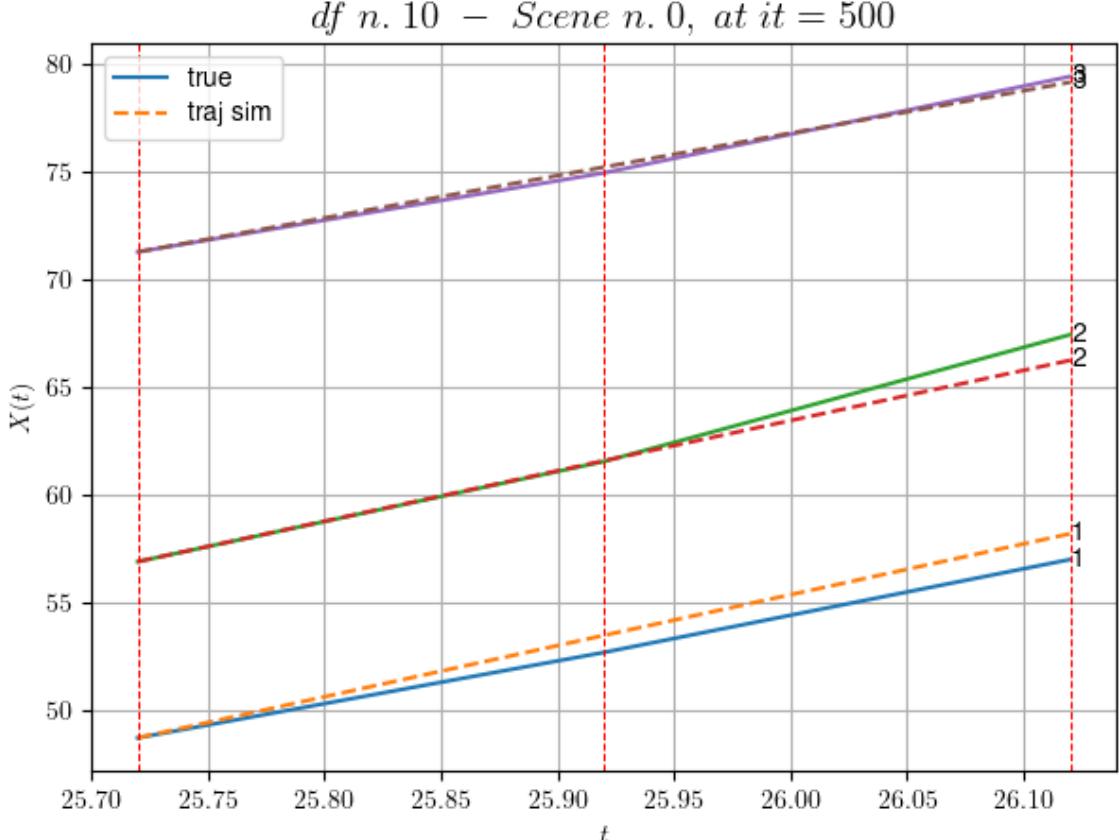
---



---

\* err= 0.40264735665439405

\* Learning rate NN = 7.28999875187277e-05  
 \* diff = 0.0005276538544938258



For scene 0/22

\* use LR\_NN=0.0001 with err=2.7080244886737463 at it=19  
 \* v0\_scn\_mean = 20.326256106181166  
 \* MAE = 0.40264735665439405

---



---

- Time interval n.0: [71.72, 71.92]
  - \* y\_true: [25.44045996 0.68637625]
  - \* v\_ann: [15.717366218566895, 17.070697784423828, 2 4.696180100224502]

---

- Time interval n.1: [71.92, 72.12]
  - \* y\_true: [ 7.65710886 16.8398502 ]
  - \* v\_ann: [13.128326416015625, 19.737924575805664, 2 4.696180100224502]

---

- Time interval n.2: [72.12, 72.32]
  - \* y\_true: [ 0.68637625 22.9307169 ]
  - \* v\_ann: [13.914106369018555, 19.813186645507812, 2 4.696180100224502]

---

- Time interval n.3: [72.32, 72.52]

```

* y_true: [6.45821063 27.07107802]
* v_ann: [15.938262939453125, 19.46729850769043, 2
4.696180100224502]

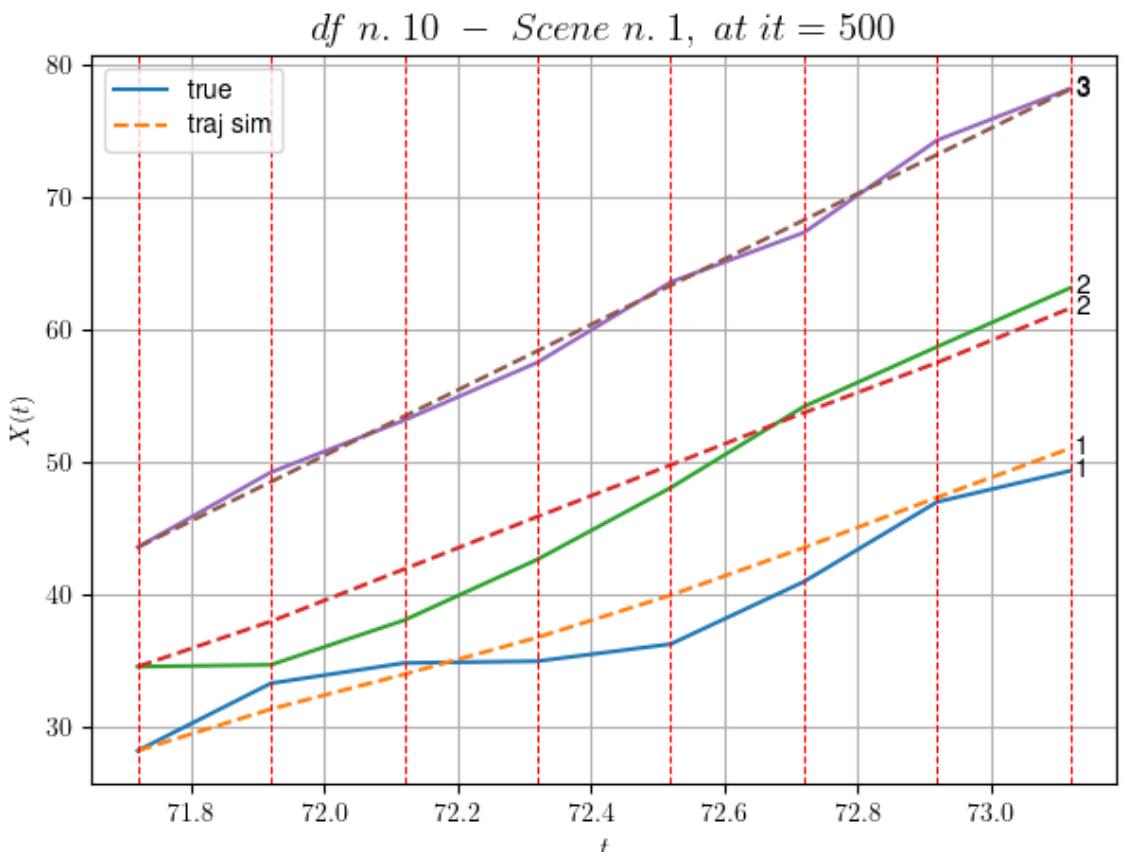
- Time interval n.4: [72.52, 72.72]
* y_true: [23.5506867 30.63154479]
* v_ann: [17.913856506347656, 19.73175048828125, 2
4.696180100224502]

- Time interval n.5: [72.72, 72.92]
* y_true: [30.10113572 22.57136168]
* v_ann: [18.98675537109375, 18.944156646728516, 2
4.696180100224502]

- Time interval n.6: [72.92, 73.12]
* y_true: [11.75053045 22.24158734]
* v_ann: [18.55543327331543, 20.536630630493164, 2
4.696180100224502]

* err= 3.2262091160579476
* Learning rate NN = 2.5418647055630572e-05
* diff = 0.004221151672600065

```



```

For scene 1/22
* use LR_NN=0.0001 with err=12.899790839716566 at it=19
* v0_scn_mean = 25.01440905608092

```

\* MAE = 3.2262091160579476

---



---

- Time interval n.0: [120.92, 121.12]  
 \* y\_true: [2.40007998 4.01291198]  
 \* v\_ann: [7.121948719024658, 6.903891563415527, 19.  
 87543626344988]

---

- Time interval n.1: [121.12, 121.32]  
 \* y\_true: [3.94779745 3.96114827]  
 \* v\_ann: [7.140039443969727, 7.523071765899658, 19.  
 87543626344988]

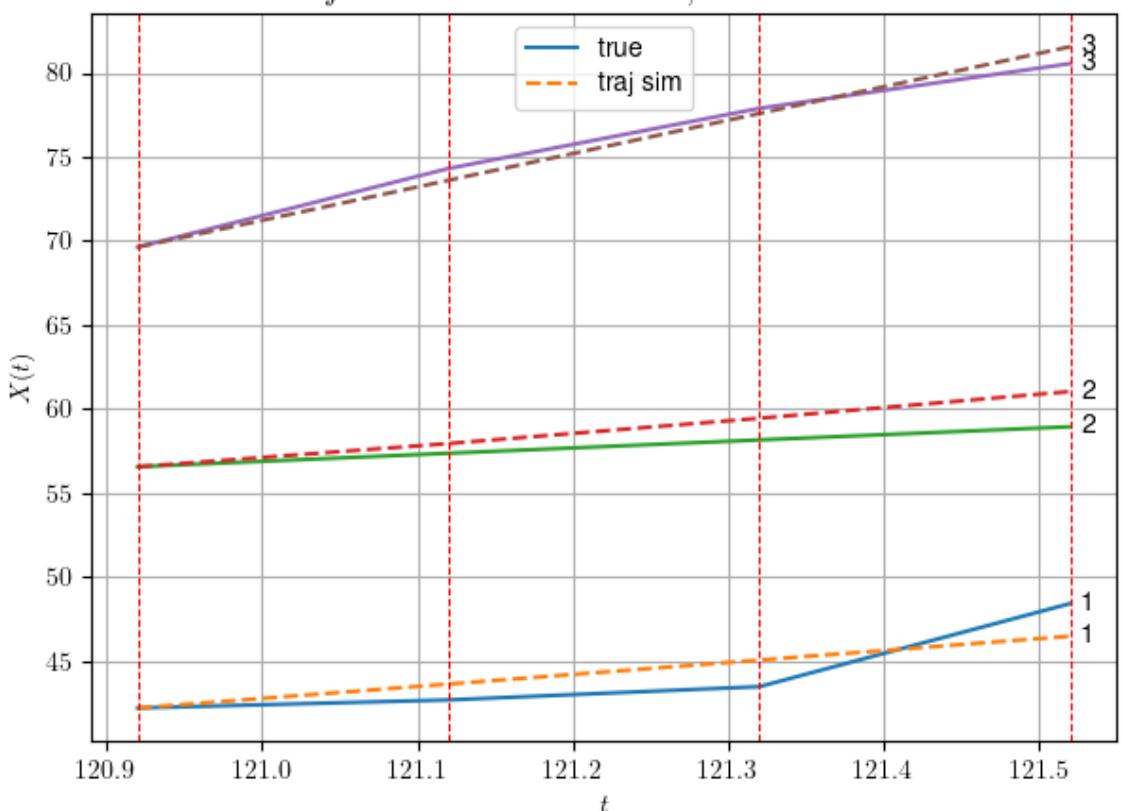
---

- Time interval n.2: [121.32, 121.52]  
 \* y\_true: [24.74097787 3.92663913]  
 \* v\_ann: [7.106204986572266, 7.955244541168213, 19.  
 87543626344988]

---

\* err= 1.2640131838098327  
 \* Learning rate NN = 5.9048988987342454e-06  
 \* diff = 1.4124881588806204e-05

*df n. 10 – Scene n. 2, at it = 500*



For scene 2/22

\* use LR\_NN=1e-05 with err=6.5200976732336065 at it=19  
 \* v0\_scn\_mean = 20.48290963307194

\* MAE = 1.2633017264991855

---



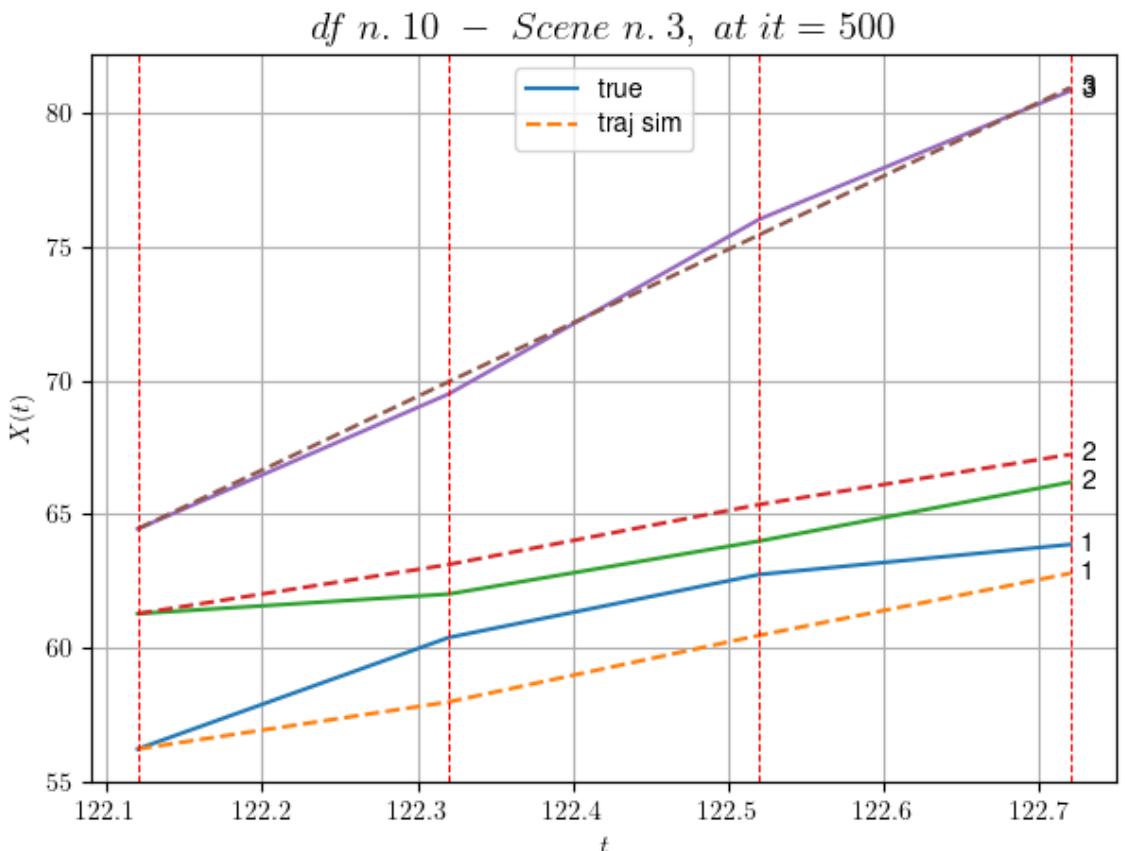
---

```
- Time interval n.0: [122.12, 122.32]
* y_true: [20.84138029 3.6661027]
* v_ann: [8.794925689697266, 9.18727970123291, 27.5
27679985064857]

- Time interval n.1: [122.32, 122.52]
* y_true: [11.80149783 9.92593948]
* v_ann: [12.471989631652832, 11.245925903320312, 2
7.527679985064857]

- Time interval n.2: [122.52, 122.72]
* y_true: [5.61571017 11.00089954]
* v_ann: [11.598437309265137, 9.351263999938965, 2
7.527679985064857]

* err= 1.4062194595776882
* Learning rate NN = 0.0029524494893848896
* diff = 0.00018371135986550158
```



For scene 3/22

\* use LR\_NN=0.005 with err=4.770628007929718 at it=19

```
* vθ_scn_mean = 27.67601907495927
* MAE = 1.1218137646153792
```

---



---

```
- Time interval n.0: [194.52, 194.72]
 * y_true: [18.69097642 14.73135237]
 * v_ann: [19.588523864746094, 19.710418701171875, 1
5.385046662986538]
```

---

```
- Time interval n.1: [194.72, 194.92]
 * y_true: [17.84107996 20.91213867]
 * v_ann: [19.3934383392334, 19.6033935546875, 15.38
5046662986538]
```

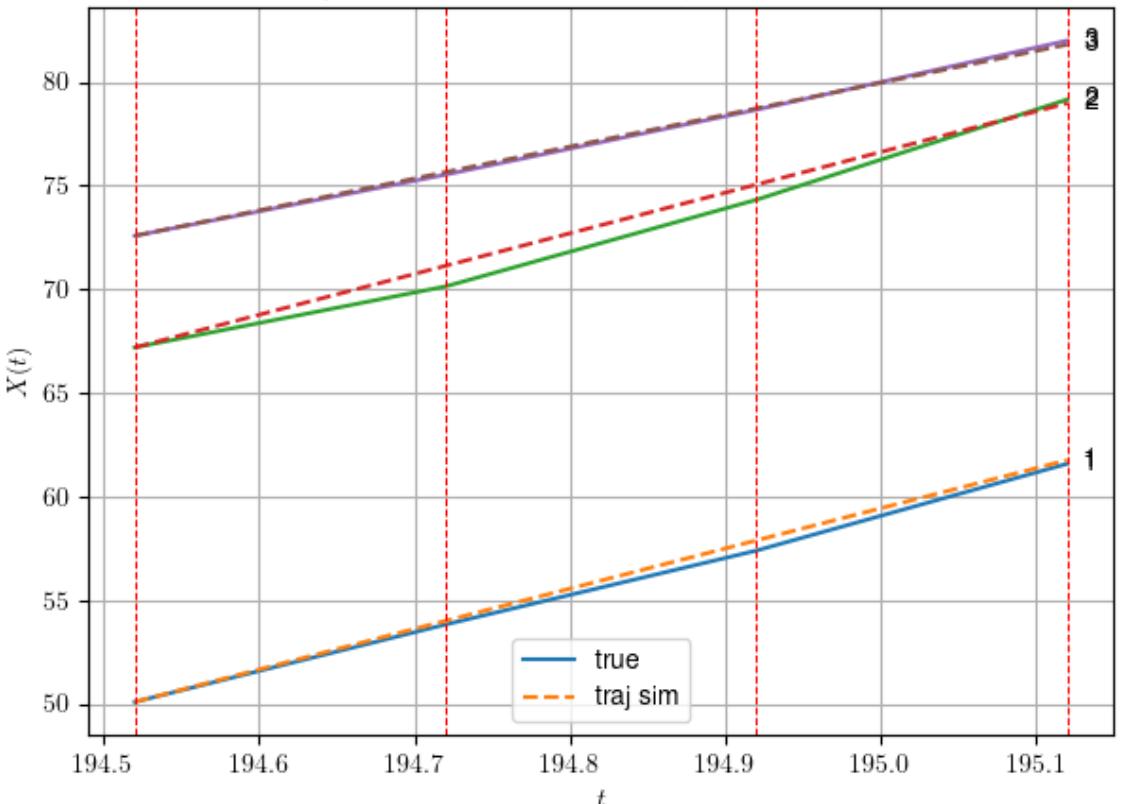
---

```
- Time interval n.2: [194.92, 195.12]
 * y_true: [20.95142105 24.20273885]
 * v_ann: [19.37578773498535, 19.62025260925293, 15.
385046662986538]
```

---

```
* err= 0.16038924865758278
* Learning rate NN = 5.904899080633186e-05
* diff = 1 52053321738000000.00
```

*df n. 10 – Scene n. 4, at it = 500*



For scene 4/22

\* use LR\_NN=0.0001 with err=16.703570740801112 at it=19

```
* vθ_scn_mean = 16.261943207027556
* MAE = 0.1563869111921483
```

```
=====
=====
```

- Time interval n.0: [201.52, 201.72]  
\* y\_true: [45.67726396 25.9301702 ]  
\* v\_ann: [29.23933982849121, 29.600231170654297, 2  
5.797423357466517]

```


```

- Time interval n.1: [201.72, 201.92]  
\* y\_true: [22.15536429 29.26032799]  
\* v\_ann: [30.228519439697266, 32.38225173950195, 2  
5.797423357466517]

```


```

- Time interval n.2: [201.92, 202.12]  
\* y\_true: [30.43022185 23.25036083]  
\* v\_ann: [29.311054229736328, 29.926729202270508, 2  
5.797423357466517]

```


```

- Time interval n.3: [202.12, 202.32]  
\* y\_true: [33.22042439 22.87050849]  
\* v\_ann: [28.788373947143555, 28.744548797607422, 2  
5.797423357466517]

```


```

- Time interval n.4: [202.32, 202.52]  
\* y\_true: [33.45065979 24.47068757]  
\* v\_ann: [28.702068328857422, 28.464914321899414, 2  
5.797423357466517]

```


```

- Time interval n.5: [202.52, 202.72]  
\* y\_true: [28.37081651 28.03104175]  
\* v\_ann: [28.76534652709961, 28.619108200073242, 2  
5.797423357466517]

```


```

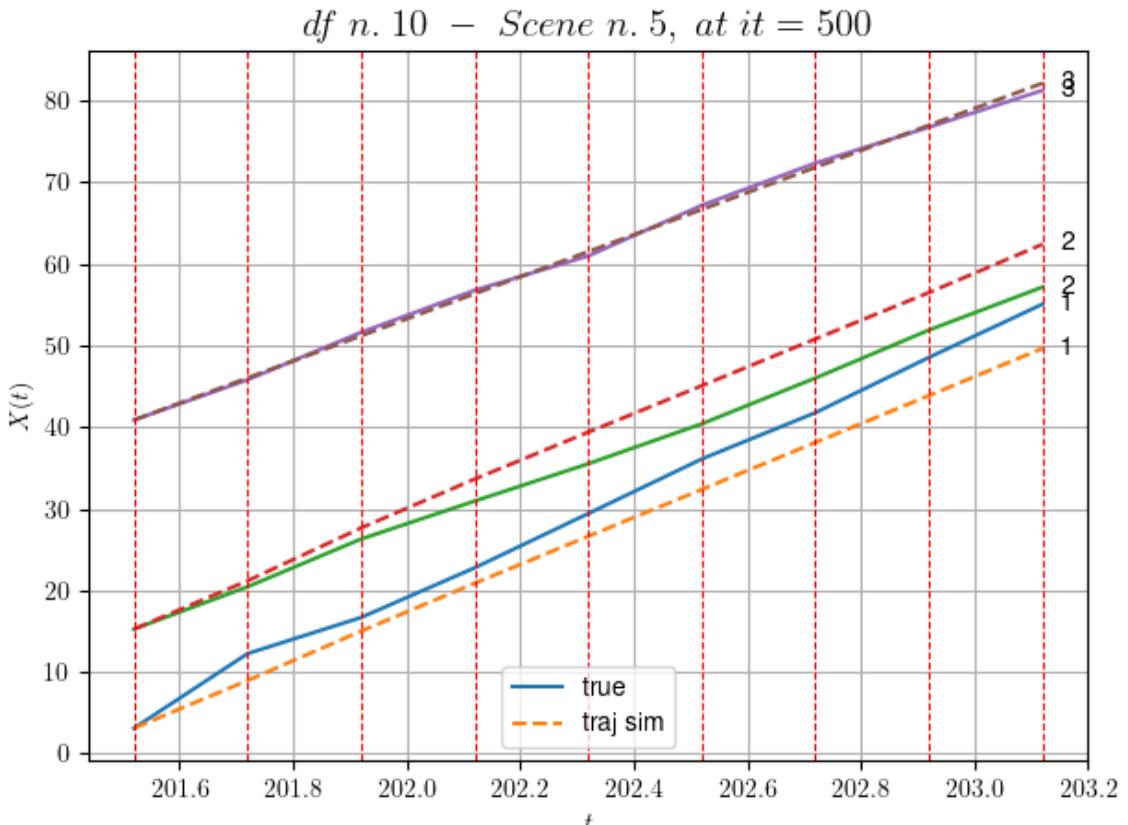
- Time interval n.6: [202.72, 202.92]  
\* y\_true: [33.85129081 29.41136895]  
\* v\_ann: [28.720783233642578, 28.455204010009766, 2  
5.797423357466517]

```


```

- Time interval n.7: [202.92, 203.12]  
\* y\_true: [32.65166271 26.3315156 ]  
\* v\_ann: [28.9955997467041, 29.574321746826172, 25.  
797423357466517]

\* err= 8.272434615349274  
 \* Learning rate NN = 0.00010294552339473739



For scene 5/22

\* use LR\_NN=0.0005 with err=152.65093322896783 at it=19  
 \* v0\_scn\_mean = 26.049577767331968  
 \* MAE = 8.272434615349274

---



---

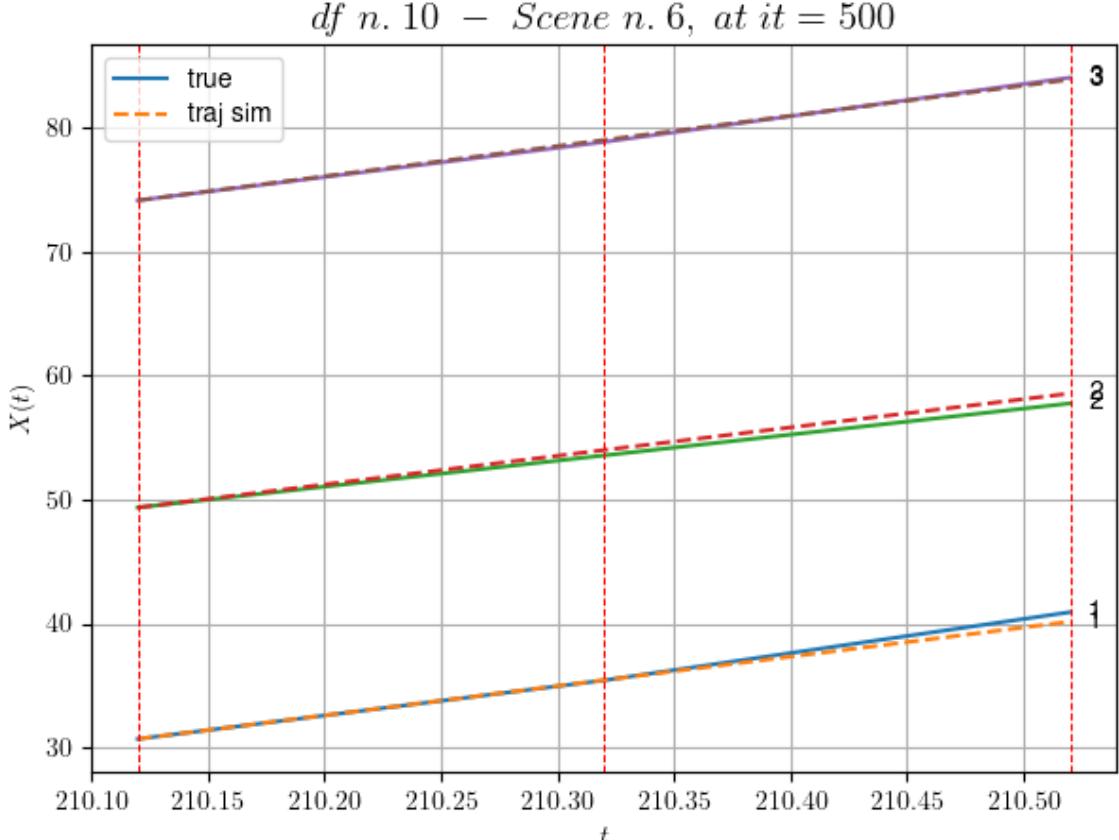
- Time interval n.0: [210.12, 210.32]  
 \* y\_true: [23.65050773 21.02104774]  
 \* v\_ ann: [23.765737533569336, 23.197378158569336, 2  
 4.382899423201046]

---

- Time interval n.1: [210.32, 210.52]  
 \* y\_true: [27.53081175 21.02121012]  
 \* v\_ ann: [23.587158203125, 22.845972061157227, 24.3  
 82899423201046]

---

\* err= 0.16338132269720948  
 \* Learning rate NN = 7.289998757187277e-05  
 \* diff = 0.0006209213522266888



For scene 6/22

- \* use LR\_NN=0.0001 with err=2.0557881156763087 at it=19
- \* v0\_scn\_mean = 24.71992520561354
- \* MAE = 0.12227486864410077

---



---

- Time interval n.0: [236.52, 236.72]
  - \* y\_true: [22.75077388 14.36119092]
  - \* v\_ann: [25.039714813232422, 22.641006469726562, 24.944260756133804]

---



---

- Time interval n.1: [236.72, 236.92]
  - \* y\_true: [21.51093715 22.77208028]
  - \* v\_ann: [18.720561981201172, 20.000383377075195, 24.944260756133804]

---



---

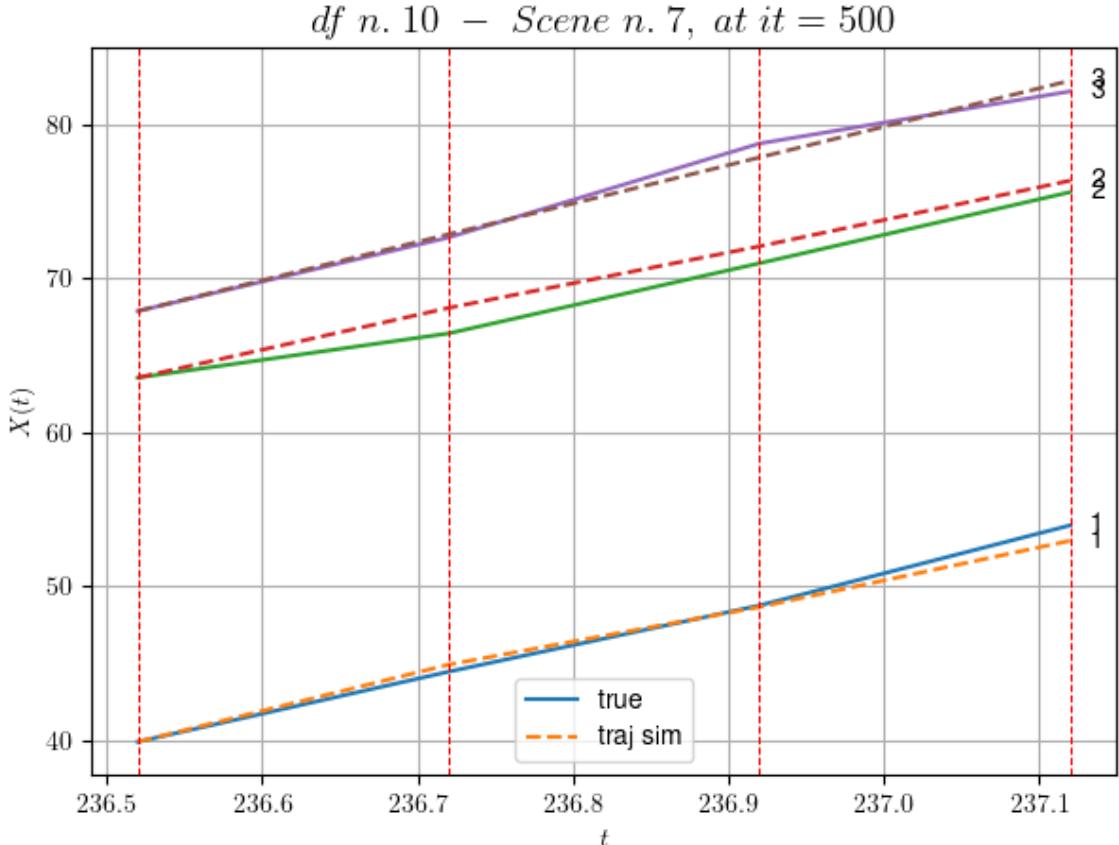
- Time interval n.2: [236.92, 237.12]
  - \* y\_true: [26.0213192 23.10241688]
  - \* v\_ann: [21.53041648864746, 21.334440231323242, 24.944260756133804]

---



---

- \* err= 0.5895449264932565
- \* Learning rate NN = 0.0005904899444431067
- \* diff = 0.0001147552816667119



For scene 7/22

- \* use LR\_NN=0.001 with err=8.4633724131622 at it=19
- \* v0\_scn\_mean = 25.247604883774073
- \* MAE = 0.5326138029770529

---



---

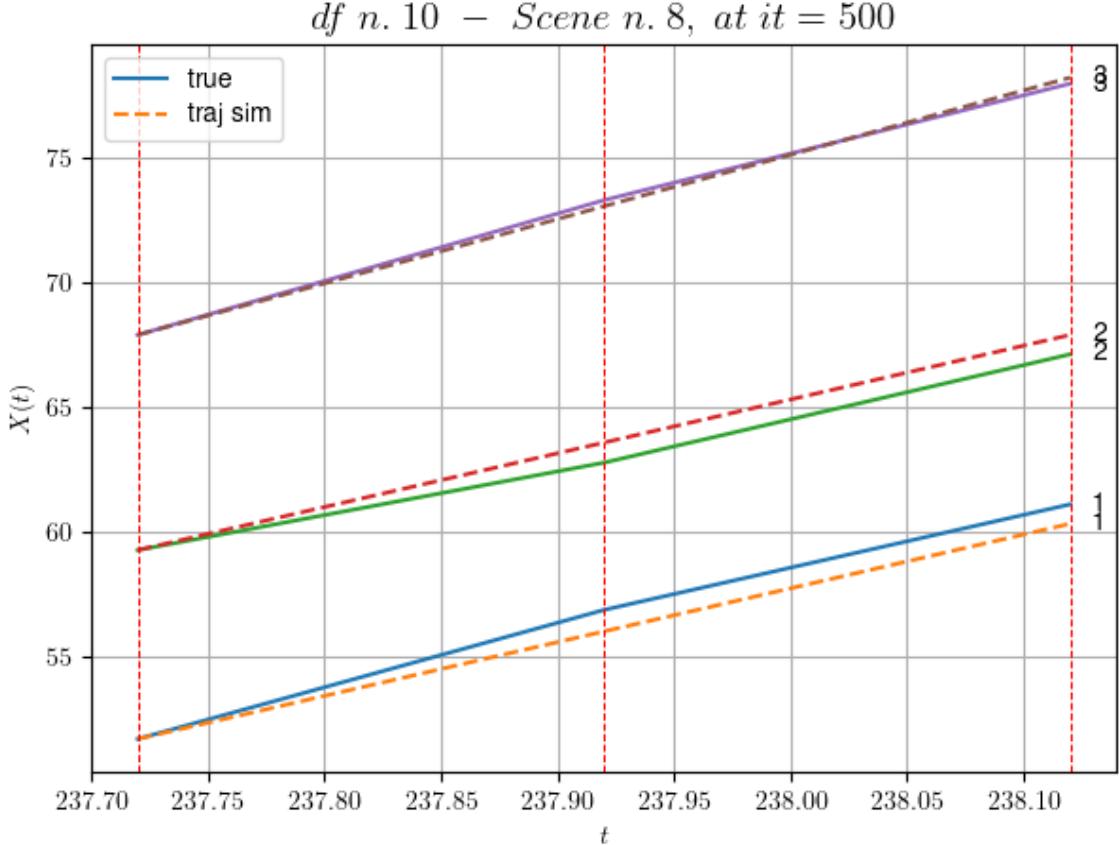
- Time interval n.0: [237.72, 237.92]
  - \* y\_true: [25.90146221 17.55123599]
  - \* v\_ann: [21.58570098876953, 21.583675384521484, 25.83259243947337]

---

- Time interval n.1: [237.92, 238.12]
  - \* y\_true: [21.20141323 21.76181979]
  - \* v\_ann: [21.623062133789062, 21.6219539642334, 25.83259243947337]

---

- \* err= 0.30301949189501415
- \* Learning rate NN = 0.00036449998151510954
- \* diff = 3.0311919800407594e-05



For scene 8/22

- \* use LR\_NN=0.0005 with err=1.9064299720777997 at it=19
- \* v0\_scn\_mean = 26.082636705997274
- \* MAE = 0.30301949189501415

---



---

- Time interval n.0: [317.32, 317.52]
  - \* y\_true: [14.46061508 5.00523108]
  - \* v\_ann: [9.840828895568848, 9.701786994934082, 5.959391366535745]

---

- Time interval n.1: [317.52, 317.72]
  - \* y\_true: [10.48047894 8.66542797]
  - \* v\_ann: [9.832324028015137, 9.684499740600586, 5.959391366535745]

---

- Time interval n.2: [317.72, 317.92]
  - \* y\_true: [ 5.95030099 13.38070893]
  - \* v\_ann: [9.830254554748535, 9.547567367553711, 5.959391366535745]

---

- Time interval n.3: [317.92, 318.12]
  - \* y\_true: [ 6.50033899 15.86094106]
  - \* v\_ann: [9.712212562561035, 9.584783554077148, 5.959391366535745]

---

59391366535745]

---

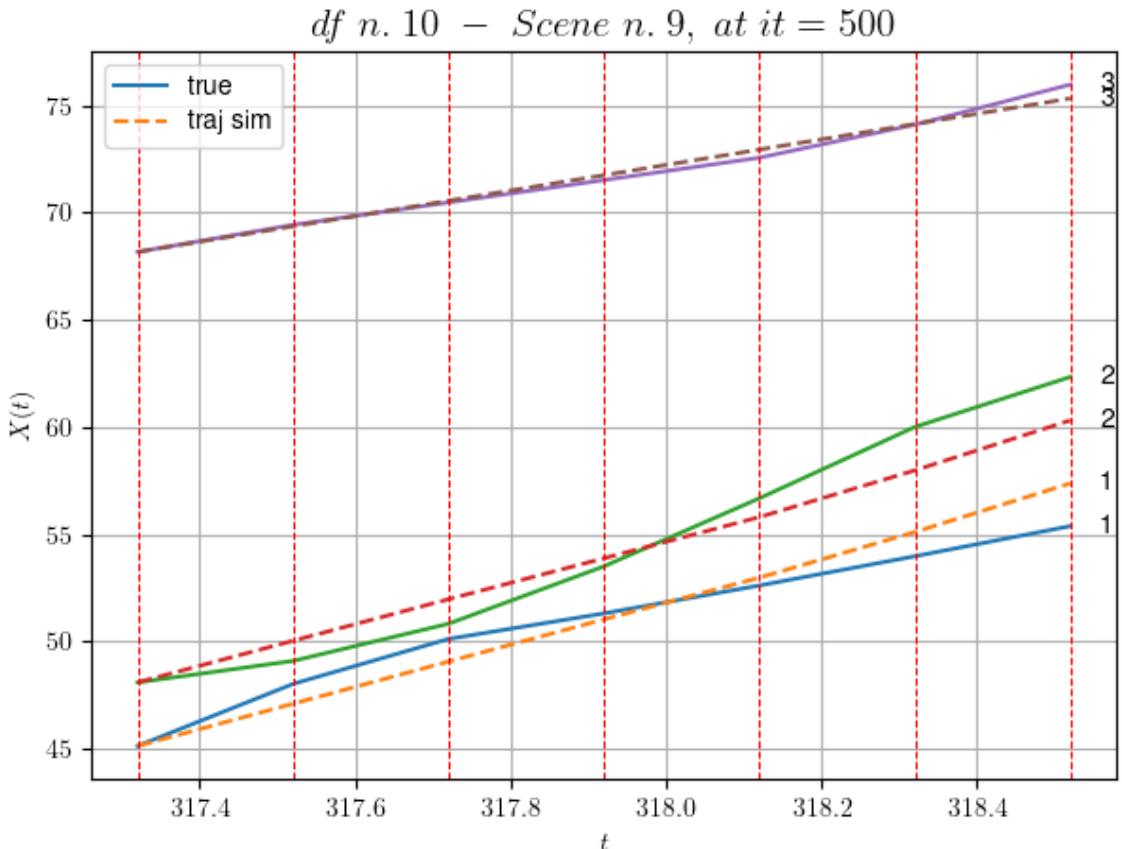
- Time interval n.4: [318.12, 318.32]
  - \* y\_true: [ 6.81537877 16.61109559]
  - \* v\_ann: [10.642962455749512, 10.890715599060059, 5.959391366535745]

---

- Time interval n.5: [318.32, 318.52]
  - \* y\_true: [ 7.02540529 11.65083477]
  - \* v\_ann: [11.327051162719727, 11.653389930725098, 5.959391366535745]

---

- \* err= 0.9202456859266763
- \* Learning rate NN = 0.0015690524596720934
- \* diff = 0.00011232280435991004



For scene 9/22

- \* use LR\_NN=0.005 with err=101.07133928938283 at it=19
- \* v0\_scn\_mean = 7.401826805172339
- \* MAE = 0.917991112432456

---



---

- Time interval n.0: [321.12, 321.32]
  - \* y\_true: [25.50087189 14.95118626]
  - \* v\_ann: [19.33884048461914, 17.905048370361328, 2]

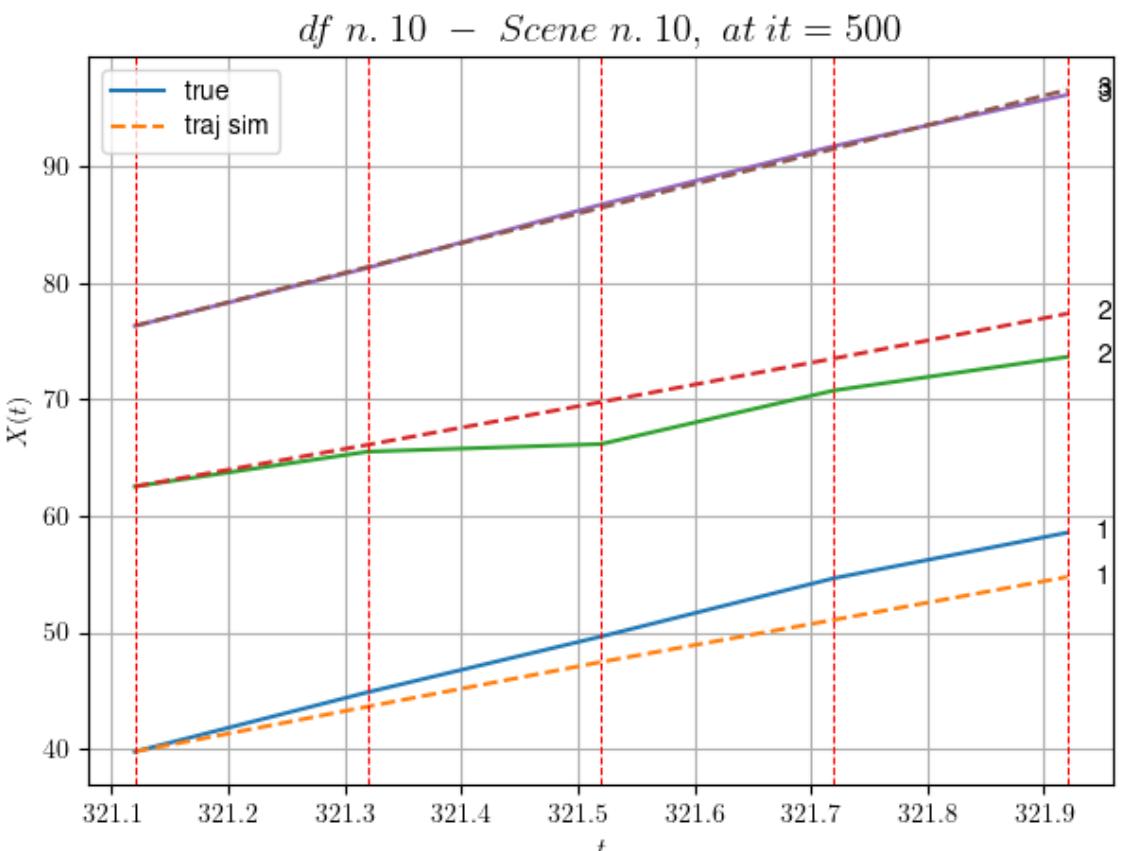
5.328428635553074]

```
- Time interval n.1: [321.32, 321.52]
 * y_true: [23.87107171 3.25027229]
 * v_ann: [19.112668991088867, 18.315242767333984, 2
5.328428635553074]
```

```
- Time interval n.2: [321.52, 321.72]
 * y_true: [25.04128771 23.00208642]
 * v_ann: [18.1057186126709, 18.709569931030273, 25.
328428635553074]
```

```
- Time interval n.3: [321.72, 321.92]
 * y_true: [19.5212431 14.40145141]
 * v_ann: [18.397626876831055, 19.198654174804688, 2
5.328428635553074]
```

```
* err= 4.558312956775708
* Learning rate NN = 4.7829678806010634e-05
* diff = 0.0027854275607461787
```



For scene 10/22

```
* use LR_NN=0.0001 with err=4.590653094108916 at it=19
* v0_scn_mean = 25.608722707676243
* MAE = 4.3449130287777935
```

```
=====
=====

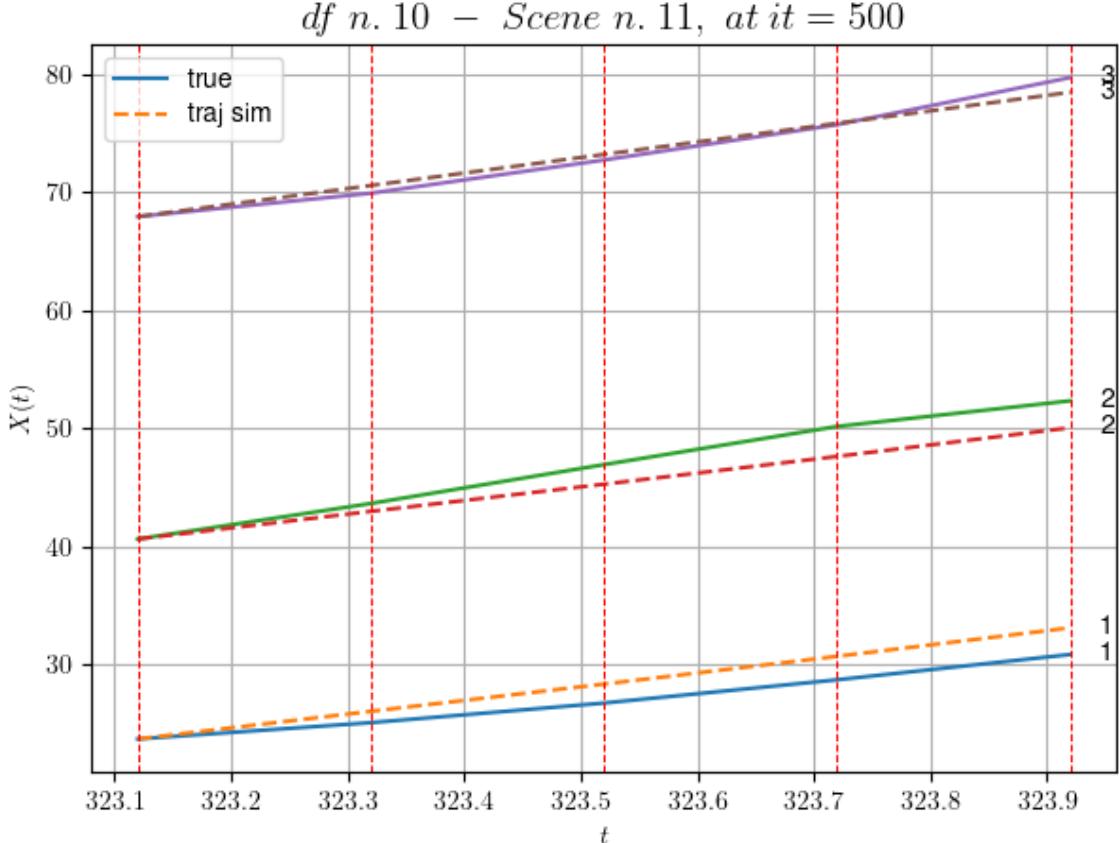
 - Time interval n.0: [323.12, 323.32]
 * y_true: [6.90008114 15.05052158]
 * v_ann: [11.704187393188477, 11.719375610351562, 1
3.161317147759917]

 - Time interval n.1: [323.32, 323.52]
 * y_true: [8.30010994 16.45065772]
 * v_ann: [11.531710624694824, 11.495966911315918, 1
3.161317147759917]

 - Time interval n.2: [323.52, 323.72]
 * y_true: [9.85014911 16.15074097]
 * v_ann: [11.740989685058594, 11.755402565002441, 1
3.161317147759917]

 - Time interval n.3: [323.72, 323.92]
 * y_true: [10.7001865 10.85055419]
 * v_ann: [12.083755493164062, 12.139116287231445, 1
3.161317147759917]

* err= 1.9723282633284231
* Learning rate NN = 0.000239148415857926
* diff = 0.0002532088251905318
```



For scene 11/22

- \* use LR\_NN=0.0005 with err=22.09052505384321 at it=19
- \* v0\_scn\_mean = 14.171637362873579
- \* MAE = 1.9695405094046177

---



---

- Time interval n.0: [337.72, 337.92]
- \* y\_true: [11.69035174 22.47147634]
- \* v\_ann: [13.981661796569824, 13.953022956848145, 1  
6.73844444980725]

---



---

- Time interval n.1: [337.92, 338.12]
- \* y\_true: [10.20034007 18.27135214]
- \* v\_ann: [14.097894668579102, 14.009010314941406, 1  
6.73844444980725]

---



---

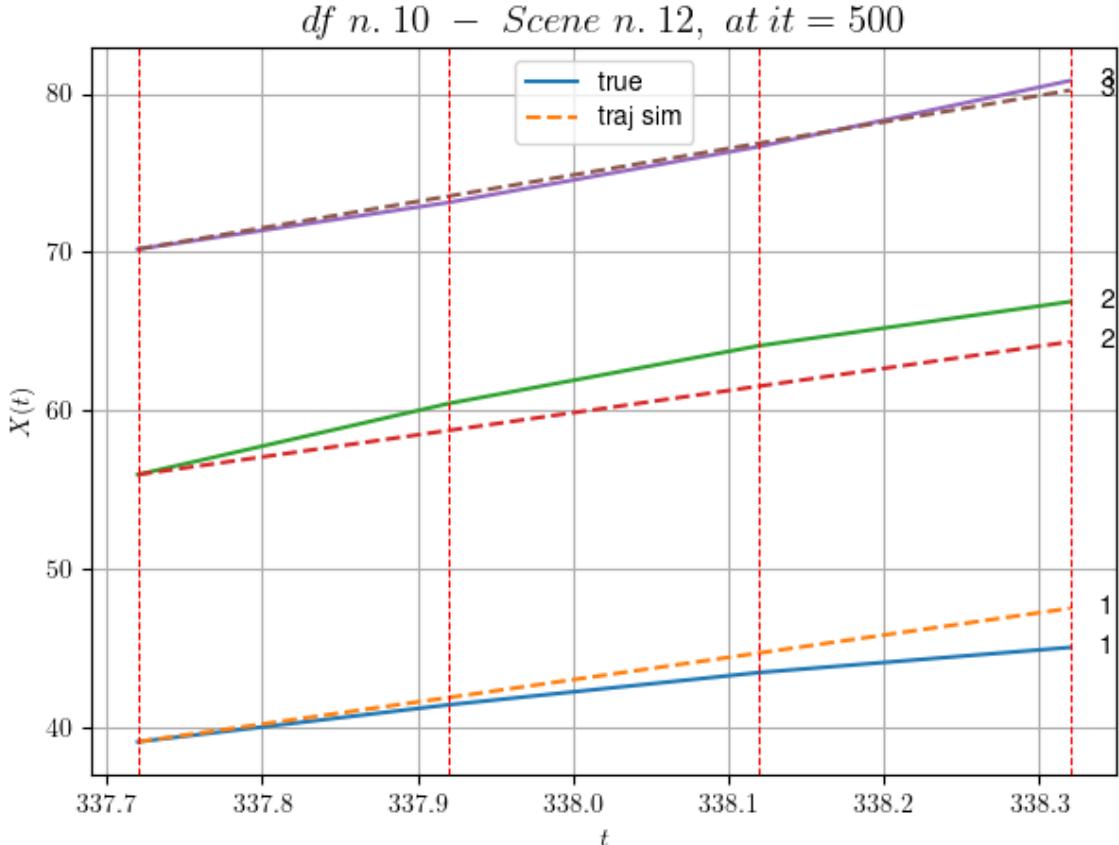
- Time interval n.2: [338.12, 338.32]
- \* y\_true: [ 7.94029275 13.91116184]
- \* v\_ann: [14.126188278198242, 14.011515617370605, 1  
6.73844444980725]

---



---

- \* err= 2.0256539185516926
- \* Learning rate NN = 2.952449540316593e-05
- \* diff = 0.001733635835133196



For scene 12/22

- \* use LR\_NN=5e-05 with err=12.051083765133832 at it=19
- \* v0\_scn\_mean = 17.534137187403736
- \* MAE = 2.0256539185516926

---



---

- Time interval n.0: [369.32, 369.52]
  - \* y\_true: [22.34117259 11.42097363]
  - \* v\_ann: [16.36156463623047, 16.446369171142578, 2 0.508861972534508]

---

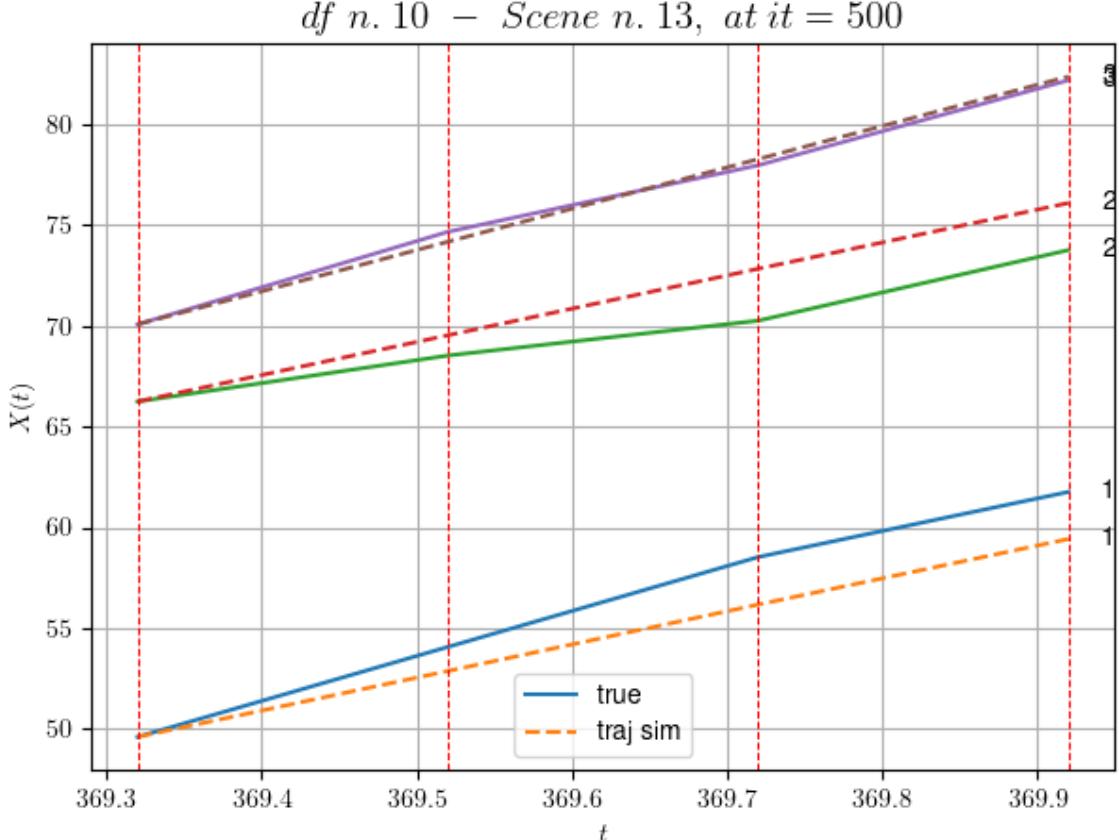
- Time interval n.1: [369.52, 369.72]
  - \* y\_true: [22.31135956 8.65079743]
  - \* v\_ann: [16.493810653686523, 16.50952911376953, 2 0.508861972534508]

---

- Time interval n.2: [369.72, 369.92]
  - \* y\_true: [16.17115552 17.53172003]
  - \* v\_ann: [16.280250549316406, 16.326454162597656, 2 0.508861972534508]

---

- \* err= 2.1615850412976827
- \* Learning rate NN = 0.0002952449722215533
- \* diff = 3.248915684928022e-05



For scene 13/22

```
* use LR_NN=0.0005 with err=5.071208013270289 at it=19
* v0_scn_mean = 21.07832982805107
* MAE = 2.1613248081133265
```

---



---

- Time interval n.0: [370.92, 371.12]
  - \* y\_true: [12.30016813 11.70074461]
  - \* v\_ann: [10.115349769592285, 12.005399703979492, 1 9.89212045378777]
  
- Time interval n.1: [371.12, 371.32]
  - \* y\_true: [ 9.3501493 10.70073785]
  - \* v\_ann: [10.542558670043945, 9.916505813598633, 1 9.89212045378777]
  
- Time interval n.2: [371.32, 371.52]
  - \* y\_true: [ 8.90016062 10.12074395]
  - \* v\_ann: [10.435690879821777, 9.911916732788086, 1 9.89212045378777]
  
- Time interval n.3: [371.52, 371.72]
  - \* y\_true: [8.30016702 9.00070559]
  - \* v\_ann: [10.191927909851074, 9.83033275604248, 19. 9.89212045378777]

89212045378777]

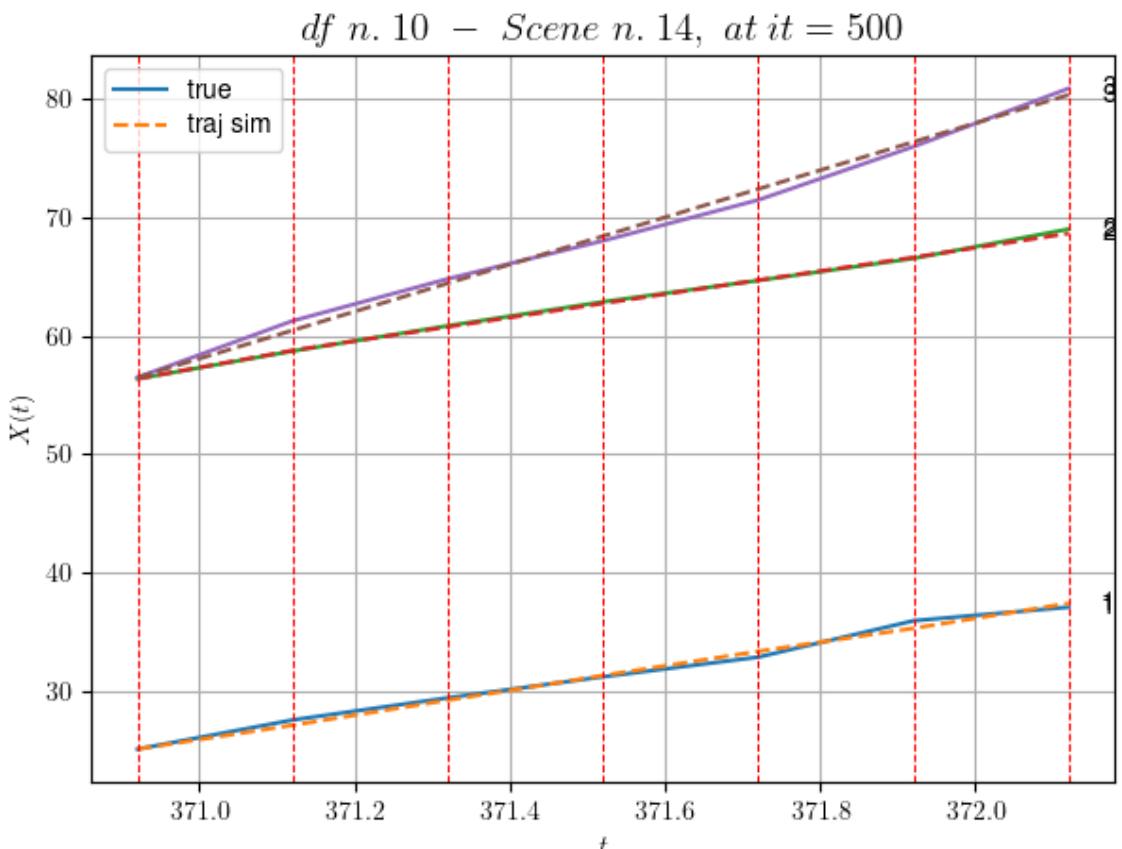
```
- Time interval n.4: [371.72, 371.92]
 * y_true: [15.35035581 9.32077268]
 * v_ann: [9.738987922668457, 9.634665489196777, 19.
```

89212045378777]

```
- Time interval n.5: [371.92, 372.12]
 * y_true: [5.75014975 12.37110708]
 * v_ann: [10.55952262878418, 10.10330867767334, 19.
```

89212045378777]

```
* err= 0.16214367554072262
* Learning rate NN = 0.00031381050939671695
* diff = 2.225861791105288e-06
```



For scene 14/22

```
* use LR_NN=0.001 with err=28.490499760796283 at it=19
* v0_scn_mean = 20.49859277273807
* MAE = 0.16214367554072262
```

```
- Time interval n.0: [376.92, 377.12]
 * y_true: [9.78017765 12.68091602]
 * v_ann: [11.072750091552734, 11.083980560302734, 1
```

3.62966623120331]

---

- Time interval n.1: [377.12, 377.32]
  - \* y\_true: [10.39021059 11.81092637]
  - \* v\_ann: [11.083436965942383, 11.089018821716309, 1]

3.62966623120331]

---

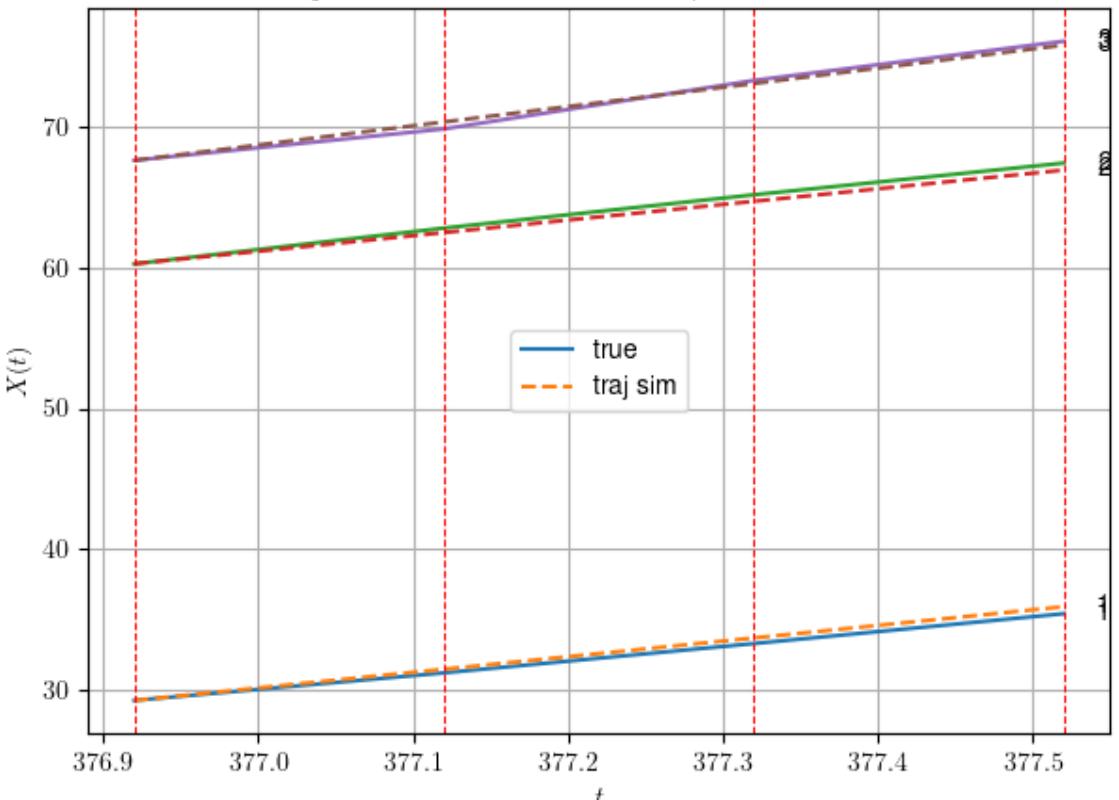
- Time interval n.2: [377.32, 377.52]
  - \* y\_true: [10.59024861 11.25094207]
  - \* v\_ann: [11.084490776062012, 11.089278221130371, 1]

3.62966623120331]

---

- \* err= 0.11699084687308792
- \* Learning rate NN = 5.904899080633186e-05
- \* diff = 2.87829769714254e-06

*df n. 10 – Scene n. 15, at it = 500*



For scene 15/22

- \* use LR\_NN=0.0001 with err=15.943845819267224 at it=19
- \* v0\_scn\_mean = 14.611885522338817
- \* MAE = 0.11699084687308792

---

- Time interval n.0: [433.52, 433.72]
  - \* y\_true: [21.56070162 24.64178312]
  - \* v\_ann: [22.73652458190918, 22.315481185913086, 2]

1.095678523799723]

---

- Time interval n.1: [433.72, 433.92]
  - \* y\_true: [20.75082718 21.171764 ]
  - \* v\_ann: [23.413467407226562, 22.65275001525879, 2

1.095678523799723]

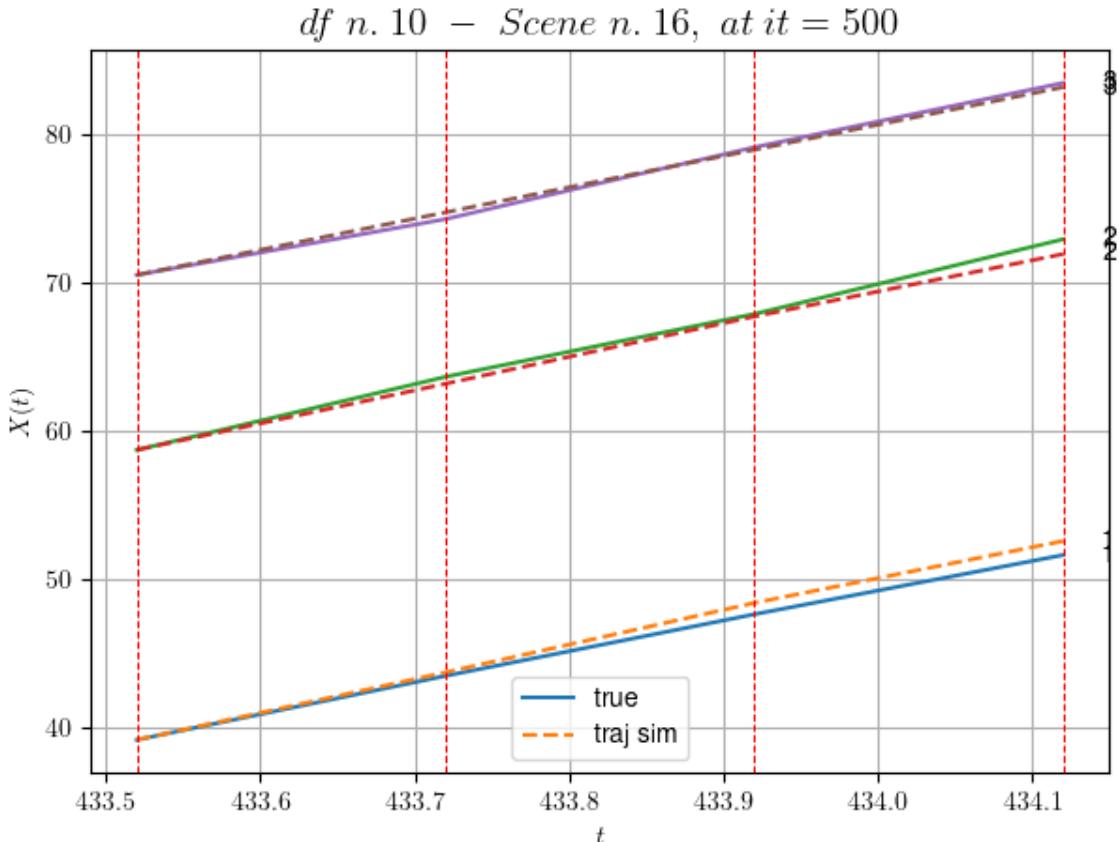
---

- Time interval n.2: [433.92, 434.12]
  - \* y\_true: [19.97093958 25.19244807]
  - \* v\_ann: [20.846254348754883, 21.059907913208008, 2

1.095678523799723]

---

- \* err= 0.2572283508797773
- \* Learning rate NN = 0.0005904899444431067
- \* diff = 0.00015072959501227778



For scene 16/22

- \* use LR\_NN=0.001 with err=8.110423154327597 at it=19
- \* v0\_scn\_mean = 21.629937412587097
- \* MAE = 0.2572283508797773

---



---

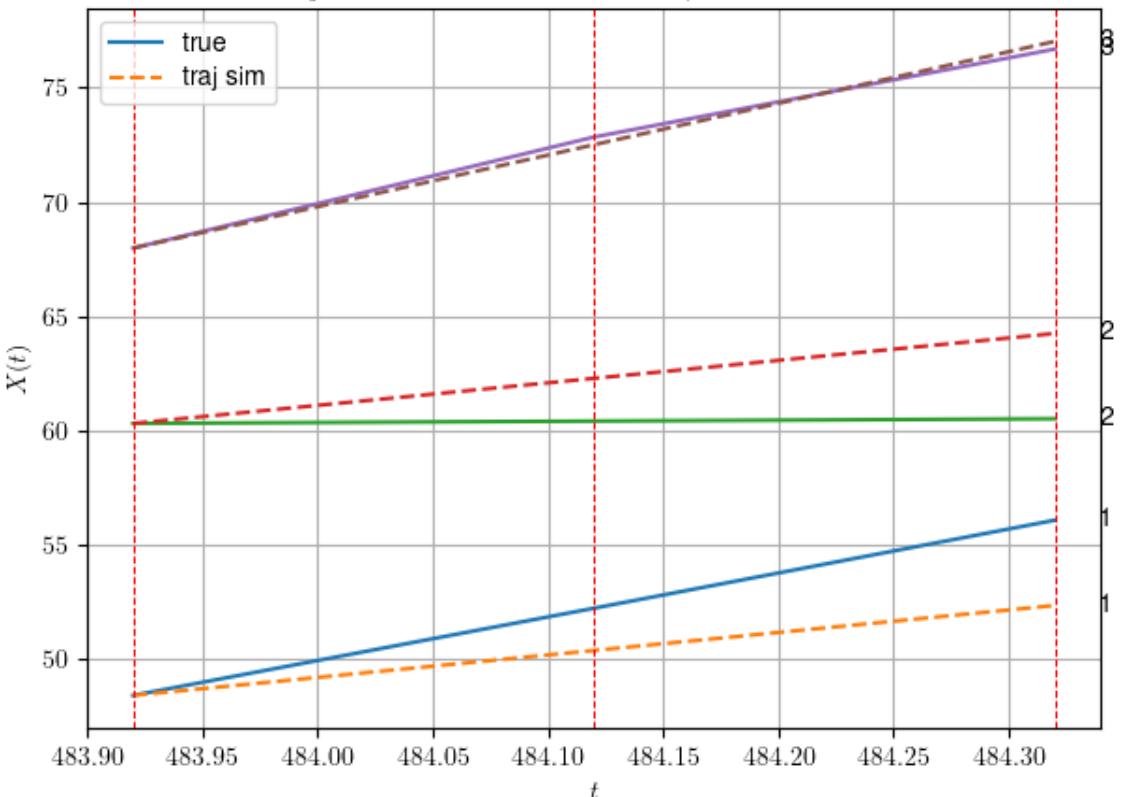
- Time interval n.0: [483.92, 484.12]
  - \* y\_true: [19.08092085 0.51217506]
  - \* v\_ann: [9.842982292175293, 9.863526344299316, 22.

61891693965095]

```
- Time interval n.1: [484.12, 484.32]
 * y_true: [19.26103904 0.51217506]
 * v_ann: [9.842781066894531, 9.820425987243652, 22.
```

61891693965095]

```
* err= 3.8875088515428966
* Learning rate NN = 0.0007289999630302191
* diff = 0.00014649935012212012
```

*df n. 10 – Scene n. 17, at it = 500*

For scene 17/22

```
* use LR_NN=0.001 with err=4.922088286400686 at it=19
* v0_scn_mean = 23.061781591876294
* MAE = 3.8875088515428966
```

205173948354133]

```
- Time interval n.0: [531.72, 531.92]
 * y_true: [0.21693371 8.7044085]
 * v_ann: [9.359048843383789, 9.212149620056152, 18.
```

```
- Time interval n.1: [531.92, 532.12]
 * y_true: [13.20333652 9.14775604]
 * v_ann: [9.352734565734863, 9.215970039367676, 18.
```

205173948354133]

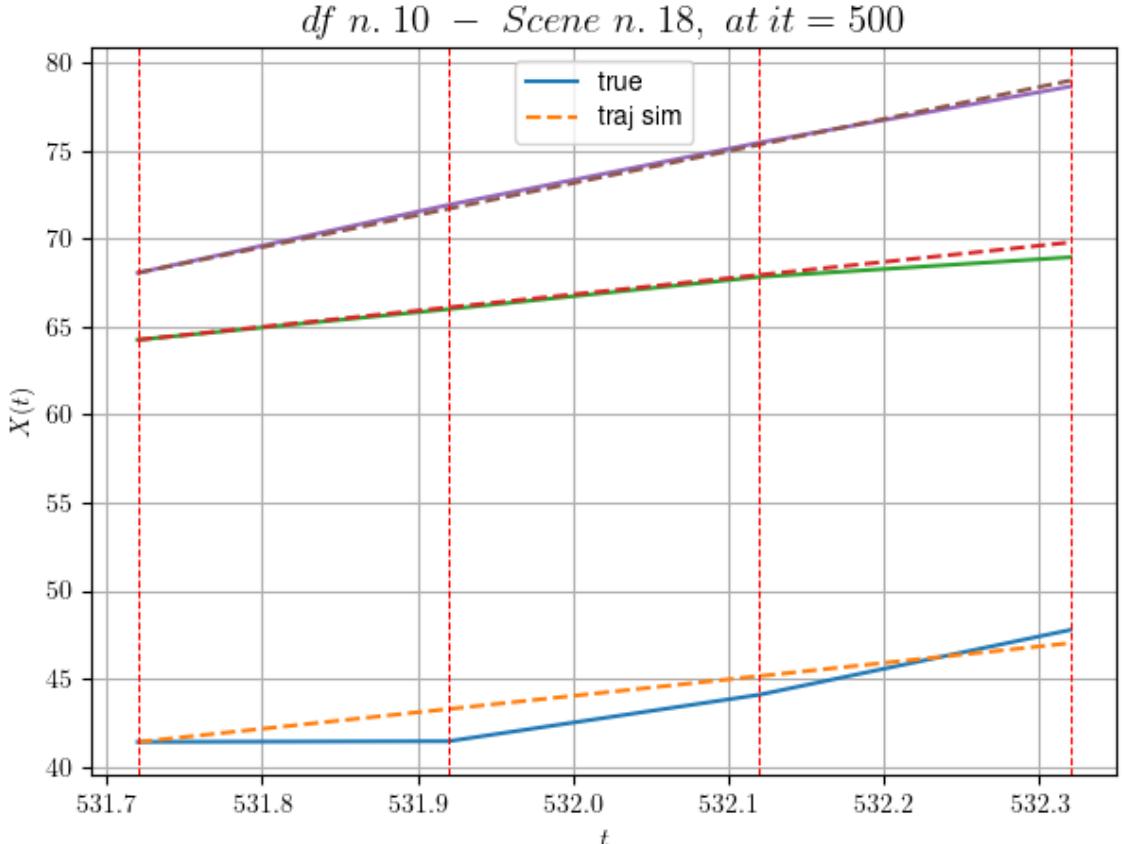
---

- Time interval n.2: [532.12, 532.32]
  - \* y\_true: [18.40074328 5.60188997]
  - \* v\_ann: [9.35461711883545, 9.233794212341309, 18.2

05173948354133]

---

- \* err= 0.4946407574832506
- \* Learning rate NN = 5.9048988987342454e-06
- \* diff = 0.00019617791924875227



For scene 18/22

- \* use LR\_NN=1e-05 with err=8.627185006689546 at it=19
- \* v0\_scn\_mean = 18.91286298189043
- \* MAE = 0.4946407574832506

---



---

- Time interval n.0: [202.52, 202.72]
  - \* y\_true: [23.35318258 28.37081651 28.03104175]
  - \* v\_ann: [27.92213249206543, 27.88567352294922, 28.

127283096313477, 24.01414470414927]

---



---

- Time interval n.1: [202.72, 202.92]
  - \* y\_true: [23.6005682 33.85129081 29.41136895]
  - \* v\_ann: [26.86518669128418, 27.183181762695312, 2

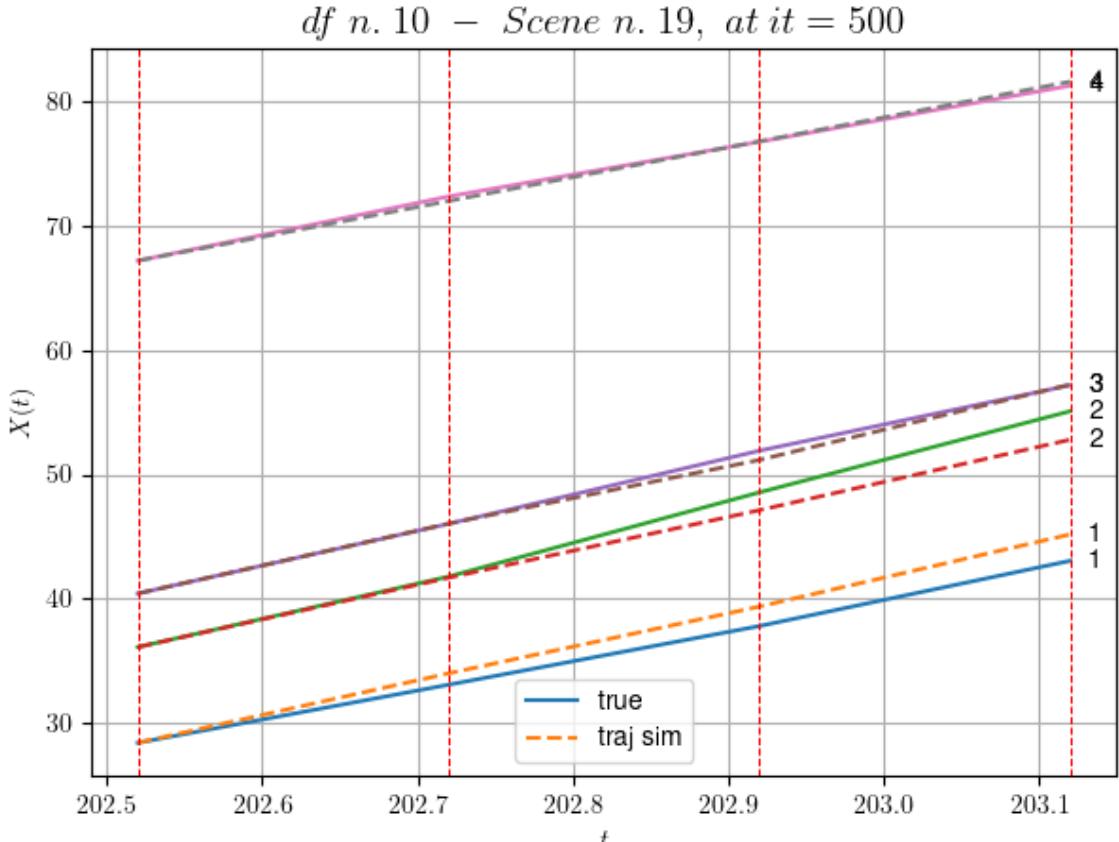
5.608448028564453, 24.01414470414927]

---

- Time interval n.2: [202.92, 203.12]
  - \* y\_true: [26.25082225 32.65166271 26.3315156 ]
  - \* v\_ann: [29.052001953125, 28.374645233154297, 30.342369079589844, 24.01414470414927]

---

- \* err= 0.9932190094319842
- \* Learning rate NN = 0.0005904899444431067
- \* diff = 2.3042476212986607e-05



For scene 19/22

- \* use LR\_NN=0.001 with err=28.64935982123495 at it=19
- \* v0\_scn\_mean = 24.492993649053112
- \* MAE = 0.9932190094319842

---



---

- Time interval n.0: [342.92, 343.12]
  - \* y\_true: [ 9.90771225 17.81228574 16.23940532 ]
  - \* v\_ann: [15.722099304199219, 14.597894668579102, 15.805392265319824, 15.471537794287473]

---

- Time interval n.1: [343.12, 343.32]
  - \* y\_true: [13.33029638 14.00078454 21.70124661 ]
  - \* v\_ann: [15.315848350524902, 16.326618194580078, 1

5.193099021911621, 15.471537794287473]

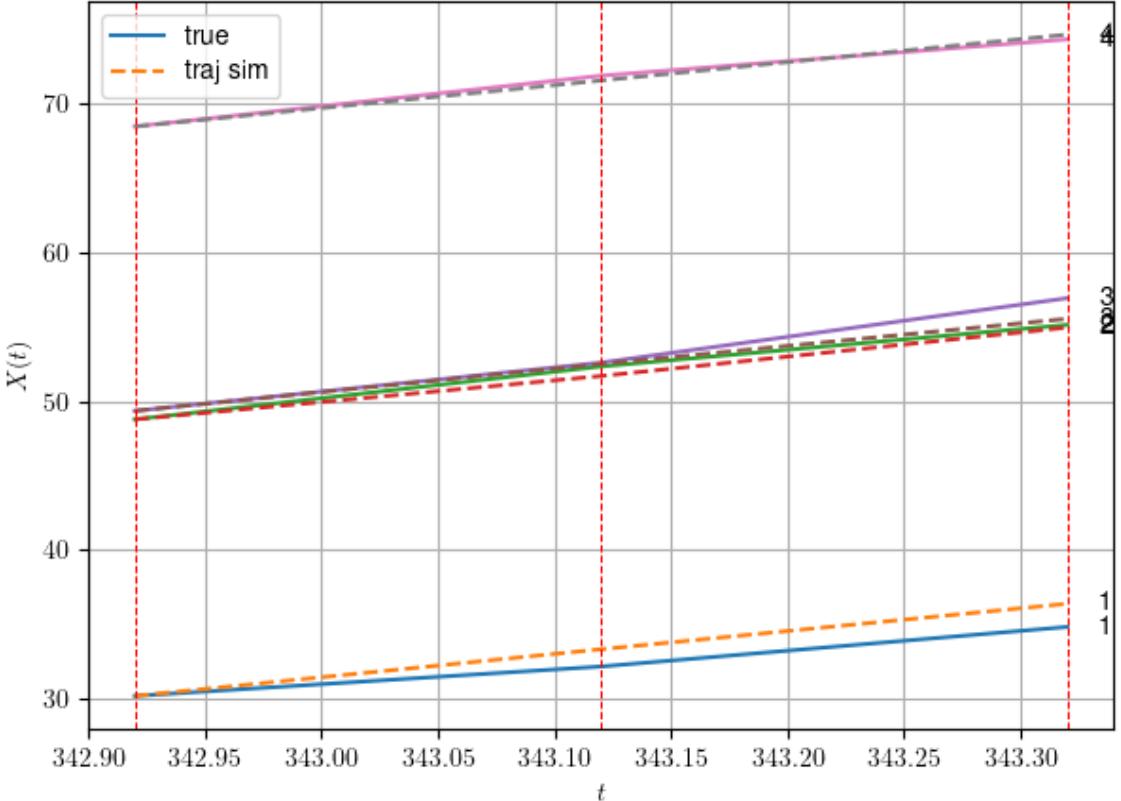
---



---

- \* err= 0.5313323465440628
- \* Learning rate NN = 0.0007289999630302191
- \* diff = 6.738407754325326e-05

*df n. 10 – Scene n. 20, at it = 500*



For scene 20/22

- \* use LR\_NN=0.001 with err=7.8332263913392515 at it=19
- \* v0\_scn\_mean = 16.63376749320833
- \* MAE = 0.5294829923497191

---



---

- Time interval n.0: [441.12, 441.32]
- \* y\_true: [16.40031153 12.42055509 15.89074593]
- \* v\_ann: [15.095914840698242, 15.241066932678223, 1

5.17159652709961, 19.352601744402673]

---



---

- Time interval n.1: [441.32, 441.52]
- \* y\_true: [16.46038907 8.18039995 21.4511847 ]
- \* v\_ann: [15.08248519897461, 15.010482788085938, 1

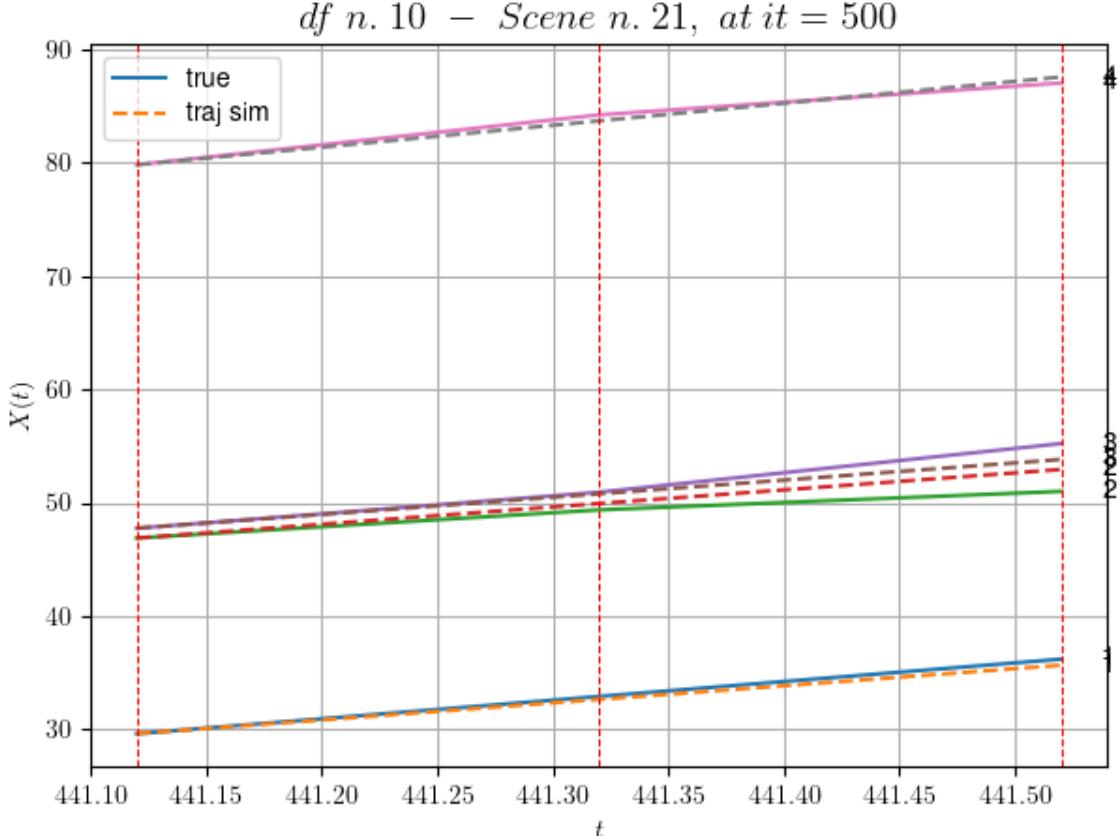
5.163082122802734, 19.352601744402673]

---



---

- \* err= 0.5788415434624172
- \* Learning rate NN = 3.6449993785936385e-05
- \* diff = 0.00030343900875928753



For scene 21/22

- \* use LR\_NN=5e-05 with err=4.053055553783469 at it=19
- \* v0\_scn\_mean = 20.204358956808587
- \* MAE = 0.4557771256255733

---



---

For df=10 with 22 scenes, time taken: 306.11

---



---

Time taken for the computation: 2830.08

Time taken using 1-4-1 NN structure: 2830.10

---



---

NN structure: 1-10-1

---



---

\*\*\*\*\*

\*\*\*\*\*

In df n.1/10 we have 28 scenes

\*\*\*\*\*

\*\*\*\*\*

- Time interval n.0: [14.24, 14.44]

- \* y\_true: [32.1443344 20.77111865]

- \* v\_ann: [26.43701934814453, 26.957870483398438, 2

7.636278285272258]

---



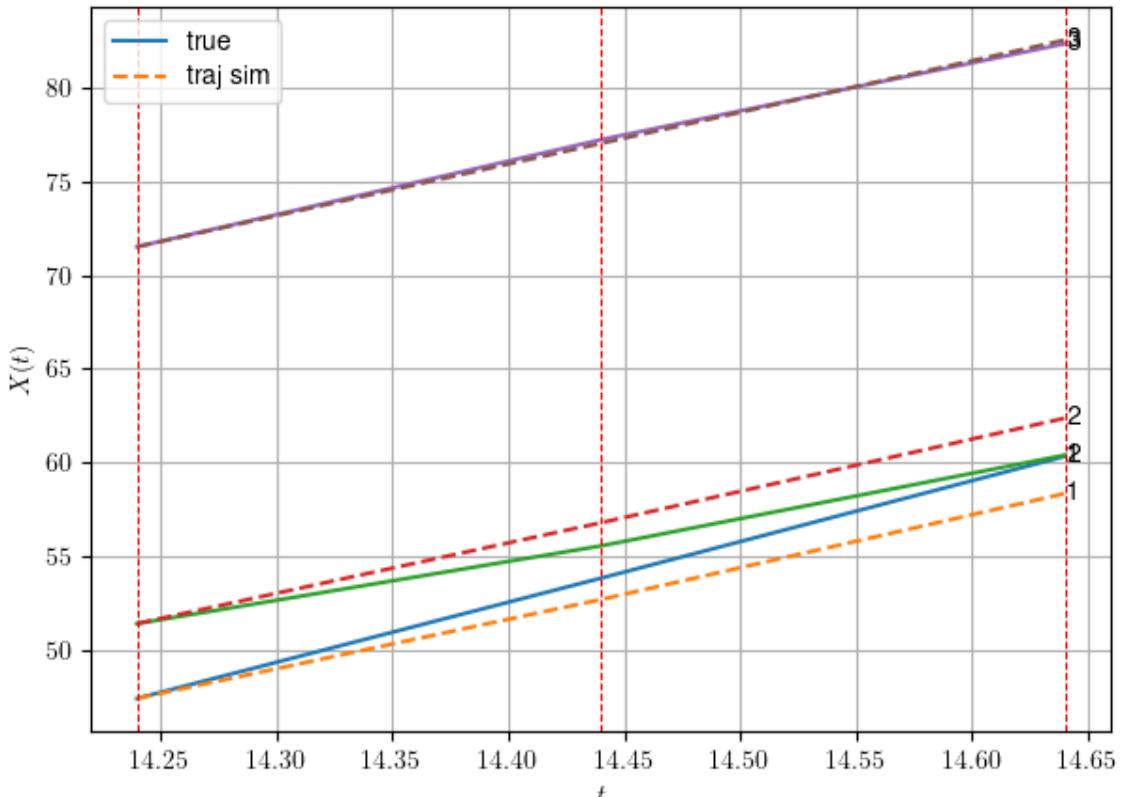
---

- Time interval n.1: [14.44, 14.64]  
 \* y\_true: [32.5721373 24.27162308]  
 \* v\_ann: [28.34090805053711, 27.9674015045166, 27.6  
 36278285272258]

---

\* err= 1.1966879748709014  
 \* Learning rate NN = 0.00036449998151510954  
 \* diff = 0.0004288931809979246

df n. 1 – Scene n. 0, at it = 500



For scene 0/28

\* use LR\_NN=0.0005 with err=16.149760636402657 at it=19  
 \* v0\_scn\_mean = 27.778101482029914  
 \* MAE = 1.1966879748709014

---



---

- Time interval n.0: [23.64, 23.84]  
 \* y\_true: [26.6509107 26.65125804]  
 \* v\_ann: [25.978635787963867, 24.574373245239258, 3  
 1.184420565840124]

---

- Time interval n.1: [23.84, 24.04]  
 \* y\_true: [29.05143519 29.47691739]  
 \* v\_ann: [26.810121536254883, 26.27568817138672, 3  
 1.184420565840124]

---



---

```

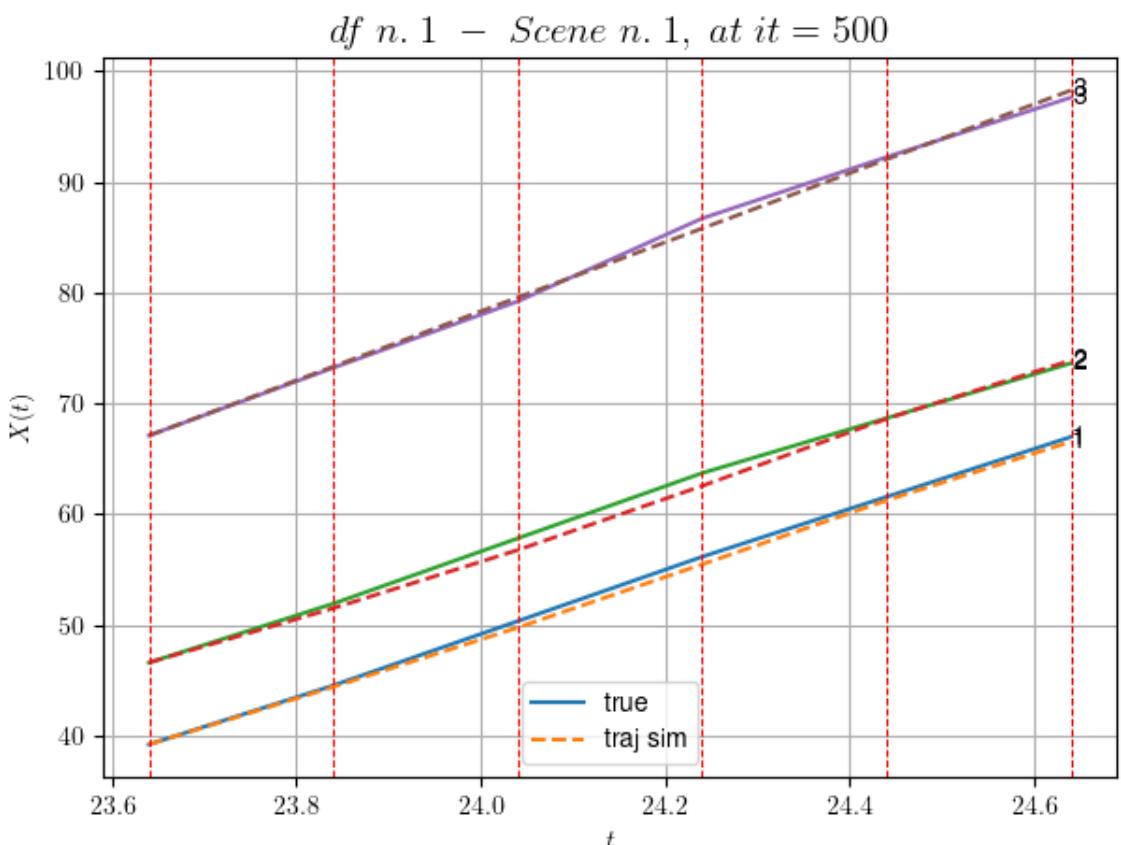
 - Time interval n.2: [24.04, 24.24]
 * y_true: [29.05143519 29.47691739]
 * v_ann: [28.55565643310547, 28.969484329223633, 3
 1.184420565840124]

 - Time interval n.3: [24.24, 24.44]
 * y_true: [27.07699139 24.80226709]
 * v_ann: [28.89255142211914, 30.2910213470459, 31.1
 84420565840124]

 - Time interval n.4: [24.44, 24.64]
 * y_true: [27.07699139 24.80226709]
 * v_ann: [26.511173248291016, 26.43806266784668, 3
 1.184420565840124]

* err= 0.29084232532680493
* Learning rate NN = 0.0003874204121530056
* diff = 0.00019334044403013229

```



For scene 1/28

```

* use LR_NN=0.001 with err=23.940091379714342 at it=19
* v0_scn_mean = 31.11335538506763
* MAE = 0.17118602721069162

```

```
- Time interval n.0: [72.44, 72.64]
 * y_true: [25.85001228 31.10049693]
 * v_ann: [27.77838706970215, 28.478761672973633, 2
8.250920573908264]

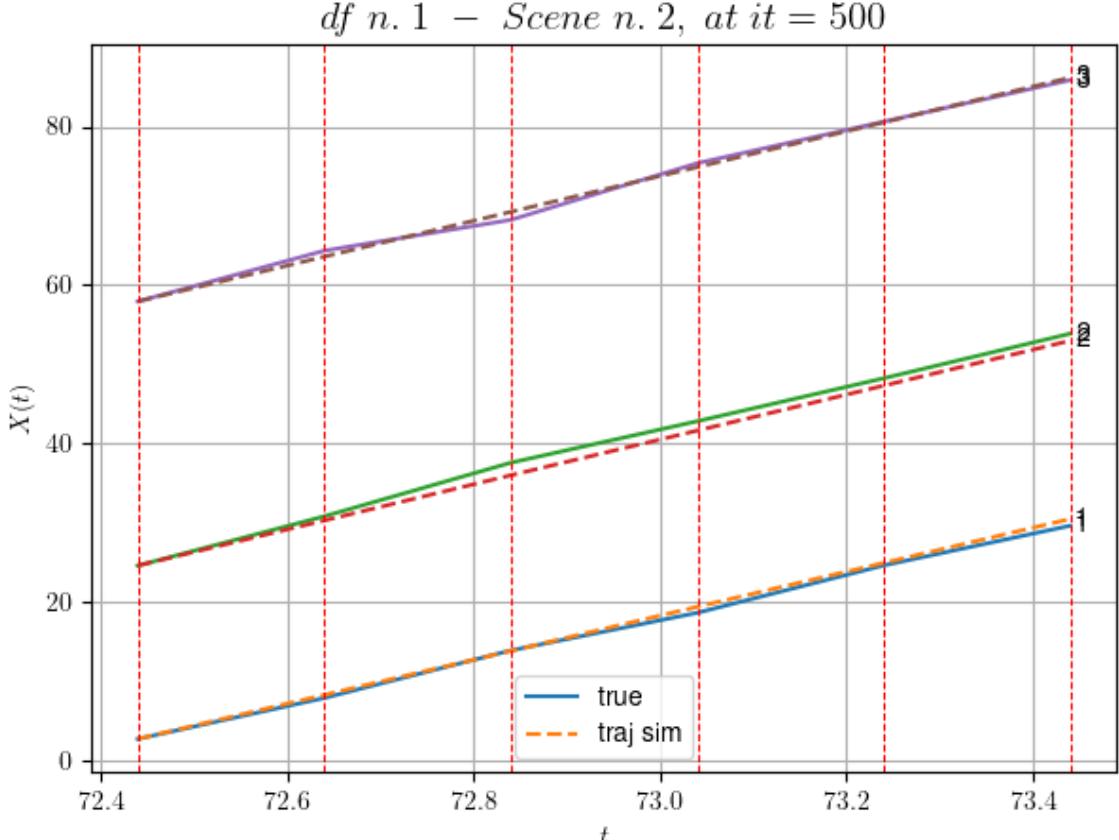
- Time interval n.1: [72.64, 72.84]
 * y_true: [30.00006309 33.82077482]
 * v_ann: [27.729448318481445, 28.526315689086914, 2
8.250920573908264]

- Time interval n.2: [72.84, 73.04]
 * y_true: [23.75011307 26.19081077]
 * v_ann: [27.848241806030273, 28.200435638427734, 2
8.250920573908264]

- Time interval n.3: [73.04, 73.24]
 * y_true: [29.90025591 27.11111625]
 * v_ann: [27.711227416992188, 28.37285804748535, 2
8.250920573908264]

- Time interval n.4: [73.24, 73.44]
 * y_true: [25.05033948 28.161422]
 * v_ann: [27.744722366333008, 28.36016273498535, 2
8.250920573908264]

* err= 0.5169361301660635
* Learning rate NN = 3.874203684972599e-06
* diff = 0.0013159643846122338
```



For scene 2/28

- \* use LR\_NN=1e-05 with err=3.3729158373352113 at it=19
- \* v0\_scn\_mean = 28.355865260943922
- \* MAE = 0.24261897099606014

---



---

- Time interval n.0: [84.24, 84.44]
  - \* y\_true: [29.4403562 23.48047527]
  - \* v\_ann: [27.269454956054688, 28.31584358215332, 29.494365593582028]

---

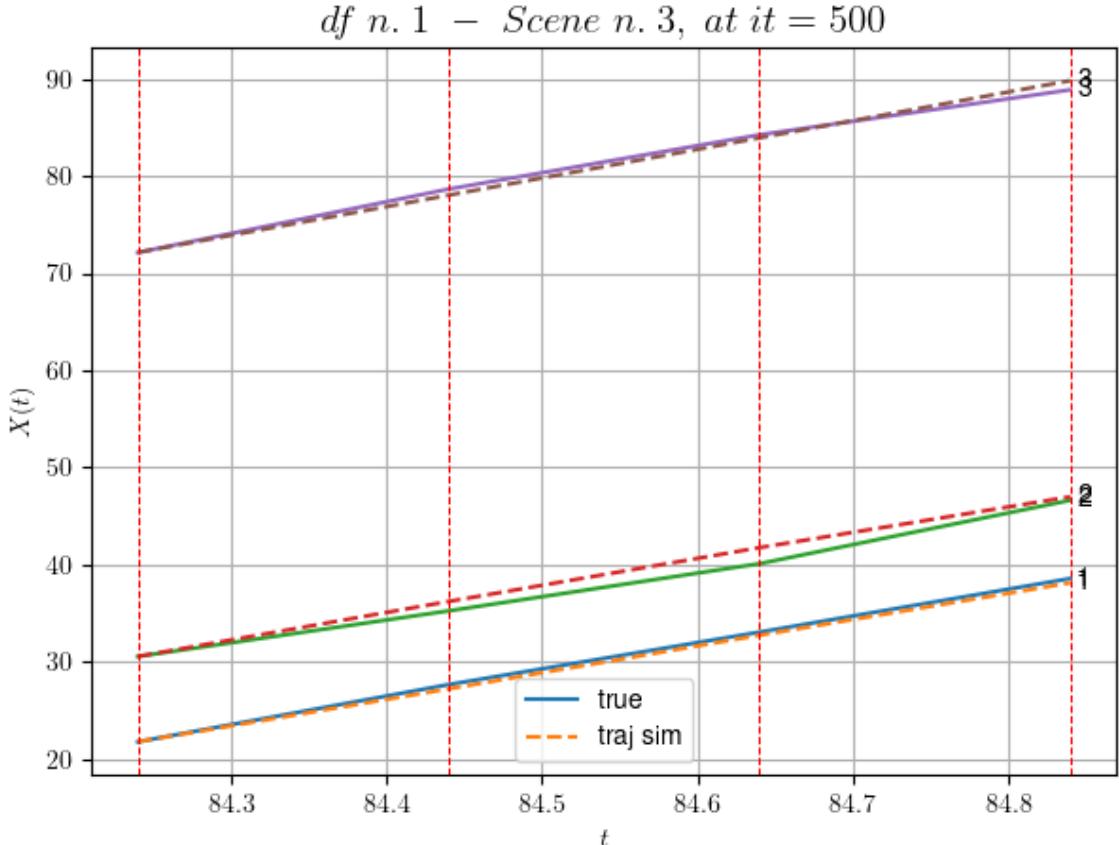
- Time interval n.1: [84.44, 84.64]
  - \* y\_true: [27.01049004 24.28067739]
  - \* v\_ann: [27.57449722290039, 27.70510482788086, 29.494365593582028]

---

- Time interval n.2: [84.64, 84.84]
  - \* y\_true: [27.60069732 32.65118399]
  - \* v\_ann: [27.006250381469727, 26.18635368347168, 29.494365593582028]

---

- \* err= 0.47263276469262266
- \* Learning rate NN = 0.0002952449722215533
- \* diff = 7.597681974164106e-05



For scene 3/28

```
* use LR_NN=0.0005 with err=22.592787815588142 at it=19
* v0_scn_mean = 29.524703635265002
* MAE = 0.4601614185147709
```

---



---

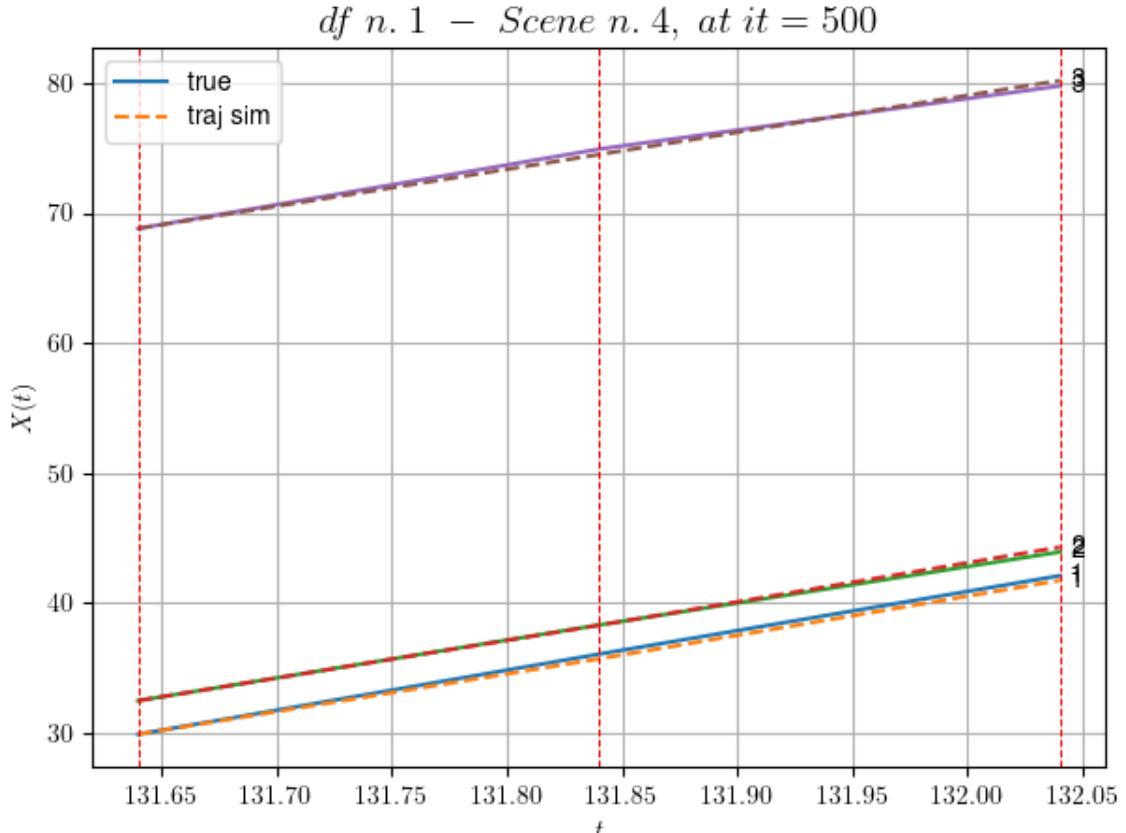
```
- Time interval n.0: [131.64, 131.84]
 * y_true: [30.80073929 29.11067519]
 * v_ann: [29.011356353759766, 28.983219146728516, 2
8.44289270224732]
```

---

```
- Time interval n.1: [131.84, 132.04]
 * y_true: [30.16079766 28.07097758]
 * v_ann: [30.139602661132812, 30.060428619384766, 2
8.44289270224732]
```

---

```
* err= 0.08292771735157929
* Learning rate NN = 0.00036449998151510954
* diff = 4.4224779494950184e-05
```



For scene 4/28

\* use LR\_NN=0.0005 with err=15.597040398615656 at it=19  
 \* v0\_scn\_mean = 28.536319070201557  
 \* MAE = 0.08292771735157929

---



---

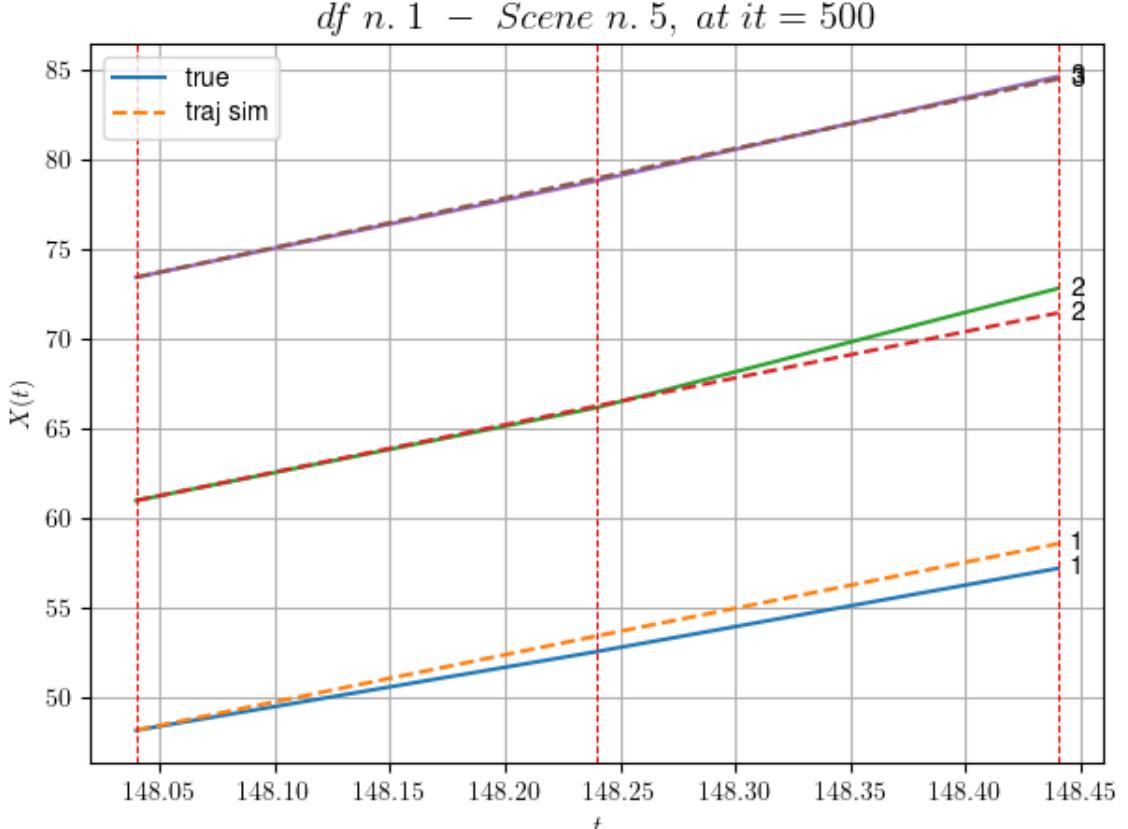
- Time interval n.0: [148.04, 148.24]  
 \* y\_true: [21.93113488 25.90203153]  
 \* v\_ann: [26.293075561523438, 26.378591537475586, 2  
 7.62165672121632]

---

- Time interval n.1: [148.24, 148.44]  
 \* y\_true: [23.17638158 33.20310746]  
 \* v\_ann: [25.67906379699707, 25.891857147216797, 2  
 7.62165672121632]

---

\* err= 0.5070202564414561  
 \* Learning rate NN = 3.6449993785936385e-05  
 \* diff = 7.465409616858043e-05



For scene 5/28

\* use LR\_NN=5e-05 with err=0.7908571890501387 at it=19  
 \* v0\_scn\_mean = 27.764357211160686  
 \* MAE = 0.5043689234200829

---



---

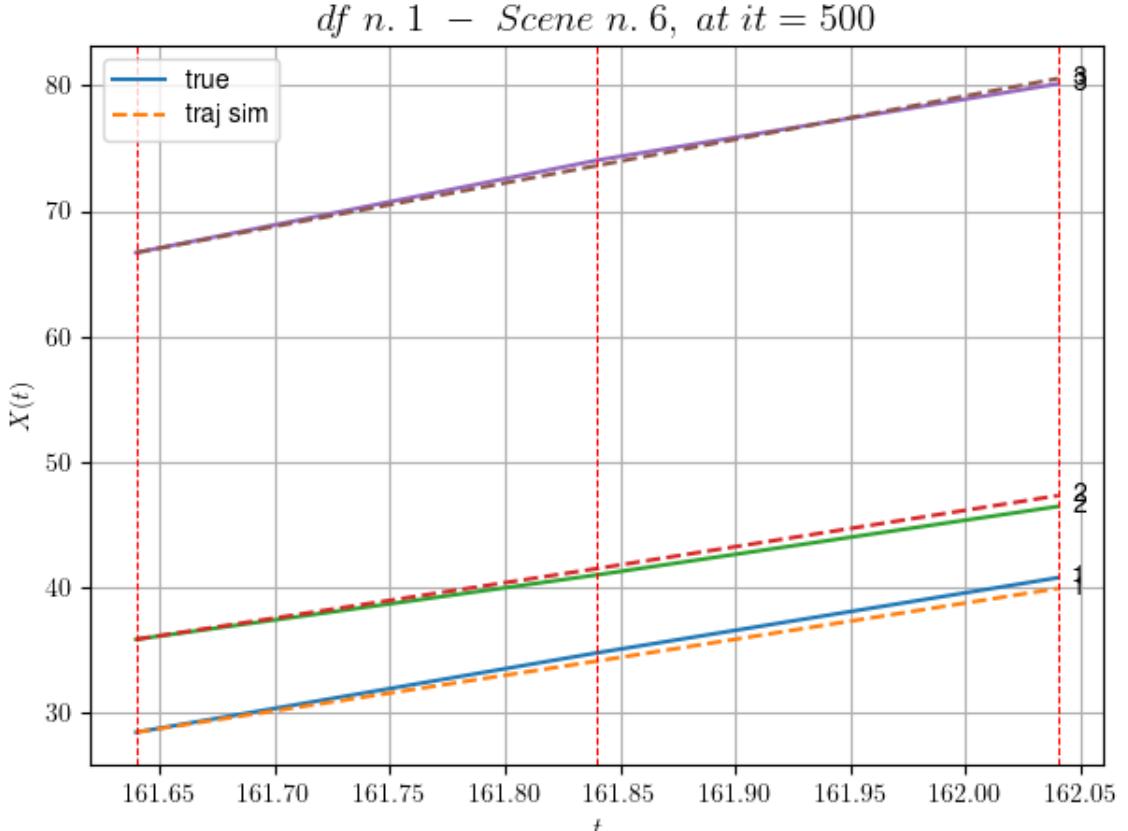
- Time interval n.0: [161.64, 161.84]  
 \* y\_true: [31.66062591 25.70084842]  
 \* v\_ann: [28.397024154663086, 28.221540451049805, 3  
 4.7118151980357]

---

- Time interval n.1: [161.84, 162.04]  
 \* y\_true: [29.96082912 27.30094687]  
 \* v\_ann: [28.959793090820312, 29.090524673461914, 3  
 4.7118151980357]

---

\* err= 0.278809841531622  
 \* Learning rate NN = 7.289998757187277e-05  
 \* diff = 0.00013573096051061606



For scene 6/28

\* use LR\_NN=0.0001 with err=12.670127269966324 at it=19  
 \* v0\_scn\_mean = 34.42910649770427  
 \* MAE = 0.26259131117372114

---



---

```

- Time interval n.0: [164.04, 164.24]

 * y_true: [27.950014 32.5307084]

 * v_ann: [23.208593368530273, 27.679119110107422, 3

 2.432850946243065]

- Time interval n.1: [164.24, 164.44]

 * y_true: [26.70005561 31.43096027]

 * v_ann: [29.523590087890625, 34.538509368896484, 3

 2.432850946243065]

- Time interval n.2: [164.44, 164.64]

 * y_true: [26.20012328 27.61110245]

 * v_ann: [24.797780990600586, 29.88755989074707, 3

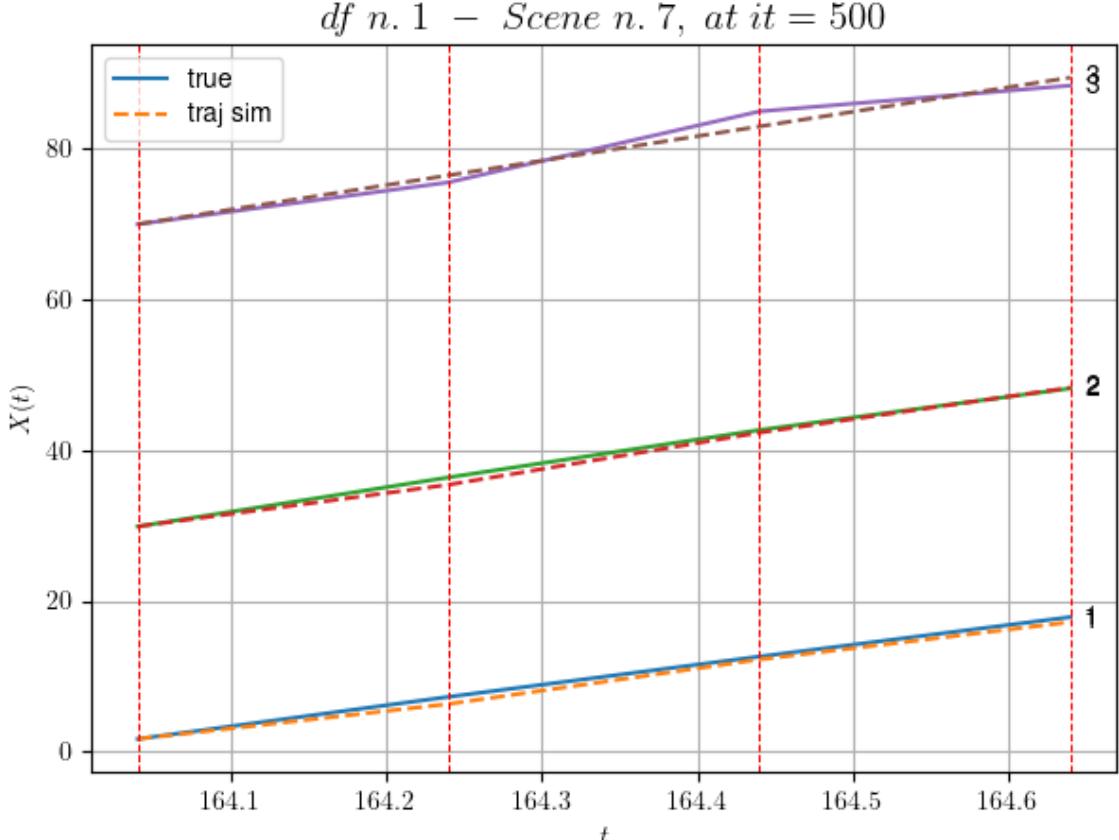
 2.432850946243065]

* err= 0.7109922616695817

* Learning rate NN = 0.0002952449722215533

* diff = 0.0011224754477016097

```



For scene 7/28

- \* use LR\_NN=0.0005 with err=1.575730052336387 at it=19
- \* v0\_scn\_mean = 32.28687999869846
- \* MAE = 0.6490442303323506

---



---

- Time interval n.0: [215.64, 215.84]
- \* y\_true: [29.28007092 34.74092457]
- \* v\_ann: [29.59650230407715, 32.893184661865234, 37.48377847226491]

---



---

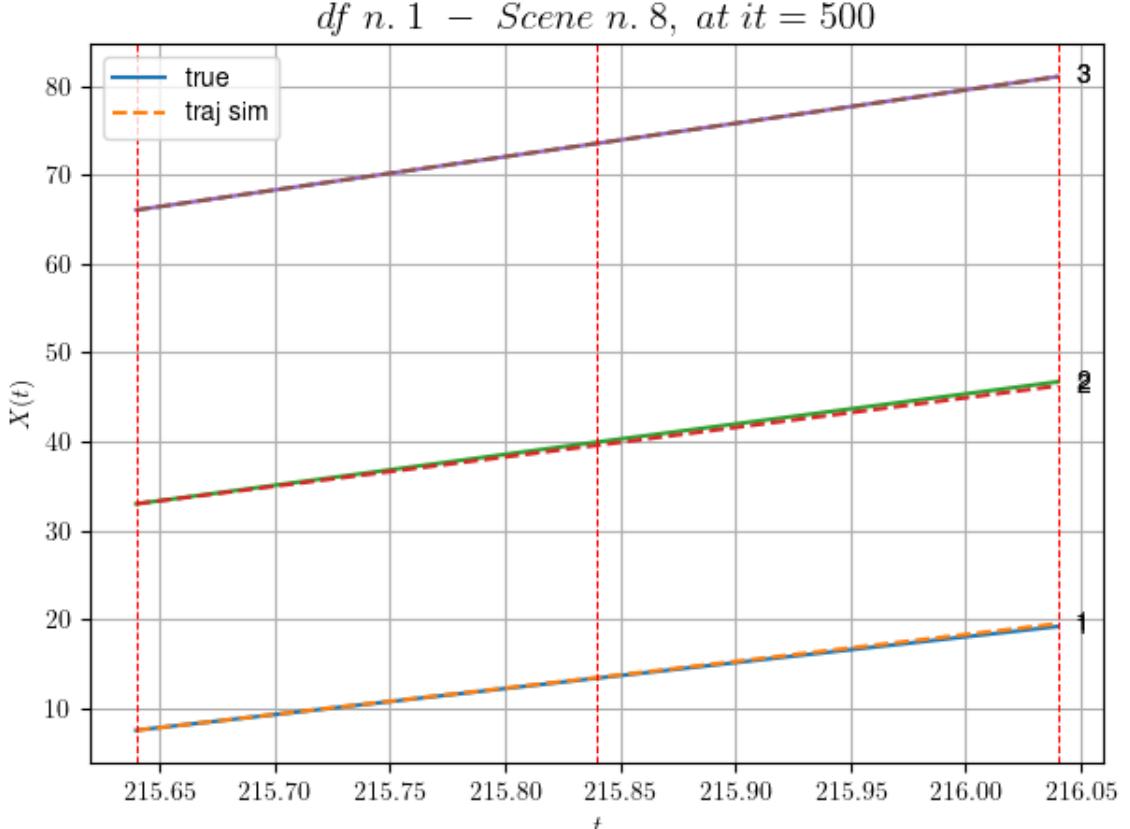
- Time interval n.1: [215.84, 216.04]
- \* y\_true: [29.05016449 33.87124084]
- \* v\_ann: [30.30157470703125, 33.41101837158203, 37.48377847226491]

---



---

- \* err= 0.05025050836117292
- \* Learning rate NN = 3.6449993785936385e-05
- \* diff = 0.00019256428223265315



For scene 8/28

\* use LR\_NN=5e-05 with err=1.3366240118519734 at it=19  
 \* v0\_scn\_mean = 37.03475209993424  
 \* MAE = 0.04130512580928756

---



---

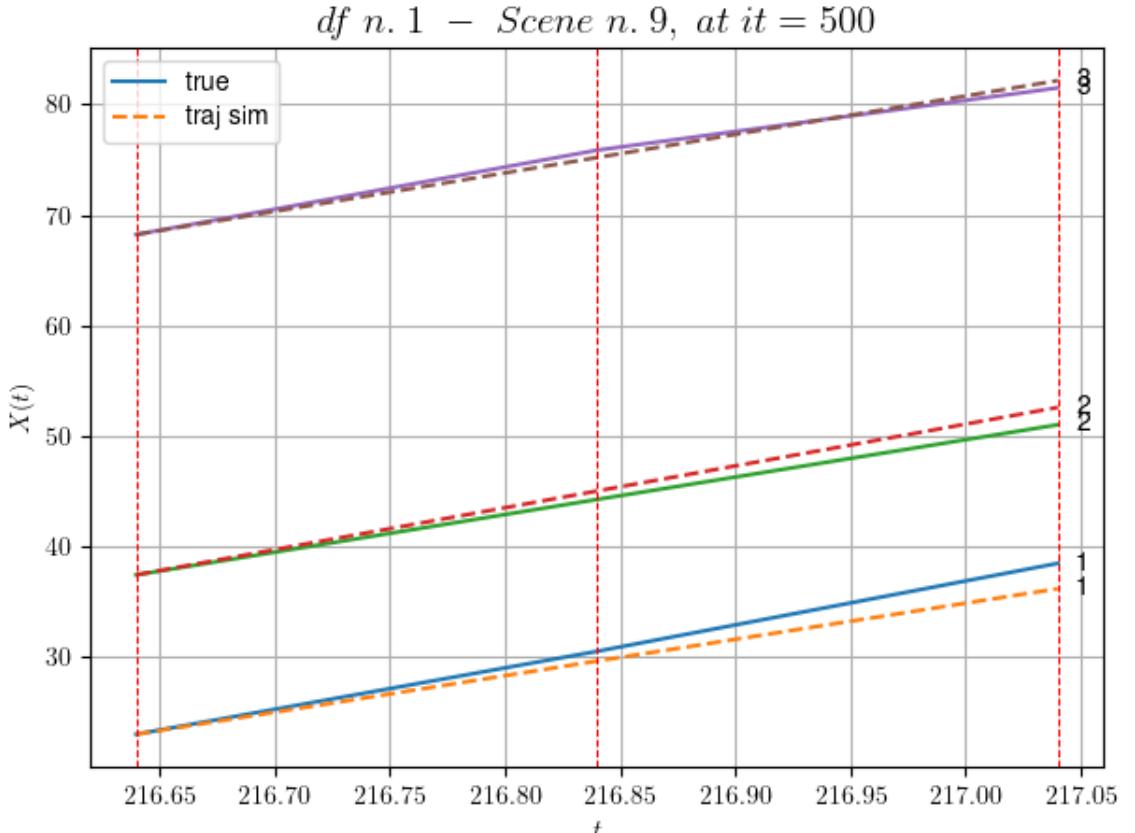
- Time interval n.0: [216.64, 216.84]  
 \* y\_true: [37.52054047 34.13112536]  
 \* v\_ann: [33.125579833984375, 37.96872329711914, 3  
 4.851825110755364]

---

- Time interval n.1: [216.84, 217.04]  
 \* y\_true: [39.83095433 33.81148861]  
 \* v\_ann: [32.7590446472168, 37.832977294921875, 34.  
 851825110755364]

---

\* err= 1.108587337317643  
 \* Learning rate NN = 3.6449993785936385e-05  
 \* diff = 0.015600623874305164



For scene 9/28

\* use LR\_NN=5e-05 with err=9.241861646010216 at it=19  
 \* v0\_scn\_mean = 34.56071582194628  
 \* MAE = 1.108587337317643

---



---

- Time interval n.0: [240.64, 240.84]  
 \* y\_true: [28.54090912 24.62265201]  
 \* v\_ann: [31.682897567749023, 30.193151473999023, 3  
 3.344769841086446]

---



---

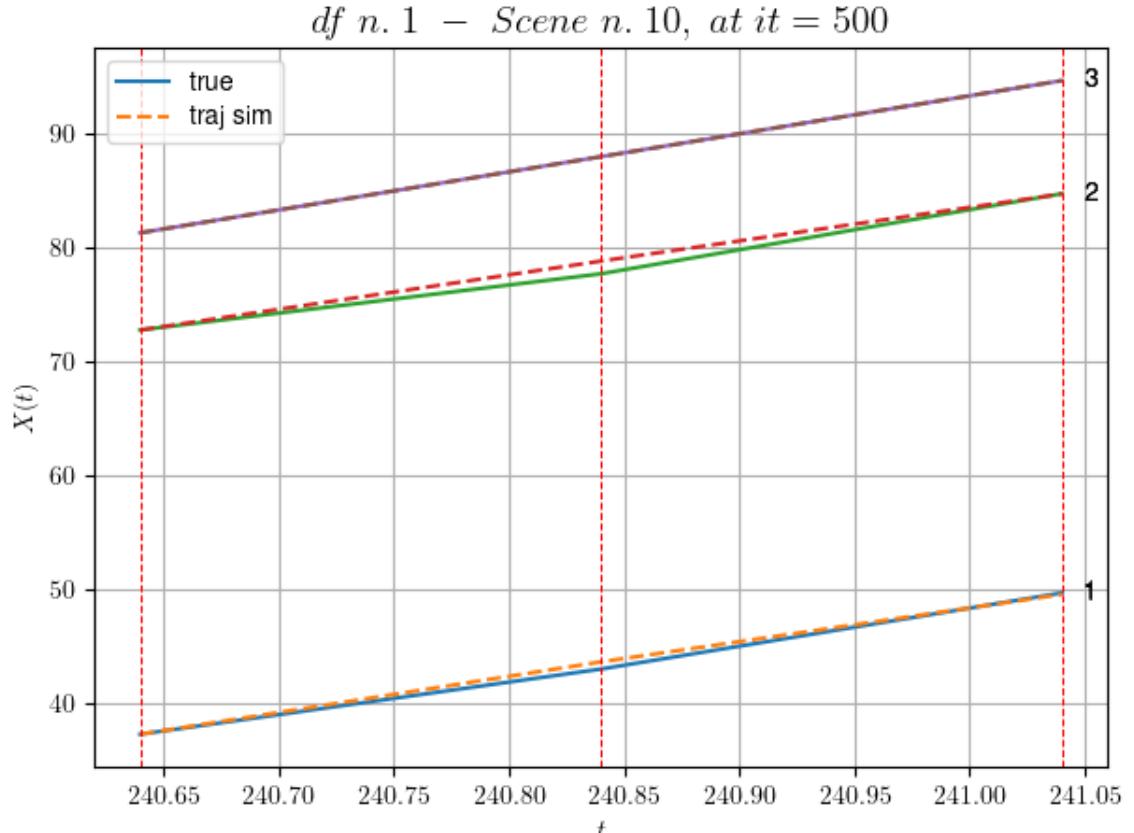
- Time interval n.1: [240.84, 241.04]  
 \* y\_true: [33.36143299 35.0745887 ]  
 \* v\_ann: [29.538007736206055, 29.393951416015625, 3  
 3.344769841086446]

---



---

\* err= 0.18391760587681294  
 \* Learning rate NN = 3.6449993785936385e-05  
 \* diff = 0.0002488313354377658



For scene 10/28

- \* use LR\_NN=5e-05 with err=9.001717684606158 at it=19
- \* v0\_scn\_mean = 33.144083800793794
- \* MAE = 0.17236100922770636

---



---

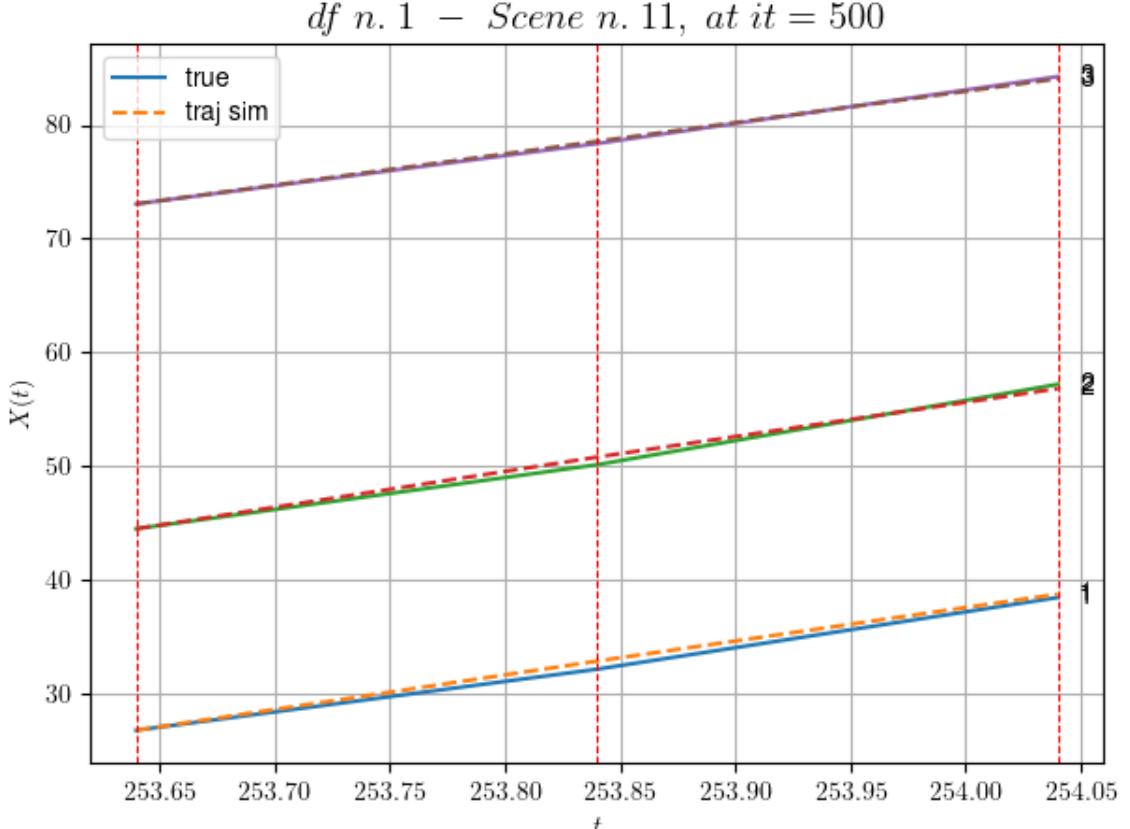
- Time interval n.0: [253.64, 253.84]
- \* y\_true: [26.81042151 28.10122634]
- \* v\_ann: [30.368547439575195, 31.465587615966797, 2  
7.4748795823492]

---

- Time interval n.1: [253.84, 254.04]
- \* y\_true: [31.5007643 35.35225595]
- \* v\_ann: [29.422147750854492, 30.089614868164062, 2  
7.4748795823492]

---

- \* err= 0.14115209429175665
- \* Learning rate NN = 3.6449993785936385e-05
- \* diff = 0.00010164743071167104



For scene 11/28

\* use LR\_NN=5e-05 with err=1.581966061667423 at it=19  
 \* v0\_scn\_mean = 27.626386694035666  
 \* MAE = 0.1354294465241828

- Time interval n.0: [262.64, 262.84]  
 \* y\_true: [36.75102901 34.57147294]  
 \* v\_ann: [30.19197654724121, 29.313125610351562, 3  
 5.93109742746418]

- Time interval n.1: [262.84, 263.04]  
 \* y\_true: [20.65076329 34.76181544]  
 \* v\_ann: [32.8702507019043, 33.9151725769043, 35.93  
 109742746418]

- Time interval n.2: [263.04, 263.24]  
 \* y\_true: [40.30193432 23.95156631]  
 \* v\_ann: [29.316654205322266, 29.34764862060547, 3  
 5.93109742746418]

- Time interval n.3: [263.24, 263.44]  
 \* y\_true: [32.10201673 27.4721836 ]  
 \* v\_ann: [31.52178192138672, 32.84748458862305, 35.

93109742746418]

```

 - Time interval n.4: [263.44, 263.64]

 * y_true: [17.75131644 43.4543127]

 * v_ann: [30.849178314208984, 30.453548431396484, 3

5.93109742746418]

```

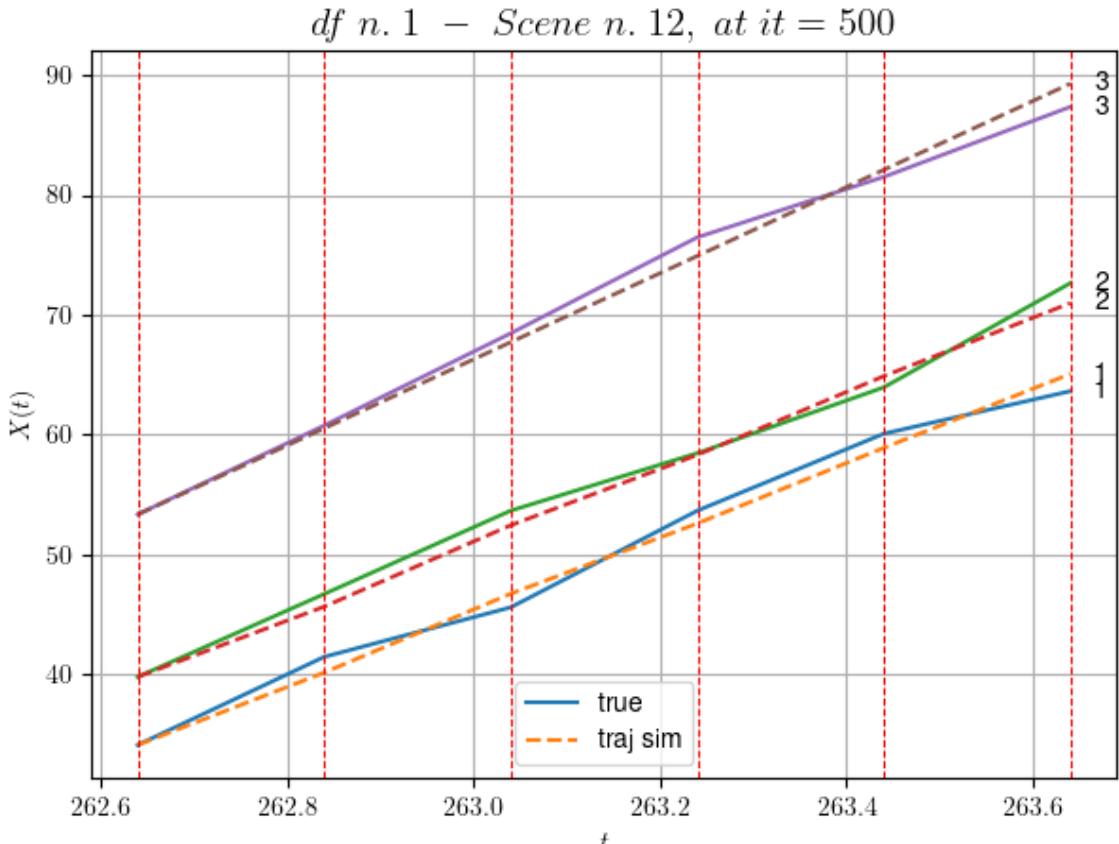
```

 * err= 1.1658175655388694

 * Learning rate NN = 0.0003874204121530056

 * diff = 0.0025408646156093173

```



For scene 12/28

```

* use LR_NN=0.001 with err=28.75032144164716 at it=19
* v0_scn_mean = 35.575231848110015
* MAE = 1.1658175655388694

```

```

=====

=====

 - Time interval n.0: [314.84, 315.04]

 * y_true: [29.62016755 31.54681236]

 * v_ann: [31.179393768310547, 29.84925651550293, 3

0.926247858927034]

```

```

 - Time interval n.1: [315.04, 315.24]

 * y_true: [30.12030665 32.32740505]

 * v_ann: [31.081771850585938, 29.93510627746582, 3

```

0.926247858927034]

---

- Time interval n.2: [315.24, 315.44]
  - \* y\_true: [25.99040223 31.02242591]
  - \* v\_ann: [32.22804641723633, 30.829715728759766, 3

0.926247858927034]

---

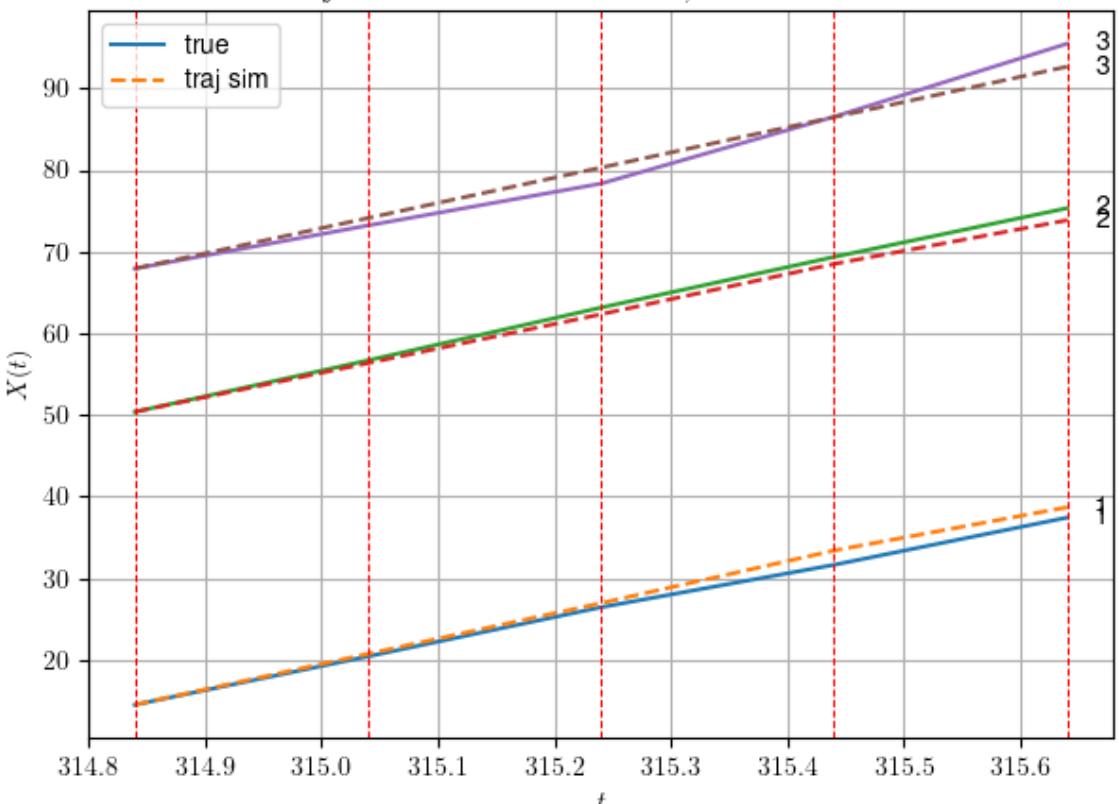
- Time interval n.3: [315.44, 315.64]
  - \* y\_true: [28.95064907 29.88823464]
  - \* v\_ann: [26.489055633544922, 26.778406143188477, 3

0.926247858927034]

---

- \* err= 1.4205717006001912
- \* Learning rate NN = 0.000239148415857926
- \* diff = 0.003165451755266613

*df n. 1 – Scene n. 13, at it = 500*



For scene 13/28

- \* use LR\_NN=0.0005 with err=18.97724938015052 at it=19
- \* v0\_scn\_mean = 30.87067302897777
- \* MAE = 1.4205717006001912

---



---

For scene 14/28

- \* use LR\_NN=0.001 with err=16.363576475398187 at it=19
- \* v0\_scn\_mean = 29.827544841127878

\* MAE = 0.5161498060663697

---



---

- Time interval n.0: [354.04, 354.24]  
 \* y\_true: [29.77169216 32.15176545]  
 \* v\_ann: [29.087648391723633, 26.726551055908203, 3  
 2.693522172935744]

---

- Time interval n.1: [354.24, 354.44]  
 \* y\_true: [35.38251939 26.55179403]  
 \* v\_ann: [30.14626121520996, 30.240840911865234, 3  
 2.693522172935744]

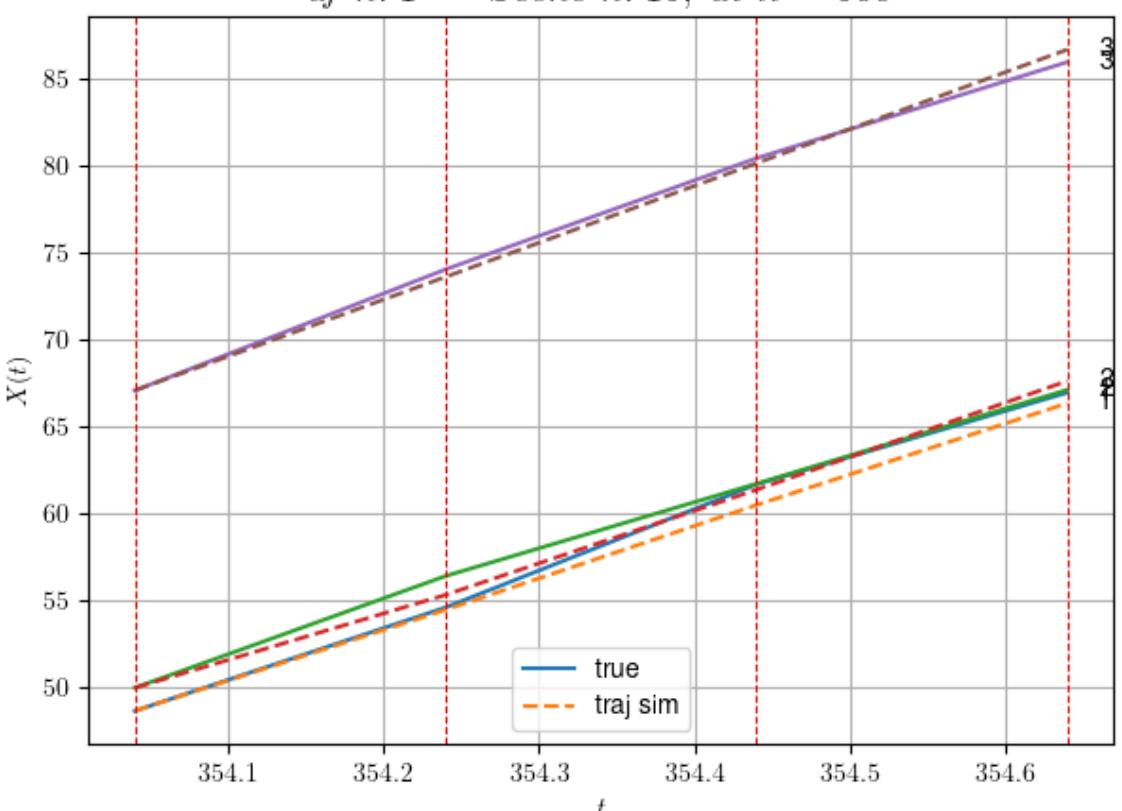
---

- Time interval n.2: [354.44, 354.64]  
 \* y\_true: [26.40441101 27.01000163]  
 \* v\_ann: [29.27849578857422, 31.3007755279541, 32.6  
 93522172935744]

---

\* err= 0.3448934359741586  
 \* Learning rate NN = 0.0005904899444431067  
 \* diff = 0.000405551076213595

*df n. 1 – Scene n. 15, at it = 500*



For scene 15/28

\* use LR\_NN=0.001 with err=24.899908285444983 at it=19  
 \* v0\_scn\_mean = 32.53191096349224

\* MAE = 0.3448934359741586

---



---

- Time interval n.0: [363.44, 363.64]  
 \* y\_true: [23.6502752 28.55056389]  
 \* v\_ann: [28.994592666625977, 28.451398849487305, 3  
 8.923494443014356]

---

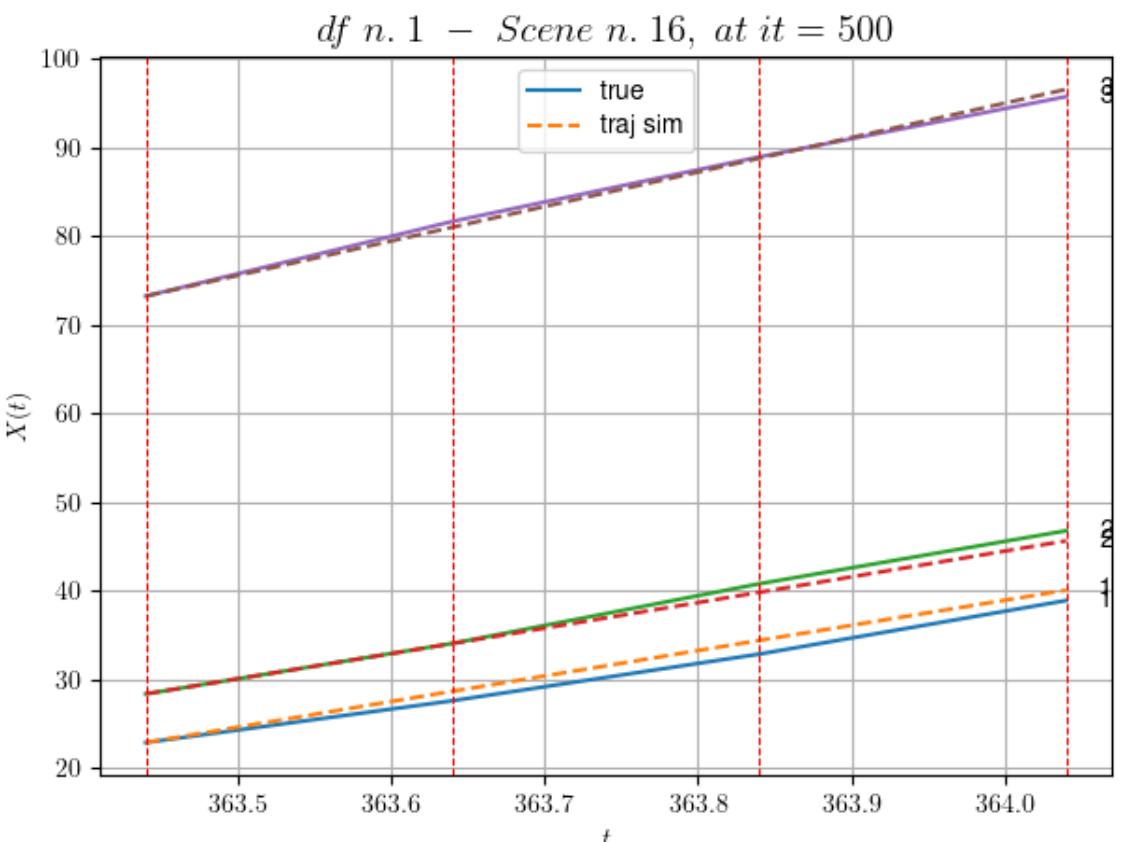
- Time interval n.1: [363.64, 363.84]  
 \* y\_true: [26.3393983 33.66093634]  
 \* v\_ann: [28.712604522705078, 28.93097496032715, 3  
 8.923494443014356]

---

- Time interval n.2: [363.84, 364.04]  
 \* y\_true: [30.2407755 29.94110461]  
 \* v\_ann: [28.343042373657227, 29.092906951904297, 3  
 8.923494443014356]

---

\* err= 0.6860842141148242  
 \* Learning rate NN = 5.9048988987342454e-06  
 \* diff = 0.0009483553693497848



For scene 16/28

\* use LR\_NN=1e-05 with err=23.969207966064406 at it=19  
 \* v0\_scn\_mean = 38.388085177079546

\* MAE = 0.389594066190031

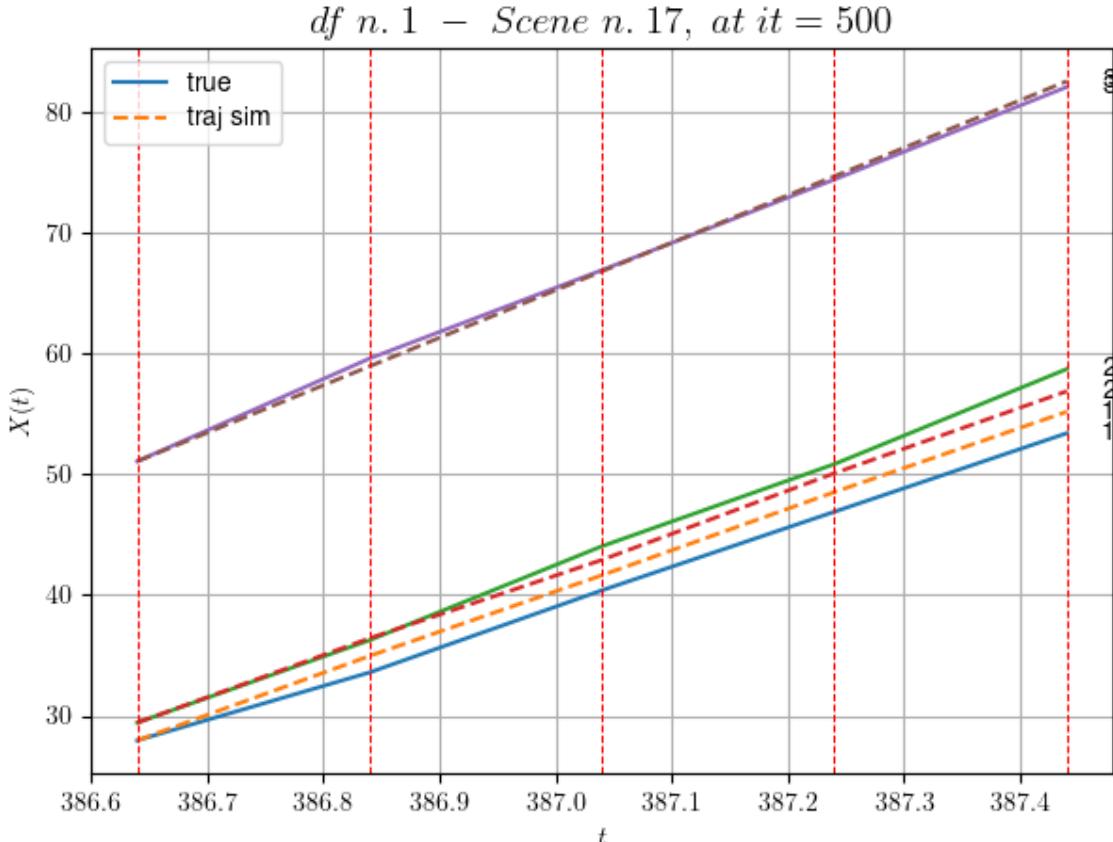
```
=====
=====
- Time interval n.0: [386.64, 386.84]
 * y_true: [28.15052447 34.1607672]
 * v_ann: [34.96709442138672, 34.96508026123047, 39.
346100167621834]

- Time interval n.1: [386.84, 387.04]
 * y_true: [34.00091123 38.91120777]
 * v_ann: [33.43223571777344, 32.45003128051758, 39.
346100167621834]

- Time interval n.2: [387.04, 387.24]
 * y_true: [32.52639997 34.00151192]
 * v_ann: [34.416297912597656, 35.87350082397461, 3
9.346100167621834]

- Time interval n.3: [387.24, 387.44]
 * y_true: [32.52639997 39.36234046]
 * v_ann: [33.29207229614258, 33.95043182373047, 39.
346100167621834]

* err= 1.0152511111367992
* Learning rate NN = 0.000478296831715852
* diff = 0.0006537580495031836
```



For scene 17/28

- \* use LR\_NN=0.001 with err=34.801848911858436 at it=19
- \* v0\_scn\_mean = 38.78533457718483
- \* MAE = 1.0152511111367992

---



---

- Time interval n.0: [431.84, 432.04]
- \* y\_true: [30.8908033 31.49166882]
- \* v\_ann: [32.35597229003906, 32.47970199584961, 30.0841616361873]

---



---

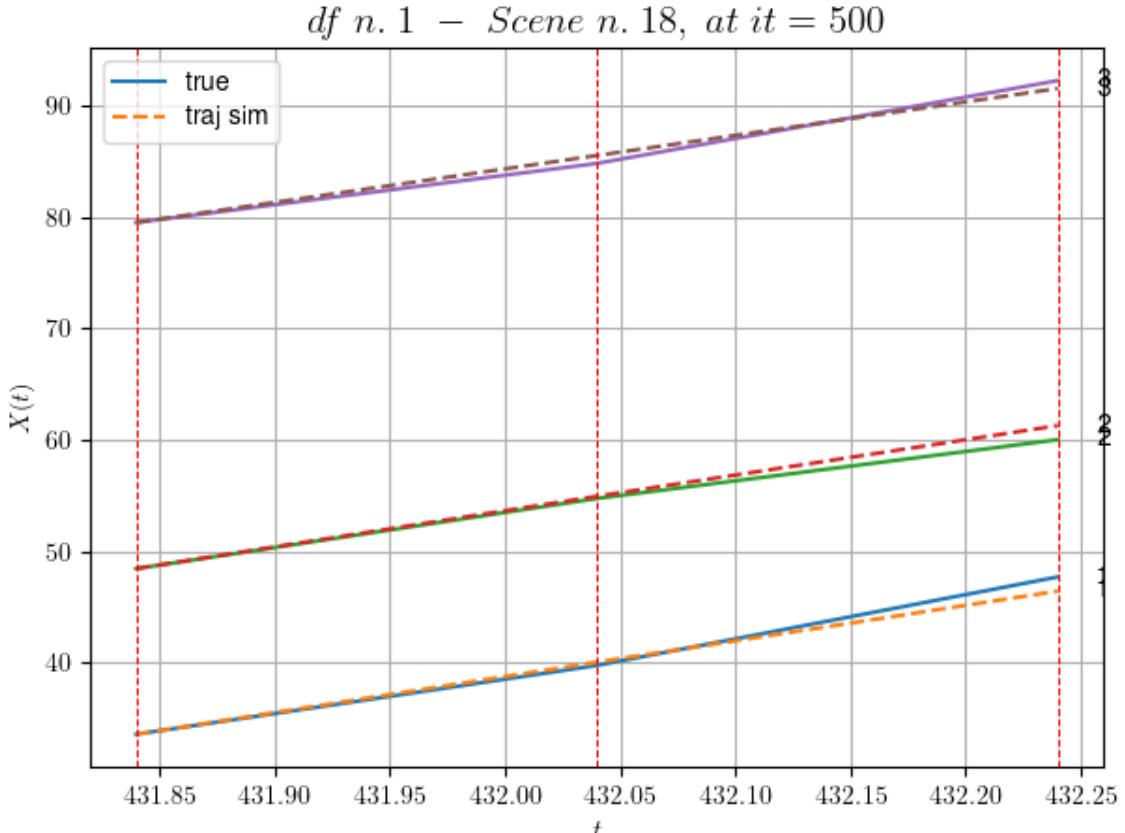
- Time interval n.1: [432.04, 432.24]
- \* y\_true: [39.73151551 26.376716 ]
- \* v\_ann: [31.883075714111328, 31.729047775268555, 30.0841616361873]

---



---

- \* err= 0.4860263992937915
- \* Learning rate NN = 7.289998757187277e-05
- \* diff = 4.222994485714171e-05



For scene 18/28

```
* use LR_NN=0.0001 with err=6.731148013108808 at it=19
* v0_scn_mean = 30.07911194179441
* MAE = 0.4860263992937915
```

---



---

```
- Time interval n.0: [446.24, 446.44]
* y_true: [25.89017971 23.30046083]
* v_ann: [26.498310089111328, 26.469999313354492, 2
9.55442920912558]
```

---

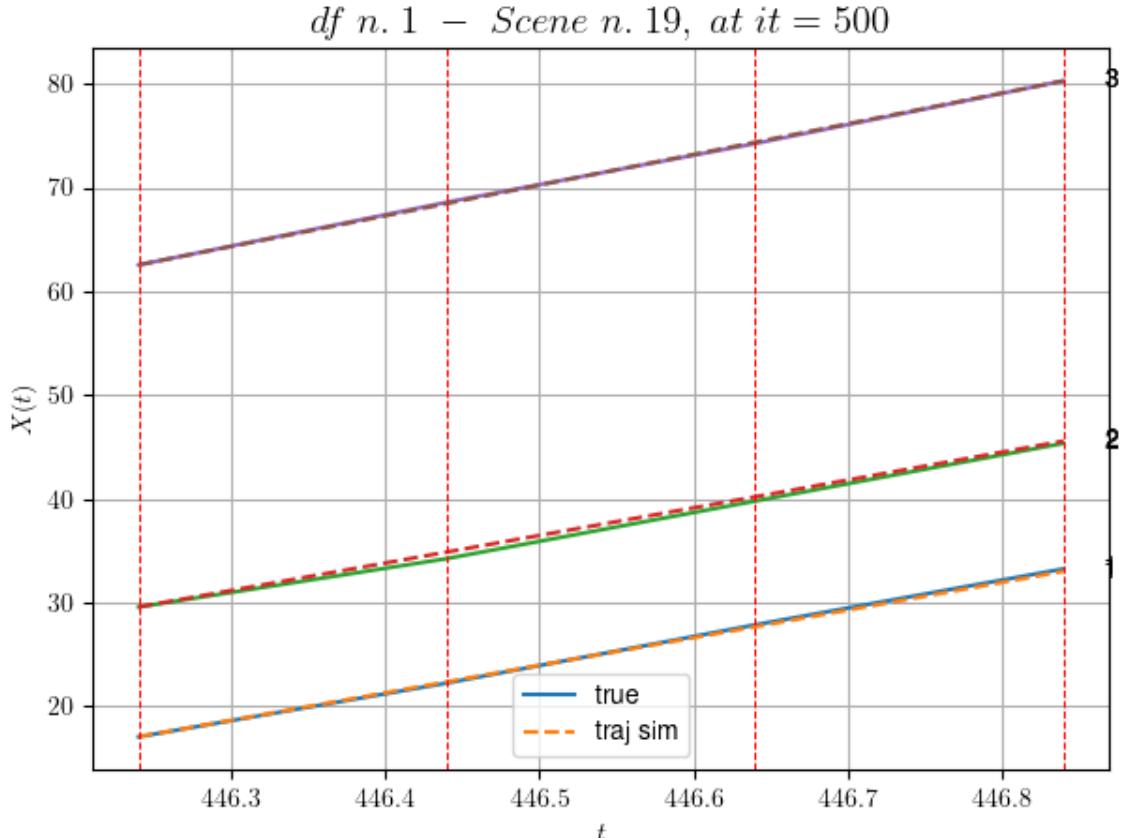
```
- Time interval n.1: [446.44, 446.64]
* y_true: [28.05031625 27.72075411]
* v_ann: [26.49686622619629, 26.594772338867188, 2
9.55442920912558]
```

---

```
- Time interval n.2: [446.64, 446.84]
* y_true: [26.94045507 27.8009832]
* v_ann: [26.7179012298584, 26.877225875854492, 29.
55442920912558]
```

---

```
* err= 0.0631685562973368
* Learning rate NN = 5.904899080633186e-05
* diff = 2.617933082621482e-06
```



For scene 19/28

```
* use LR_NN=0.0001 with err=11.401637344469512 at it=19
* v0_scn_mean = 29.581163436573405
* MAE = 0.05457630460622873
```

---



---

```
- Time interval n.0: [447.44, 447.64]
* y_true: [31.0713577 29.31148494]
* v_ann: [27.687030792236328, 26.515941619873047, 3
2.584860045176995]
```

---

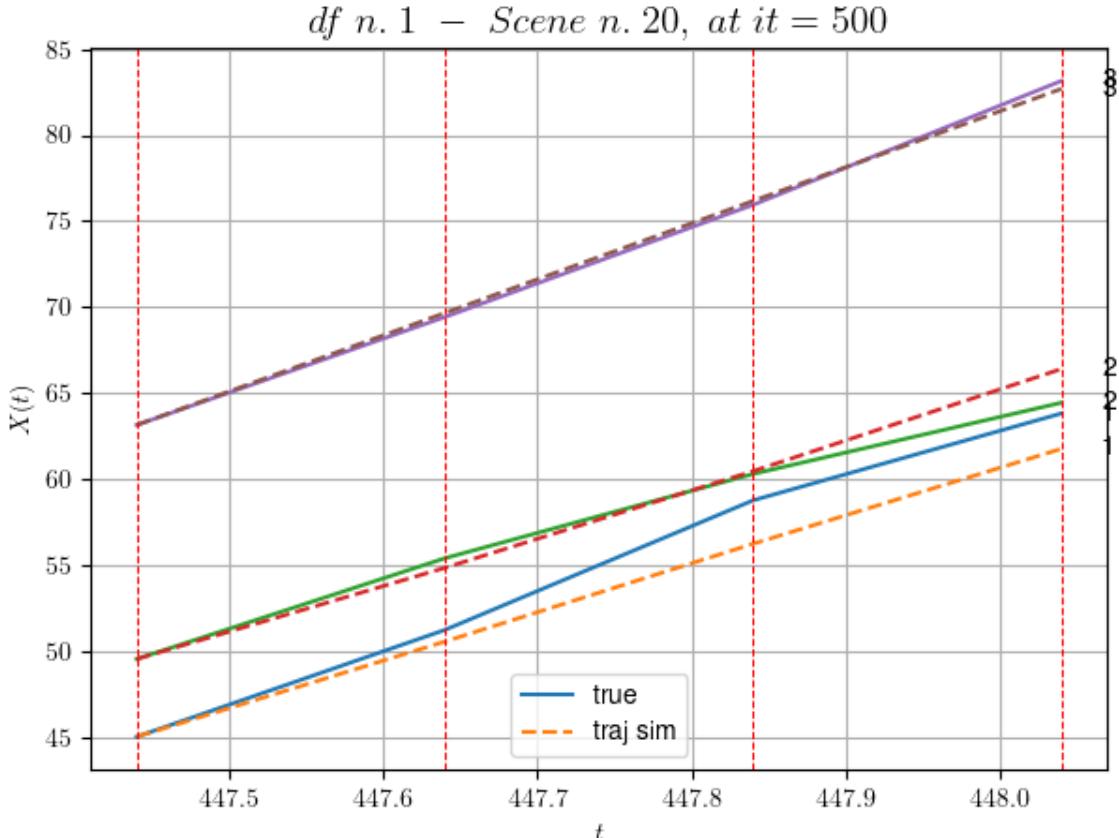
```
- Time interval n.1: [447.64, 447.84]
* y_true: [37.68225285 24.50151408]
* v_ann: [28.42885971069336, 28.113466262817383, 3
2.584860045176995]
```

---

```
- Time interval n.2: [447.84, 448.04]
* y_true: [25.261801 20.71149408]
* v_ann: [27.61557388305664, 29.71030616760254, 32.
584860045176995]
```

---

```
* err= 1.2993047327546976
* Learning rate NN = 0.0002952449722215533
* diff = 0.001304111425167287
```



For scene 20/28

- \* use LR\_NN=0.0005 with err=24.5409456202314 at it=19
- \* v0\_scn\_mean = 32.429768558521346
- \* MAE = 0.875946849746373

---



---

- Time interval n.0: [495.84, 496.04]
- \* y\_true: [23.1307843 13.57637571]
- \* v\_ann: [20.54403305053711, 19.578258514404297, 2 3.563093490872152]

---



---

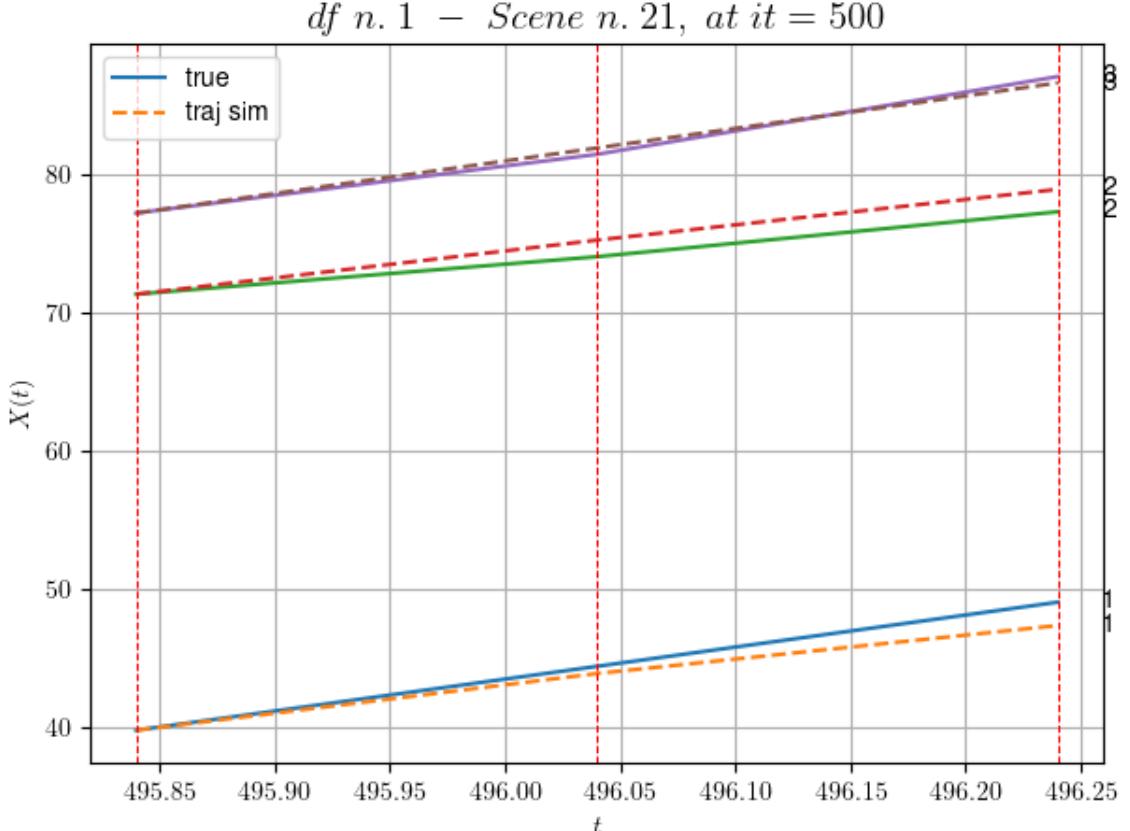
- Time interval n.1: [496.04, 496.24]
- \* y\_true: [23.23098731 16.2618474 ]
- \* v\_ann: [17.372661590576172, 18.391544342041016, 2 3.563093490872152]

---



---

- \* err= 0.8475272289599843
- \* Learning rate NN = 0.0007289999630302191
- \* diff = 7.345916145595766e-05



For scene 21/28

```
* use LR_NN=0.001 with err=2.5734554646632404 at it=19
* v0_scn_mean = 23.949307592416627
* MAE = 0.8465206434415312
```

---



---

- Time interval n.0: [496.84, 497.04]
  - \* y\_true: [19.47545433 17.05100655]
  - \* v\_ann: [17.974472045898438, 18.110313415527344, 2
  - 3.67102213011834]
  
- Time interval n.1: [497.04, 497.24]
  - \* y\_true: [13.44536038 20.12642582]
  - \* v\_ann: [18.060138702392578, 18.03681755065918, 2
  - 3.67102213011834]
  
- Time interval n.2: [497.24, 497.44]
  - \* y\_true: [18.49565962 22.17670532]
  - \* v\_ann: [17.429359436035156, 17.387351989746094, 2
  - 3.67102213011834]
  
- Time interval n.3: [497.44, 497.64]
  - \* y\_true: [20.96085077 13.7761341 ]
  - \* v\_ann: [19.493816375732422, 18.775157928466797, 2

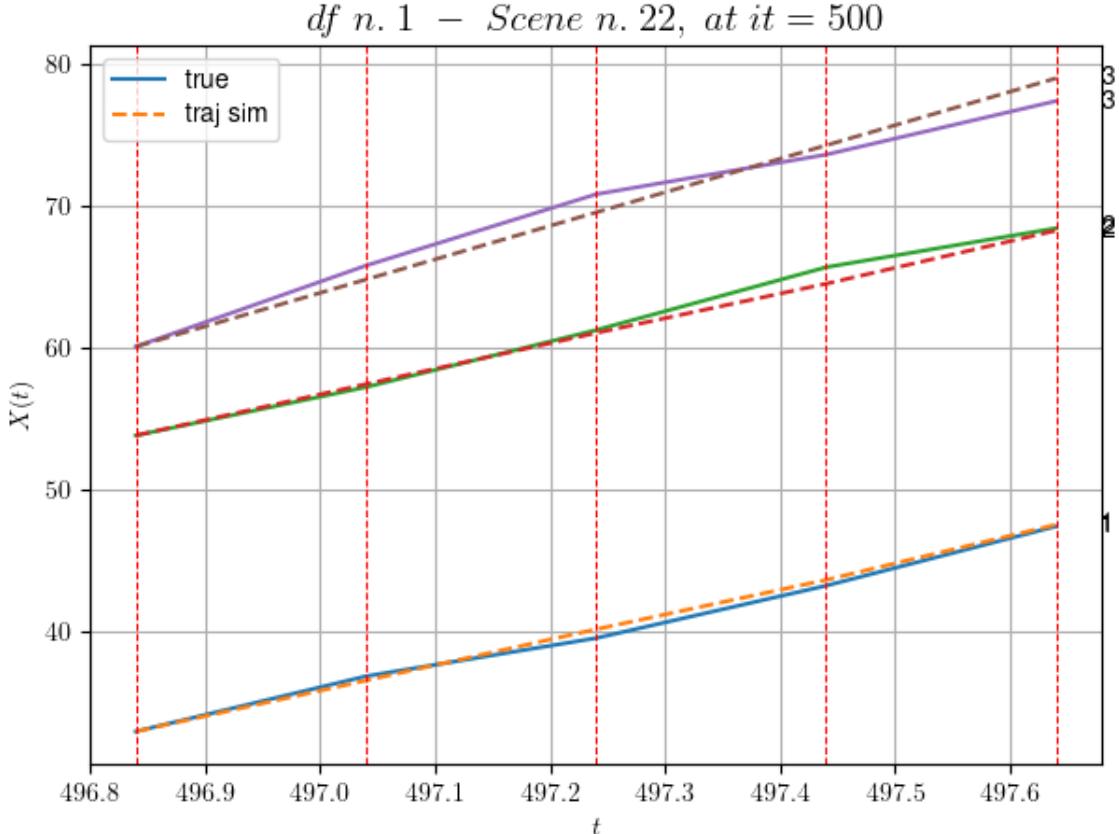
3.67102213011834]

---



---

- \* err= 0.5156676846537176
- \* Learning rate NN = 0.000478296831715852
- \* diff = 9.900270362905861e-05



For scene 22/28

- \* use LR\_NN=0.001 with err=13.073255326872436 at it=19
- \* v0\_scn\_mean = 24.050760518153265
- \* MAE = 0.5151517830125133

---



---

- Time interval n.0: [499.04, 499.24]
- \* y\_true: [23.84103851 15.32650765]
- \* v\_ann: [21.668781280517578, 21.59867286682129, 1  
7.832163517130496]

---



---

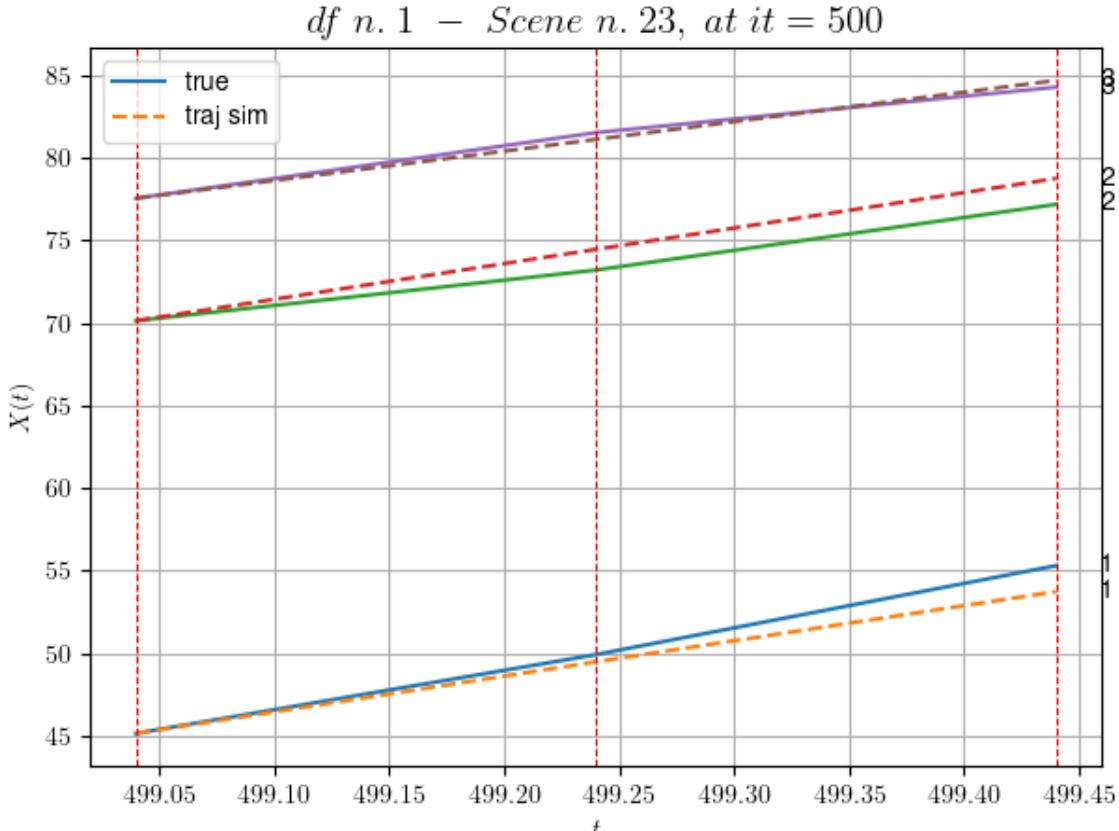
- Time interval n.1: [499.24, 499.44]
- \* y\_true: [26.92142921 19.88726092]
- \* v\_ann: [21.238780975341797, 21.45376968383789, 1  
7.832163517130496]

---



---

- \* err= 0.7801228370191109
- \* Learning rate NN = 7.289998757187277e-05
- \* diff = 3.6810180598867426e-05



For scene 23/28

- \* use LR\_NN=0.0001 with err=5.213012540616206 at it=19
- \* v0\_scn\_mean = 18.562233159793387
- \* MAE = 0.6982923414040453

---



---

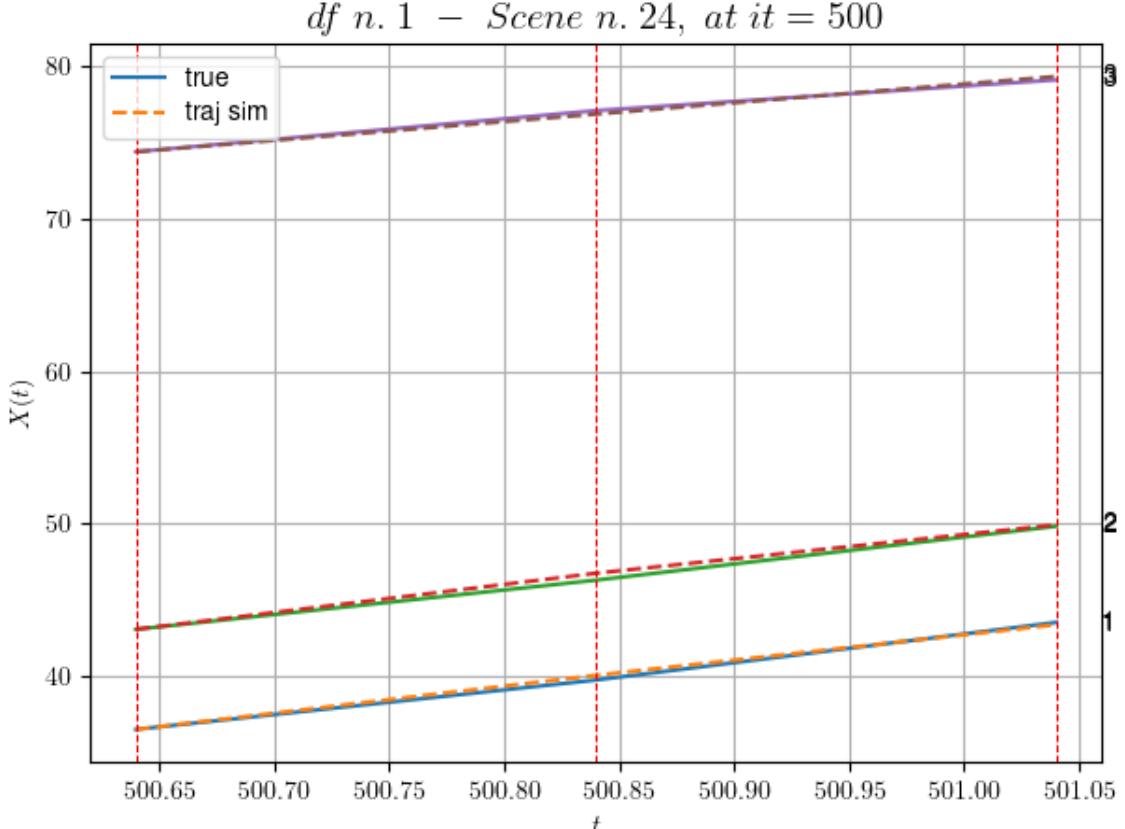
- Time interval n.0: [500.64, 500.84]
- \* y\_true: [16.2004483 16.13562888]
- \* v\_ann: [17.750734329223633, 18.408740997314453, 1  
2.361370218693779]

---

- Time interval n.1: [500.84, 501.04]
- \* y\_true: [18.900675 17.67575332]
- \* v\_ann: [16.599279403686523, 15.880380630493164, 1  
2.361370218693779]

---

- \* err= 0.049027956754151586
- \* Learning rate NN = 0.0007289999630302191
- \* diff = 8.179100180721877e-06



For scene 24/28

```
* use LR_NN=0.001 with err=10.307813123687646 at it=19
* v0_scn_mean = 13.419687213635976
* MAE = 0.047650821417406654
```

---



---

- Time interval n.0: [502.24, 502.44]
  - \* y\_true: [20.97545504 14.04040867]
  - \* v\_ann: [16.379398345947266, 17.80874252319336, 1  
5.581016722933798]

---

- Time interval n.1: [502.44, 502.64]
  - \* y\_true: [18.07559412 14.7904947 ]
  - \* v\_ann: [17.403362274169922, 17.853246688842773, 1  
5.581016722933798]

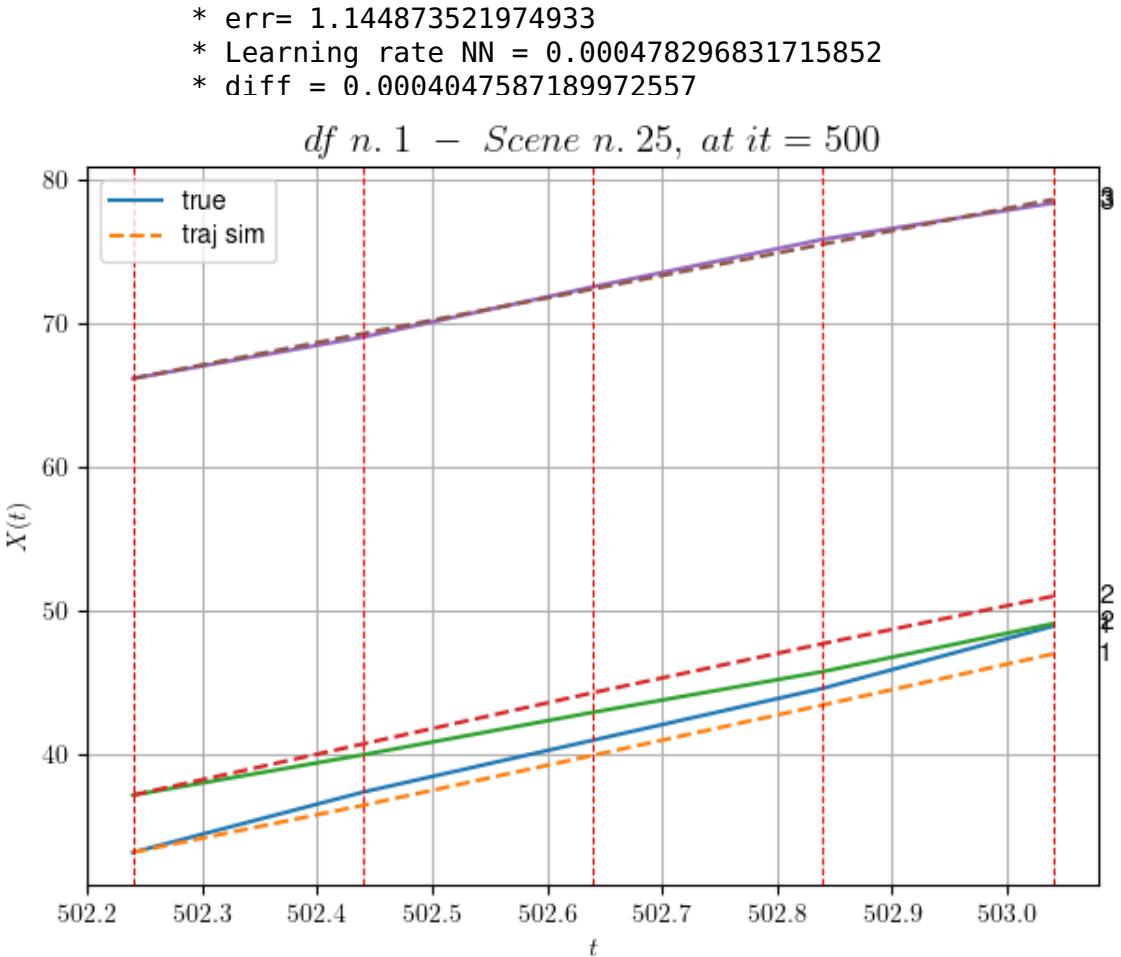
---

- Time interval n.2: [502.64, 502.84]
  - \* y\_true: [18.07559412 14.18054394]
  - \* v\_ann: [17.545196533203125, 17.086713790893555, 1  
5.581016722933798]

---

- Time interval n.3: [502.84, 503.04]
  - \* y\_true: [21.64181695 16.68485314]
  - \* v\_ann: [17.777185440063477, 16.499433517456055, 1

5.581016722933798]



For scene 25/28

```
* use LR_NN=0.001 with err=32.22915903873908 at it=19
* v0_scn_mean = 16.44615507217685
* MAE = 1.144873521974933
```

---



---

For scene 26/28

```
* use LR_NN=0.0001 with err=0.909784340959294 at it=19
* v0_scn_mean = 29.7789828026073
* MAE = 1.8902005401394435
```

---



---

```
- Time interval n.0: [573.84, 574.04]
 * y_true: [20.07571717 13.74586409]
 * v_ann: [13.61866283416748, 14.205192565917969, 9.
338719660906754]
```

---



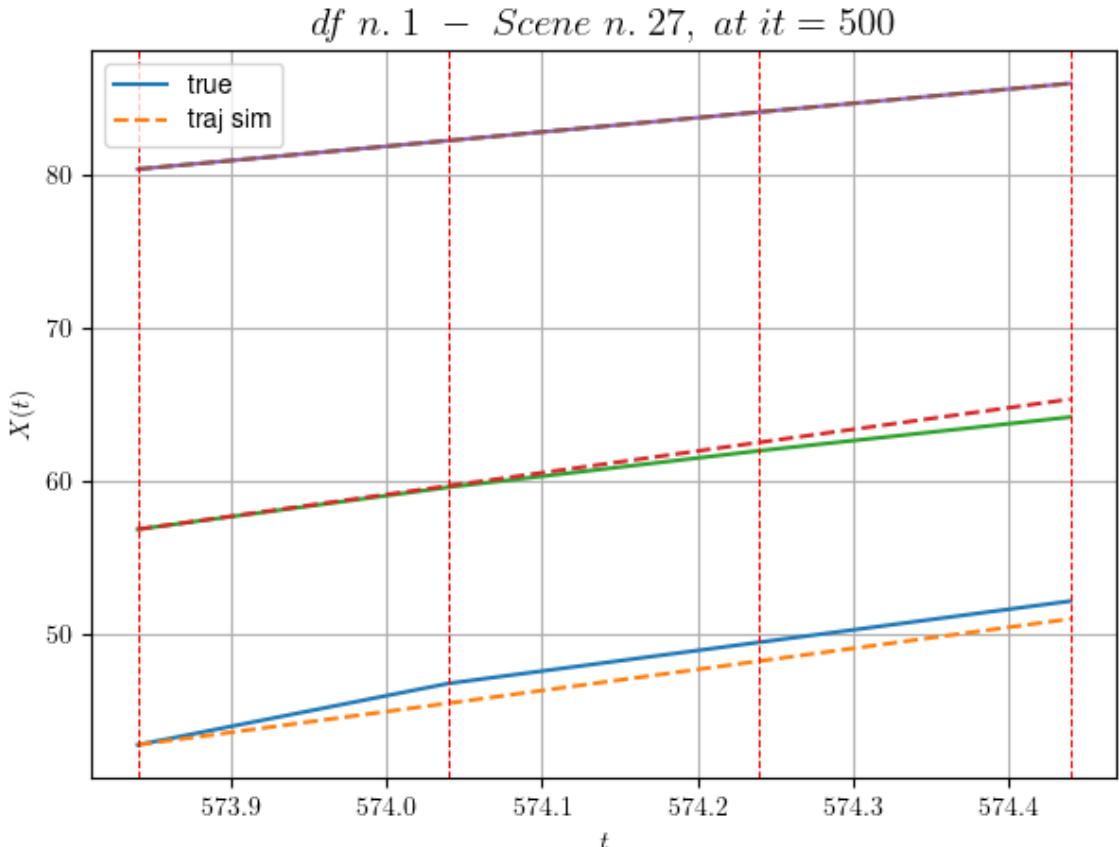
---

```
- Time interval n.1: [574.04, 574.24]
```

```
* y_true: [13.45064024 11.92582032]
* v_ann: [13.772967338562012, 14.207818984985352,
9.338719660906754]
```

```
- Time interval n.2: [574.24, 574.44]
* y_true: [13.45064024 11.00083908]
* v_ann: [13.767084121704102, 14.105263710021973,
9.338719660906754]
```

```
* err= 0.5169317362512401
* Learning rate NN = 2.952449540316593e-05
* diff = 0.0001210110007261267
```



For scene 27/28

```
* use LR_NN=5e-05 with err=22.552930351344518 at it=19
* v0_scn_mean = 10.578395553605912
* MAE = 0.4684360830132437
```

---



---

For df=1 with 28 scenes, time taken: 327.66

---



---



---



---



---



---



---



---



---



---

In df n.2/10 we have 18 scenes

---



---

```

- Time interval n.0: [86.16, 86.36]
 * y_true: [16.74023073 23.1409288]
 * v_ann: [18.441429138183594, 18.441368103027344, 1
6.23533006014589]

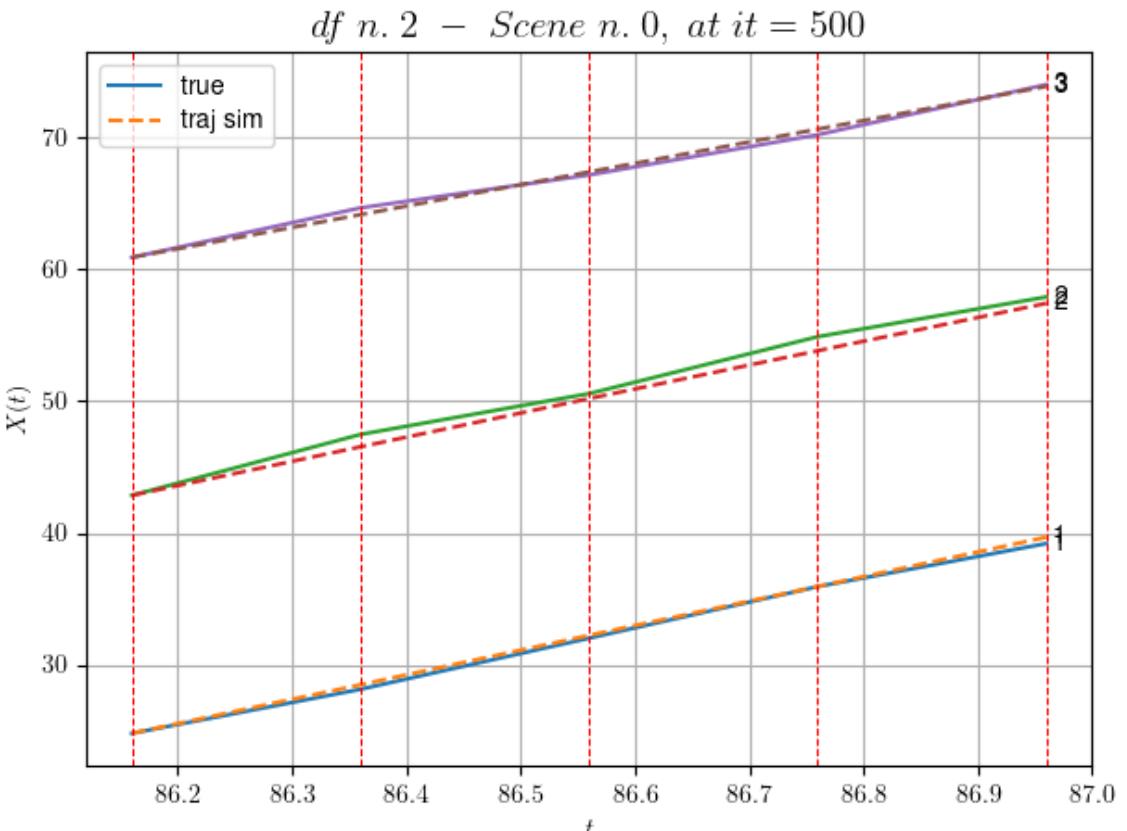
- Time interval n.1: [86.36, 86.56]
 * y_true: [19.40034801 15.51071286]
 * v_ann: [18.769981384277344, 18.31849479675293, 1
6.23533006014589]

- Time interval n.2: [86.56, 86.76]
 * y_true: [19.59044325 21.61118084]
 * v_ann: [18.560386657714844, 18.170576095581055, 1
6.23533006014589]

- Time interval n.3: [86.76, 86.96]
 * y_true: [16.37044892 15.10091945]
 * v_ann: [18.724159240722656, 18.028427124023438, 1
6.23533006014589]

```

\* err= 0.22051333868734926  
 \* Learning rate NN = 2.3914839403005317e-05  
 \* diff = 7 99235141712984e-06



For scene 0/18

\* use LR\_NN=5e-05 with err=15.81843936129033 at it=19

```
* vθ_scn_mean = 17.061209638533196
* MAE = 0.22021590790603715
```

```
=====
=====
- Time interval n.0: [109.36, 109.56]
 * y_true: [28.77160952 15.03115545]
 * v_ann: [21.816574096679688, 22.196704864501953, 2
0.033858704331532]
```

```


- Time interval n.1: [109.56, 109.76]
 * y_true: [23.64157457 15.83133823]
 * v_ann: [22.615385055541992, 22.322525024414062, 2
0.033858704331532]
```

```

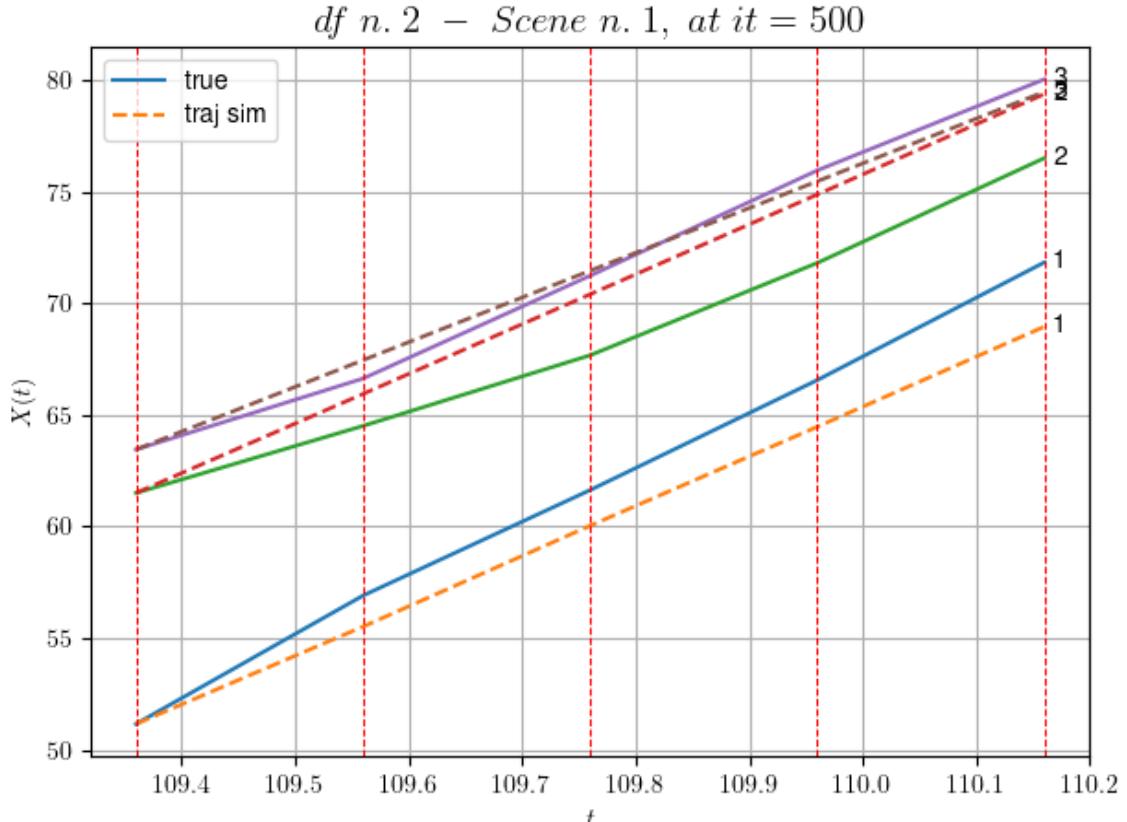

- Time interval n.2: [109.76, 109.96]
 * y_true: [24.63196009 20.68195399]
 * v_ann: [22.15402603149414, 22.354843139648438, 2
0.033858704331532]
```

```


- Time interval n.3: [109.96, 110.16]
 * y_true: [26.38241903 23.49250056]
 * v_ann: [22.43369483947754, 22.512510299682617, 2
0.033858704331532]
```

```

* err= 3.0397631626974344
* Learning rate NN = 0.000478296831715852
* diff = 0.0010325350177891046
```



For scene 1/18

```
* use LR_NN=0.001 with err=8.460001911126751 at it=19
* v0_scn_mean = 20.631826734613465
* MAE = 3.0397631626974344
```

---



---

```
- Time interval n.0: [170.36, 170.56]
* y_true: [25.3307413 19.52081588]
* v_ann: [23.69818687438965, 26.03282928466797, 16.
15160939147754]
```

---

```
- Time interval n.1: [170.56, 170.76]
* y_true: [29.74113537 17.1608437]
* v_ann: [22.867572784423828, 23.2406063079834, 16.
15160939147754]
```

---

```
- Time interval n.2: [170.76, 170.96]
* y_true: [24.43113316 23.6413756]
* v_ann: [25.043323516845703, 23.366477966308594, 1
6.15160939147754]
```

---

```
- Time interval n.3: [170.96, 171.16]
* y_true: [22.71130298 30.41206279]
* v_ann: [25.175073623657227, 23.11103057861328, 1
```

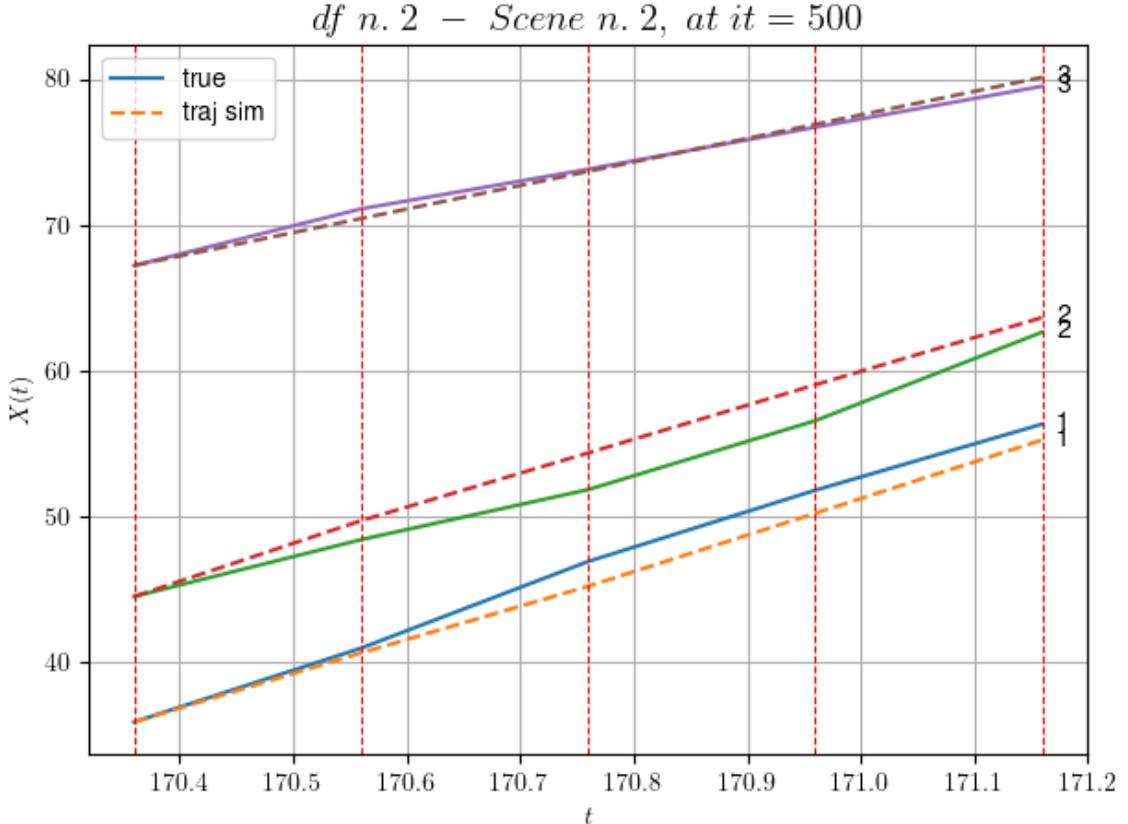
6.15160939147754]

---



---

```
* err= 1.5106026951255564
* Learning rate NN = 0.000478296831715852
* diff = 0.00016584800745585668
```



For scene 2/18

```
* use LR_NN=0.001 with err=34.102544725388675 at it=19
* v0_scn_mean = 16.982512206226307
* MAE = 1.4768356950871846
```

---



---

- Time interval n.0: [179.36, 179.56]  
\* y\_true: [10.36002857 23.43048282]  
\* v\_ann: [17.307621002197266, 17.55887794494629, 2  
2.081999529878647]

---

- Time interval n.1: [179.56, 179.76]  
\* y\_true: [10.37004005 22.87060641]  
\* v\_ann: [17.29969024658203, 17.487751007080078, 2  
2.081999529878647]

---

- Time interval n.2: [179.76, 179.96]  
\* y\_true: [15.39008451 20.81068862]  
\* v\_ann: [17.296947479248047, 17.437313079833984, 2  
2.081999529878647]

```

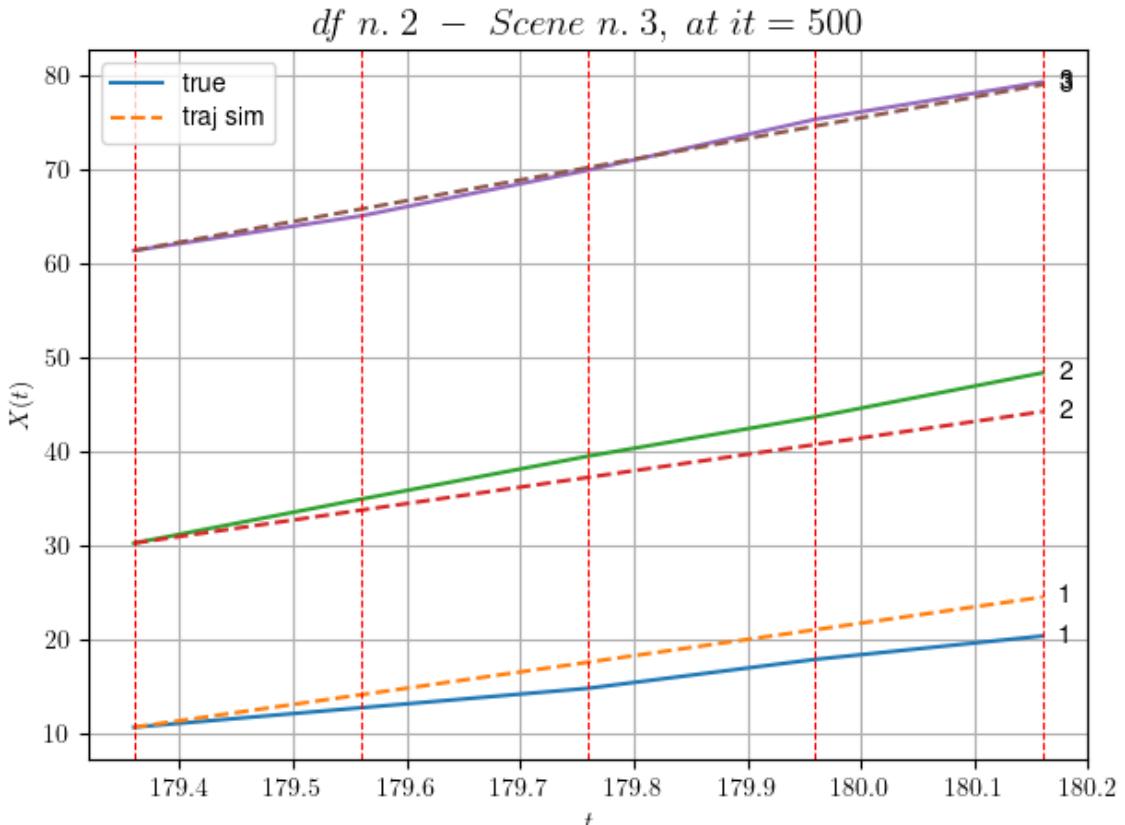
- Time interval n.3: [179.96, 180.16]
 * y_true: [12.44008929 23.53096892]
 * v_ann: [17.369308471679688, 17.53118324279785, 2
2.081999529878647]

```

```

* err= 4.665627260581346
* Learning rate NN = 2.3914839403005317e-05
* diff = 0.0009956125128143256

```



For scene 3/18

```

* use LR_NN=5e-05 with err=5.937593993171728 at it=19
* v0_scn_mean = 22.557079202585214
* MAE = 4.665627260581346

```

```

=====
=====
- Time interval n.0: [199.76, 199.96]
 * y_true: [18.79121443 18.55195156]
 * v_ann: [19.619441986083984, 18.993560791015625, 1
4.651669964039794]

```

```

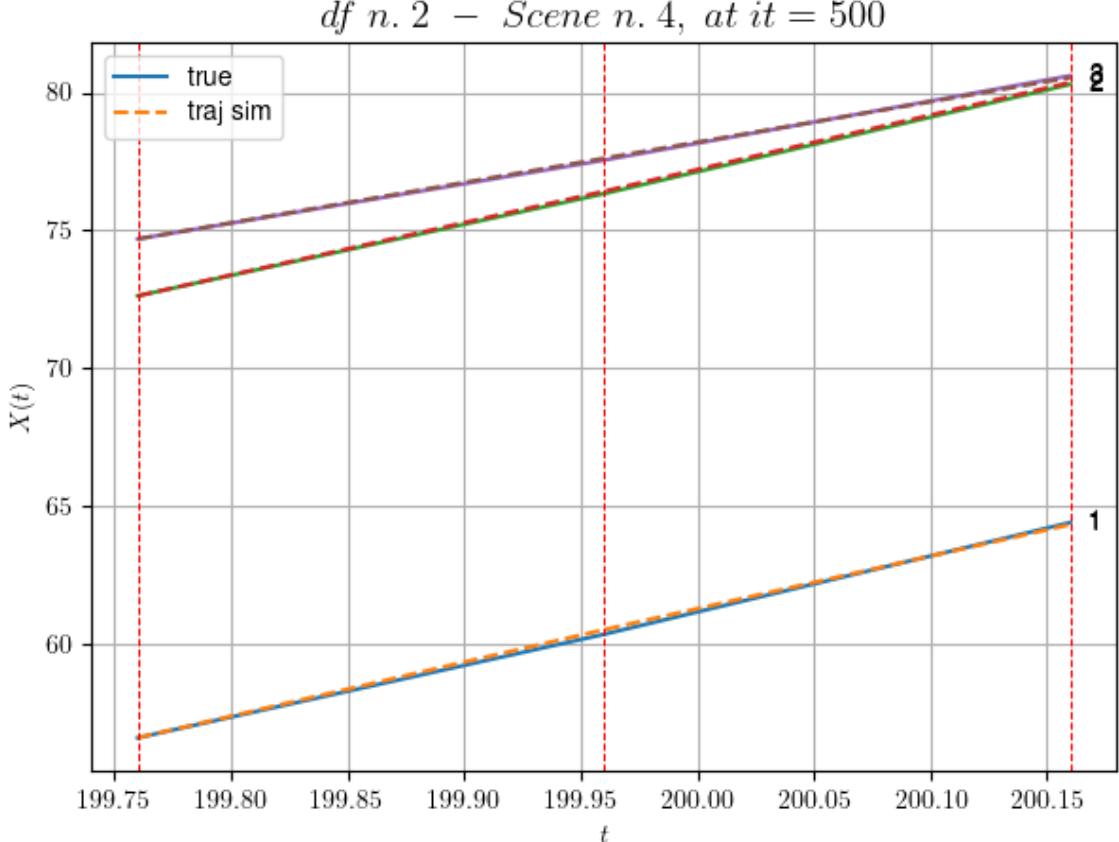
=====
=====
- Time interval n.1: [199.96, 200.16]
 * y_true: [20.30155709 19.85230976]
 * v_ann: [19.097782135009766, 19.76962661743164, 1
4.651669964039794]

```

```

* err= 0.0062042691889218834
* Learning rate NN = 0.0007289999630302191
* diff = 2.0129601233184573e-05

```



For scene 4/18

```

* use LR_NN=0.001 with err=10.095725283431257 at it=19
* v0_scn_mean = 15.572569077090579
* MAE = 0.0062042691889218834

```

---



---

- Time interval n.0: [212.56, 212.76]
  - \* y\_true: [14.43013055 12.85042103]
  - \* v\_ann: [15.743385314941406, 17.150760650634766, 2 0.507135320916387]

---



---

- Time interval n.1: [212.76, 212.96]
  - \* y\_true: [10.79011916 33.80137312]
  - \* v\_ann: [15.589603424072266, 17.45435905456543, 2 0.507135320916387]

---



---

- Time interval n.2: [212.96, 213.16]
  - \* y\_true: [16.24022861 13.70067627]
  - \* v\_ann: [16.595722198486328, 17.20677947998047, 2 0.507135320916387]

---



---

```

- Time interval n.3: [213.16, 213.36]

 * y_true: [10.73017559 21.10118973]

 * v_ann: [16.423797607421875, 16.971111297607422, 2

 0.507135320916387]

```

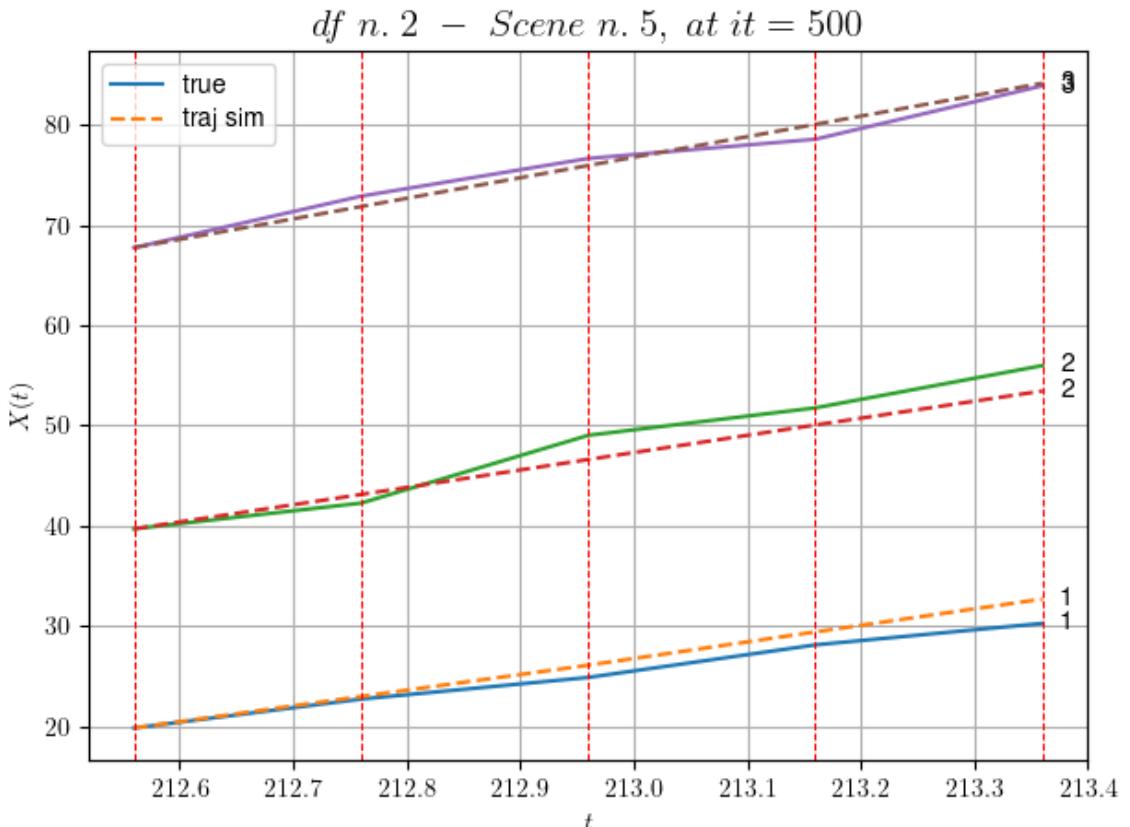
```

* err= 1.924587315642104

* Learning rate NN = 2.3914839403005317e-05

* diff = 0.001726166353089198

```



For scene 5/18

```

* use LR_NN=5e-05 with err=8.762458705992264 at it=19

* v0_scn_mean = 21.07670677545235

* MAE = 1.8435285840262166
=====
```

```

- Time interval n.0: [318.16, 318.36]

 * y_true: [13.01007537 20.36054455]

 * v_ann: [16.21576690673828, 17.39704704284668, 20.

 35519762916404]

```

```

- Time interval n.1: [318.36, 318.56]

 * y_true: [14.27010639 20.89068863]

 * v_ann: [16.371980667114258, 17.445133209228516, 2

 0.35519762916404]

```

```

- Time interval n.2: [318.56, 318.76]

 * y_true: [12.16011799 21.20084683]

 * v_ann: [16.55630874633789, 17.440990447998047, 2

 0.35519762916404]

```

```

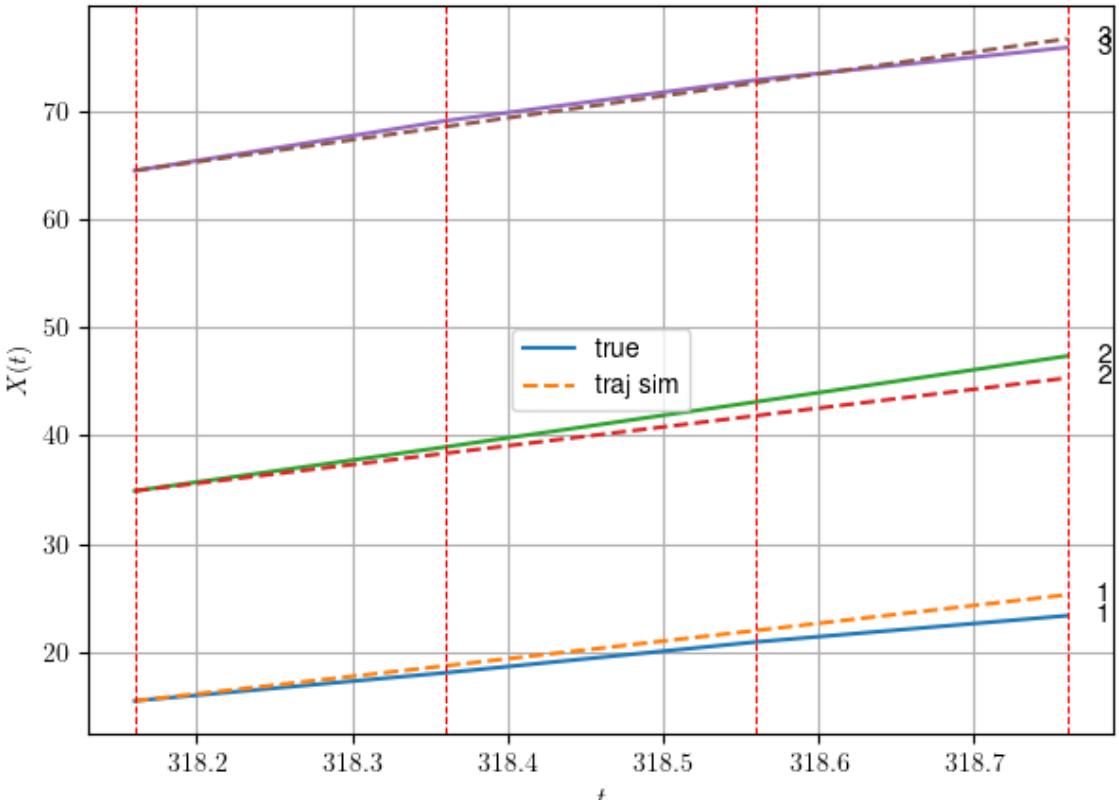
* err= 1.0371495595999007

* Learning rate NN = 2.952449540316593e-05

* diff = 0.0019477064921300524

```

*df n. 2 – Scene n. 6, at it = 500*



For scene 6/18

```

* use LR_NN=5e-05 with err=4.956180924227101 at it=19

* v0_scn_mean = 20.933885338383188

* MAE = 0.9361105316918835

```

```

=====
=====

- Time interval n.0: [430.16, 430.36]

 * y_true: [15.83005748 20.27065425]

 * v_ann: [18.884077072143555, 18.7404727935791, 21.

 236902740721757]

```

```


- Time interval n.1: [430.36, 430.56]

 * y_true: [19.99011659 24.33092793]

 * v_ann: [19.035184860229492, 18.984603881835938, 2

 1.236902740721757]

```

```

- Time interval n.2: [430.56, 430.76]

* y_true: [14.67011767 20.05093433]

* v_ann: [19.228124618530273, 18.71703338623047, 2

1.236902740721757]

```

```

- Time interval n.3: [430.76, 430.96]

* y_true: [14.38015429 21.97121967]

* v_ann: [19.403121948242188, 18.51886749267578, 2

1.236902740721757]

```

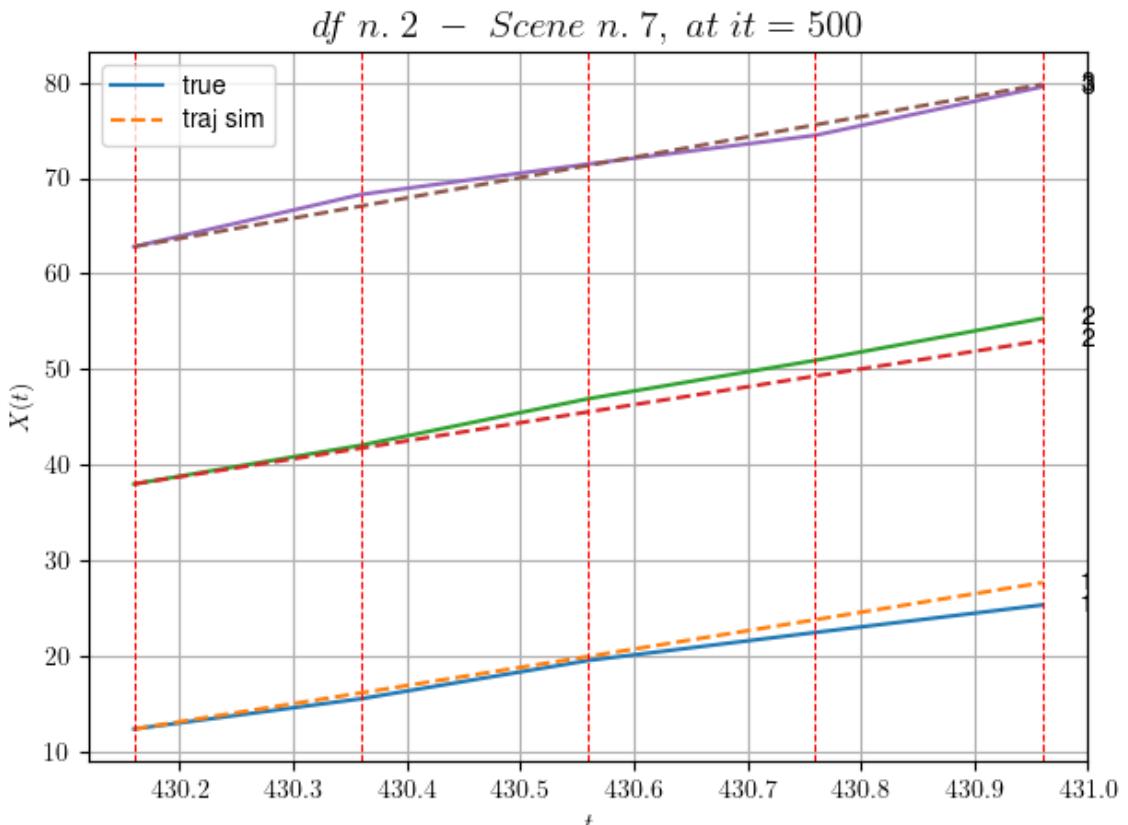
```

* err= 1.3777557220567713

* Learning rate NN = 4.782968062500004e-06

* diff = 2.525513428386361e-06

```



For scene 7/18

```

* use LR_NN=1e-05 with err=8.640668039124735 at it=19

* v0_scn_mean = 21.762688182834207

* MAE = 1.37765584438457

```

```

=====

=====

- Time interval n.0: [435.96, 436.16]

* y_true: [15.85107698 23.95169404]

* v_ann: [19.766624450683594, 21.860626220703125, 2

1.458715492508333]

```

```

- Time interval n.1: [436.16, 436.36]

* y_true: [18.0813972 25.19206379]

* v_ann: [21.932920455932617, 19.361665725708008, 2

1.458715492508333]

```

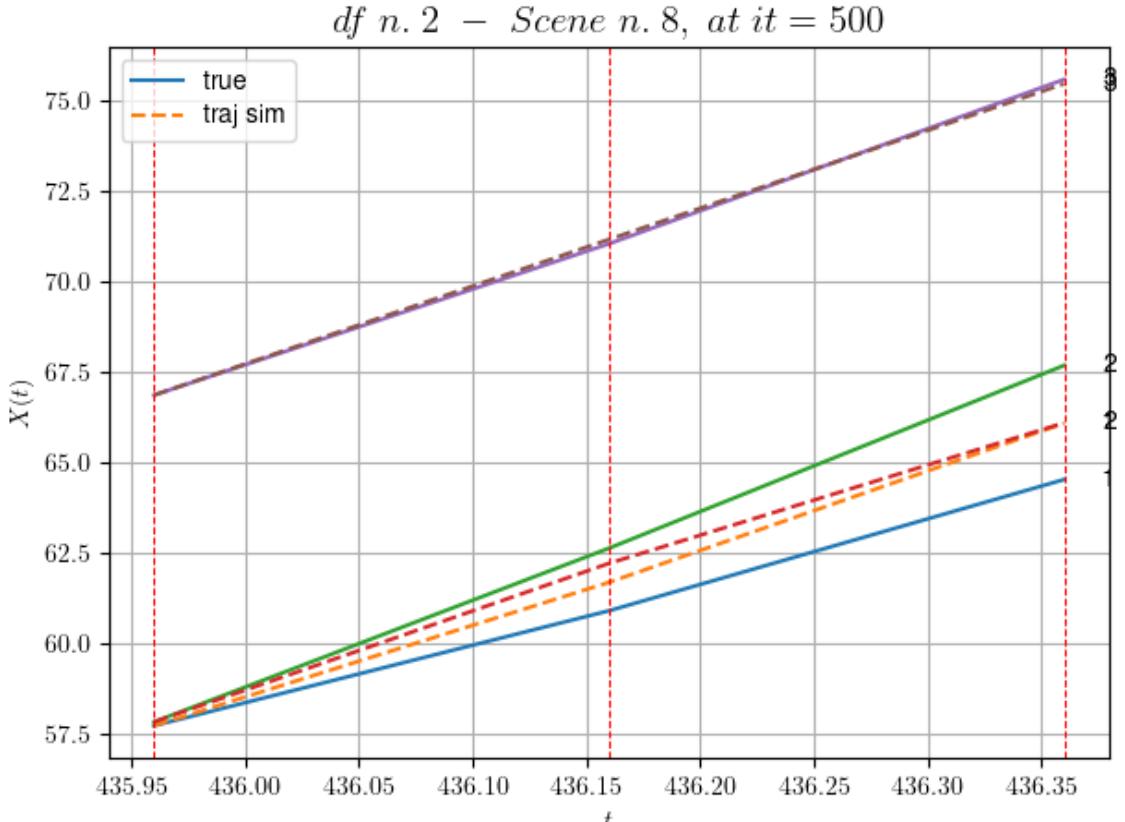
```

* err= 0.6377486780793316

* Learning rate NN = 0.0036449995823204517

* diff = 9.921590582018247e-05

```



For scene 8/18

```

* use LR_NN=0.005 with err=2.03997327759066 at it=19

* v0_scn_mean = 21.971192179472894

* MAE = 0.6377486780793316
=====
```

```

- Time interval n.0: [442.76, 442.96]

* y_true: [18.06141662 13.31057742]

* v_ann: [19.588436126708984, 19.011152267456055, 2

2.775896802505155]

```

```

- Time interval n.1: [442.96, 443.16]

* y_true: [20.34015276 11.01053508]

* v_ann: [19.029029846191406, 18.733163833618164, 2

2.775896802505155]

```

```

 - Time interval n.2: [443.16, 443.36]

 * y_true: [26.42894929 13.47072378]

 * v_ann: [18.555070877075195, 18.47771453857422, 2

2.775896802505155]

 - Time interval n.3: [443.36, 443.56]

 * y_true: [22.70036274 15.67093348]

 * v_ann: [18.71260643005371, 18.58470916748047, 22.

775896802505155]

 - Time interval n.4: [443.56, 443.76]

 * y_true: [30.60068675 16.84112333]

 * v_ann: [18.754531860351562, 18.642175674438477, 2

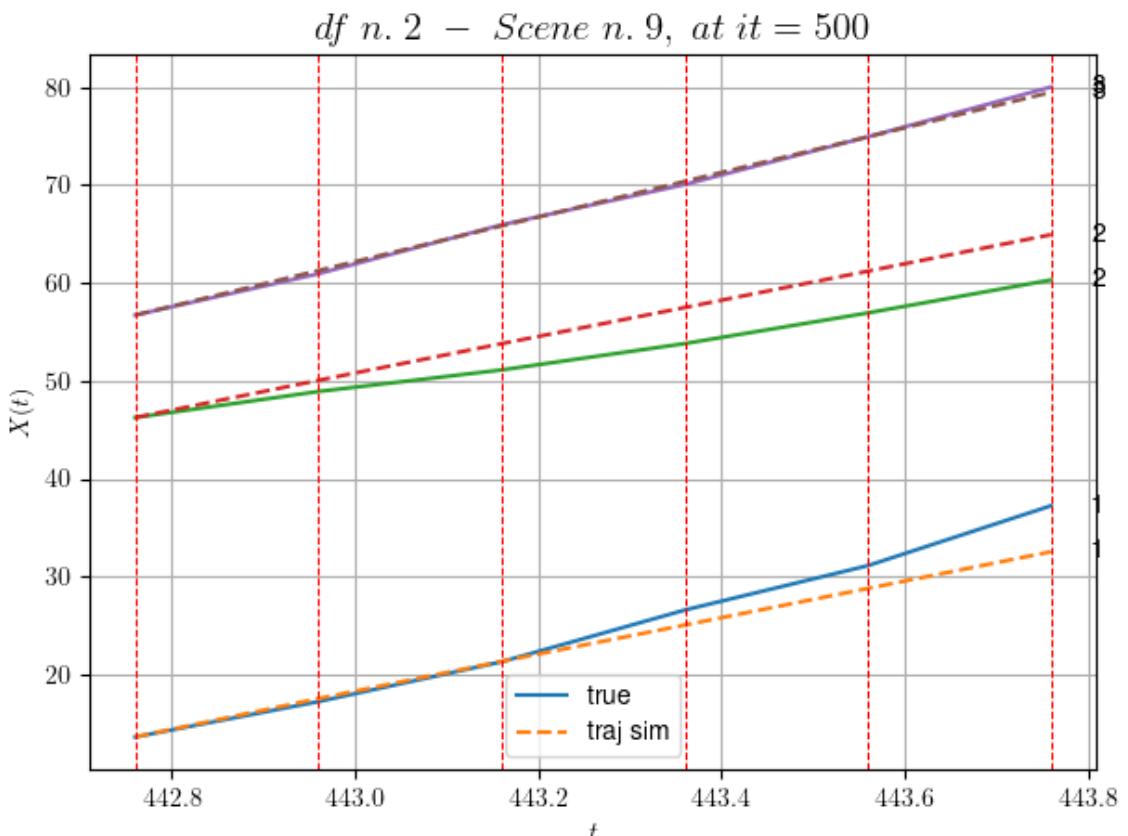
2.775896802505155]

* err= 5.12214812250669

* Learning rate NN = 3.874203684972599e-05

* diff = 0.002405778963489702

```



For scene 9/18

```

* use LR_NN=0.0001 with err=8.195634887839265 at it=19
* v0_scn_mean = 23.20934267000829
* MAE = 4.968492531213469
=====
```

```

- Time interval n.0: [487.56, 487.76]
 * y_true: [22.90018755 16.61065196]
 * v_ann: [20.76412010192871, 20.438777923583984, 2
1.11190024799164]
```

---

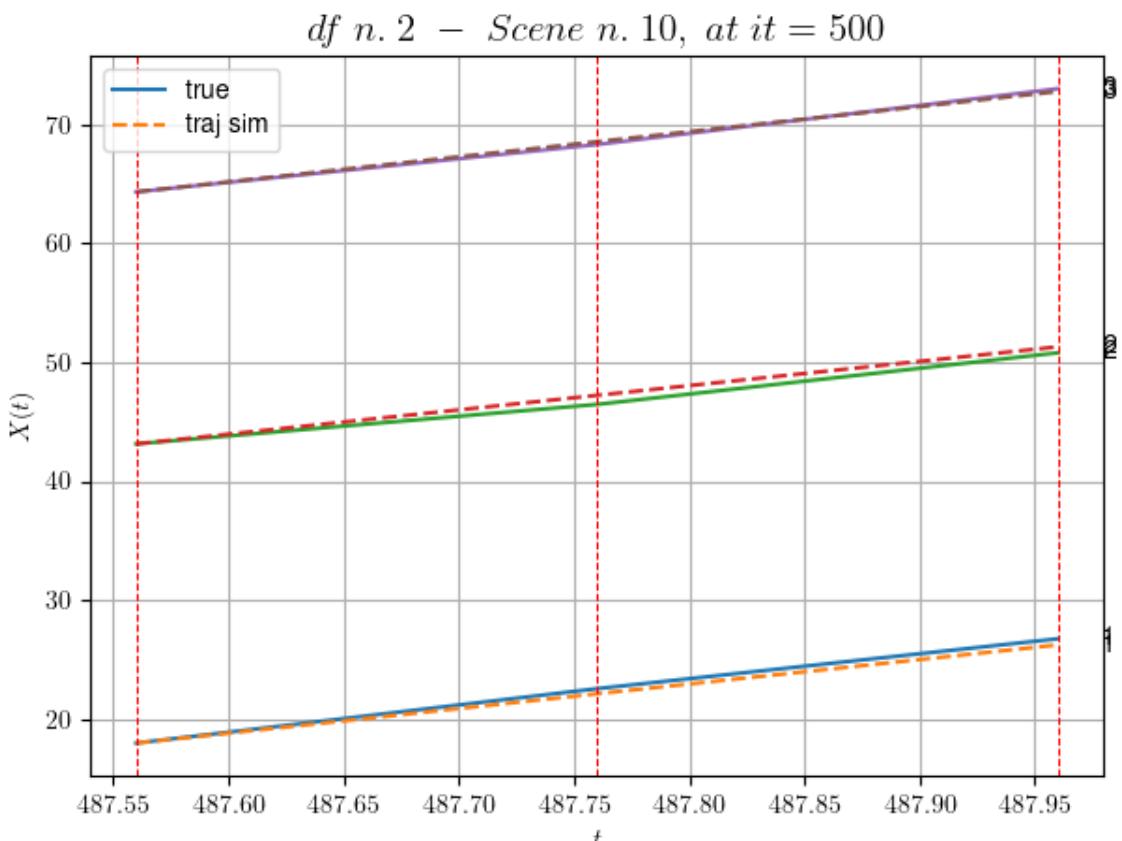
```

- Time interval n.1: [487.76, 487.96]
 * y_true: [21.00025249 21.71102285]
 * v_ann: [20.563386917114258, 20.402612686157227, 2
1.11190024799164]
```

---

```

* err= 0.15606864565959713
* Learning rate NN = 3.6449993785936385e-05
* diff = 2.214692181956579e-05
```



For scene 10/18

```

* use LR_NN=5e-05 with err=1.6972155888448486 at it=19
* v0_scn_mean = 21.64518583405624
* MAE = 0.15384945279999782
```

---



---

```

- Time interval n.0: [531.76, 531.96]
 * y_true: [23.26110286 19.80102444]
 * v_ann: [21.63097381591797, 22.141307830810547, 1
7.911731328080137]
```

---



---

```

- Time interval n.1: [531.96, 532.16]
 * y_true: [19.37730225 14.13461647]
 * v_ann: [21.373369216918945, 20.872926712036133, 1
 7.911731328080137]

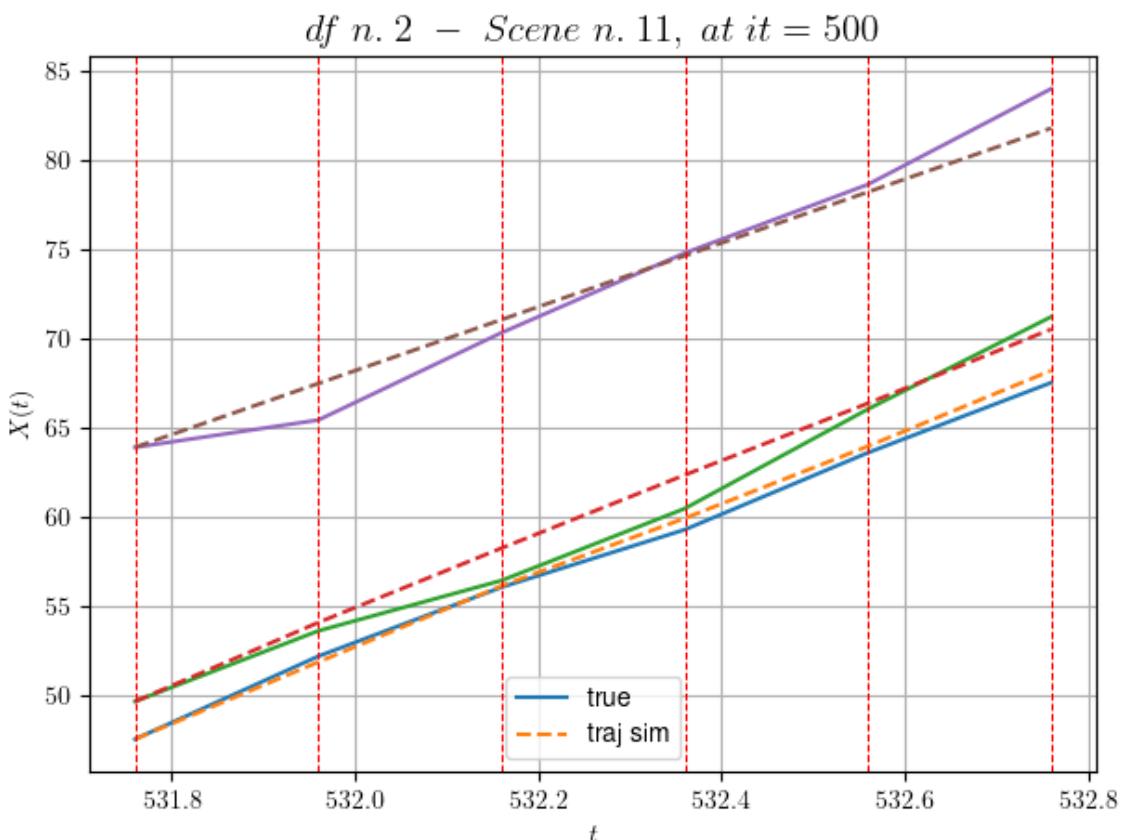
- Time interval n.2: [532.16, 532.36]
 * y_true: [16.15104075 20.18132342]
 * v_ann: [18.982065200805664, 20.525497436523438, 1
 7.911731328080137]

- Time interval n.3: [532.36, 532.56]
 * y_true: [21.60157988 27.91216632]
 * v_ann: [20.216297149658203, 20.117692947387695, 1
 7.911731328080137]

- Time interval n.4: [532.56, 532.76]
 * y_true: [19.65163525 25.90233391]
 * v_ann: [21.245073318481445, 20.799476623535156, 1
 7.911731328080137]

* err= 1.0338949586791737
* Learning rate NN = 0.0003874204121530056
* diff = 0.00012780929979383515

```



For scene 11/18  
\* use LR\_NN=0.001 with err=23.375542229531145 at it=19

```
* vθ_scn_mean = 18.637026905658413
* MAE = 1.014647815280309
```

```
=====
=====

- Time interval n.0: [538.36, 538.56]
 * y_true: [17.69068154 17.20117669]
 * v_ann: [21.695533752441406, 20.119834899902344, 2
1.51886934452403]

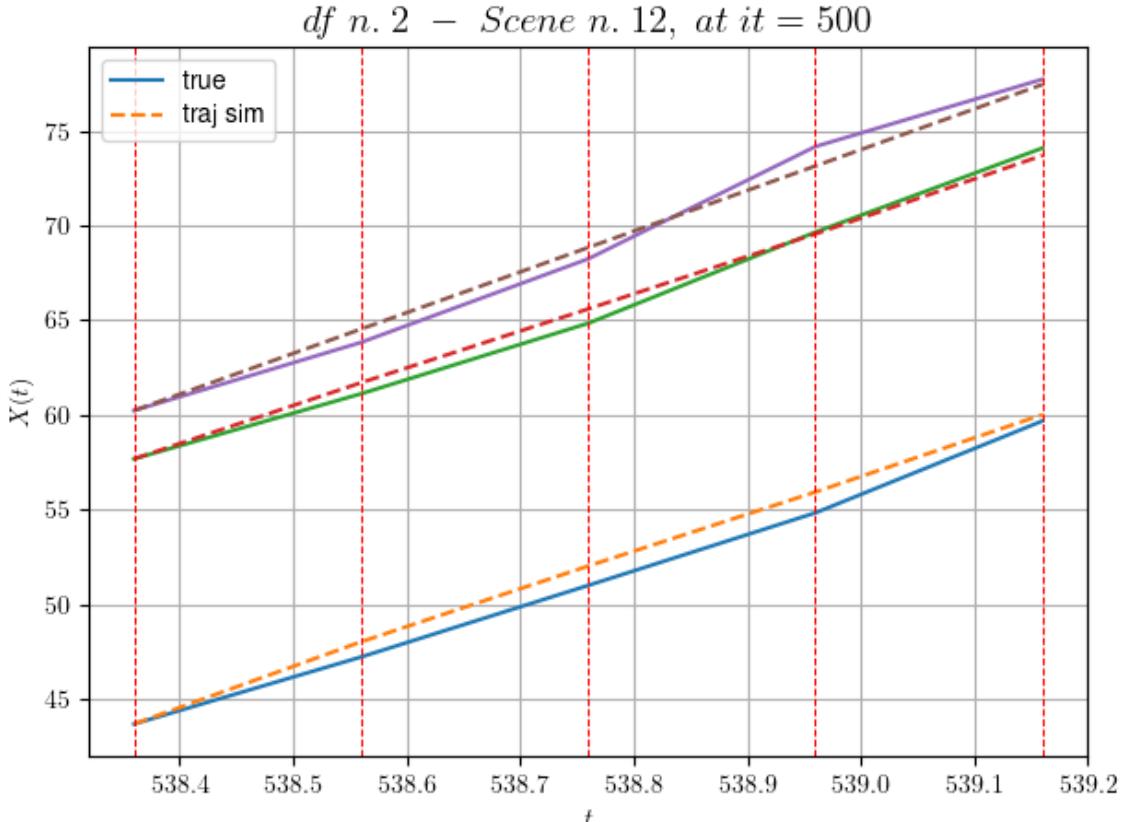
- Time interval n.1: [538.56, 538.76]
 * y_true: [18.89091077 18.60142936]
 * v_ann: [19.99895668029785, 19.467365264892578, 2
1.51886934452403]

- Time interval n.2: [538.76, 538.96]
 * y_true: [19.15102468 24.05210496]
 * v_ann: [19.542724609375, 19.789949417114258, 21.5
1886934452403]

- Time interval n.3: [538.96, 539.16]
 * y_true: [24.26158149 22.202218]
 * v_ann: [20.429174423217773, 20.74080467224121, 2
1.51886934452403]


```

\* err= 0.4044554436926509  
\* Learning rate NN = 0.000478296831715852  
\* diff = 0.00019157035146266654



For scene 12/18

\* use LR\_NN=0.001 with err=14.097165716817074 at it=19

\* v0\_scn\_mean = 22.02773680306795

\* MAE = 0.40158216546039543

---



---

- Time interval n.0: [541.16, 541.36]  
 \* y\_true: [22.67086863 28.23390149]  
 \* v\_ann: [25.111324310302734, 24.606035232543945, 2  
 0.489990975467293]

---

- Time interval n.1: [541.36, 541.56]  
 \* y\_true: [19.45088023 23.11862329]  
 \* v\_ann: [24.129310607910156, 24.245121002197266, 2  
 0.489990975467293]

---

- Time interval n.2: [541.56, 541.76]  
 \* y\_true: [24.96136667 24.68114114]  
 \* v\_ann: [22.844322204589844, 22.67119598388672, 2  
 0.489990975467293]

---

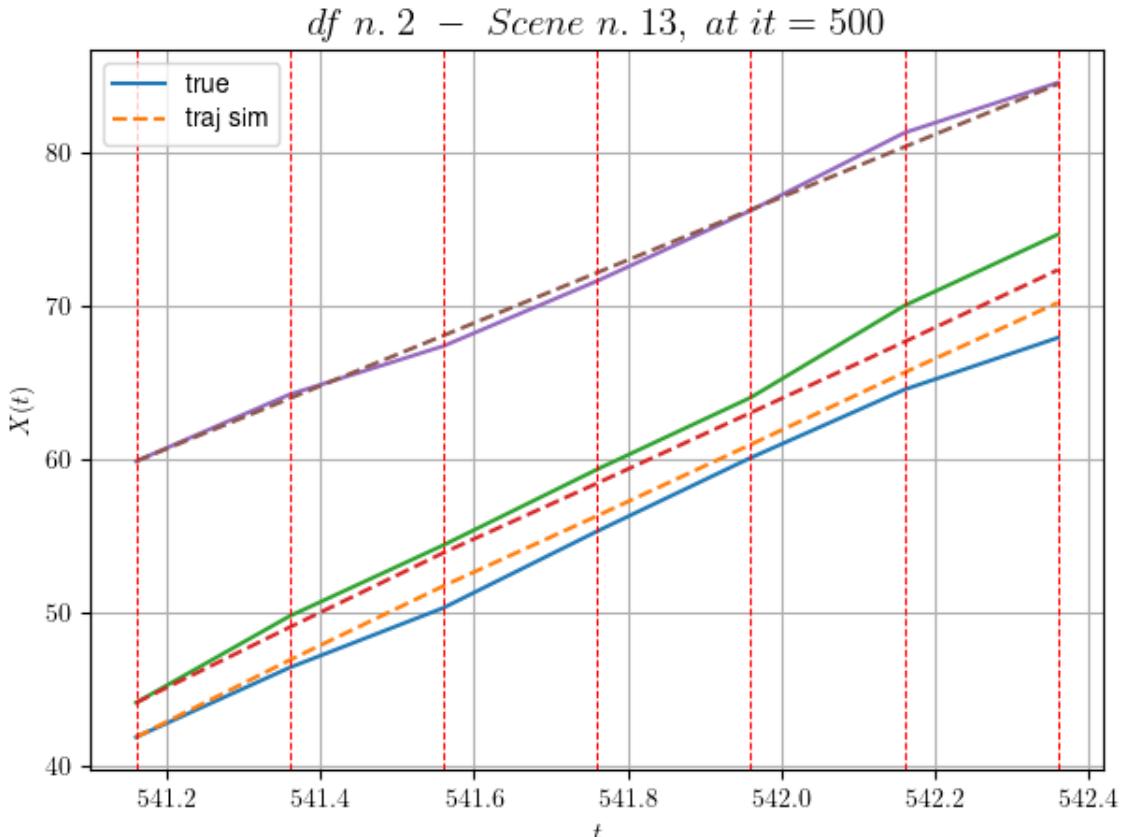
- Time interval n.3: [541.76, 541.96]  
 \* y\_true: [23.96154506 23.41644837]  
 \* v\_ann: [23.262893676757812, 22.974349975585938, 2

0.489990975467293]

```
- Time interval n.4: [541.96, 542.16]
 * y_true: [22.22167267 29.9460798]
 * v_ann: [23.47431182861328, 23.104473114013672, 2
0.489990975467293]
```

```
- Time interval n.5: [542.16, 542.36]
 * y_true: [16.91142821 23.23526684]
 * v_ann: [22.77935028076172, 23.472702026367188, 2
0.489990975467293]
```

```
* err= 1.2208113970928816
* Learning rate NN = 0.00031381050939671695
* diff = 0.00024507515706706506
```



For scene 13/18

```
* use LR_NN=0.001 with err=25.42396751260822 at it=19
* v0_scn_mean = 21.06059108996021
* MAF = 1.207572830619744
```

```
=====
=====
- Time interval n.0: [549.76, 549.96]
 * y_true: [23.30098965 17.25125335]
 * v_ann: [22.449665069580078, 21.232885360717773, 2
2.495719525409571]
```

```

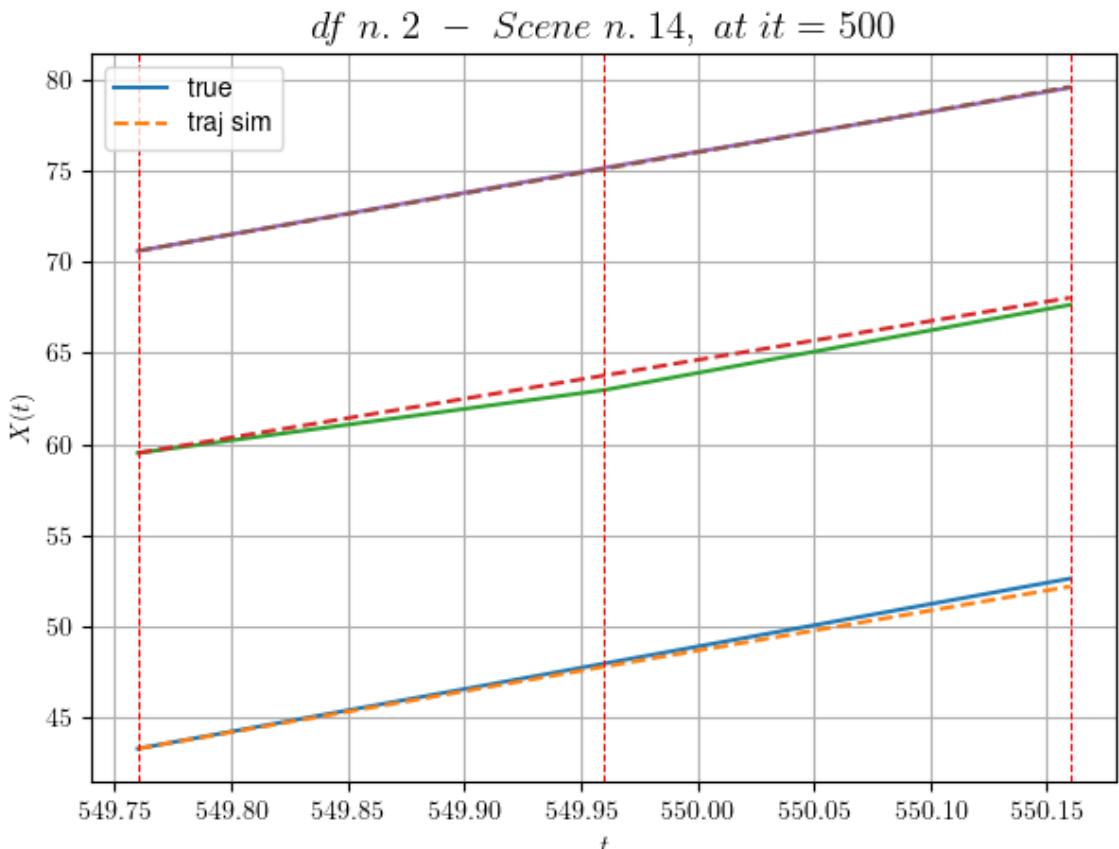
- Time interval n.1: [549.96, 550.16]
 * y_true: [23.30098965 23.35192881]
 * v_ann: [21.965988159179688, 21.311540603637695, 2
 2.49571952540957]

```

```

* err= 0.11240392645607107
* Learning rate NN = 7.289998757187277e-05
* diff = 0.00037479220529335056

```



For scene 14/18

```

* use LR_NN=0.0001 with err=1.3781192458468539 at it=19
* v0_scn_mean = 22.945976016958788
* MAE = 0.09492845143419626

```

For scene 15/18

```

* use LR_NN=5e-05 with err=0.8321694432966761 at it=19
* v0_scn_mean = 24.820158346800056
* MAE = 0.0731650414399221

```

```

- Time interval n.0: [87.56, 87.76]
 * y_true: [20.56019483 17.07029985 18.3510221]

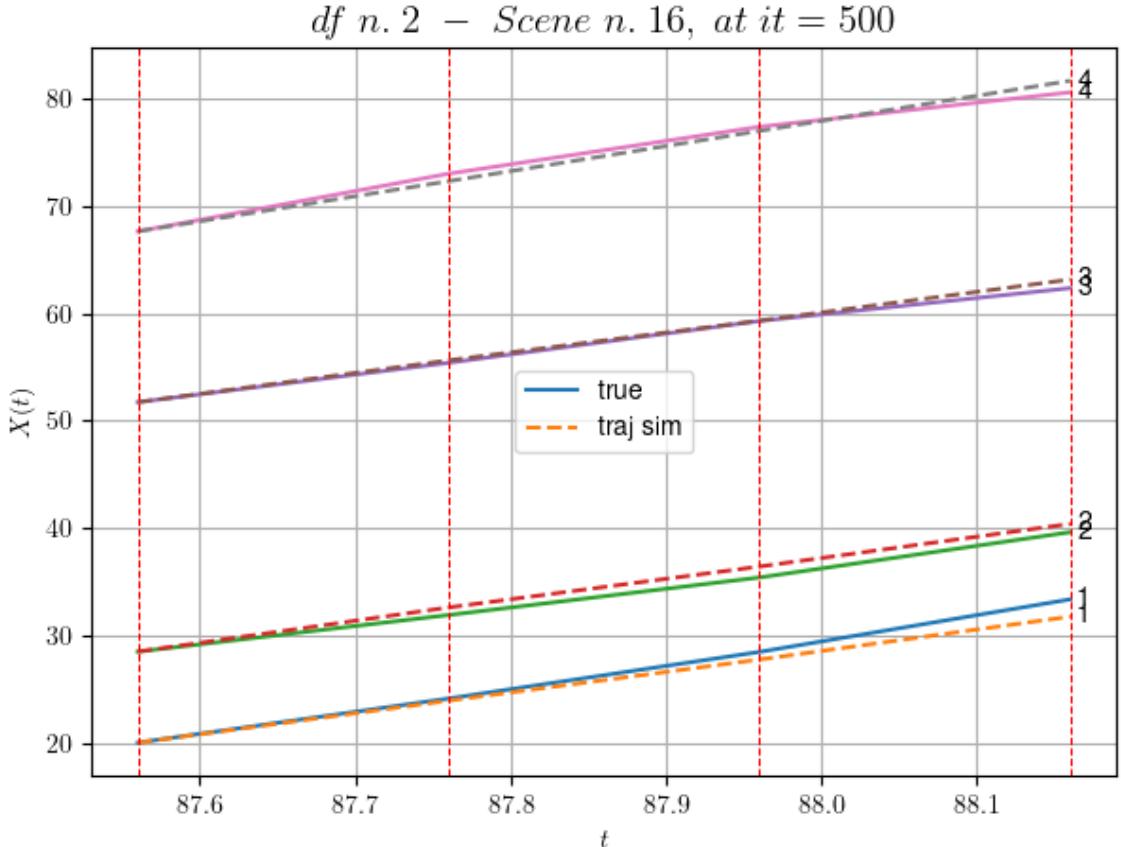
```

```
* v_ann: [19.562400817871094, 20.602100372314453, 1
9.503400802612305, 23.39910333176467]

- Time interval n.1: [87.76, 87.96]
* y_true: [21.72029145 17.49039467 19.46124504]
* v_ann: [19.167463302612305, 19.06519317626953, 1
8.50298309326172, 23.39910333176467]

- Time interval n.2: [87.96, 88.16]
* y_true: [24.51045762 21.12058621 15.36109554]
* v_ann: [20.01868438720703, 19.89096450805664, 19.
169849395751953, 23.39910333176467]

* err= 0.48541120203728766
* Learning rate NN = 0.0005904899444431067
* diff = 6.4900889993890765e-06
```



For scene 16/18

```
* use LR_NN=0.001 with err=8.628670809641022 at it=19
* v0_scn_mean = 23.92715358503306
* MAE = 0.48167480644371374
```

=====

=====

For scene 17/18

```
* use LR_NN=0.001 with err=5.405920804911851 at it=19
```

```
* vθ_scn_mean = 15.494279173684276
* MAE = 0.05216262659133812
```

```
=====
=====
```

For df=2 with 18 scenes, time taken: 242.98

```
=====
=====
```

```
=====
=====


```

In df n.3/10 we have 55 scenes

```


```

```
=====
=====
- Time interval n.0: [16.16, 16.36]
* y_true: [27.36596872 40.6089382]
* v_ann: [24.324935913085938, 24.270057678222656, 3
```

```
9.22728178683312]
```

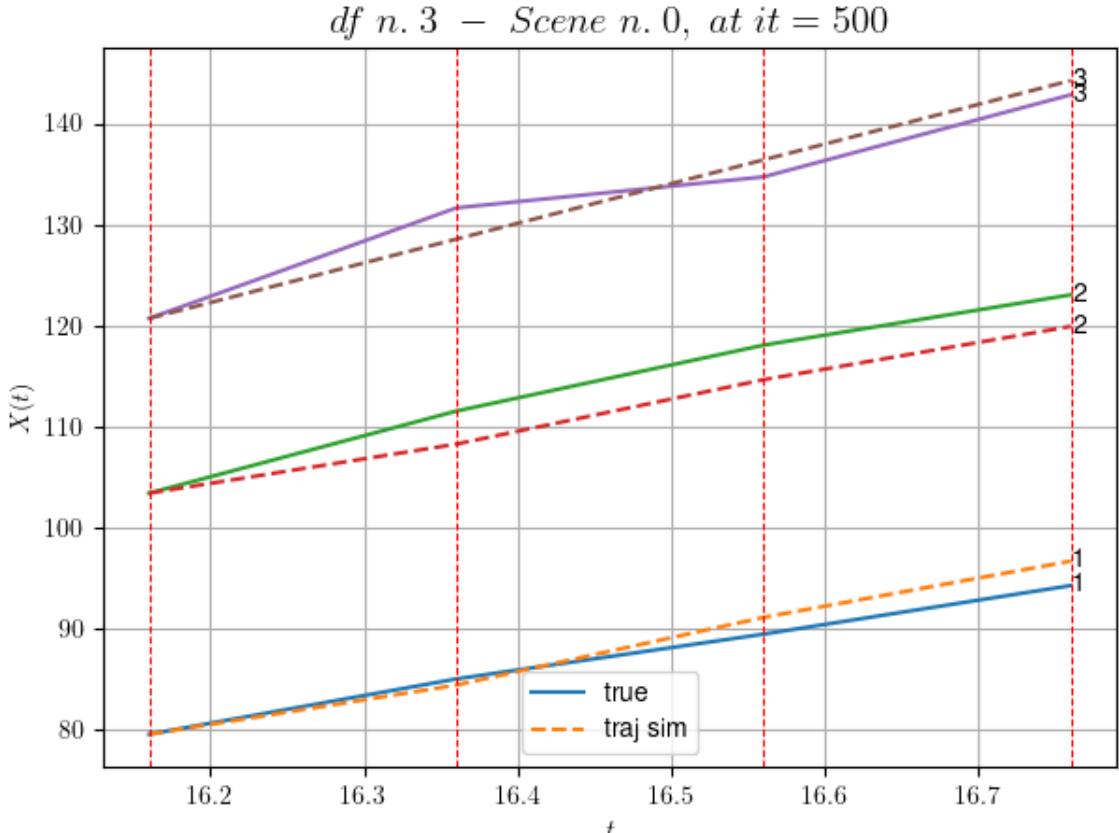
```
=====
=====
- Time interval n.1: [16.36, 16.56]
* y_true: [22.16572117 32.62072047]
* v_ann: [33.49271774291992, 31.859683990478516, 3
```

```
9.22728178683312]
```

```
=====
=====
- Time interval n.2: [16.56, 16.76]
* y_true: [24.04131334 24.91936545]
* v_ann: [27.831804275512695, 26.393123626708984, 3
```

```
9.22728178683312]
```

```
=====
=====
* err= 4.621492485690303
* Learning rate NN = 0.0002952449722215533
* diff = 0.005305822569185992
```



For scene 0/55

```
* use LR_NN=0.0005 with err=13.355669354164874 at it=19
* v0_scn_mean = 38.67364529390813
* MAE = 4.621492485690303
```

---



---

For scene 1/55

```
* use LR_NN=5e-05 with err=9.413438301230874 at it=19
* v0_scn_mean = 36.841045170042854
* MAE = 0.873164223631063
```

---



---

- Time interval n.0: [23.96, 24.16]  
 \* y\_true: [31.9527567 21.95230333]  
 \* v\_ann: [24.47051239013672, 24.808124542236328, 2  
 7.016664353697227]

---

- Time interval n.1: [24.16, 24.36]  
 \* y\_true: [26.79271708 14.85171745]  
 \* v\_ann: [26.079345703125, 26.411970138549805, 27.0  
 16664353697227]

---

- Time interval n.2: [24.36, 24.56]

```

* y_true: [20.5424093 31.65411216]
* v_ann: [24.940519332885742, 24.698652267456055, 2
7.016664353697227]

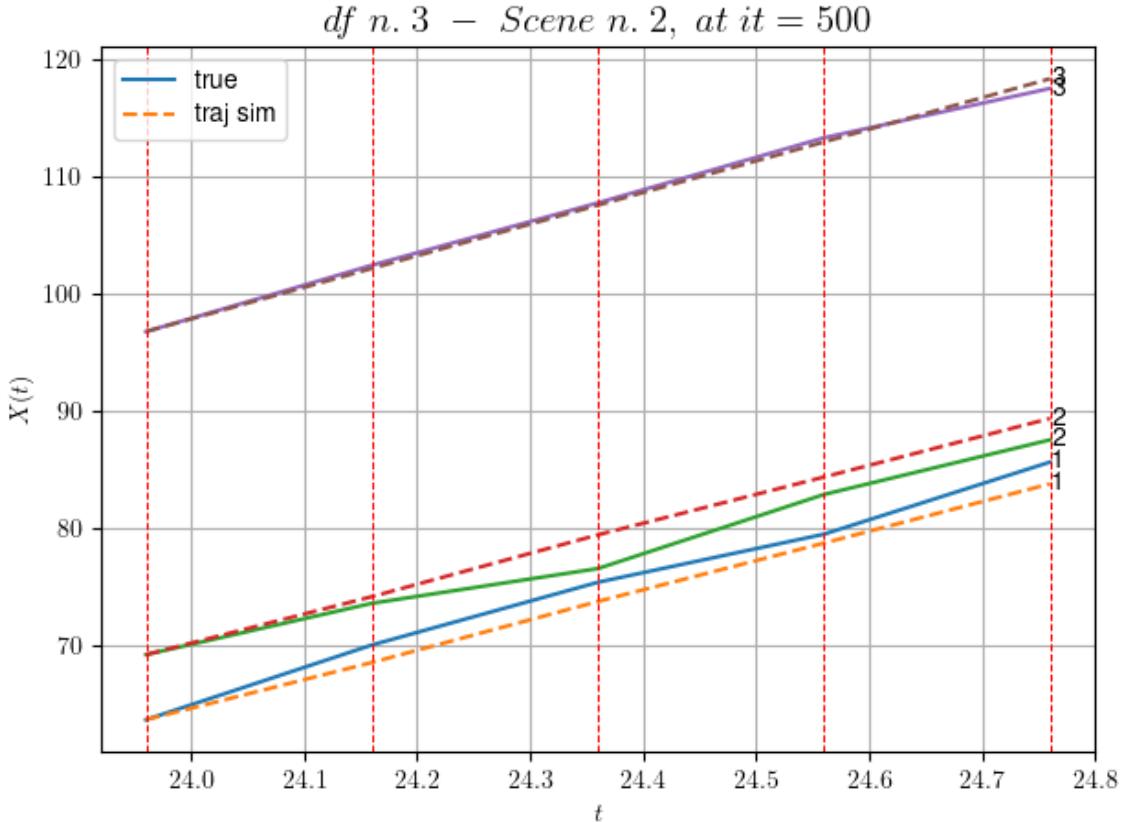
- Time interval n.3: [24.56, 24.76]
* y_true: [30.8240747 23.35345154]
* v_ann: [25.32663345336914, 25.02105712890625, 27.
016664353697227]

```

```

* err= 1.6060029996776402
* Learning rate NN = 0.000239148415857926
* diff = 0.00016601301079766095

```



For scene 2/55

```

* use LR_NN=0.0005 with err=37.66509323703462 at it=19
* v0_scn_mean = 27.195664358530077
* MAE = 1.605418082855106

```

```

=====
=====
- Time interval n.0: [42.96, 43.16]
* y_true: [34.44093898 36.40531345]
* v_ann: [25.192462921142578, 25.270950317382812, 2
7.35067344092241]

```

```

=====
=====
- Time interval n.1: [43.16, 43.36]
* y_true: [27.09071898 44.10770887]

```

```

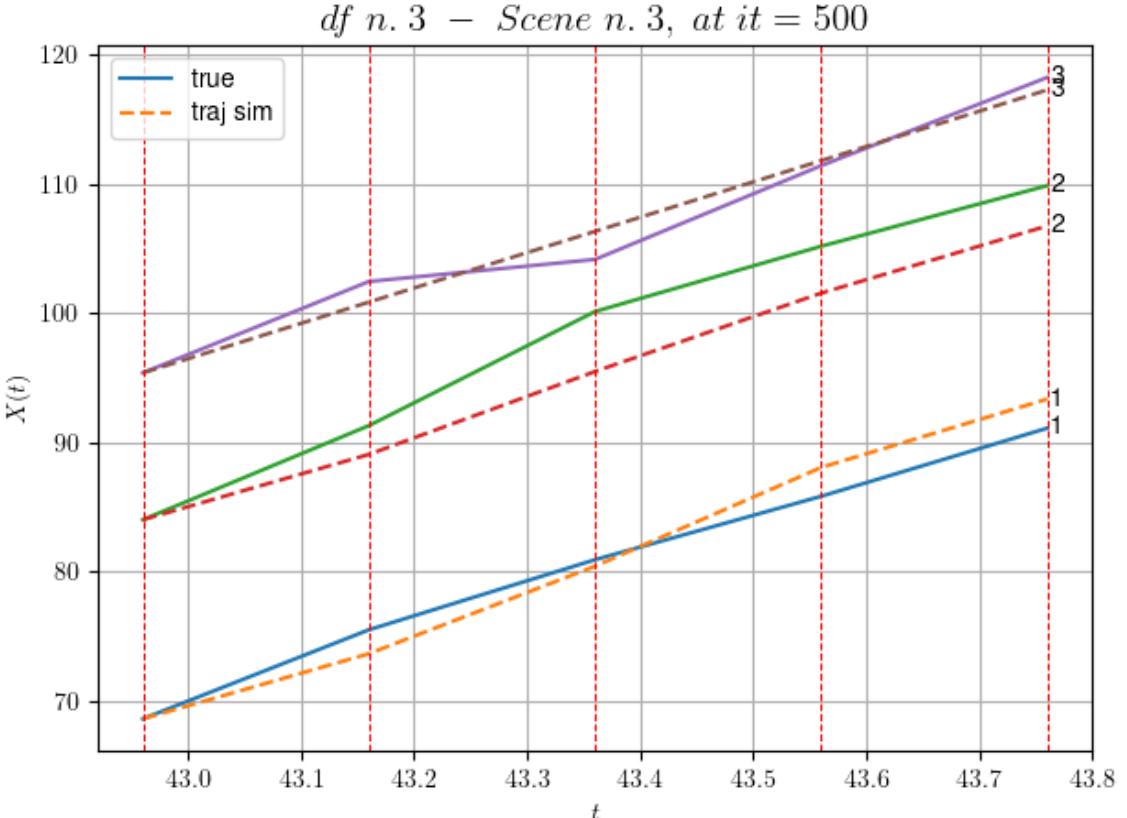
* v_ann: [33.819087982177734, 32.053924560546875, 2
7.35067344092241]

- Time interval n.2: [43.36, 43.56]
* y_true: [24.51583897 25.2301032]
* v_ann: [38.19797897338867, 30.309864044189453, 2
7.35067344092241]

- Time interval n.3: [43.56, 43.76]
* y_true: [26.35394512 23.45522926]
* v_ann: [26.445331573486328, 25.990144729614258, 2
7.35067344092241]

* err= 4.756622581714452
* Learning rate NN = 0.000478296831715852
* diff = 0.004633206258373157

```



For scene 3/55  
\* use LR\_NN=0.001 with err=21.382326530372882 at it=19  
\* v0\_scn\_mean = 27.50963291551805  
\* MAE = 4.309823877404427

---



---

```

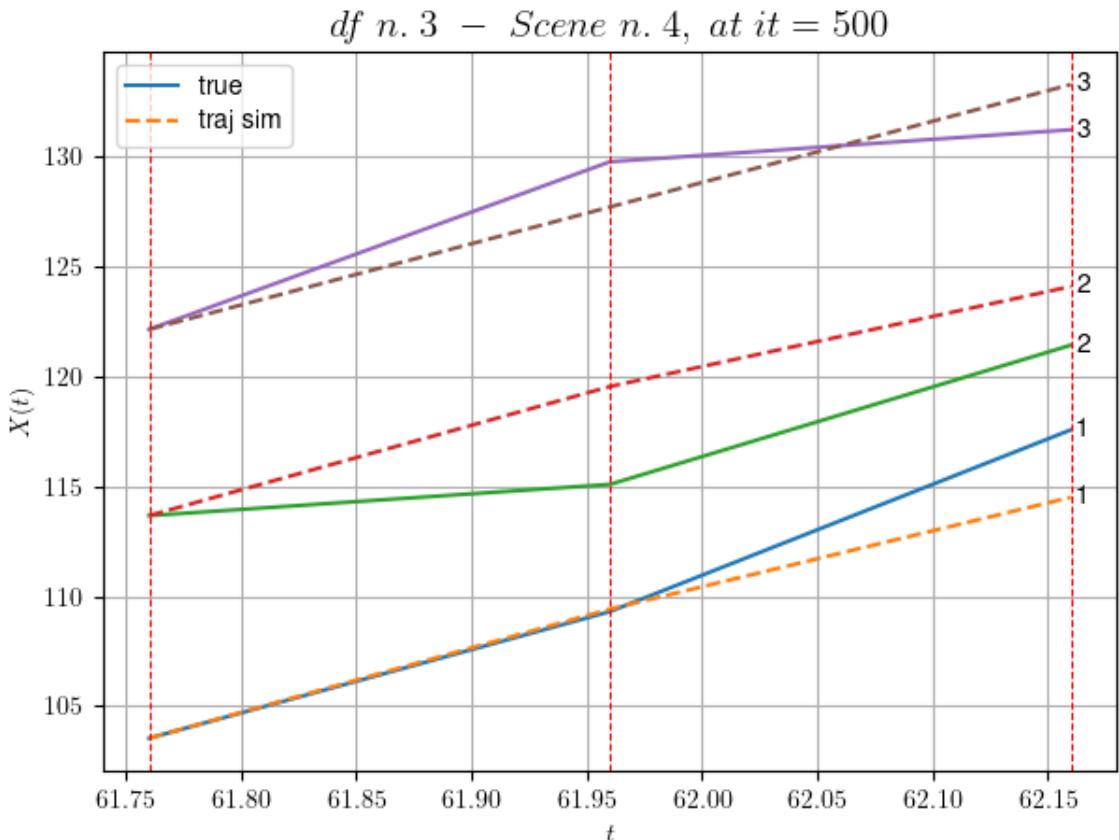
- Time interval n.0: [61.76, 61.96]
* y_true: [28.79377133 7.10177762]
* v_ann: [29.35749626159668, 29.34964942932129, 27.

```

830090416767145]

```
- Time interval n.1: [61.96, 62.16]
 * y_true: [41.29768472 31.64601894]
 * v_ann: [25.40966033935547, 22.738872528076172, 2
7.830090416767145]
```

```
* err= 4.974683172244029
* Learning rate NN = 0.0007289999630302191
* diff = 0.018437557326633325
```



For scene 4/55

```
* use LR_NN=0.001 with err=7.306800196472797 at it=19
* v0_scn_mean = 27.96028489433687
* MAE = 4.974683172244029
```

```
- Time interval n.0: [63.76, 63.96]
 * y_true: [39.33120973 30.97229006]
 * v_ann: [34.5610237121582, 25.848804473876953, 33.
83988267438123]
```

```
- Time interval n.1: [63.96, 64.16]
 * y_true: [32.2308074 22.86038312]
 * v_ann: [33.96524429321289, 26.721710205078125, 3
```

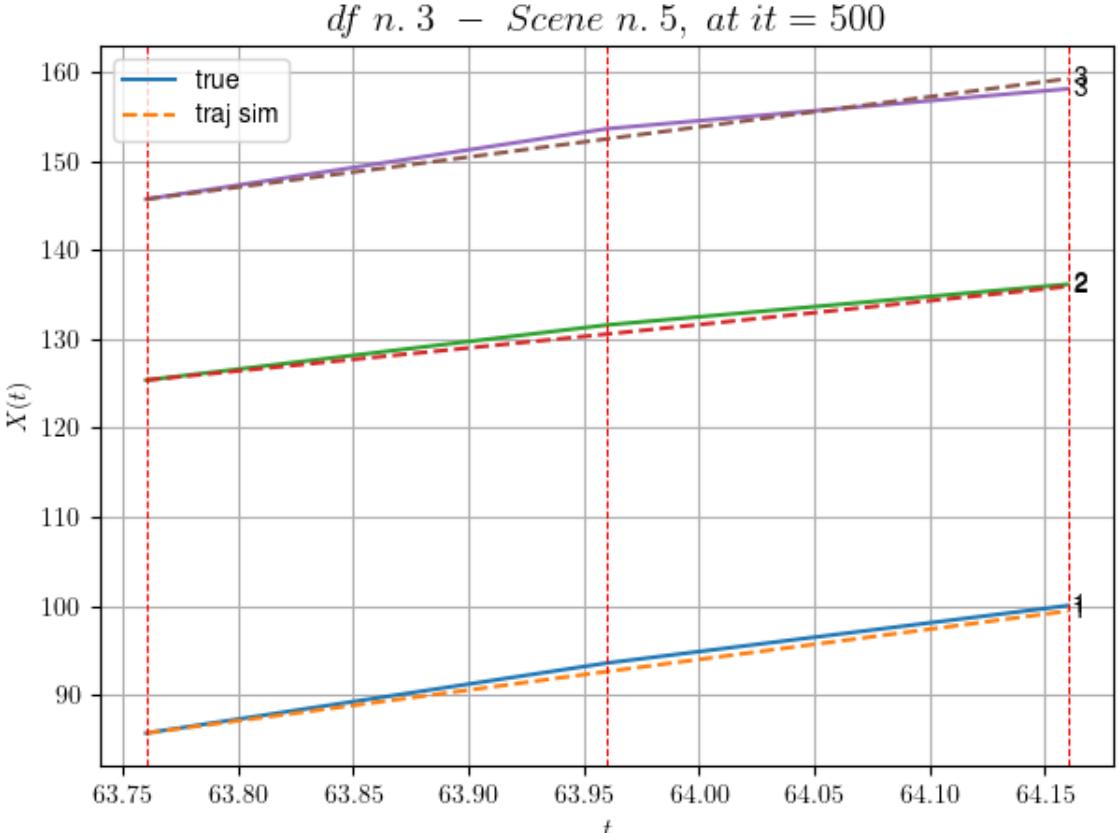
3.83988267438123]

---



---

- \* err= 0.5573892372481207
- \* Learning rate NN = 7.289998848136747e-06
- \* diff = 5.542751392006995e-05



For scene 5/55

- \* use LR\_NN=1e-05 with err=1.5926140449564705 at it=19
- \* v0\_scn\_mean = 33.609489886320766
- \* MAE = 0.405433626906059

---



---

- Time interval n.0: [67.16, 67.36]
  - \* y\_true: [27.17586615 28.72375126]
  - \* v\_ann: [25.607084274291992, 25.3055362701416, 32.13932154245637]

---



---

- Time interval n.1: [67.36, 67.56]
  - \* y\_true: [31.70635664 24.62373081]
  - \* v\_ann: [27.522403717041016, 26.38526725769043, 32.13932154245637]

---



---

- Time interval n.2: [67.56, 67.76]
  - \* y\_true: [27.5714436 21.15852297]
  - \* v\_ann: [28.260414123535156, 26.960235595703125, 32.13932154245637]

2.13932154245637]

```

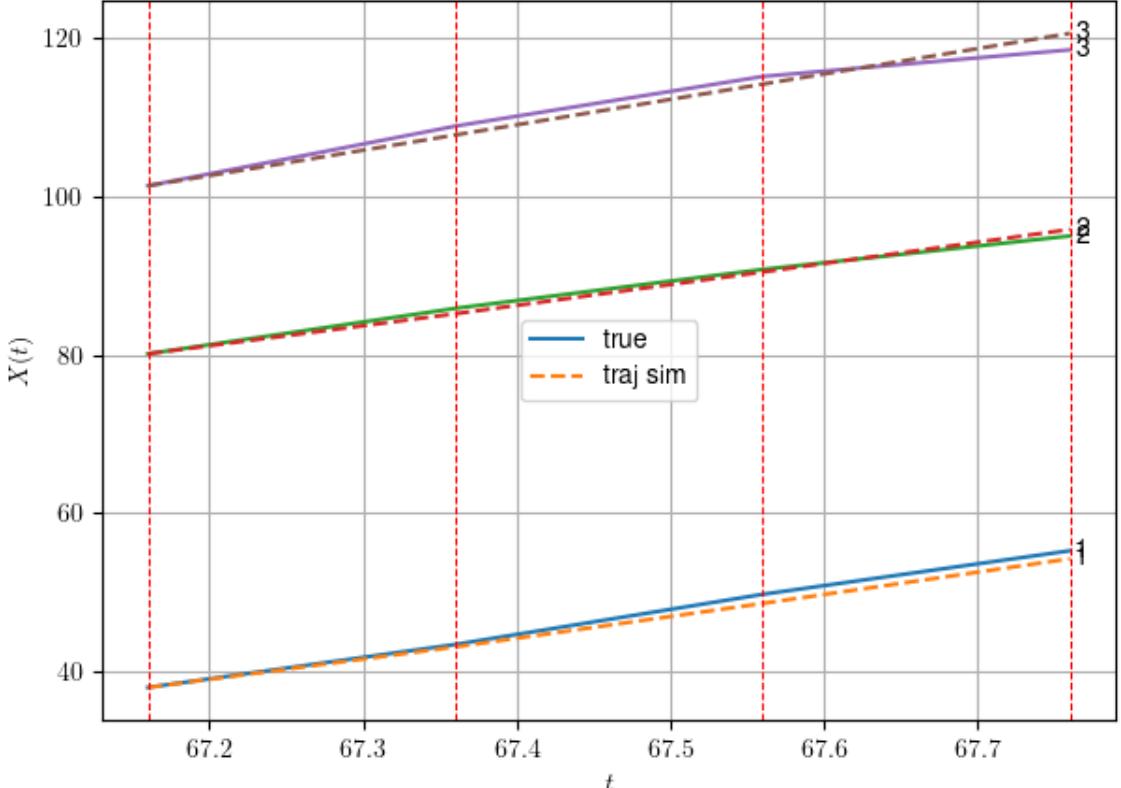
* err= 0.8547341038881826

* Learning rate NN = 5.904899080633186e-05

* diff = 0.0020447953501272487

```

df n. 3 - Scene n. 6, at it = 500



For scene 6/55

```

* use LR_NN=0.0001 with err=4.262400473582175 at it=19

* v0_scn_mean = 32.010962345959975

* MAE = 0.7856084990918278

```

```

=====
=====

- Time interval n.0: [72.76, 72.96]

* y_true: [28.501496 30.93407752]

* v_ann: [31.628952026367188, 31.224262237548828, 2

8.121240263140237]

```

```

- Time interval n.1: [72.96, 73.16]

* y_true: [36.65243351 31.9148258]

* v_ann: [31.41201400756836, 31.187585830688477, 2

8.121240263140237]

```

```

- Time interval n.2: [73.16, 73.36]

* y_true: [27.70226144 28.33497935]

* v_ann: [31.75334358215332, 31.81806755065918, 28.

```

121240263140237]

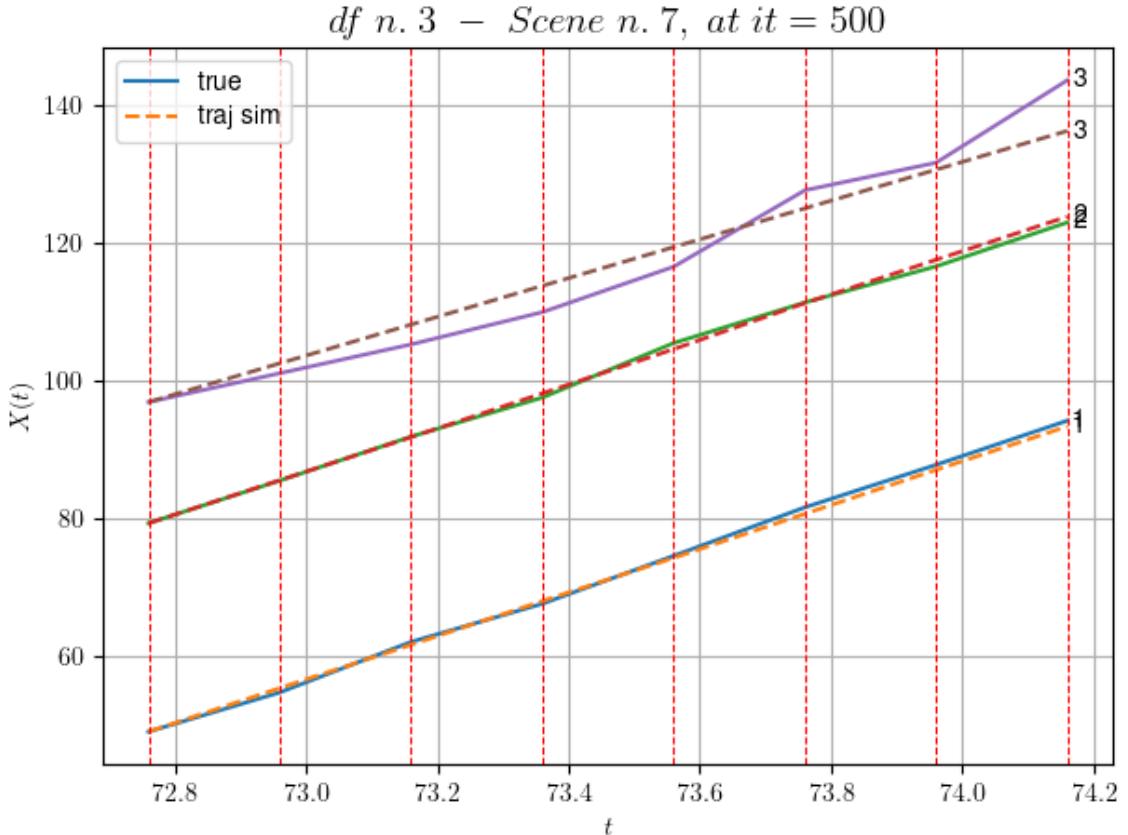
- Time interval n.3: [73.36, 73.56]  
\* y\_true: [34.7534691 39.55781959]  
\* v\_ann: [31.314729690551758, 32.07817077636719, 2  
8.121240263140237]

- Time interval n.4: [73.56, 73.76]  
\* y\_true: [35.21414381 29.47666535]  
\* v\_ann: [32.01420211791992, 33.45853805541992, 28.  
121240263140237]

- Time interval n.5: [73.76, 73.96]  
\* y\_true: [30.89430642 26.20657024]  
\* v\_ann: [31.948963165283203, 31.451723098754883, 2  
8.121240263140237]

- Time interval n.6: [73.96, 74.16]  
\* y\_true: [32.05509091 31.88895952]  
\* v\_ann: [31.510986328125, 31.337507247924805, 28.1  
21240263140237]

\* err= 4.200879681949746  
\* Learning rate NN = 1.2709323527815286e-05  
\* diff = 0.0012867720620981515



For scene 7/55

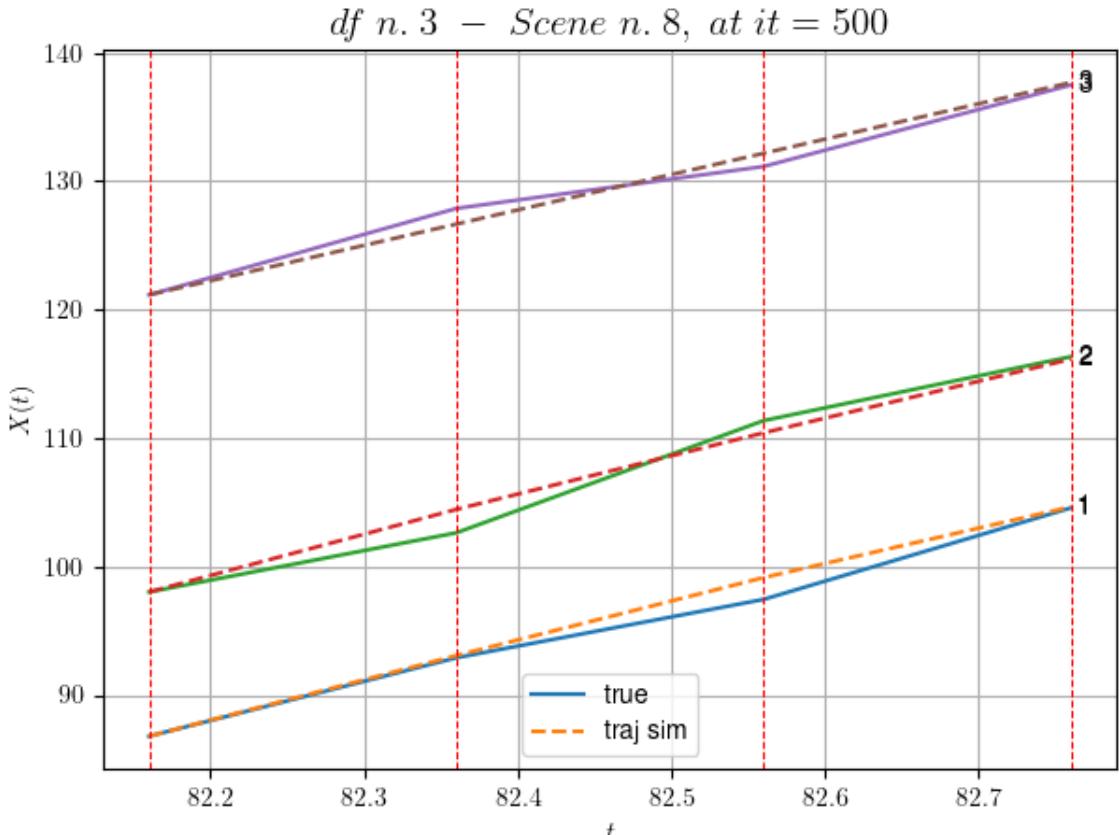
\* use LR\_NN=5e-05 with err=45.94832401177852 at it=19  
 \* v0\_scn\_mean = 28.233965762999585  
 \* MAE = 4.146560472210807

- Time interval n.0: [82.16, 82.36]  
 \* y\_true: [30.54468004 23.04450554]  
 \* v\_ann: [31.406143188476562, 32.14670181274414, 2  
 7.55023741370738]

- Time interval n.1: [82.36, 82.56]  
 \* y\_true: [22.71402344 43.65971655]  
 \* v\_ann: [30.340839385986328, 29.795969009399414, 2  
 7.55023741370738]

- Time interval n.2: [82.56, 82.76]  
 \* y\_true: [35.61686857 24.88594316]  
 \* v\_ann: [27.532167434692383, 28.692556381225586, 2  
 7.55023741370738]

\* err= 0.8127121877201221  
 \* Learning rate NN = 0.0002952449722215533  
 \* diff = 3.384306962417316e-05



For scene 8/55

```
* use LR_NN=0.0005 with err=7.178262379747983 at it=19
* v0_scn_mean = 27.69722305889582
* MAE = 0.8058256883593248
```

---



---

```
- Time interval n.0: [86.16, 86.36]
* y_true: [27.89181051 25.45740923]
* v_ann: [25.735559463500977, 33.36088562011719, 3
5.76473661345442]
```

---

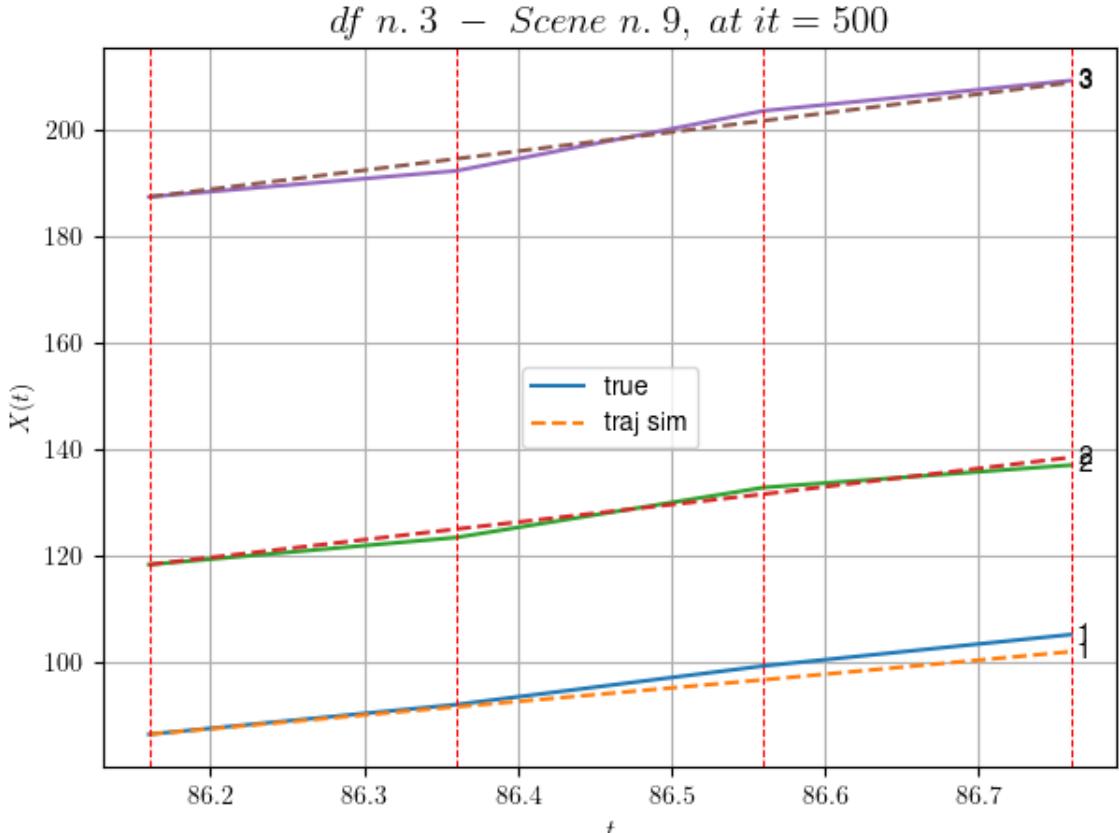
```
- Time interval n.1: [86.36, 86.56]
* y_true: [36.25627338 46.92477715]
* v_ann: [25.423845291137695, 32.8416633605957, 35.
76473661345442]
```

---

```
- Time interval n.2: [86.56, 86.76]
* y_true: [29.50579063 21.07714474]
* v_ann: [26.43043327331543, 34.500858306884766, 3
5.76473661345442]
```

---

```
* err= 2.675524536045805
* Learning rate NN = 5.9048988987342454e-06
* diff = 0.028285739583747027
```



For scene 9/55

\* use LR\_NN=1e-05 with err=13.8045154754435 at it=19  
 \* v0\_scn\_mean = 35.41885267547109  
 \* MAE = 2.675524536045805

- 
- 
- 
- Time interval n.0: [130.96, 131.16]
    - \* y\_true: [15.85249734 39.95916833]
    - \* v\_ann: [32.25851821899414, 30.612255096435547, 3 1.752337885124334]

---

  - Time interval n.1: [131.16, 131.36]
    - \* y\_true: [19.2732587 14.0236874]
    - \* v\_ann: [34.52285385131836, 29.418407440185547, 3 1.752337885124334]

---

  - Time interval n.2: [131.36, 131.56]
    - \* y\_true: [20.77382027 41.90201833]
    - \* v\_ann: [32.11528778076172, 28.381267547607422, 3 1.752337885124334]

---

  - Time interval n.3: [131.56, 131.76]
    - \* y\_true: [36.06757222 59.75967406]
    - \* v\_ann: [34.35273742675781, 29.235483169555664, 3 1.752337885124334]

1.752337885124334]

---

- Time interval n.4: [131.76, 131.96]
  - \* y\_true: [33.71775213 41.23564164]
  - \* v\_ann: [39.58182907104492, 30.03278350830078, 31.

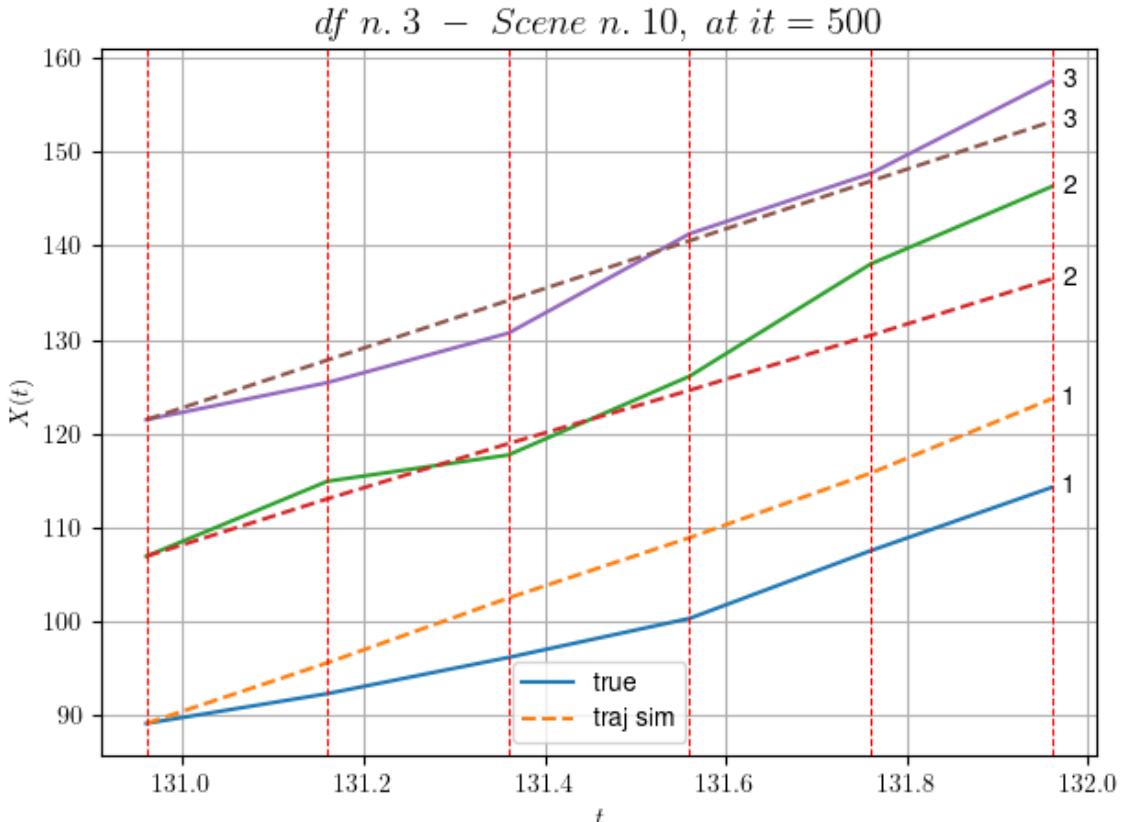
752337885124334]

---



---

- \* err= 26.74423706591305
- \* Learning rate NN = 3.874203684972599e-05
- \* diff = 0.011543433829679373



For scene 10/55

- \* use LR\_NN=0.0001 with err=59.53133247339131 at it=19
- \* v0\_scn\_mean = 31.64719769069286
- \* MAE = 16.395516142497517

---



---



---



---

- Time interval n.0: [139.16, 139.36]
  - \* y\_true: [22.50033849 31.62238978]
  - \* v\_ann: [26.479629516601562, 28.39590835571289, 2

8.144630567259167]

---



---



---



---

- Time interval n.1: [139.36, 139.56]
  - \* y\_true: [29.90063418 17.15160439]
  - \* v\_ann: [27.31733512878418, 27.537145614624023, 2

8.144630567259167]

```
- Time interval n.2: [139.56, 139.76]
 * y_true: [27.10078793 37.57385655]
 * v_ann: [25.7542667388916, 27.91524887084961, 28.1
44630567259167]

- Time interval n.3: [139.76, 139.96]
 * y_true: [25.40095052 21.65266443]
 * v_ann: [27.32671356201172, 28.72571563720703, 28.
144630567259167]

- Time interval n.4: [139.96, 140.16]
 * y_true: [21.40097883 32.03445568]
 * v_ann: [26.542573928833008, 27.196155548095703, 2
8.144630567259167]

- Time interval n.5: [140.16, 140.36]
 * y_true: [21.7011754 31.91506312]
 * v_ann: [27.491878509521484, 26.696544647216797, 2
8.144630567259167]

- Time interval n.6: [140.36, 140.56]
 * y_true: [30.50199276 23.65435061]
 * v_ann: [28.339706420898438, 25.955459594726562, 2
8.144630567259167]

- Time interval n.7: [140.56, 140.76]
 * y_true: [27.90220498 42.04863469]
 * v_ann: [27.625587463378906, 28.589536666870117, 2
8.144630567259167]

- Time interval n.8: [140.76, 140.96]
 * y_true: [45.30444602 33.92792147]
 * v_ann: [29.77962303161621, 28.85235595703125, 28.
144630567259167]

- Time interval n.9: [140.96, 141.16]
 * y_true: [22.85268623 11.9131035]
 * v_ann: [30.01285743713379, 25.709800720214844, 2
8.144630567259167]

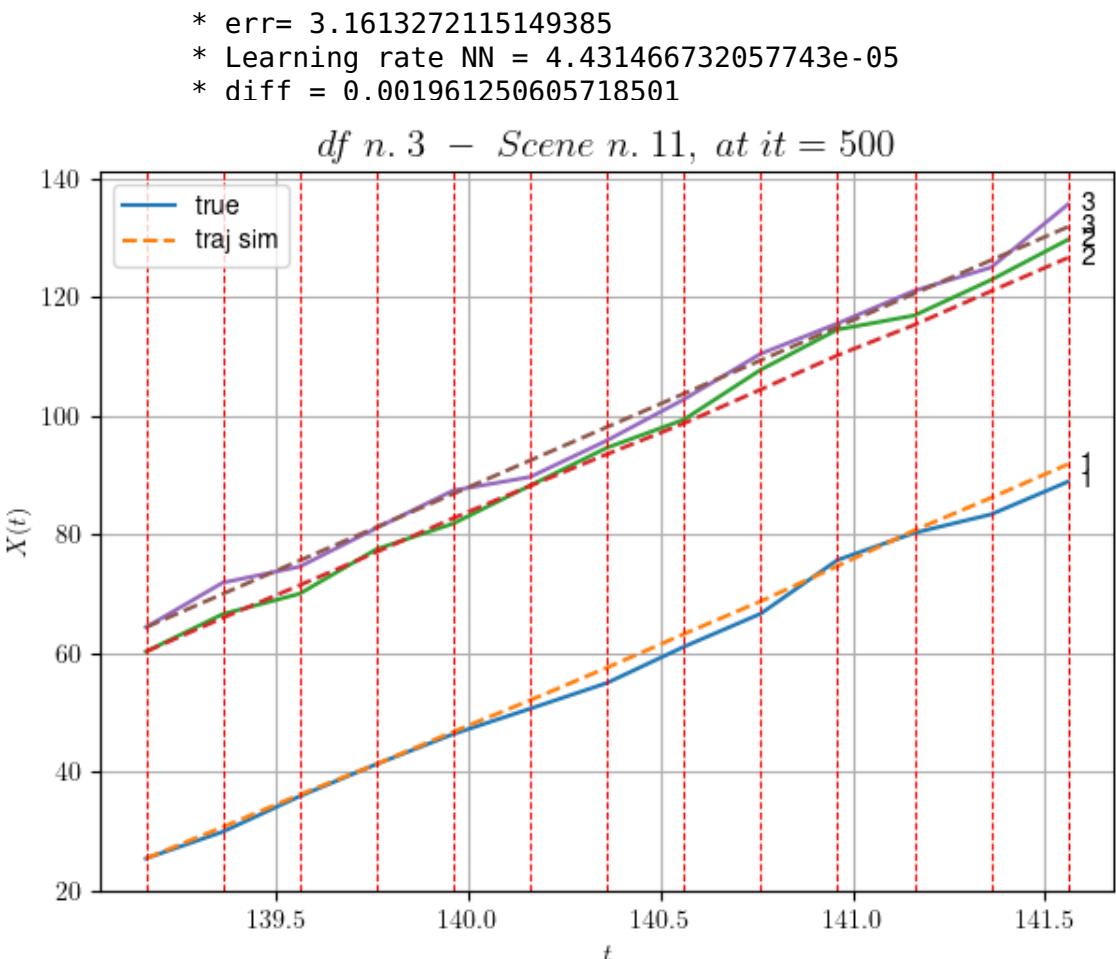
- Time interval n.10: [141.16, 141.36]
```

```

* y_true: [15.65202595 30.01833255]
* v_ann: [27.554676055908203, 28.46416473388672, 2
8.144630567259167]

- Time interval n.11: [141.36, 141.56]
* y_true: [27.55395105 33.94025545]
* v_ann: [28.273286819458008, 28.16086196899414, 2
8.144630567259167]

```



For scene 11/55

```

* use LR_NN=0.0005 with err=200.3447209979082 at it=19
* v0_scn_mean = 28.25595264992155
* MAE = 2.3719967725242603
=====
```

```

- Time interval n.0: [143.76, 143.96]
* y_true: [30.62207823 41.7261053]
* v_ann: [29.553462982177734, 29.73076629638672, 2
9.41474446324694]
```

```

- Time interval n.1: [143.96, 144.16]
```

```

* y_true: [21.21173425 33.31570327]
* v_ann: [32.183570861816406, 31.368206024169922, 2
9.41474446324694]

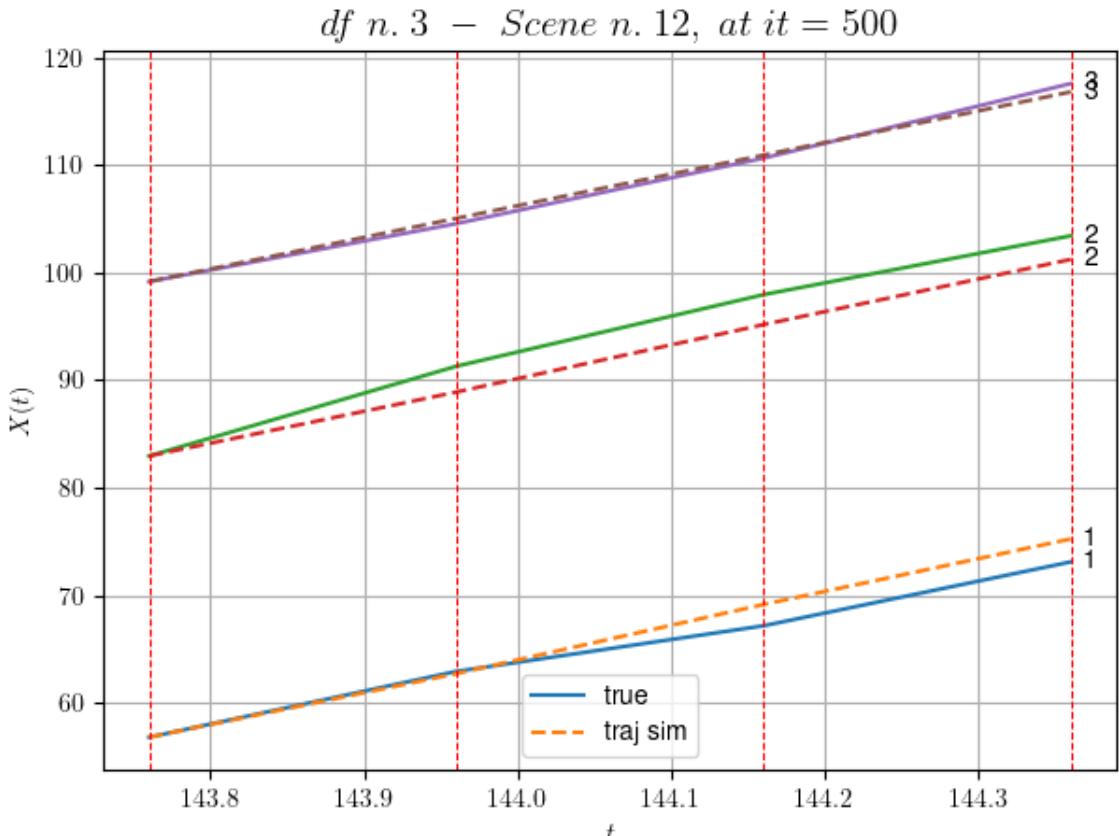
- Time interval n.2: [144.16, 144.36]
* y_true: [29.72284222 27.36558717]
* v_ann: [30.503156661987305, 30.332393646240234, 2
9.41474446324694]

```

```

* err= 2.317344706495166
* Learning rate NN = 5.904899080633186e-05
* diff = 0.001505101125125061

```



For scene 12/55  
\* use LR\_NN=0.0001 with err=17.373492459175953 at it=19  
\* v0\_scn\_mean = 29.44985976917531  
\* MAE = 2.309906237239979

=====  
=====  
=====  
For scene 13/55  
\* use LR\_NN=1e-05 with err=26.63312790559785 at it=19  
\* v0\_scn\_mean = 24.1217715153478  
\* MAE = 1.257776349329937

```

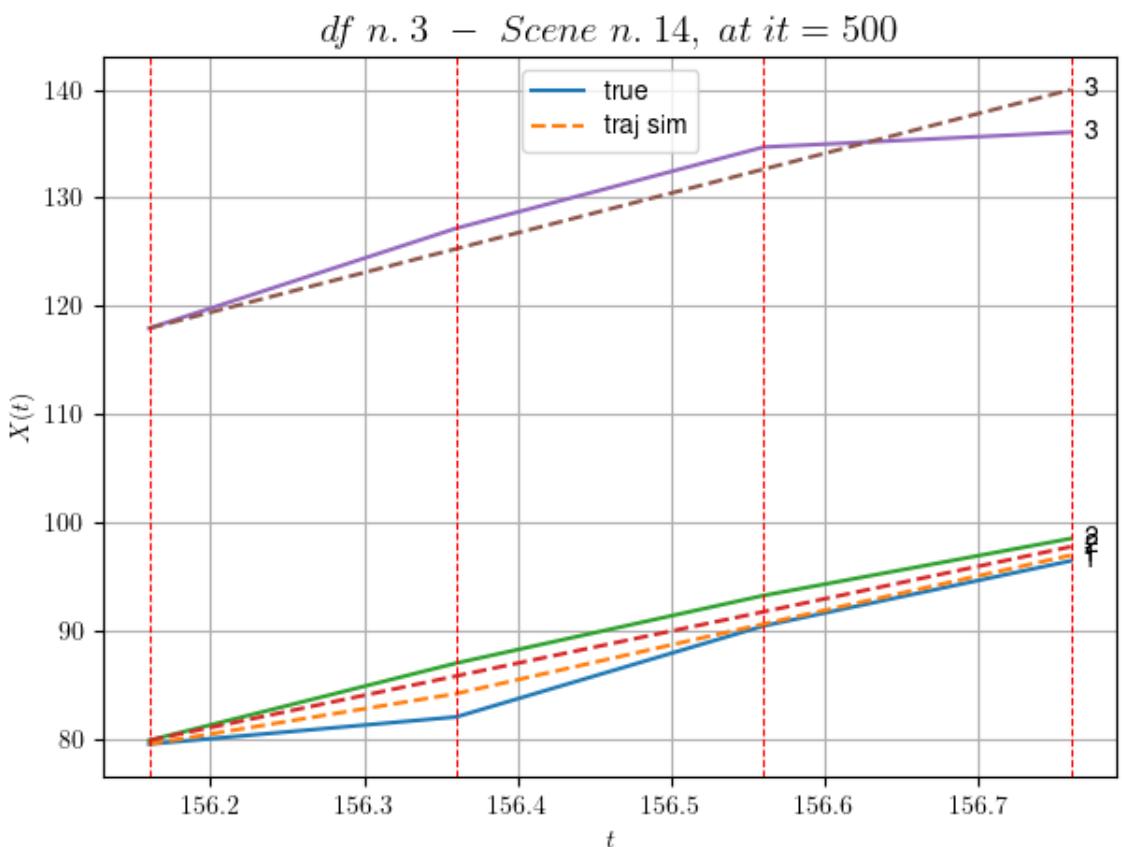
 - Time interval n.0: [156.16, 156.36]
 * y_true: [12.56997445 35.72646923]
 * v_ann: [23.339012145996094, 29.77294921875, 36.77
961690674214]

 - Time interval n.1: [156.36, 156.56]
 * y_true: [42.07610638 31.26485338]
 * v_ann: [32.22903060913086, 29.708282470703125, 3
6.77961690674214]

 - Time interval n.2: [156.56, 156.76]
 * y_true: [30.09491831 26.35466702]
 * v_ann: [31.761825561523438, 30.085939407348633, 3
6.77961690674214]

 * err= 2.703082925674997
 * Learning rate NN = 5.9048988987342454e-06
 * diff = 0.001936918019318945

```



For scene 14/55  
 \* use LR\_NN=1e-05 with err=30.60903727893881 at it=19  
 \* v0\_scn\_mean = 36.372840196728156  
 \* MAE = 2.3605328307854294

```

- Time interval n.0: [207.96, 208.16]
 * y_true: [30.12104774 28.85226703]
 * v_ann: [29.86968421936035, 30.12103271484375, 31.
124909645191092]

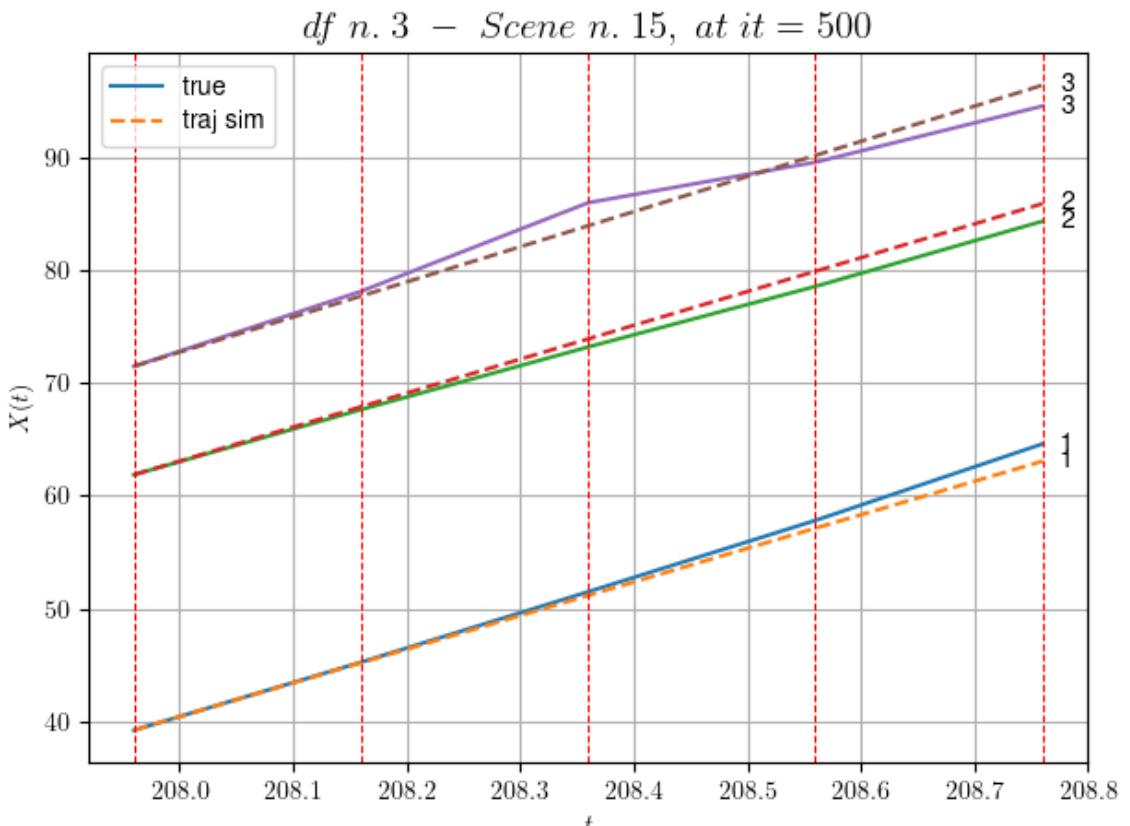
- Time interval n.1: [208.16, 208.36]
 * y_true: [31.19139939 27.73265496]
 * v_ann: [29.81558609008789, 30.051837921142578, 3
1.124909645191092]

- Time interval n.2: [208.36, 208.56]
 * y_true: [31.59181924 26.81292648]
 * v_ann: [29.76201629638672, 29.92234992980957, 31.
124909645191092]

- Time interval n.3: [208.56, 208.76]
 * y_true: [33.88244728 28.87369213]
 * v_ann: [29.69121551513672, 29.958084106445312, 3
1.124909645191092]

* err= 1.0563515445673368
* Learning rate NN = 2.3914839403005317e-05
* diff = 0.0011337054296125526

```



For scene 15/55

\* use LR\_NN=5e-05 with err=10.693963148488288 at it=19

```
* vθ_scn_mean = 31.057415116985236
* MAE = 1.0563515445673368
```

```
=====
=====
```

- Time interval n.0: [218.16, 218.36]  
\* y\_true: [26.47083003 31.40159485]  
\* v\_ann: [32.694801330566406, 32.01895523071289, 3  
1.946925583263592]

```


```

- Time interval n.1: [218.36, 218.56]  
\* y\_true: [32.09751616 29.50187244]  
\* v\_ann: [29.897653579711914, 30.05915069580078, 3  
1.946925583263592]

```


```

- Time interval n.2: [218.56, 218.76]  
\* y\_true: [31.61167285 38.50305628]  
\* v\_ann: [30.871854782104492, 31.151611328125, 31.9  
46925583263592]

```


```

- Time interval n.3: [218.76, 218.96]  
\* y\_true: [30.522016 20.15190279]  
\* v\_ann: [31.644023895263672, 33.14167404174805, 3  
1.946925583263592]

```

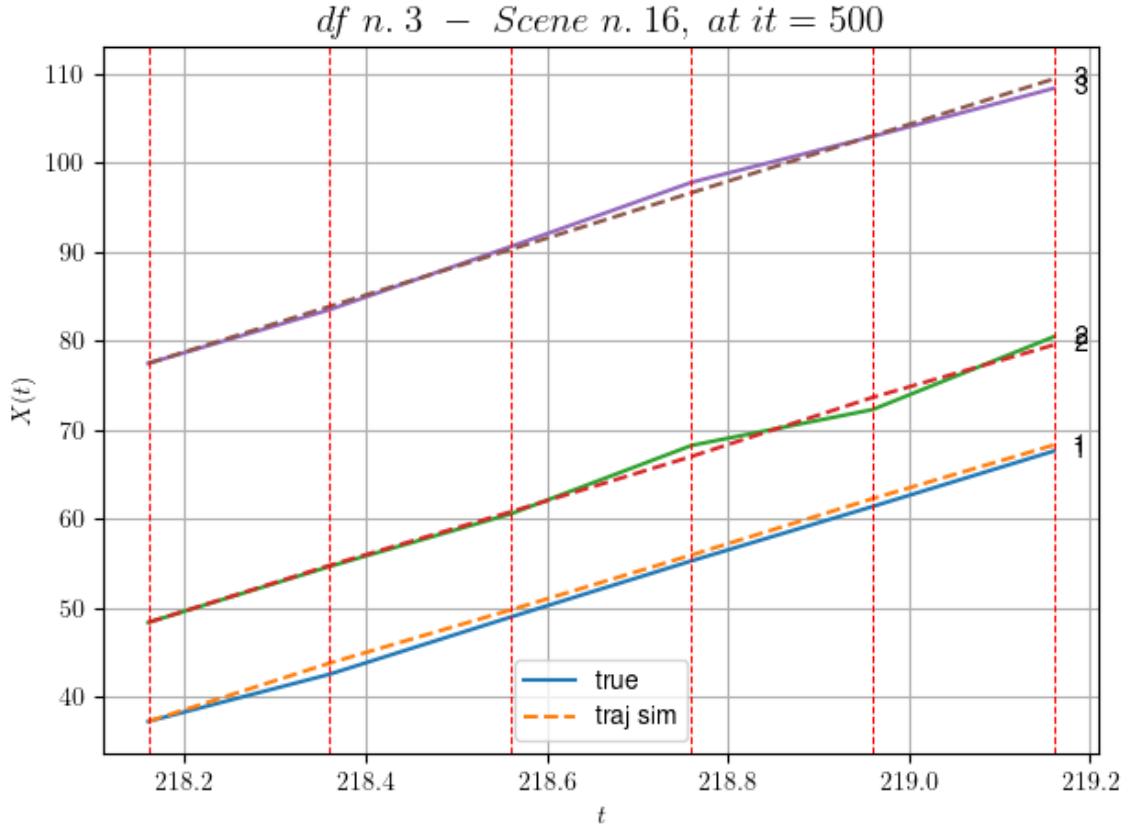

```

- Time interval n.4: [218.96, 219.16]  
\* y\_true: [31.13252968 40.9045659 ]  
\* v\_ann: [30.10830307006836, 29.48027992248535, 31.  
946925583263592]

```


```

\* err= 0.6047754509569659  
\* Learning rate NN = 0.0001937102060765028  
\* diff = 0.00011217303635022786



For scene 16/55

```
* use LR_NN=0.0005 with err=28.42133252736612 at it=19
* v0_scn_mean = 31.830110135680467
* MAE = 0.5805702084896489
```

---



---

```
- Time interval n.0: [222.96, 223.16]
 * y_true: [37.21103813 39.71315438]
 * v_ann: [35.34295654296875, 34.35975646972656, 31.
279750687418055]
```

---

```
- Time interval n.1: [223.16, 223.36]
 * y_true: [31.35126998 28.99272163]
 * v_ann: [36.52544021606445, 35.09279251098633, 31.
279750687418055]
```

---

```
- Time interval n.2: [223.36, 223.56]
 * y_true: [33.72173898 31.78369531]
 * v_ann: [34.78212356567383, 33.76348114013672, 31.
279750687418055]
```

---

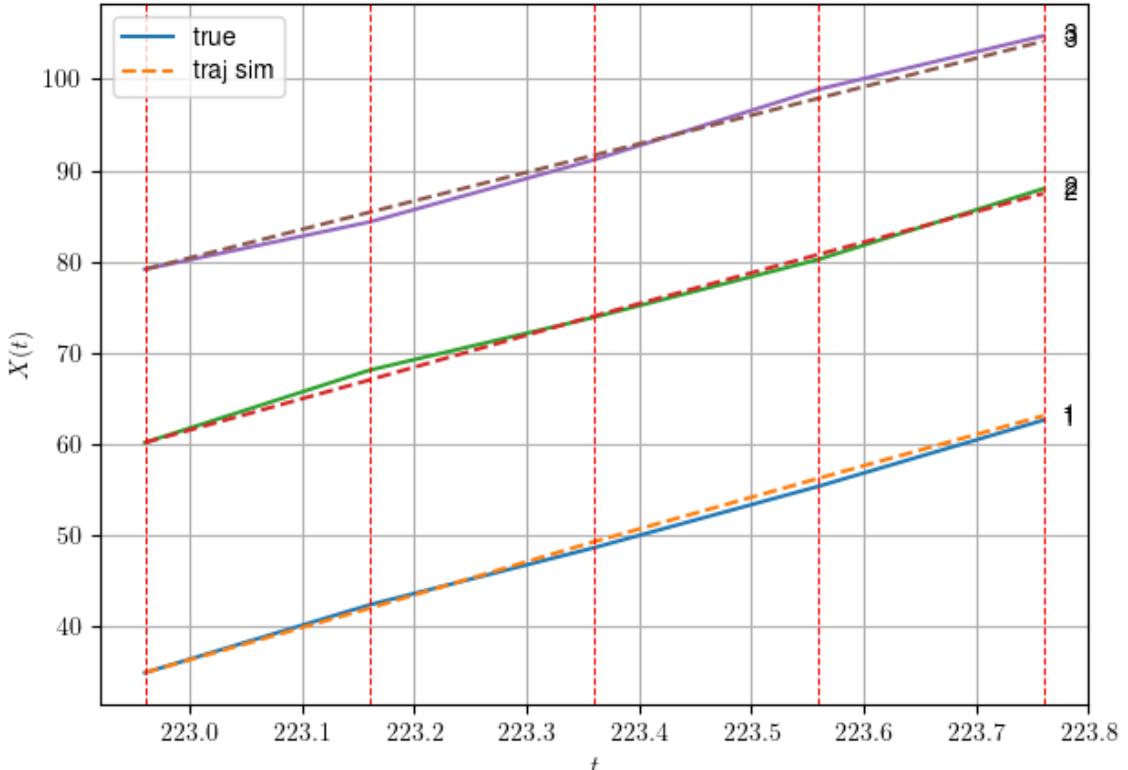
```
- Time interval n.3: [223.56, 223.76]
 * y_true: [36.23248355 38.79526469]
 * v_ann: [34.27682876586914, 33.43231201171875, 31.
279750687418055]
```

```

* err= 0.40003265146572337
* Learning rate NN = 4.7829678806010634e-05
* diff = 0.0003678964512046079

```

*df n. 3 – Scene n. 17, at it = 500*



For scene 17/55

```

* use LR_NN=0.0001 with err=6.021045199737524 at it=19
* v0_scn_mean = 31.20296570363055
* MAE = 0.40003265146572337

```

---



---

- Time interval n.0: [247.36, 247.56]  
\* y\_true: [24.34113117 25.37248976]  
\* v\_ann: [29.081268310546875, 26.43048667907715, 2  
9.19954509278762]

---



---

- Time interval n.1: [247.56, 247.76]  
\* y\_true: [20.86113385 27.00305492]  
\* v\_ann: [27.324020385742188, 25.270849227905273, 2  
9.19954509278762]

---



---

- Time interval n.2: [247.76, 247.96]  
\* y\_true: [25.44173909 29.15378269]  
\* v\_ann: [26.69512939453125, 26.944393157958984, 2  
9.19954509278762]

```

- Time interval n.3: [247.96, 248.16]

* y_true: [34.05263307 29.24437105]

* v_ann: [27.50008201599121, 28.85566520690918, 29.

19954509278762]

```

```

- Time interval n.4: [248.16, 248.36]

* y_true: [24.6823336 32.34552948]

* v_ann: [28.921716690063477, 29.832550048828125, 2

9.19954509278762]

```

```

- Time interval n.5: [248.36, 248.56]

* y_true: [29.77329807 35.48696999]

* v_ann: [29.72232437133789, 31.42302894592285, 29.

19954509278762]

```

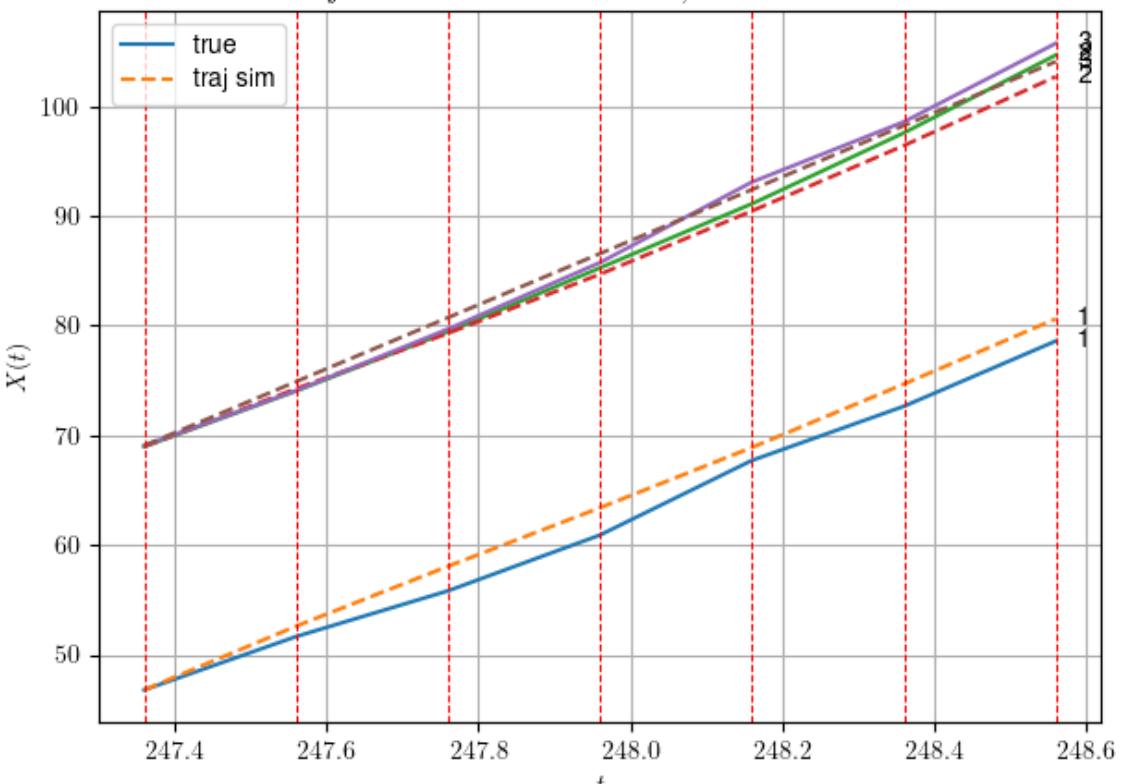
```

* err= 1.5967096179498352

* Learning rate NN = 0.00031381050939671695

* diff = 0.000265700000240711
```

*df n. 3 – Scene n. 18, at it = 500*



For scene 18/55

```

* use LR_NN=0.001 with err=2.896763780615792 at it=19
* v0_scn_mean = 29.247572351281917
* MAE = 1.061169788752142
=====
```

```
- Time interval n.0: [269.56, 269.76]
 * y_true: [27.75027124 32.18076388]
 * v_ann: [28.463743209838867, 29.54214096069336, 3
0.539175669712662]

- Time interval n.1: [269.76, 269.96]
 * y_true: [33.80053503 32.77104018]
 * v_ann: [28.911264419555664, 29.646352767944336, 3
0.539175669712662]

- Time interval n.2: [269.96, 270.16]
 * y_true: [22.10049768 29.95131945]
 * v_ann: [30.283437728881836, 31.535511016845703, 3
0.539175669712662]

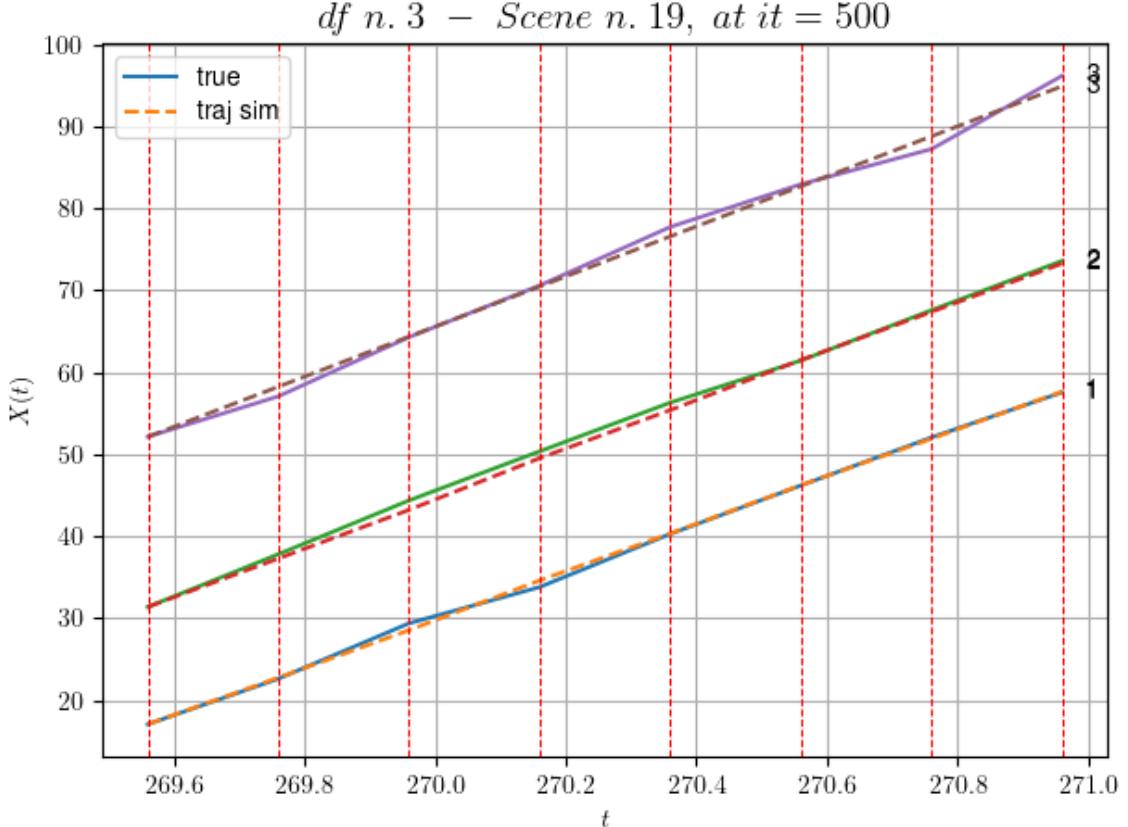
- Time interval n.3: [270.16, 270.36]
 * y_true: [32.40098084 29.70158012]
 * v_ann: [28.718551635742188, 29.338760375976562, 3
0.539175669712662]

- Time interval n.4: [270.36, 270.56]
 * y_true: [29.55119411 25.63174114]
 * v_ann: [29.406349182128906, 30.532852172851562, 3
0.539175669712662]

- Time interval n.5: [270.56, 270.76]
 * y_true: [29.3015063 30.75243246]
 * v_ann: [28.3323974609375, 29.328439712524414, 30.
539175669712662]

- Time interval n.6: [270.76, 270.96]
 * y_true: [27.50174001 30.06304641]
 * v_ann: [28.79473876953125, 29.515439987182617, 3
0.539175669712662]

* err= 0.4803004172396217
* Learning rate NN = 0.00012709324073512107
* diff = 0.0017530670956225625
```



For scene 19/55

\* use LR\_NN=0.0005 with err=5.4749183348918145 at it=19  
 \* v0\_scn\_mean = 30.50682515373735  
 \* MAE = 0.4563417994177101

---



---

- Time interval n.0: [316.16, 316.36]  
 \* y\_true: [33.9635286 19.3731464]  
 \* v\_ann: [27.2441463470459, 27.221574783325195, 31.  
 119731307251488]

---



---

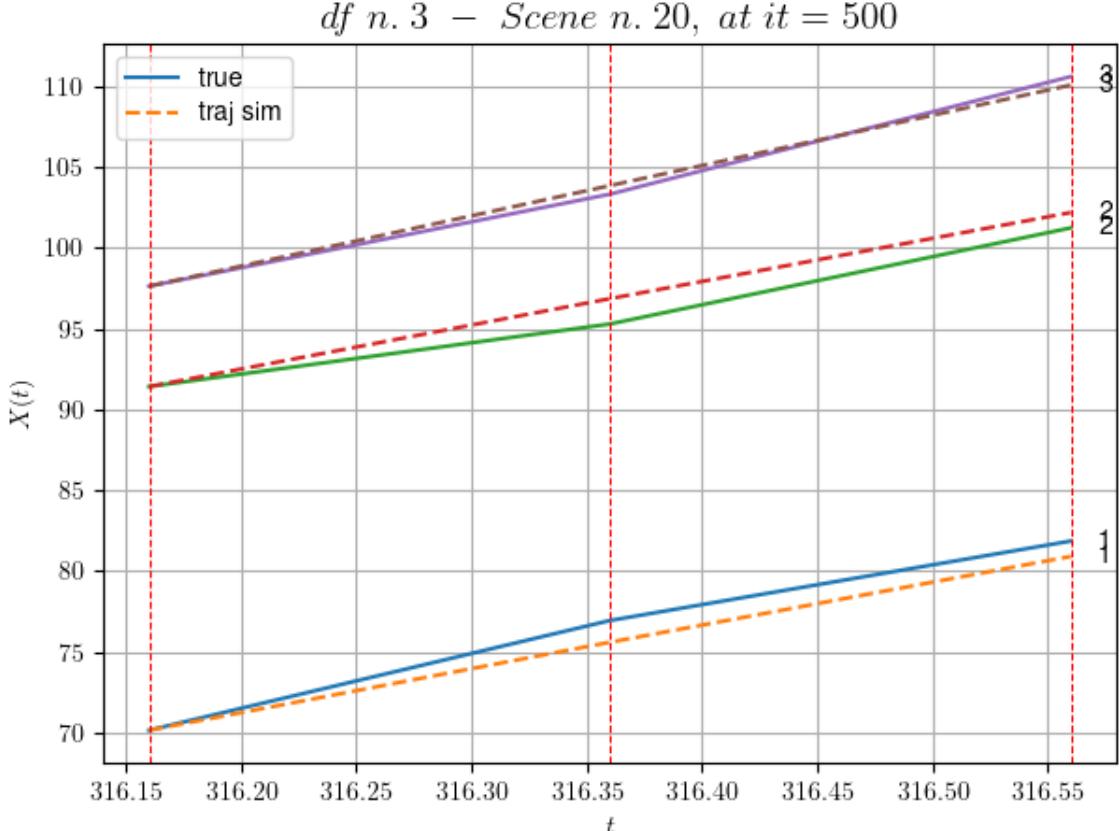
- Time interval n.1: [316.36, 316.56]  
 \* y\_true: [24.60296417 29.75560281]  
 \* v\_ann: [26.55394744873047, 26.65553092956543, 31.  
 119731307251488]

---



---

\* err= 0.7378483068721589  
 \* Learning rate NN = 0.00036449998151510954  
 \* diff = 3.590900059224911e-05



For scene 20/55

\* use LR\_NN=0.0005 with err=3.045594864956351 at it=19  
 \* v0\_scn\_mean = 31.05254747909  
 \* MAE = 0.7342350236006406

---



---

- Time interval n.0: [317.76, 317.96]  
 \* y\_true: [22.24301013 28.10582296]  
 \* v\_ann: [27.043733596801758, 28.51169204711914, 2  
 8.729606502534768]

---

- Time interval n.1: [317.96, 318.16]  
 \* y\_true: [28.26433817 33.10585656]  
 \* v\_ann: [25.43869400024414, 24.520238876342773, 2  
 8.729606502534768]

---

- Time interval n.2: [318.16, 318.36]  
 \* y\_true: [11.28182915 18.67354228]  
 \* v\_ann: [26.5166072845459, 18.952220916748047, 28.  
 729606502534768]

---

- Time interval n.3: [318.36, 318.56]  
 \* y\_true: [28.12514655 32.86712293]  
 \* v\_ann: [25.119449615478516, 26.202011108398438, 2

8.729606502534768]

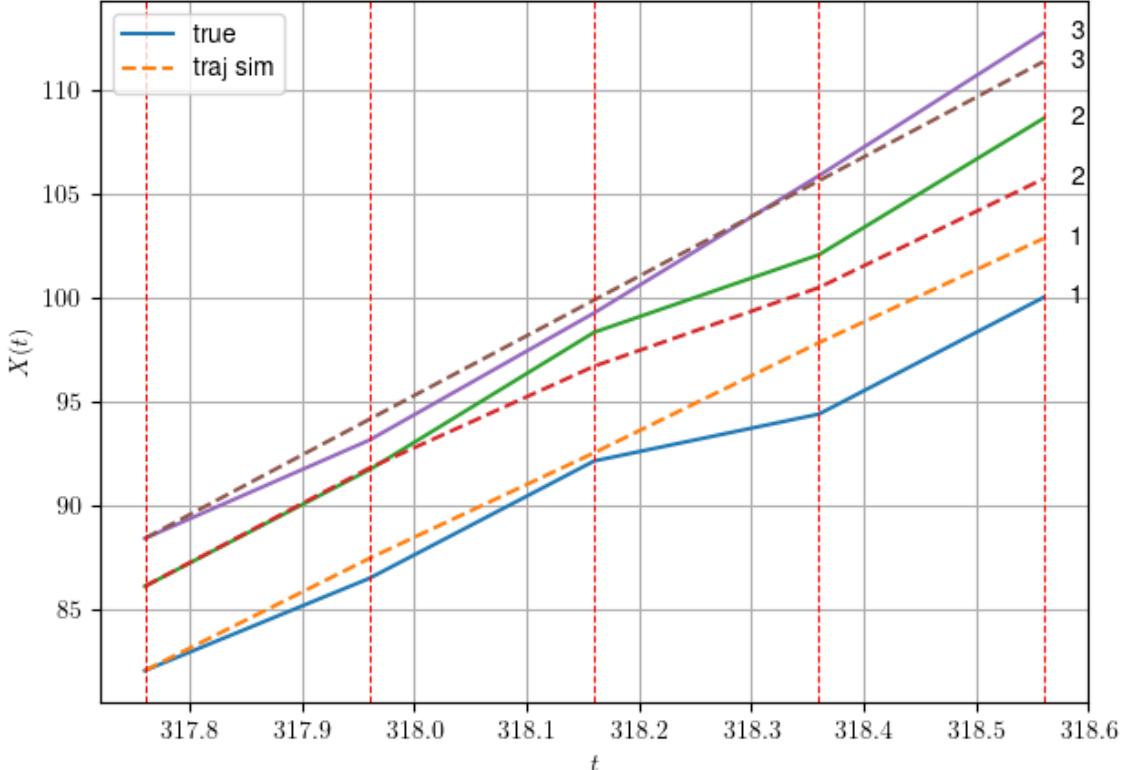
---



---

- \* err= 2.535180026324143
- \* Learning rate NN = 0.000478296831715852
- \* diff = 0.0039615385911648815

*df n. 3 – Scene n. 21, at it = 500*



For scene 21/55

- \* use LR\_NN=0.001 with err=15.405224120334125 at it=19
- \* v0\_scn\_mean = 28.805830055344398
- \* MAE = 1.1204150577319065

---



---

- Time interval n.0: [325.76, 325.96]
  - \* y\_true: [25.31057708 30.22149101]
  - \* v\_ann: [19.383731842041016, 23.726688385009766, 3 3.13555230710752]

---



---

- Time interval n.1: [325.96, 326.16]
  - \* y\_true: [25.23074384 33.46208613]
  - \* v\_ann: [24.29228973388672, 32.371089935302734, 3 3.13555230710752]

---



---

- Time interval n.2: [326.16, 326.36]
  - \* y\_true: [24.63092838 29.01218385]
  - \* v\_ann: [24.981508255004883, 32.40016555786133, 3 3.13555230710752]

```

 - Time interval n.3: [326.36, 326.56]

 * y_true: [17.72077879 27.33248549]

 * v_ann: [22.298397064208984, 27.606746673583984, 3

3.13555230710752]

```

```

 - Time interval n.4: [326.56, 326.76]

 * y_true: [25.71142574 30.60327071]

 * v_ann: [19.257036209106445, 21.845579147338867, 3

3.13555230710752]

```

```

 - Time interval n.5: [326.76, 326.96]

 * y_true: [31.6120671 24.79299826]

 * v_ann: [28.908079147338867, 36.799041748046875, 3

3.13555230710752]

```

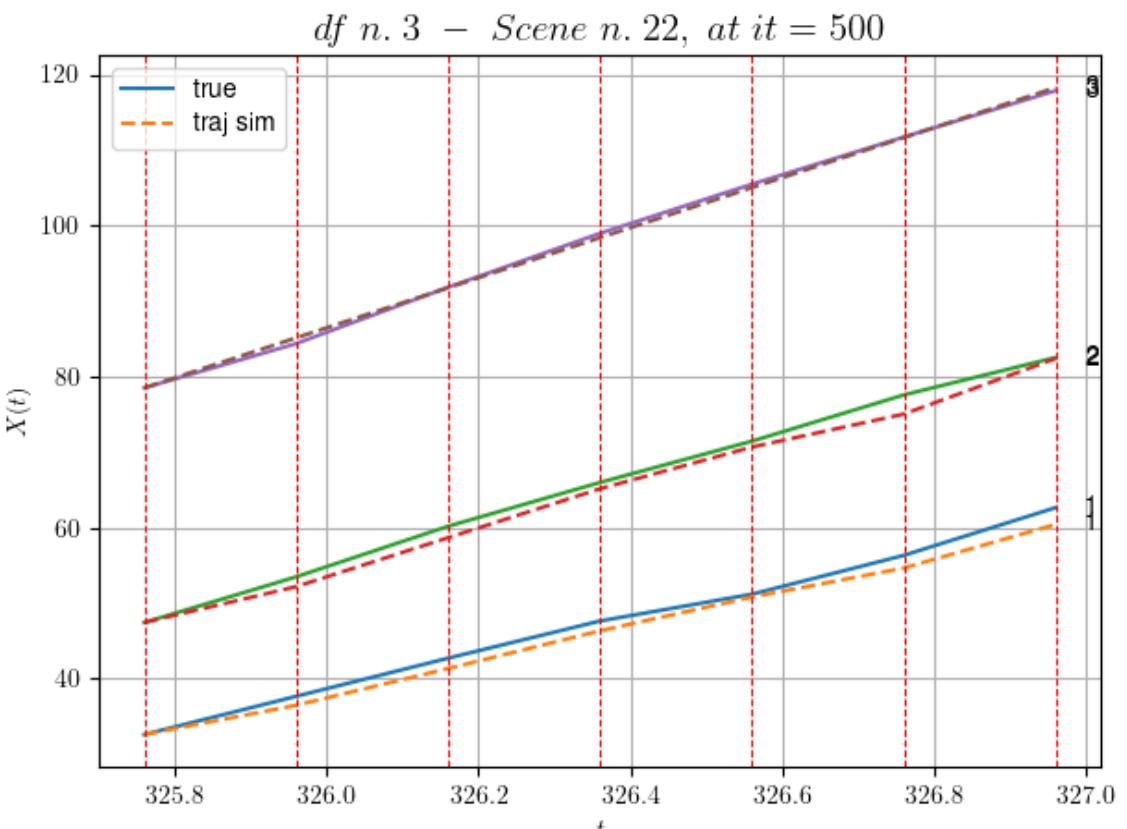
```

 * err= 1.235617125992592

 * Learning rate NN = 0.00031381050939671695

 * diff = 0.009849604005622847

```



For scene 22/55

```

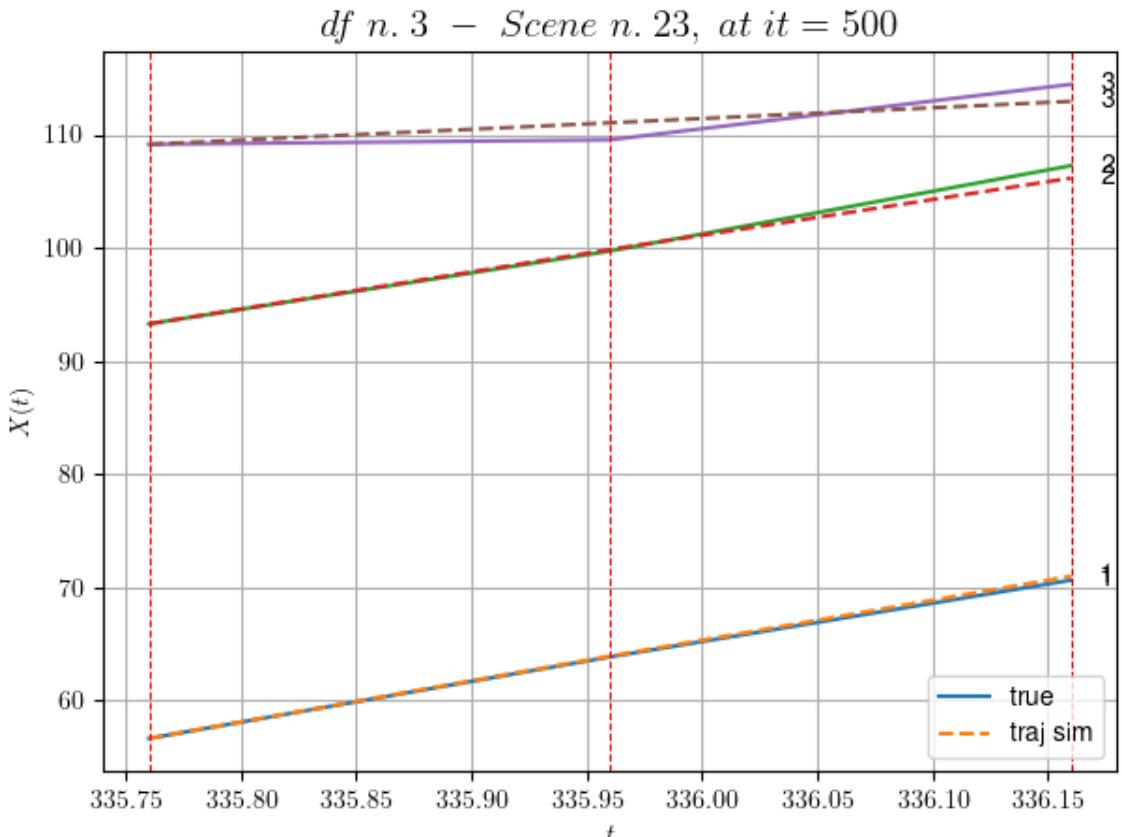
* use LR_NN=0.001 with err=10.45725904339561 at it=19
* v0_scn_mean = 32.9474193094602
* MAE = 1.1594240810570524

```

```
=====
- Time interval n.0: [335.76, 335.96]
 * y_true: [36.00253797 32.17585284]
 * v_ann: [36.31842041015625, 32.8247184753418, 9.49
5680524399495]
```

```
=====
- Time interval n.1: [335.96, 336.16]
 * y_true: [33.90297107 37.71766361]
 * v_ann: [35.28157424926758, 31.58795738220215, 9.4
95680524399495]
```

```
* err= 0.6492780229502538
* Learning rate NN = 3.6449993785936385e-05
* diff = 0.000050110777004177
```



For scene 23/55

```
* use LR_NN=5e-05 with err=16.839527018885594 at it=19
* v0_scn_mean = 10.725938772335907
* MAE = 0.6492780229502538
```

```
=====
- Time interval n.0: [371.16, 371.36]
 * y_true: [24.42036896 26.80112378]
 * v_ann: [26.551027297973633, 26.747182846069336, 3
2.539507599226525]
```

```

- Time interval n.1: [371.36, 371.56]

 * y_true: [25.21053633 31.30165898]

 * v_ann: [25.91230010986328, 25.126188278198242, 3

 2.539507599226525]

```

```

- Time interval n.2: [371.56, 371.76]

 * y_true: [24.36067127 30.15199262]

 * v_ann: [27.724821090698242, 29.562936782836914, 3

 2.539507599226525]

```

```

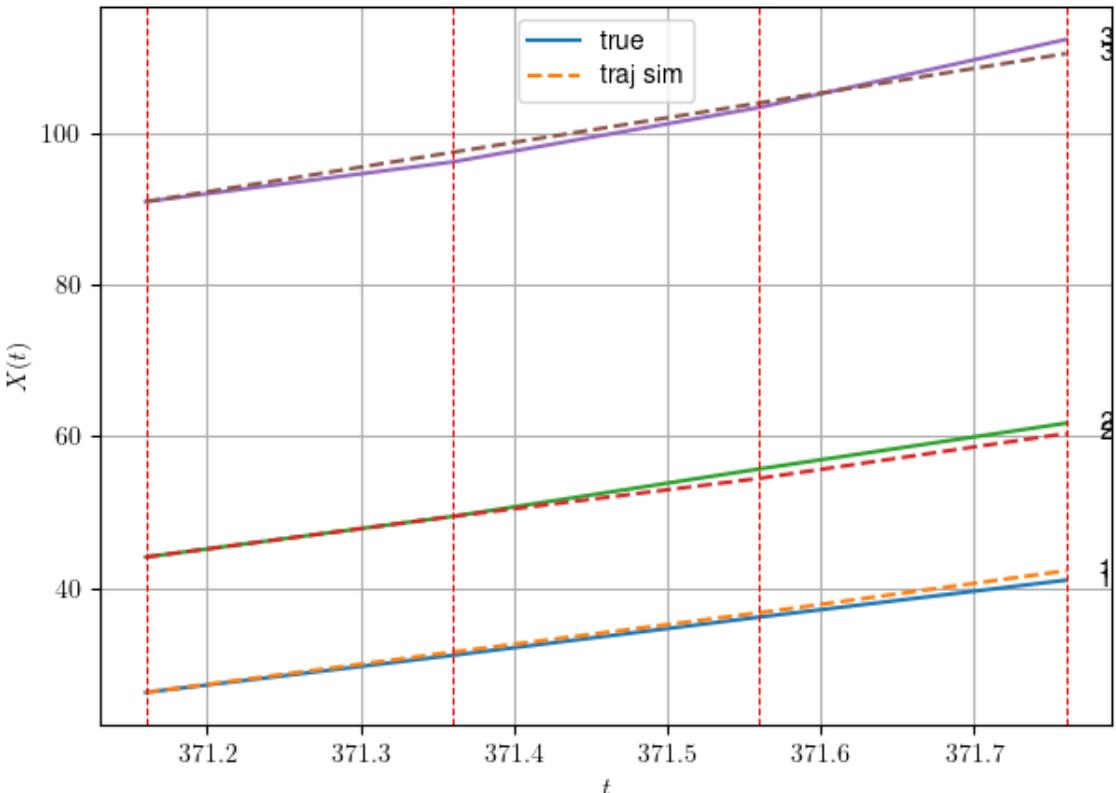
* err= 0.9084901778776242

* Learning rate NN = 5.904899080633186e-05

* diff = 0.0011447376752601324

```

*df n. 3 – Scene n. 24, at it = 500*



For scene 24/55

```

* use LR_NN=0.0001 with err=7.537337756741775 at it=19

* v0_scn_mean = 32.387137257291

* MAE = 0.8367696145272533

```

```

=====

=====

- Time interval n.0: [387.36, 387.56]

 * y_true: [32.47194771 39.46360823]

 * v_ann: [25.84466552734375, 32.41073226928711, 33.

 03189808825702]

```

```

 - Time interval n.1: [387.56, 387.76]

 * y_true: [28.80212467 26.65295039]

 * v_ann: [31.61945915222168, 40.04893493652344, 33.

03189808825702]

```

```

 - Time interval n.2: [387.76, 387.96]

 * y_true: [28.30253286 24.25305315]

 * v_ann: [23.250629425048828, 26.548818588256836, 3

3.03189808825702]

```

```

 - Time interval n.3: [387.96, 388.16]

 * y_true: [34.31356051 24.78356316]

 * v_ann: [23.755857467651367, 28.474512100219727, 3

3.03189808825702]

```

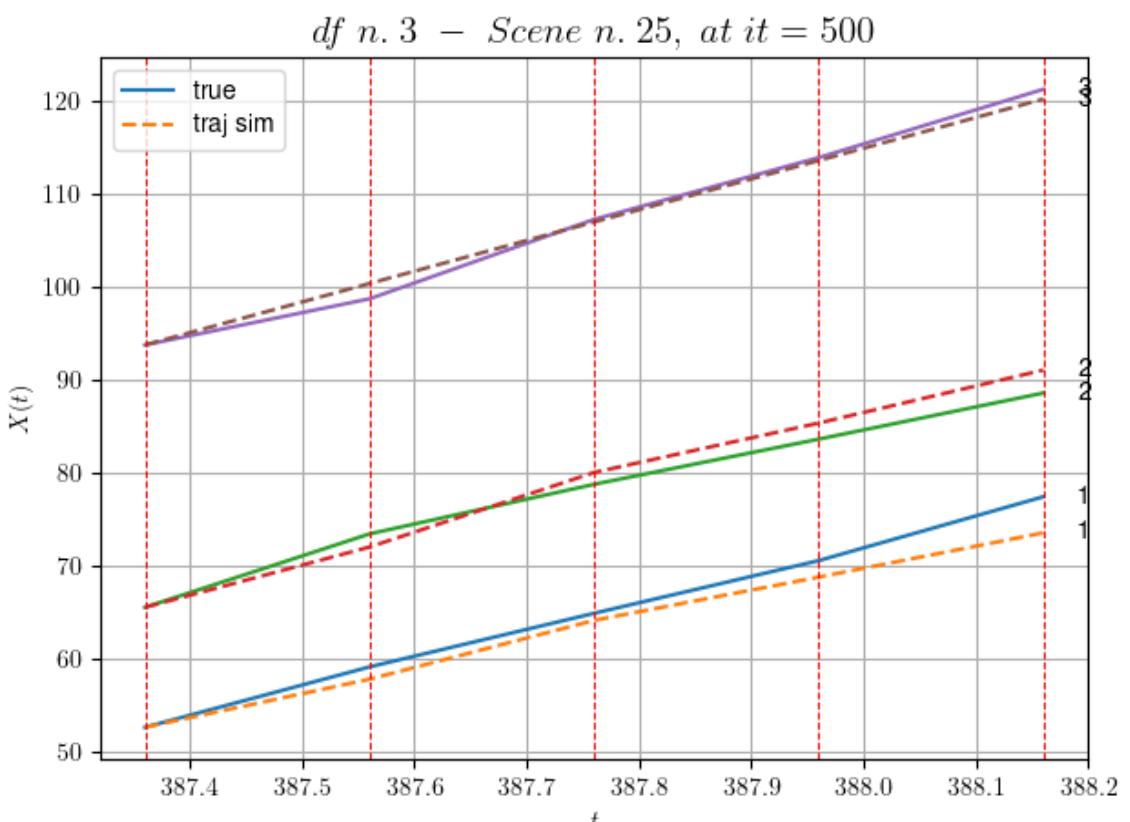
```

* err= 2.4811889786598744

* Learning rate NN = 0.000239148415857926

* diff = 0.04012365347928393

```



For scene 25/55

```

* use LR_NN=0.0005 with err=14.835439283037497 at it=19
* v0_scn_mean = 32.849984339086774
* MAE = 2.4811889786598744

```

```

 - Time interval n.0: [390.36, 390.56]
 * y_true: [34.37306474 33.21473815]
 * v_ann: [32.21700668334961, 30.940067291259766, 3
 6.35426043628985]

```

---

```

 - Time interval n.1: [390.56, 390.76]
 * y_true: [31.79338609 29.7348149]
 * v_ann: [32.74614334106445, 32.911582946777344, 3
 6.35426043628985]

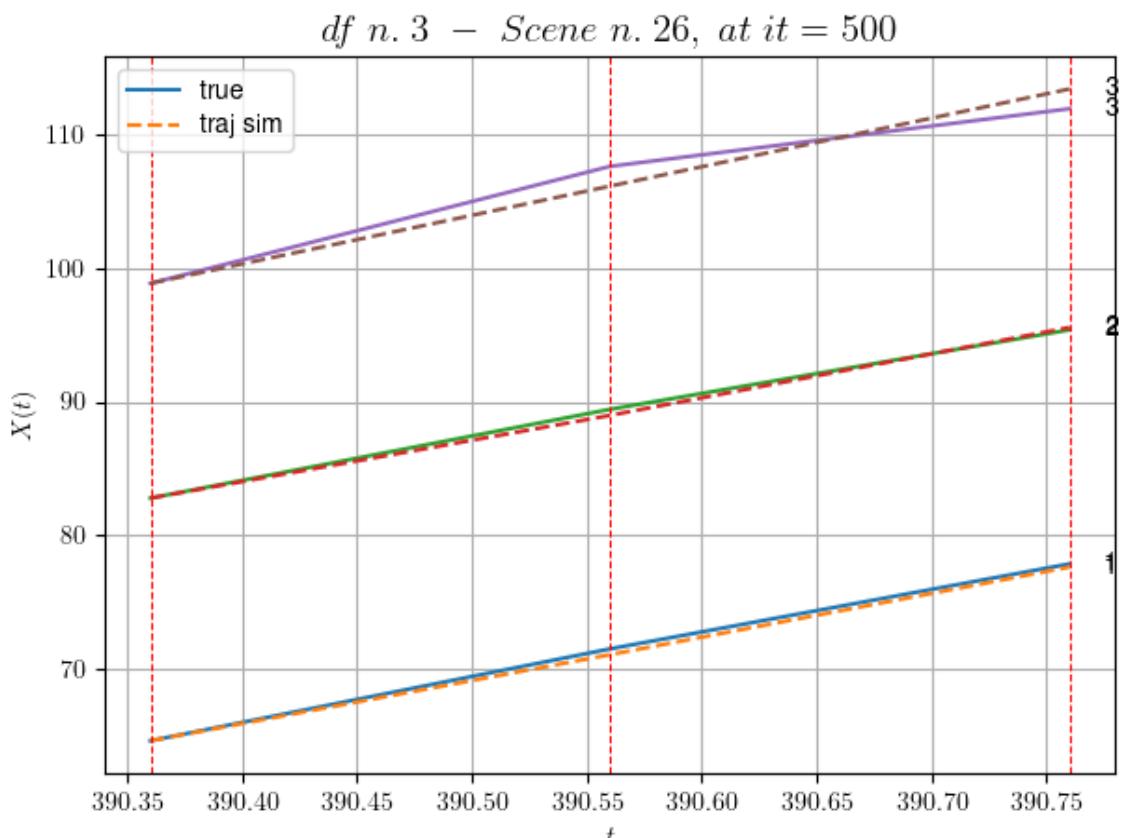
```

---

```

 * err= 0.5397673558088744
 * Learning rate NN = 7.289998757187277e-05
 * diff = 6.42205281986552e-06

```



For scene 26/55

```

* use LR_NN=0.0001 with err=1.072597135039344 at it=19
* v0_scn_mean = 35.97300509540515
* MAE = 0.49732323074001217

```

---



---

For scene 27/55

```

* use LR_NN=0.0005 with err=66.44833056882219 at it=19
* v0_scn_mean = 36.614898994076455
* MAE = 36.60495756533797

```

---



---

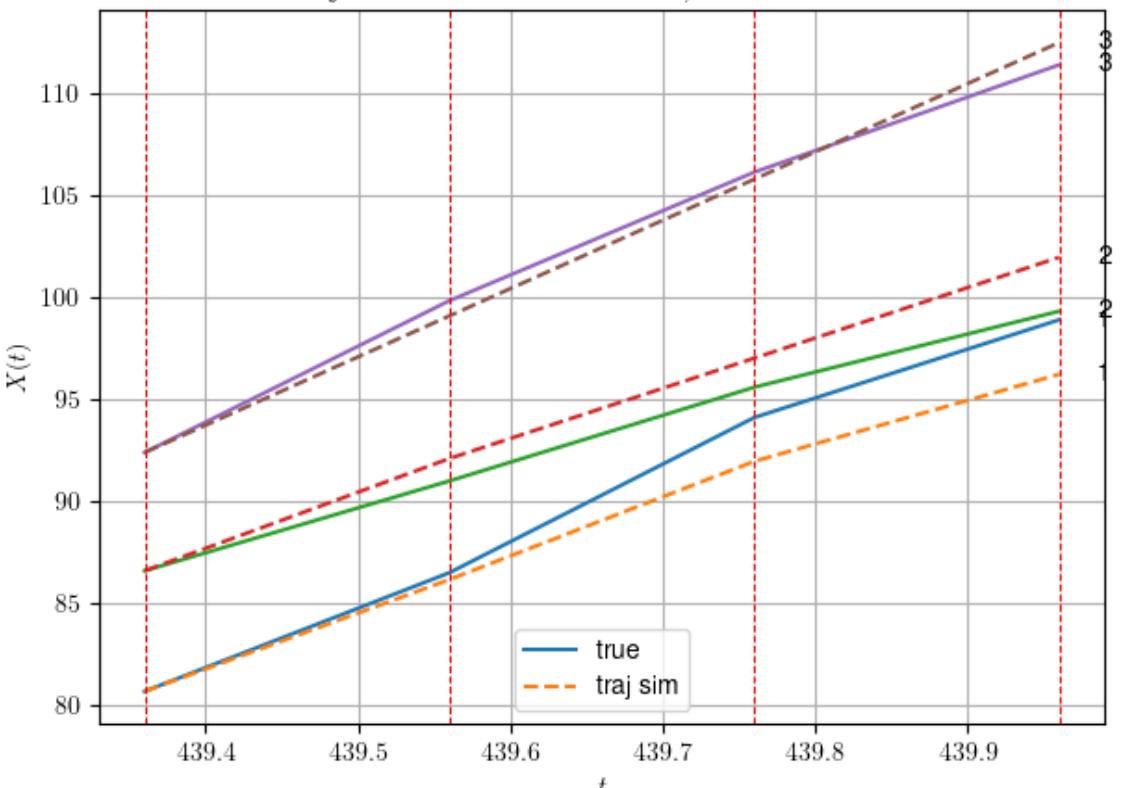
```
=====
- Time interval n.0: [439.36, 439.56]
 * y_true: [29.12388438 22.06331107]
 * v_ann: [27.44281578063965, 27.56226348876953, 33.
53637857273001]
```

```
=====
- Time interval n.1: [439.56, 439.76]
 * y_true: [38.07606081 22.99369197]
 * v_ann: [29.006019592285156, 24.624004364013672, 3
3.53637857273001]
```

```
=====
- Time interval n.2: [439.76, 439.96]
 * y_true: [23.98424021 18.65338098]
 * v_ann: [21.367008209228516, 24.752593994140625, 3
3.53637857273001]
```

```
* err= 1.9996835316031534
* Learning rate NN = 0.0002952449722215533
* diff = 0.0003292410061717099
```

*df n. 3 – Scene n. 28, at it = 500*



For scene 28/55

```
* use LR_NN=0.0005 with err=13.465607842411112 at it=19
* v0_scn_mean = 33.32419601714192
* MAE = 1.0194562162040477
```

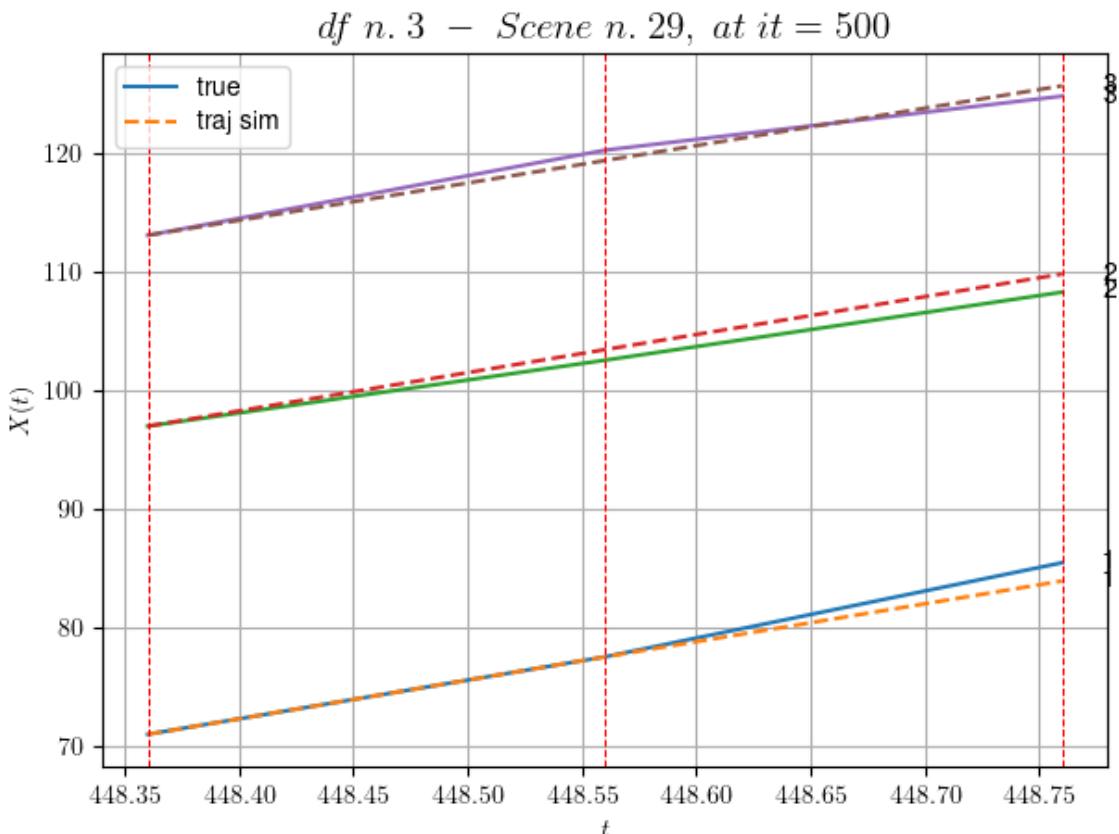
```

 - Time interval n.0: [448.36, 448.56]
 * y_true: [32.70350359 27.85524745]
 * v_ann: [32.69613265991211, 32.328712463378906, 3
1.585048186377175]

 - Time interval n.1: [448.56, 448.76]
 * y_true: [39.76511656 28.75604876]
 * v_ann: [32.060089111328125, 31.95522689819336, 3
1.585048186377175]

 * err= 0.78502400362366
 * Learning rate NN = 3.6449993785936385e-05
 * diff = 9.0112719720703e-05

```



For scene 29/55

```

* use LR_NN=5e-05 with err=0.5687561980020092 at it=19
* v0_scn_mean = 31.48994536635914
* MAE = 0.7816559018106156

```

---



---

```

 - Time interval n.0: [465.16, 465.36]
 * y_true: [25.95020905 30.0319773]
 * v_ann: [25.798892974853516, 25.776775360107422, 2
4.72207906512802]

```

```
- Time interval n.1: [465.36, 465.56]
 * y_true: [21.30025919 28.782318]
 * v_ann: [26.417966842651367, 26.186790466308594, 2
4.72207906512802]

- Time interval n.2: [465.56, 465.76]
 * y_true: [22.00036741 28.59272475]
 * v_ann: [26.60519027709961, 25.802392959594727, 2
4.72207906512802]

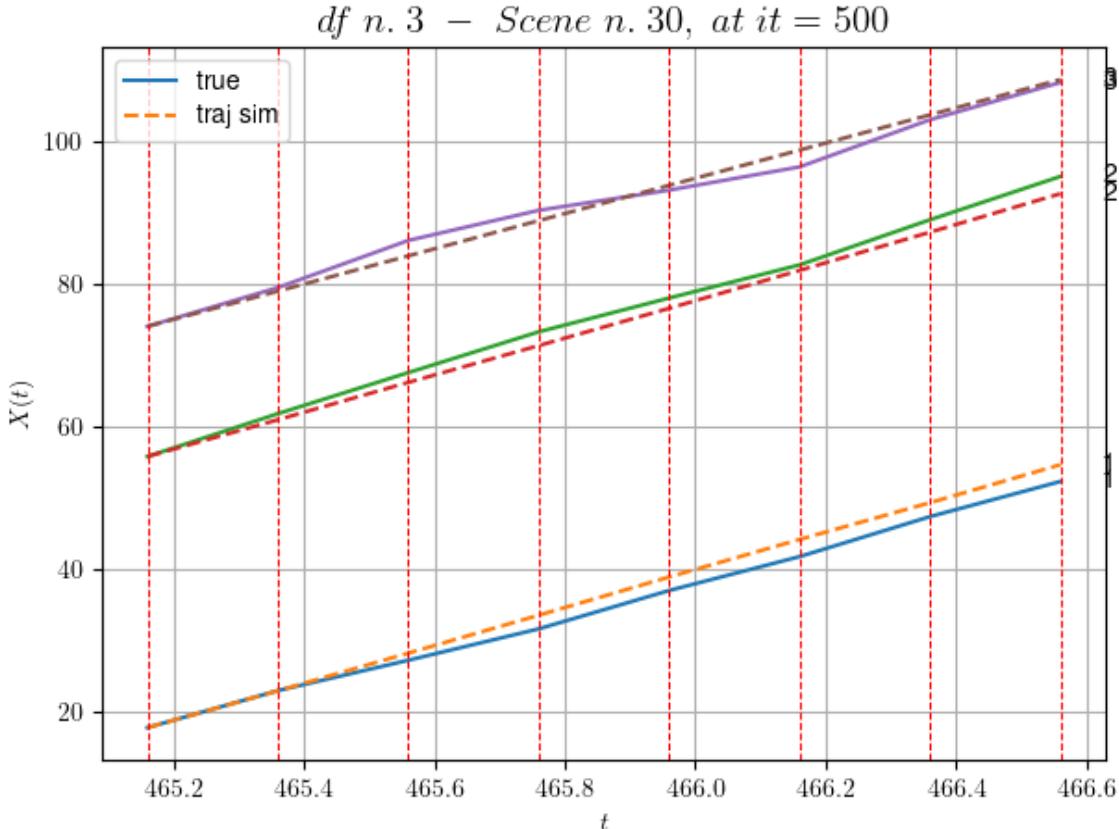
- Time interval n.3: [465.76, 465.96]
 * y_true: [26.90061063 23.70259195]
 * v_ann: [26.773521423339844, 26.13040542602539, 2
4.72207906512802]

- Time interval n.4: [465.96, 466.16]
 * y_true: [23.75070885 23.26288454]
 * v_ann: [26.341672897338867, 26.59574317932129, 2
4.72207906512802]

- Time interval n.5: [466.16, 466.36]
 * y_true: [28.05107156 31.61450449]
 * v_ann: [25.771196365356445, 26.785011291503906, 2
4.72207906512802]

- Time interval n.6: [466.36, 466.56]
 * y_true: [24.65117633 30.37492519]
 * v_ann: [26.661563873291016, 26.99041175842285, 2
4.72207906512802]

```



For scene 30/55

\* use LR\_NN=0.0001 with err=62.262074645513366 at it=19  
 \* v0\_scn\_mean = 25.038754084253625  
 \* MAE = 2.286166754125439

---



---

- Time interval n.0: [467.16, 467.36]  
 \* y\_true: [14.52040439 29.14139959]  
 \* v\_ann: [19.907730102539062, 21.196516036987305, 2  
 0.77626285260558]

---

- Time interval n.1: [467.36, 467.56]  
 \* y\_true: [ 8.96028804 21.01119683]  
 \* v\_ann: [18.806894302368164, 19.968061447143555, 2  
 0.77626285260558]

---

- Time interval n.2: [467.56, 467.76]  
 \* y\_true: [15.62056342 22.22157858]  
 \* v\_ann: [18.931093215942383, 20.1303653717041, 20.  
 77626285260558]

---

- Time interval n.3: [467.76, 467.96]  
 \* y\_true: [19.48080782 28.40220095]  
 \* v\_ann: [19.297454833984375, 20.616775512695312, 2

0.77626285260558]

---

- Time interval n.4: [467.96, 468.16]
  - \* y\_true: [16.10078185 22.34213456]
  - \* v\_ann: [20.168819427490234, 20.31434440612793, 2

0.77626285260558]

---

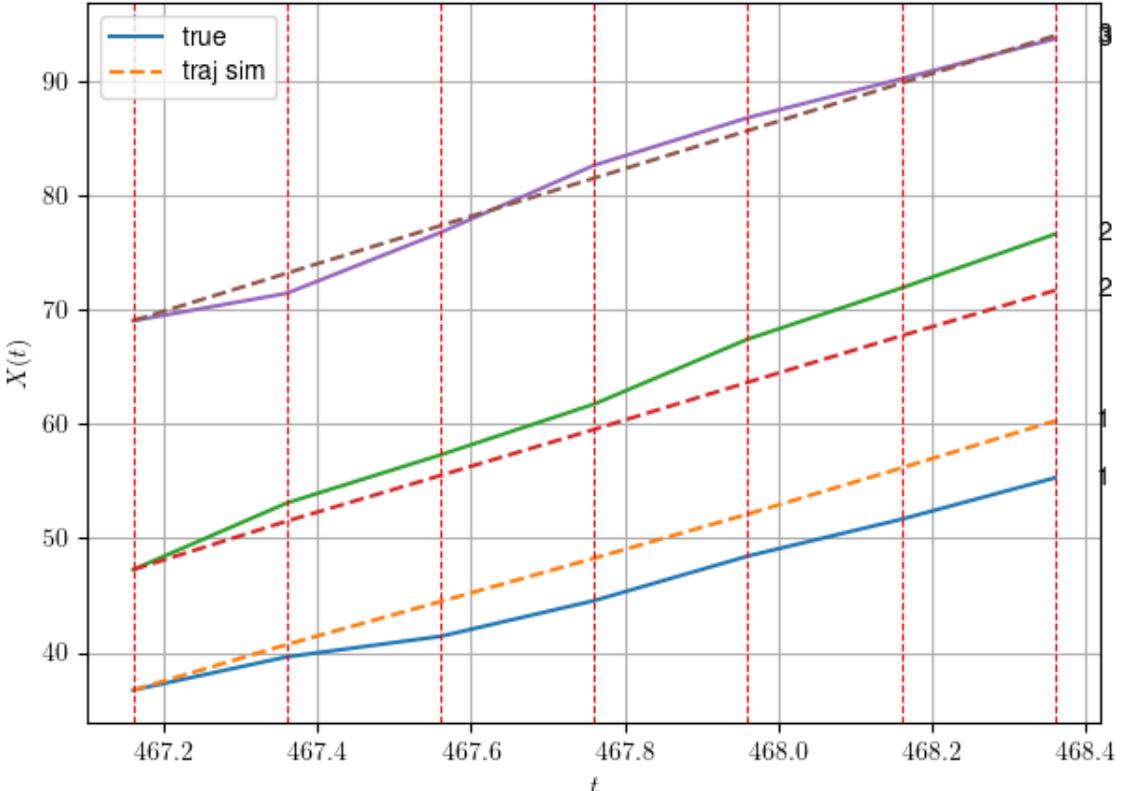
- Time interval n.5: [468.16, 468.36]
  - \* y\_true: [18.12099432 23.56241547]
  - \* v\_ann: [20.56846809387207, 19.85527229309082, 20.

77626285260558]

---

- \* err= 7.3968335701551196
- \* Learning rate NN = 3.138104875688441e-05
- \* diff = 0.001022741546880267

*df n. 3 – Scene n. 31, at it = 500*



For scene 31/55

- \* use LR\_NN=0.0001 with err=16.235872934731322 at it=19
- \* v0\_scn\_mean = 21.329686667323212
- \* MAE = 7.3968335701551196

---

- Time interval n.0: [480.76, 480.96]
  - \* y\_true: [26.72145209 13.04113053]
  - \* v\_ann: [16.04176902770996, 17.19268035888672, 18.

304841737444658]

```

 - Time interval n.1: [480.96, 481.16]

 * y_true: [27.70182882 12.50117676]

 * v_ann: [16.94309425354004, 19.550973892211914, 1

8.304841737444658]

```

```

 - Time interval n.2: [481.16, 481.36]

 * y_true: [16.26121495 12.26123448]

 * v_ann: [16.71782112121582, 20.693721771240234, 1

8.304841737444658]

```

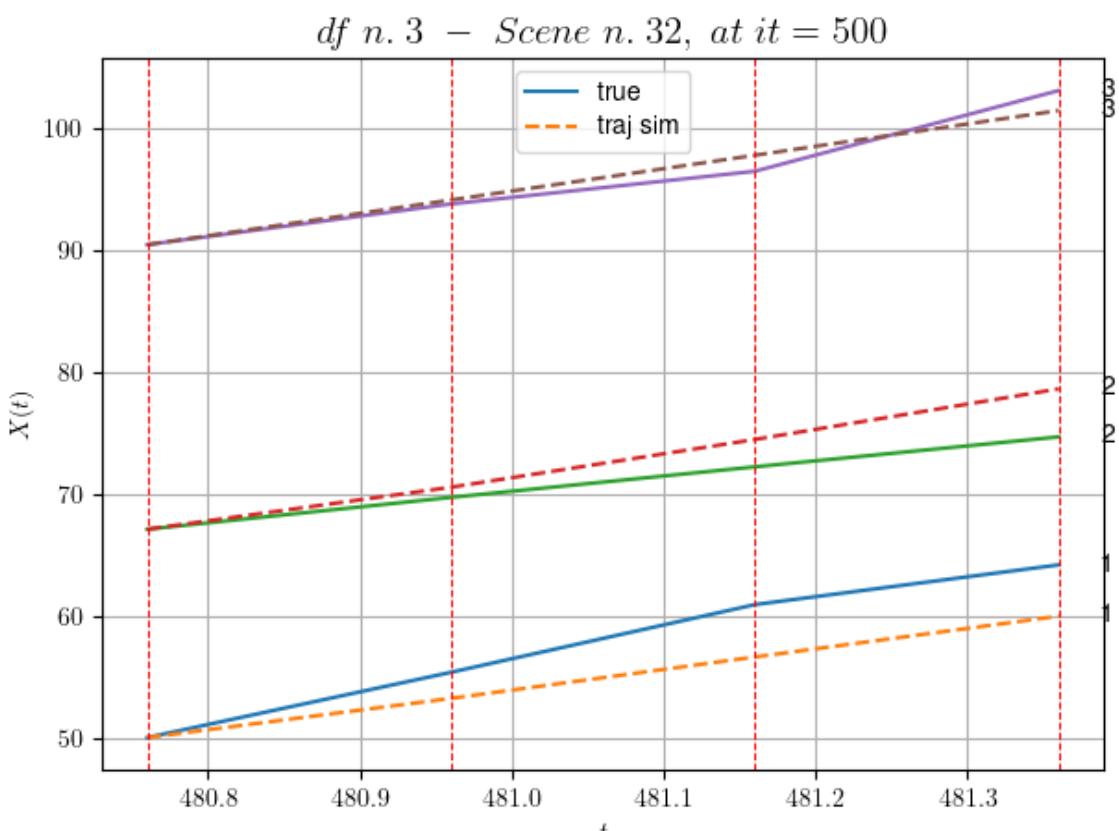
```

* err= 5.514829575526826

* Learning rate NN = 0.0002952449722215533

* diff = 0.007010530909989043

```



For scene 32/55

```

* use LR_NN=0.0005 with err=15.907465171709525 at it=19
* v0_scn_mean = 19.00655070811092
* MAE = 5.514829575526826

```

```

=====

=====

 - Time interval n.0: [487.16, 487.36]

 * y_true: [6.3002445 28.62315801]

 * v_ann: [14.406527519226074, 14.448513984680176, 2

3.071831621687295]

```

```

 - Time interval n.1: [487.36, 487.56]

 * y_true: [10.63044184 13.60161023]

 * v_ann: [15.136039733886719, 14.82181167602539, 2

3.071831621687295]

```

```

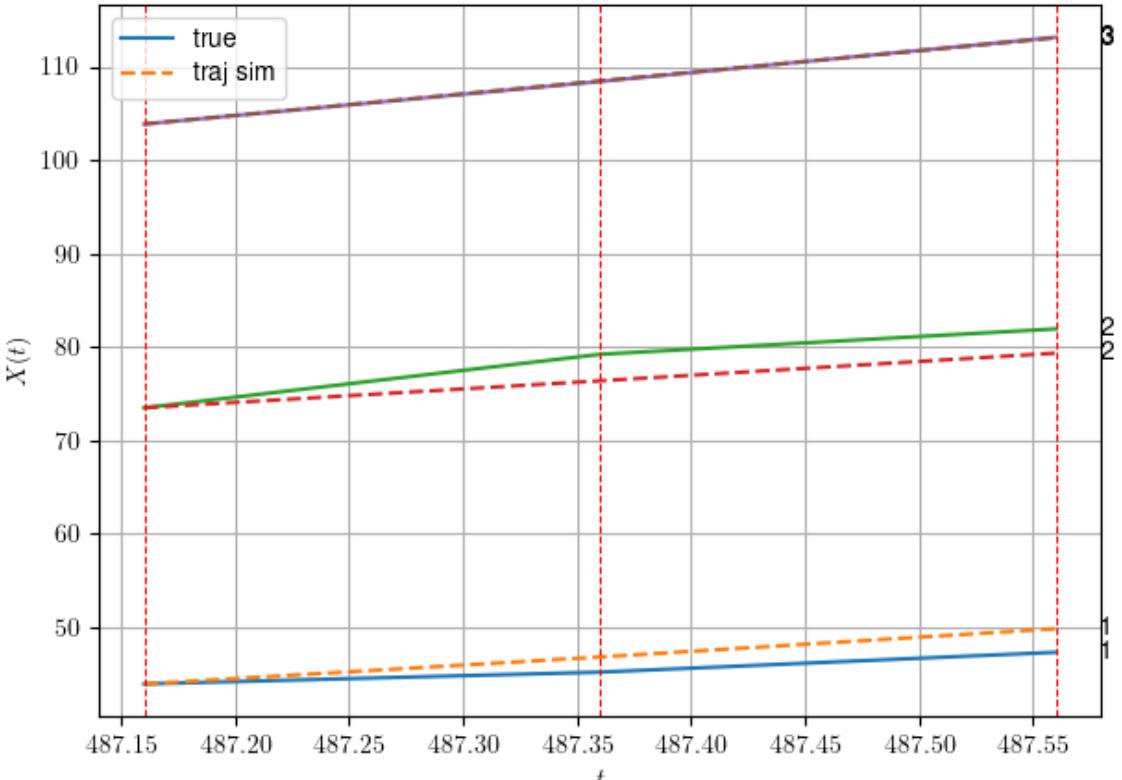
 * err= 2.638712516123084

 * Learning rate NN = 3.6449993785936385e-05

 * diff = 4.484588428432801e-05

```

*df n. 3 – Scene n. 33, at it = 500*



For scene 33/55

```

* use LR_NN=5e-05 with err=3.9036816682103708 at it=19

* v0_scn_mean = 23.48752141332561

* MAE = 2.638301712290812

```

```

=====
=====

 - Time interval n.0: [498.56, 498.76]

 * y_true: [19.66086018 15.38134444]

 * v_ann: [16.799386978149414, 17.148313522338867, 2

6.40426296494278]

```

```


 - Time interval n.1: [498.76, 498.96]

 * y_true: [16.17082592 17.38167269]

 * v_ann: [16.754079818725586, 17.704206466674805, 2

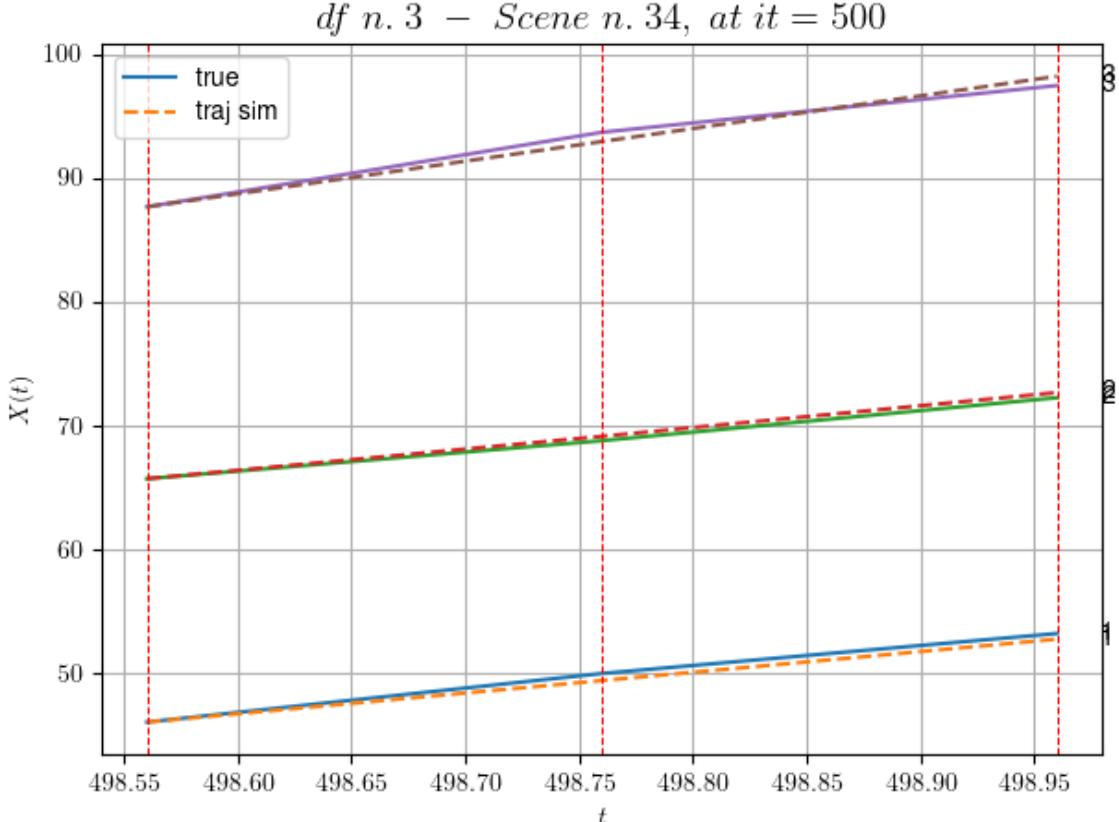
6.40426296494278]

```

```

* err= 0.21777210436436048
* Learning rate NN = 7.289998757187277e-05
* diff = 9.62288396522959e-05

```



For scene 34/55

```

* use LR_NN=0.0001 with err=0.8051658678972989 at it=19
* v0_scn_mean = 26.62000702560596
* MAE = 0.21777210436436048

```

```

- Time interval n.0: [517.96, 518.16]
 * y_true: [11.01062169 17.99135838]
 * v_ann: [14.4706392288208, 13.456425666809082, 13.
435738688973172]

```

```

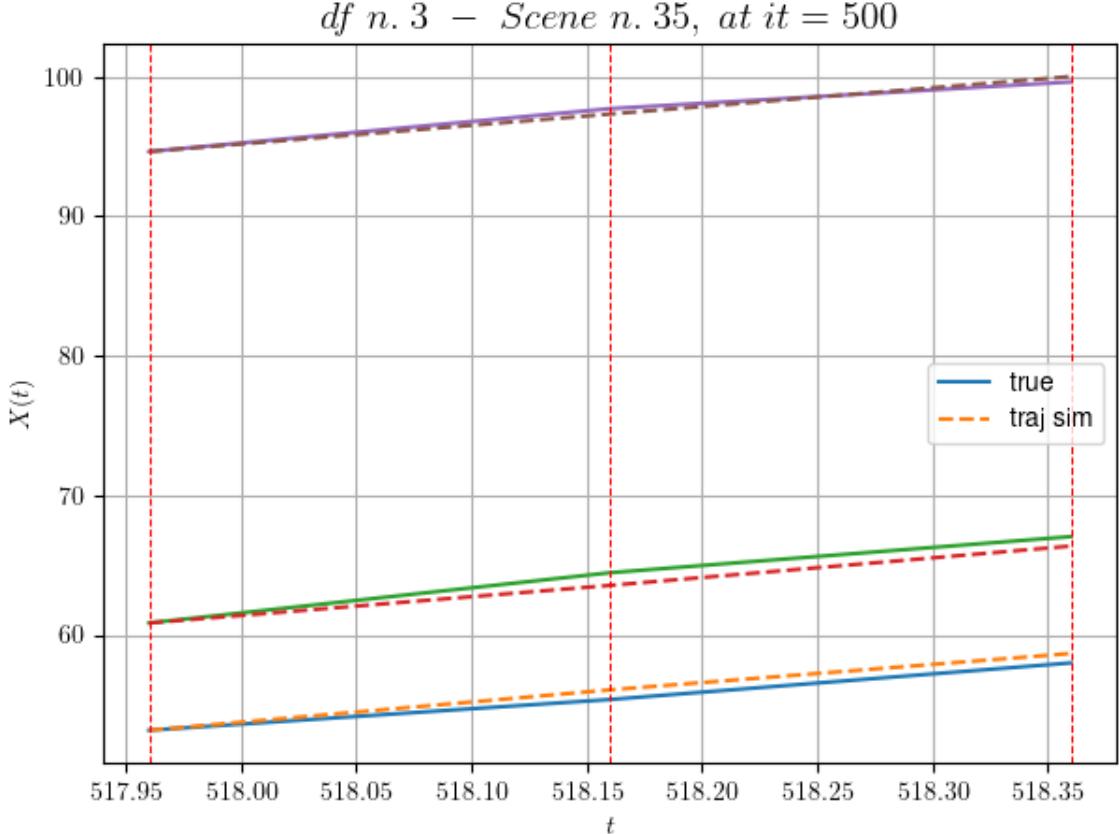
- Time interval n.1: [518.16, 518.36]
 * y_true: [13.11081201 12.94110202]
 * v_ann: [13.033343315124512, 14.08469295501709, 1
3.435738688973172]

```

```

* err= 0.2799282679824707
* Learning rate NN = 0.00036449998151510954
* diff = 2.1903348802421174e-05

```



For scene 35/55

```
* use LR_NN=0.0005 with err=7.71571601150461 at it=19
* v0_scn_mean = 14.429593623934965
* MAE = 0.27891736223133573
```

---



---

For scene 36/55

```
* use LR_NN=0.0001 with err=14.101871134691413 at it=19
* v0_scn_mean = 17.738348774695776
* MAE = 0.6860131765595673
```

---



---

```
- Time interval n.0: [530.36, 530.56]
 * y_true: [16.07060164 26.13260896]
 * v_ann: [20.445999145507812, 18.91507911682129, 1
8.054855152783908]
```

---

```
- Time interval n.1: [530.56, 530.76]
 * y_true: [15.14064363 18.85215172]
 * v_ann: [22.228172302246094, 19.477109909057617, 1
8.054855152783908]
```

---

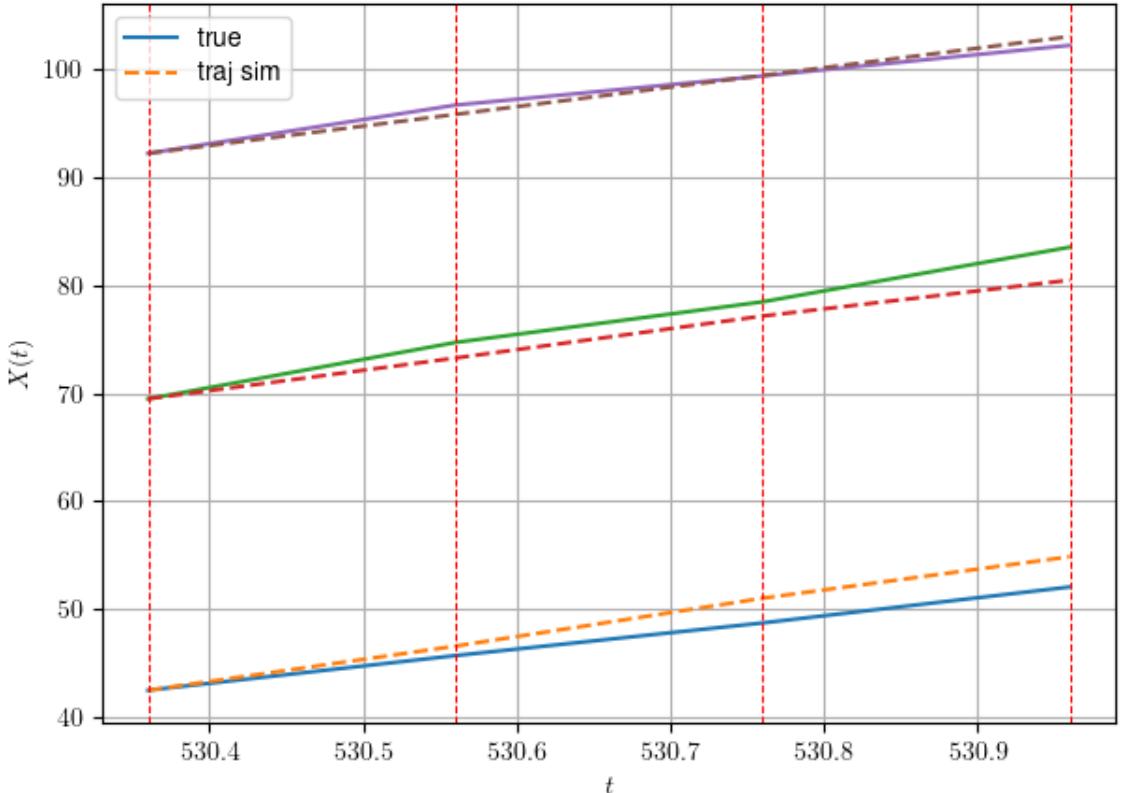
```
- Time interval n.2: [530.76, 530.96]
```

```
* y_true: [16.69081323 25.36324467]
* v_ann: [19.25986671447754, 16.65637969970703, 18.
054855152783908]
```

---

```
* err= 2.3748417660123646
* Learning rate NN = 0.0002952449722215533
* diff = 0.0034871120833099845
```

*df n. 3 – Scene n. 37, at it = 500*



For scene 37/55

```
* use LR_NN=0.0005 with err=10.979740435920377 at it=19
* v0_scn_mean = 18.7715633073057
* MAE = 2.3748417660123646
```

---



---

```
- Time interval n.0: [576.56, 576.76]
 * y_true: [22.12000755 22.50086521]
 * v_ann: [24.995113372802734, 19.88233757019043, 2
1.516688146760774]
```

---



---

```
- Time interval n.1: [576.76, 576.96]
 * y_true: [22.90003133 17.69083]
 * v_ann: [25.004356384277344, 20.2423095703125, 21.
516688146760774]
```

---



---

```
- Time interval n.2: [576.96, 577.16]
```

```

* y_true: [24.57008129 24.8113942]
* v_ann: [24.641151428222656, 19.881572723388672, 2
1.516688146760774]

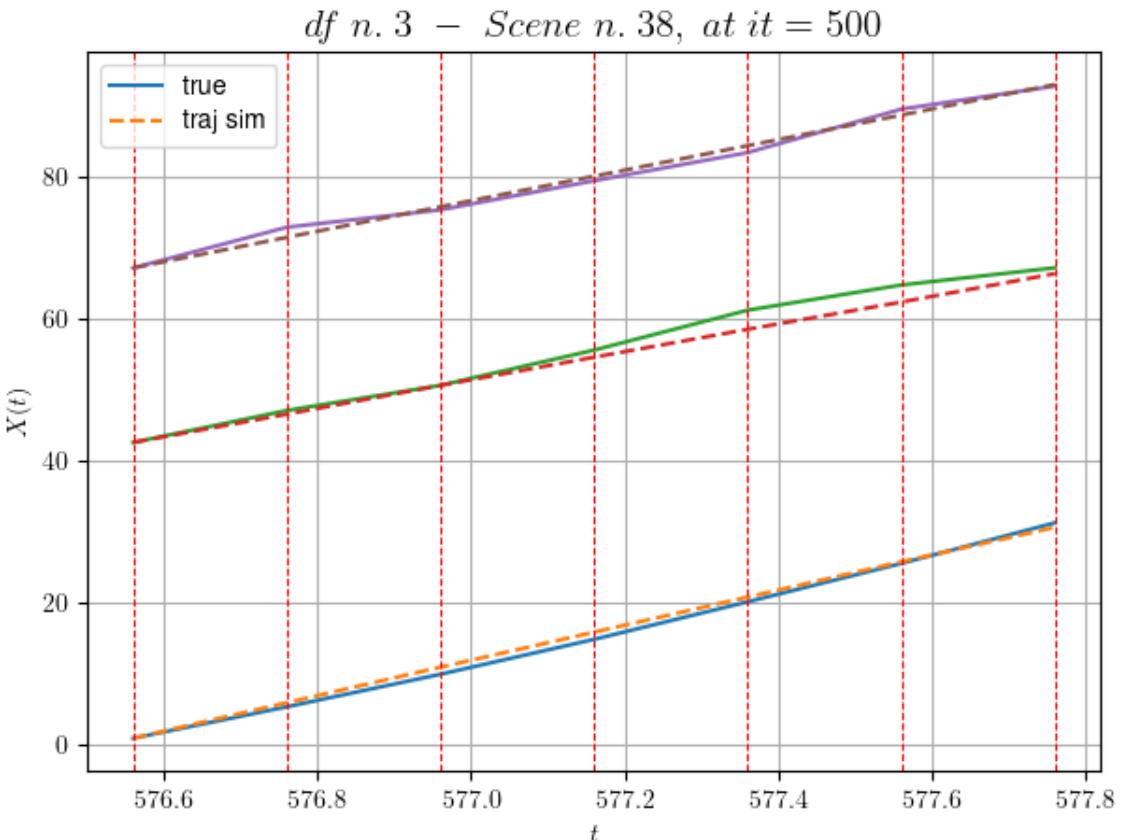
- Time interval n.3: [577.16, 577.36]
* y_true: [26.44016601 28.10183764]
* v_ann: [24.688472747802734, 19.6448917388916, 21.
516688146760774]

- Time interval n.4: [577.36, 577.56]
* y_true: [27.01028631 17.73134123]
* v_ann: [24.865957260131836, 19.19573211669922, 2
1.516688146760774]

- Time interval n.5: [577.56, 577.76]
* y_true: [28.59045436 12.12102827]
* v_ann: [24.300777435302734, 19.963638305664062, 2
1.516688146760774]

* err= 1.0719919711253987
* Learning rate NN = 3.138104830213706e-06
* diff = 0.0032223631786087118

```



For scene 38/55  
\* use LR\_NN=1e-05 with err=20.49607342668237 at it=19  
\* v0\_scn\_mean = 22.02568647707349  
\* MAE = 1.0719919711253987

```
=====
=====
- Time interval n.0: [579.56, 579.76]
 * y_true: [21.03058275 42.18516565]
 * v_ann: [26.879497528076172, 23.852508544921875, 2
5.358404463471736]

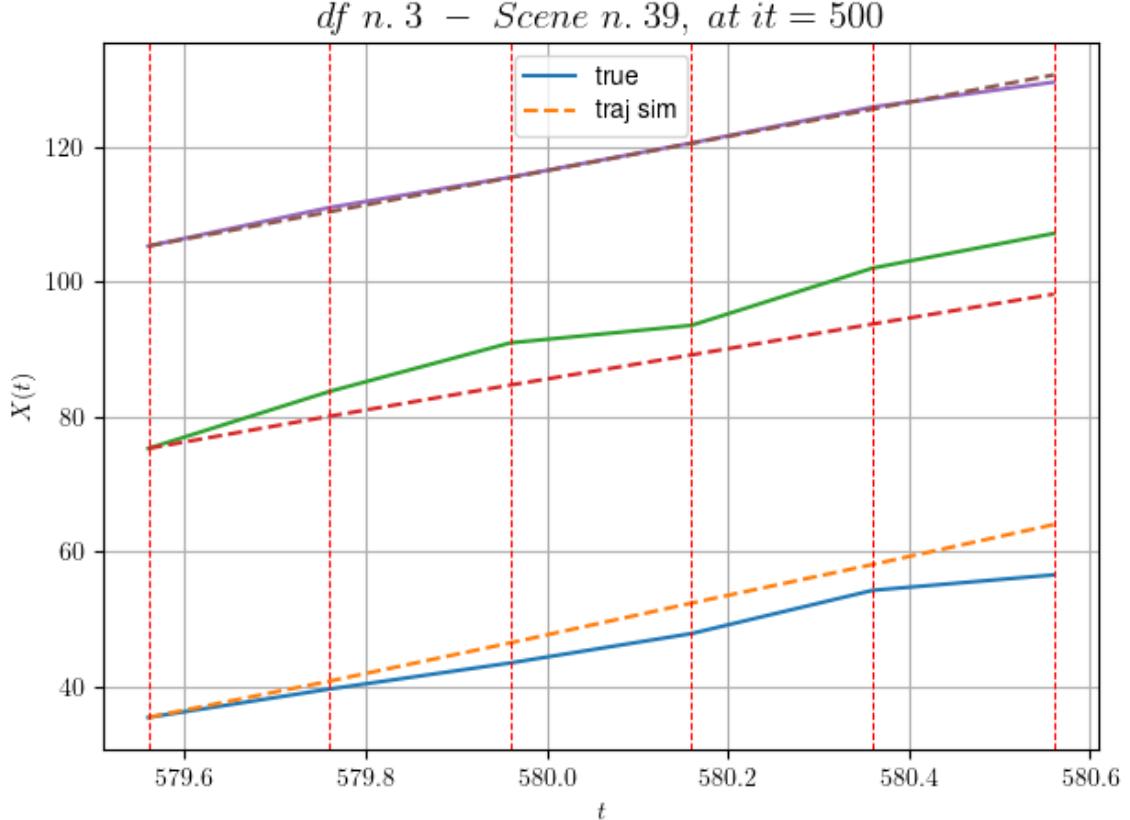
- Time interval n.1: [579.76, 579.96]
 * y_true: [19.36065083 36.06520173]
 * v_ann: [28.37416648864746, 23.137638092041016, 2
5.358404463471736]

- Time interval n.2: [579.96, 580.16]
 * y_true: [21.76088956 12.96224398]
 * v_ann: [29.46235466003418, 22.319860458374023, 2
5.358404463471736]

- Time interval n.3: [580.16, 580.36]
 * y_true: [32.02164742 42.42773504]
 * v_ann: [28.57953453063965, 22.890769958496094, 2
5.358404463471736]

- Time interval n.4: [580.36, 580.56]
 * y_true: [11.44064385 25.66536311]
 * v_ann: [29.60808563232422, 22.132429122924805, 2
5.358404463471736]

* err= 17.987402528095704
* Learning rate NN = 3.874203684972599e-06
* diff = 0.01989455750985769
```



For scene 39/55

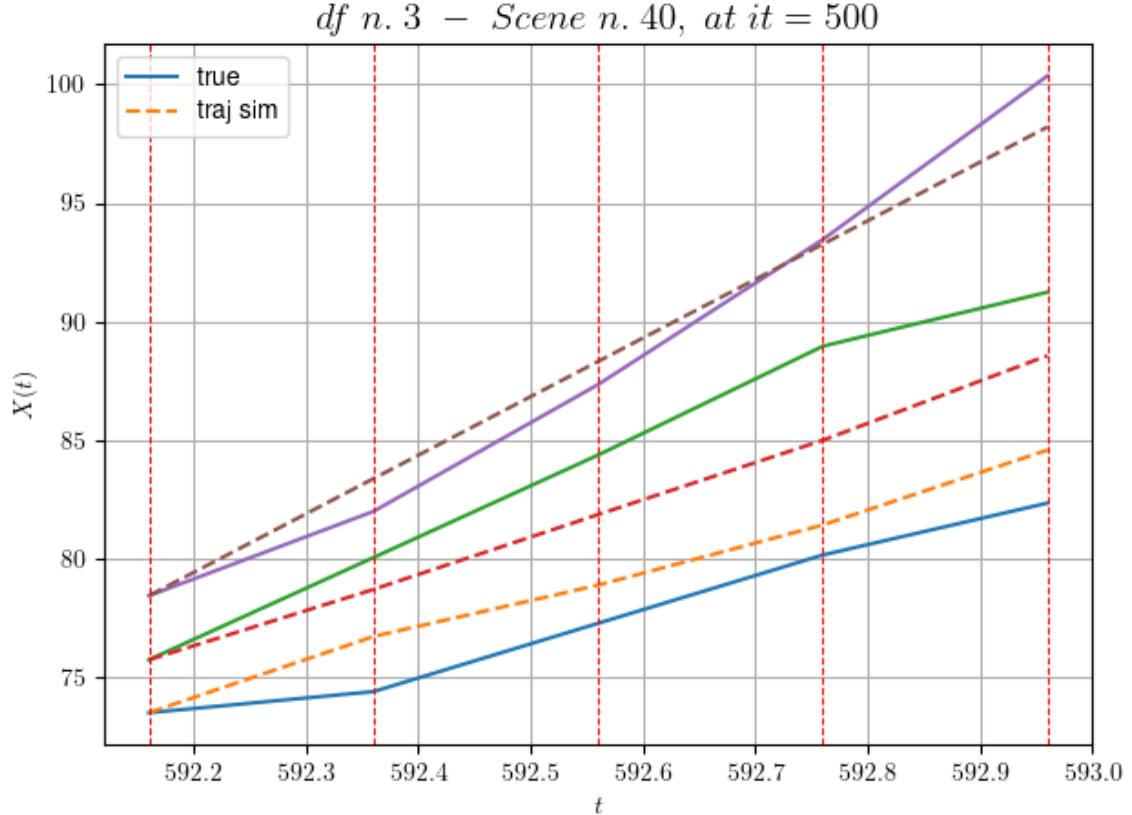
\* use LR\_NN=1e-05 with err=37.73246549617951 at it=19  
 \* v0\_scn\_mean = 25.63689998726498  
 \* MAE = 17.987402528095704

- 
- 
- Time interval n.0: [592.16, 592.36]
    - \* y\_true: [ 4.45046478 21.56401461]
    - \* v\_ann: [16.072343826293945, 14.842971801757812, 2 4.70998074865545]
- 
- Time interval n.1: [592.36, 592.56]
    - \* y\_true: [14.40168088 21.61284101]
    - \* v\_ann: [10.822379112243652, 15.779888153076172, 2 4.70998074865545]
- 
- Time interval n.2: [592.56, 592.76]
    - \* y\_true: [14.40168088 22.933287 ]
    - \* v\_ann: [12.684540748596191, 15.667390823364258, 2 4.70998074865545]
- 
- Time interval n.3: [592.76, 592.96]
    - \* y\_true: [10.94538603 11.39186219]
    - \* v\_ann: [15.797887802124023, 17.848262786865234, 2 4.70998074865545]

```

* err= 3.5411344357691346
* Learning rate NN = 0.002391484100371599
* diff = 0.0004316290983990001

```



For scene 40/55

```

* use LR_NN=0.005 with err=8.513887501666943 at it=19
* v0_scn_mean = 25.027381666226187
* MAE = 3.130524578509856

```

---



---

- Time interval n.0: [21.56, 21.76]  
\* y\_true: [26.48927836 26.93283237 27.60013316]  
\* v\_ann: [23.819395065307617, 24.250545501708984, 2  
4.44951629638672, 29.08365839993882]

---



---



---

- Time interval n.1: [21.76, 21.96]  
\* y\_true: [24.19440937 24.35304119 22.73494812]  
\* v\_ann: [26.029176712036133, 27.089771270751953, 2  
6.038440704345703, 29.08365839993882]

---



---

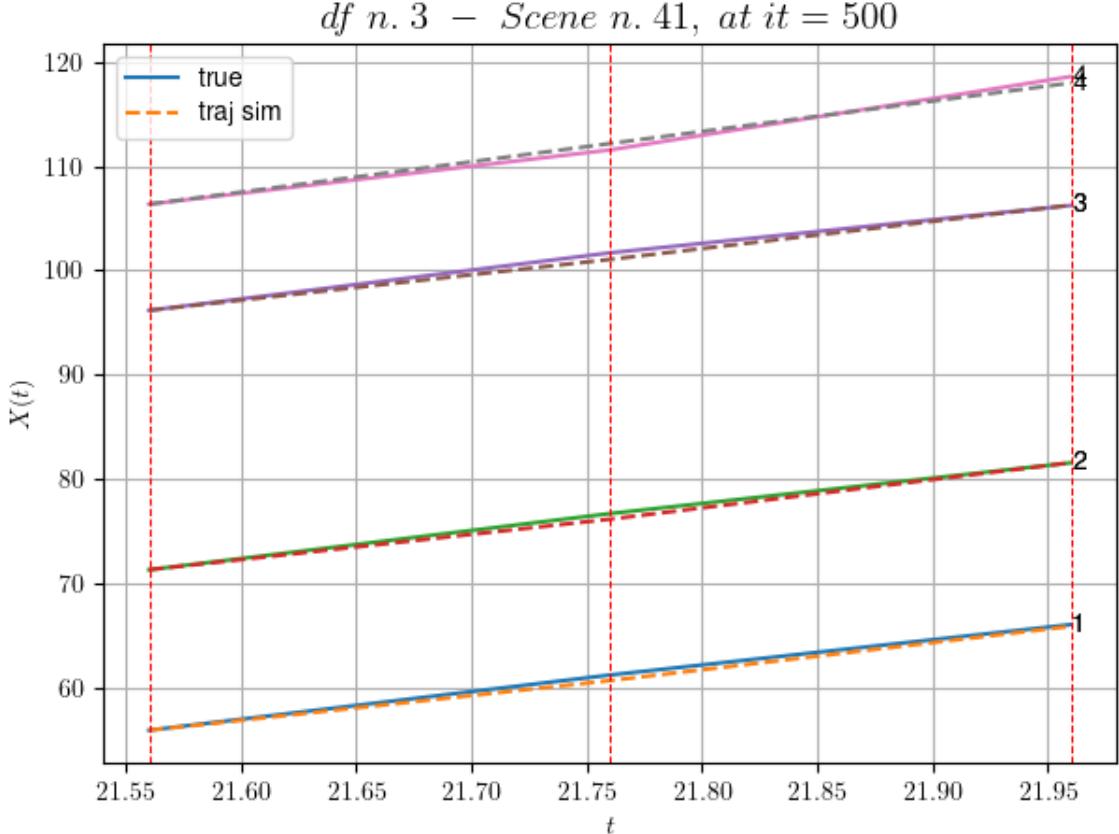


---

```

* err= 0.14598012107638858
* Learning rate NN = 0.00036449998151510954
* diff = 9.548913213838772e-05

```



For scene 41/55

\* use LR\_NN=0.0005 with err=3.585036935738983 at it=19  
 \* v0\_scn\_mean = 29.15696274604705  
 \* MAE = 0.14598012107638858

---



---

- Time interval n.0: [31.36, 31.56]  
 \* y\_true: [24.92105739 19.11766565 26.56610692]  
 \* v\_ann: [16.96372413635254, 21.600902557373047, 1  
 6.63566017150879, 30.917174059156057]

---

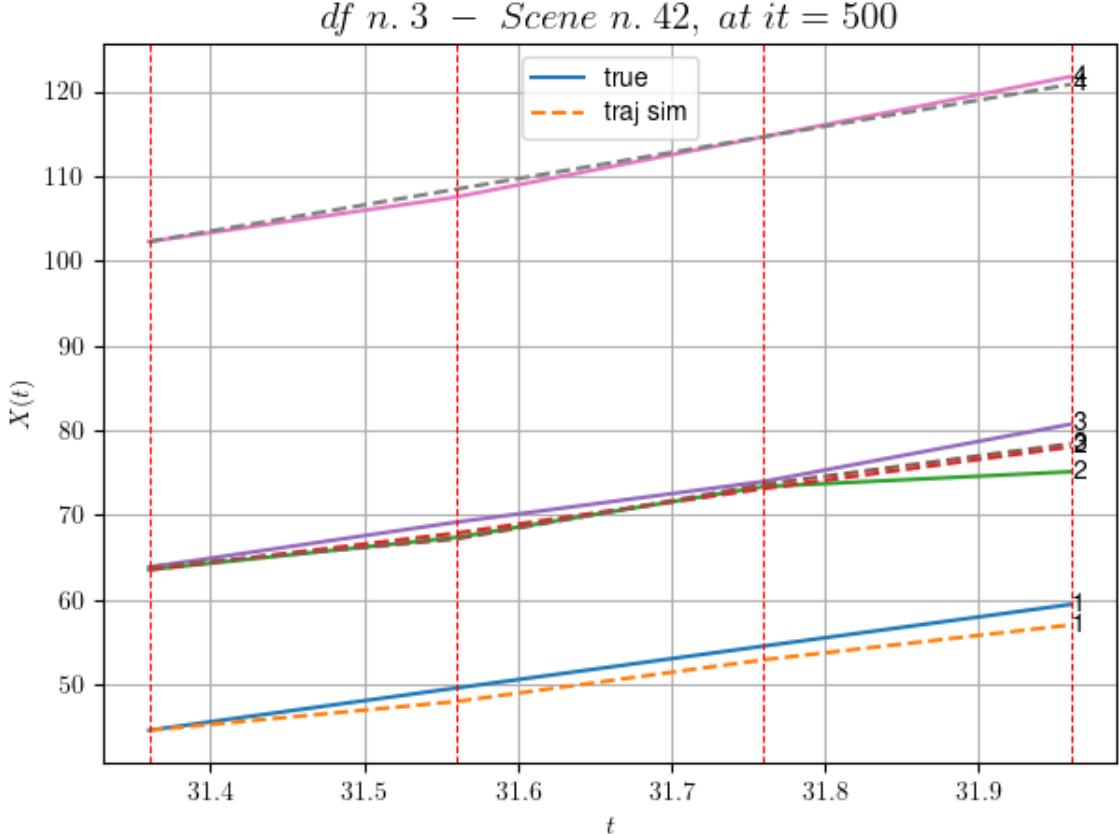
- Time interval n.1: [31.56, 31.76]  
 \* y\_true: [24.72130541 29.91666352 24.00857353]  
 \* v\_ann: [24.609933853149414, 26.245330810546875, 3  
 2.23094177246094, 30.917174059156057]

---

- Time interval n.2: [31.76, 31.96]  
 \* y\_true: [24.58151426 8.80091982 33.80389928]  
 \* v\_ann: [20.55776596069336, 24.612680435180664, 2  
 3.986732482910156, 30.917174059156057]

---

\* err= 1.9327370784349411  
 \* Learning rate NN = 0.0005904899444431067  
 \* diff = 0.6432266518572023



For scene 42/55

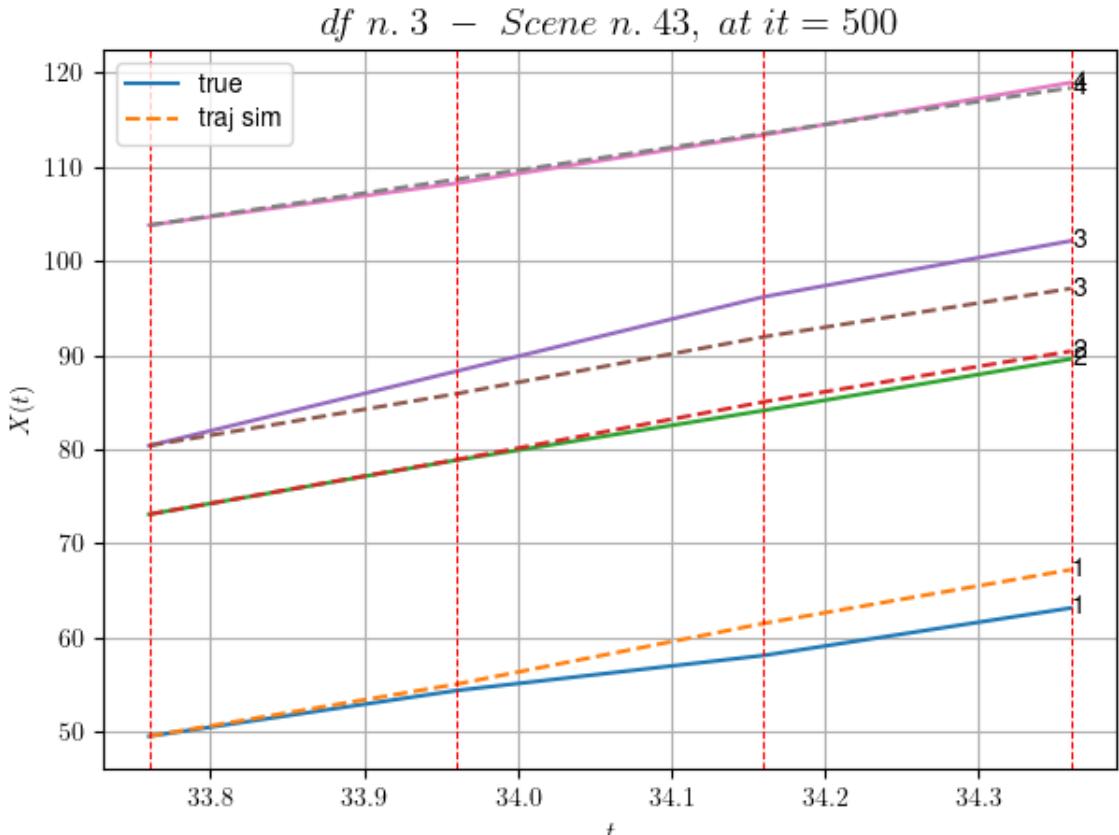
```
* use LR_NN=0.001 with err=14.382351177494828 at it=19
* v0_scn_mean = 30.843803119029186
* MAE = 0.8079599232357748
```

---



---

- Time interval n.0: [33.76, 33.96]
    - \* y\_true: [24.27120267 28.75319668 39.53553599]
    - \* v\_ann: [27.62281608581543, 28.989112854003906, 2  
7.553377151489258, 24.31564748296743]
  - Time interval n.1: [33.96, 34.16]
    - \* y\_true: [18.63110748 26.36338094 39.47623422]
    - \* v\_ann: [32.29082489013672, 30.721622467041016, 3  
0.228734970092773, 24.31564748296743]
  - Time interval n.2: [34.16, 34.36]
    - \* y\_true: [25.20172426 27.37399424 29.73574355]
    - \* v\_ann: [28.509382247924805, 26.92276382446289, 2  
5.66762351989746, 24.31564748296743]
- \* err= 4.996805969775475  
 \* Learning rate NN = 0.0005904899444431067  
 \* diff = 0.0018622390815421497



For scene 43/55

- \* use LR\_NN=0.001 with err=16.25007136073514 at it=19
- \* v0\_scn\_mean = 24.770377186695484
- \* MAE = 4.751749613964525

---



---

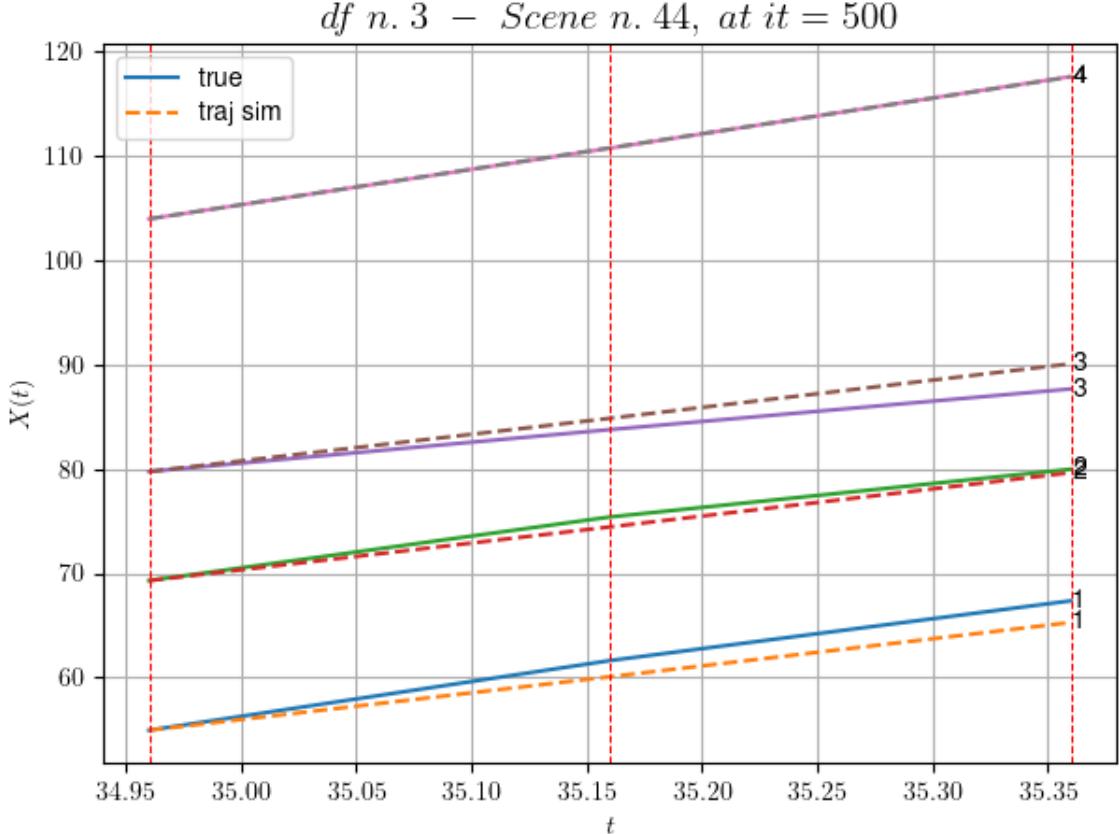
- Time interval n.0: [34.96, 35.16]
- \* y\_true: [33.40218228 30.49313647 20.11252108]
- \* v\_ann: [25.656848907470703, 25.730030059814453, 2  
5.53173828125, 34.04452453089862]

---

- Time interval n.1: [35.16, 35.36]
- \* y\_true: [28.66899207 22.90260208 19.5026699 ]
- \* v\_ann: [26.027759552001953, 26.024337768554688, 2  
6.149789810180664, 34.04452453089862]

---

- \* err= 1.2275532132504248
- \* Learning rate NN = 7.289998757187277e-05
- \* diff = 0.0014406526879562342



For scene 44/55

\* use LR\_NN=0.0001 with err=9.57681846762788 at it=19  
 \* v0\_scn\_mean = 33.72097572984421  
 \* MAE = 1.0942116289026391

---



---

- Time interval n.0: [83.36, 83.56]  
 \* y\_true: [27.1108197 22.97496526 13.79424223]  
 \* v\_ann: [28.59988784790039, 27.897563934326172, 2  
 8.7453670501709, 26.10772419731458]

---

- Time interval n.1: [83.56, 83.76]  
 \* y\_true: [28.73111951 35.1785896 26.83859352]  
 \* v\_ann: [27.678306579589844, 27.68608856201172, 2  
 8.460391998291016, 26.10772419731458]

---

- Time interval n.2: [83.76, 83.96]  
 \* y\_true: [29.25142438 34.77932949 18.27648805]  
 \* v\_ann: [28.191303253173828, 27.957523345947266, 2  
 8.357555389404297, 26.10772419731458]

---

- Time interval n.3: [83.96, 84.16]  
 \* y\_true: [27.70171969 23.46694627 45.36715188]  
 \* v\_ann: [28.342161178588867, 28.234203338623047, 2

8.250064849853516, 26.10772419731458]

---

- Time interval n.4: [84.16, 84.36]
  - \* y\_true: [26.72197507 21.43687952 37.53588876]
  - \* v\_ann: [28.567758560180664, 28.003427505493164, 2

8.79229736328125, 26.10772419731458]

---



---

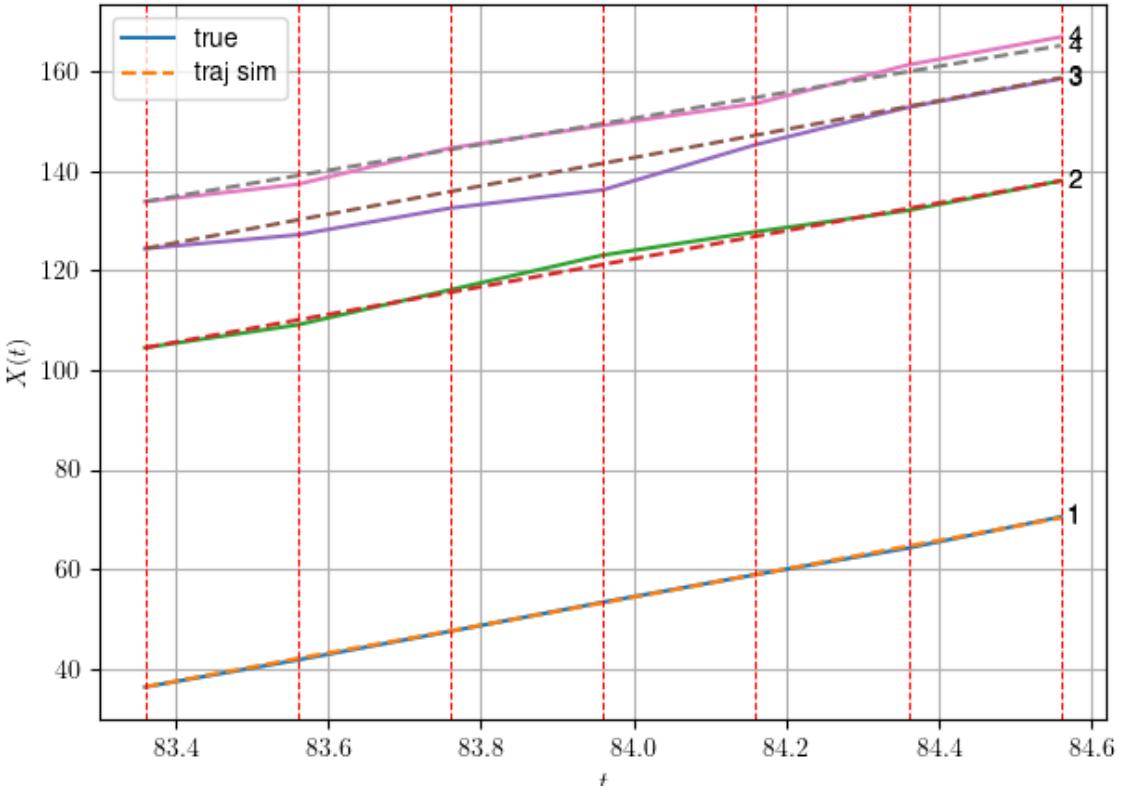
- Time interval n.5: [84.36, 84.56]
  - \* y\_true: [31.24277517 29.71036516 28.7233215 ]
  - \* v\_ann: [28.358118057250977, 27.737571716308594, 2

8.772197723388672, 26.10772419731458]

---

- \* err= 2.4162333588949663
- \* Learning rate NN = 1.5690524378442205e-05
- \* diff = 2.3191265158040153e-05

*df n. 3 – Scene n. 45, at it = 500*



For scene 45/55

- \* use LR\_NN=5e-05 with err=104.31351001088737 at it=19
- \* v0\_scn\_mean = 26.41909359554942
- \* MAE = 2.242392590750154

---



---

- Time interval n.0: [94.36, 94.56]
  - \* y\_true: [33.70387327 38.57908217 21.70251029]
  - \* v\_ann: [29.852210998535156, 31.014907836914062, 2

9.75164222717285, 29.52615606533508]

---

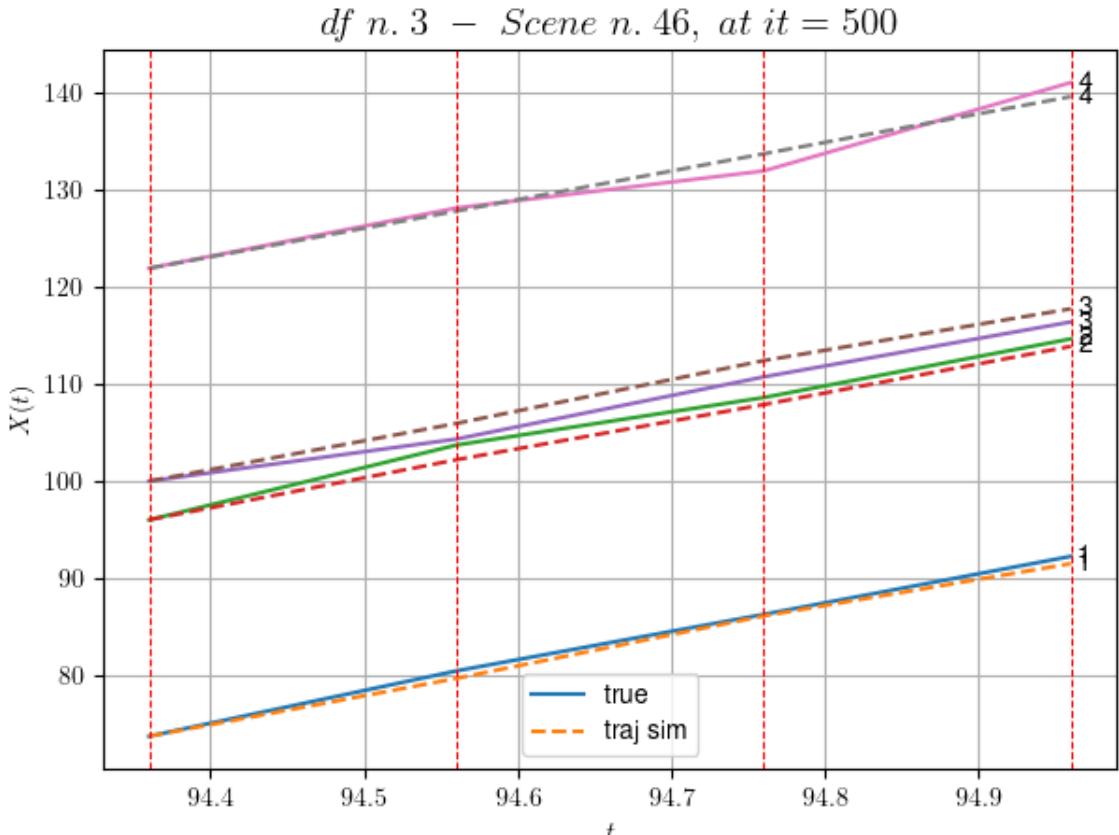
- Time interval n.1: [94.56, 94.76]
  - \* y\_true: [29.14386677 24.50535727 32.05702124]
  - \* v\_ann: [32.20523452758789, 28.432924270629883, 3 2.41059494018555, 29.52615606533508]

---

- Time interval n.2: [94.76, 94.96]
  - \* y\_true: [29.96461386 30.28702151 28.36707369]
  - \* v\_ann: [27.019189834594727, 30.05450439453125, 2 6.747140884399414, 29.52615606533508]

---

- \* err= 1.0735865960394202
- \* Learning rate NN = 0.0005904899444431067
- \* ~~diff = 0.00011000000000000005~~



For scene 46/55

- \* use LR\_NN=0.001 with err=17.563135960537238 at it=19
- \* v0\_scn\_mean = 29.564062038157473
- \* MAE = 1.0735865960394202

---



---

- Time interval n.0: [142.16, 142.36]
  - \* y\_true: [31.90177154 33.47450881 19.84324761]
  - \* v\_ann: [23.634992599487305, 25.675792694091797, 2 6.510852813720703, 28.121237748537617]

```

 - Time interval n.1: [142.36, 142.56]

 * y_true: [31.50218522 24.08376432 24.27420294]

 * v_ann: [24.719932556152344, 27.79318618774414, 2

8.222793579101562, 28.121237748537617]

 - Time interval n.2: [142.56, 142.76]

 * y_true: [24.70204715 30.9853993 17.45337402]

 * v_ann: [24.37217903137207, 27.730026245117188, 2

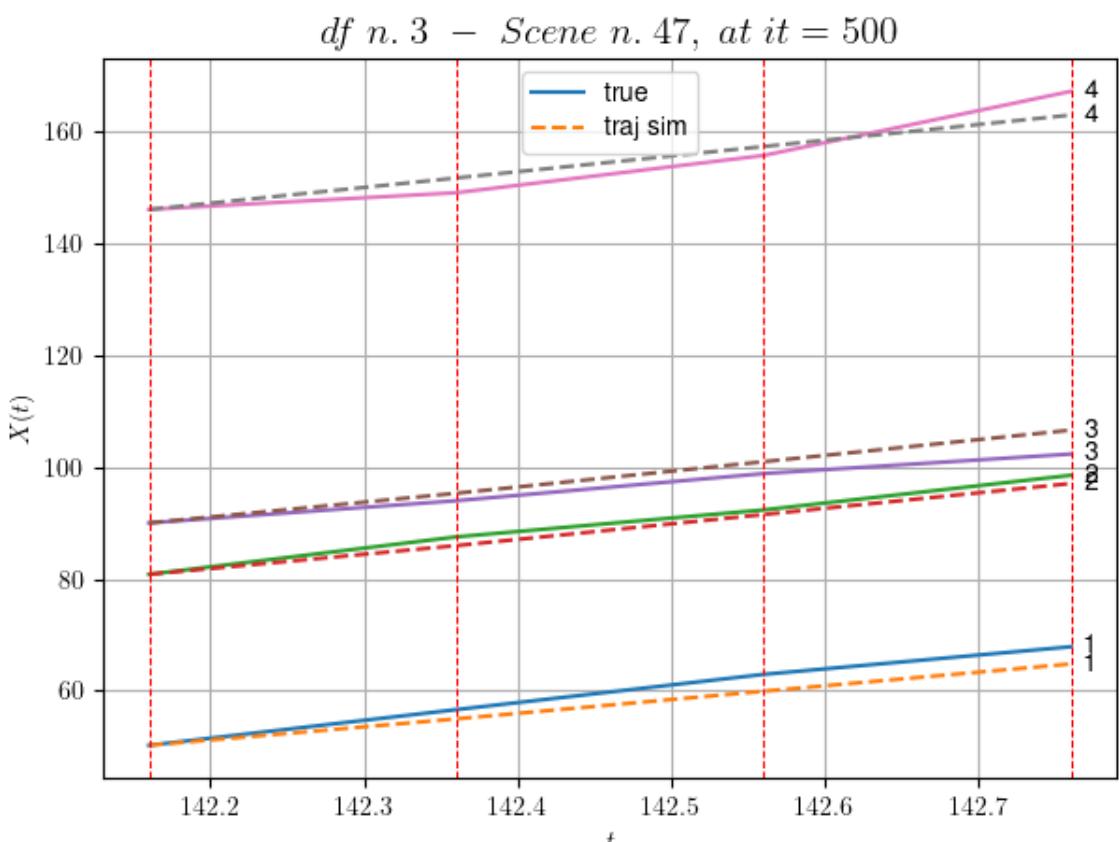
8.233129501342773, 28.121237748537617]

 * err= 4.9140967542805285

 * Learning rate NN = 5.904899080633186e-05

 * diff = 0.010811903647200083

```



For scene 47/55  
\* use LR\_NN=0.0001 with err=29.76801581257181 at it=19  
\* v0\_scn\_mean = 28.27153261491404  
\* MAE = 4.9140967542805285

---



---

```

 - Time interval n.0: [170.36, 170.56]

 * y_true: [24.1106547 30.95205085 31.86307572]

 * v_ann: [24.65854835510254, 25.940628051757812, 2

5.96985626220703, 32.99653993565799]

```

```

- Time interval n.1: [170.56, 170.76]
 * y_true: [28.33103197 10.10076519 29.63331411]
 * v_ann: [25.256446838378906, 26.1129093170166, 26.
571876525878906, 32.99653993565799]

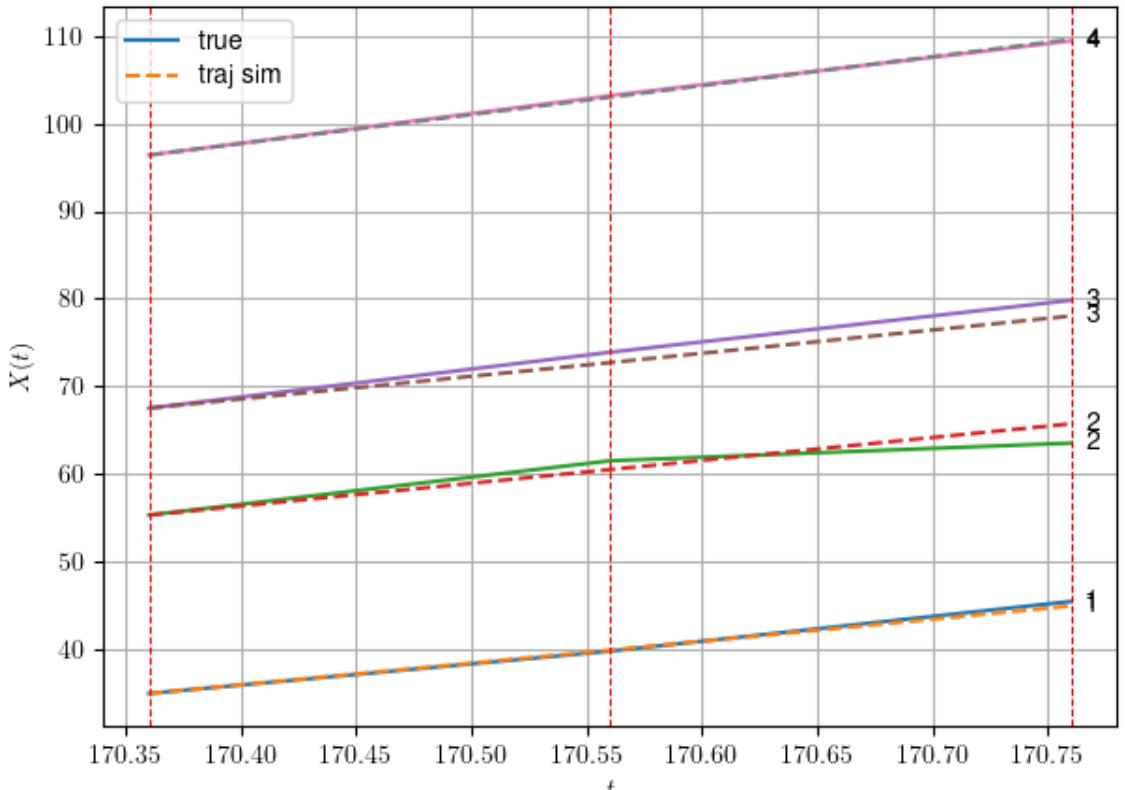
```

```

* err= 0.8978341674040161
* Learning rate NN = 3.6449993785936385e-05
* diff = 0.0001001506855679013

```

*df n. 3 – Scene n. 48, at it = 500*



For scene 48/55

```

* use LR_NN=5e-05 with err=1.8520931988755798 at it=19
* v0_scn_mean = 32.756826491942086
* MAE = 0.8286821892213692

```

```

=====
=====
- Time interval n.0: [248.16, 248.36]
 * y_true: [31.21204442 24.6823336 32.34552948]
 * v_ann: [31.385292053222656, 32.838687896728516, 3
0.60886573791504, 30.248970609827072]

```

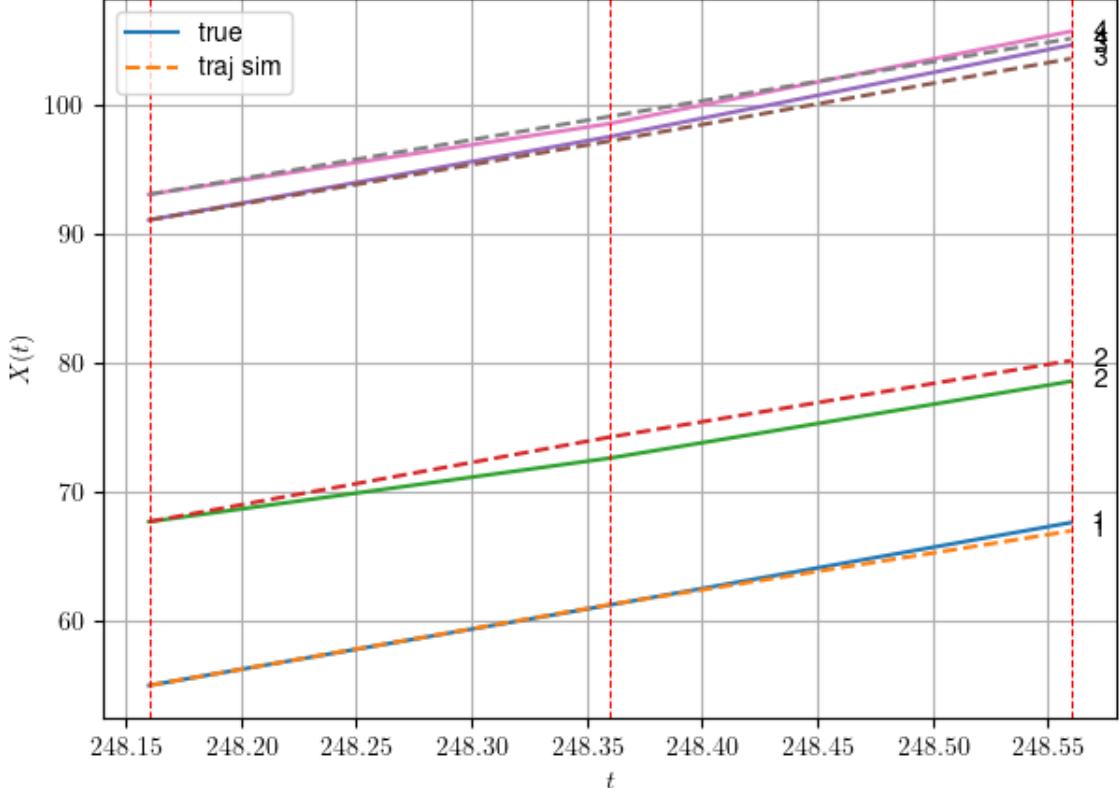
```

=====
=====
- Time interval n.1: [248.36, 248.56]
 * y_true: [31.9625999 29.77329807 35.48696999]
 * v_ann: [28.54913330078125, 29.65340805053711, 31.
996706008911133, 30.248970609827072]

```

```
* err= 0.6245599588438736
* Learning rate NN = 0.0007289999630302191
* diff = 0.0006169946450577113
```

df n. 3 – Scene n. 49, at it = 500



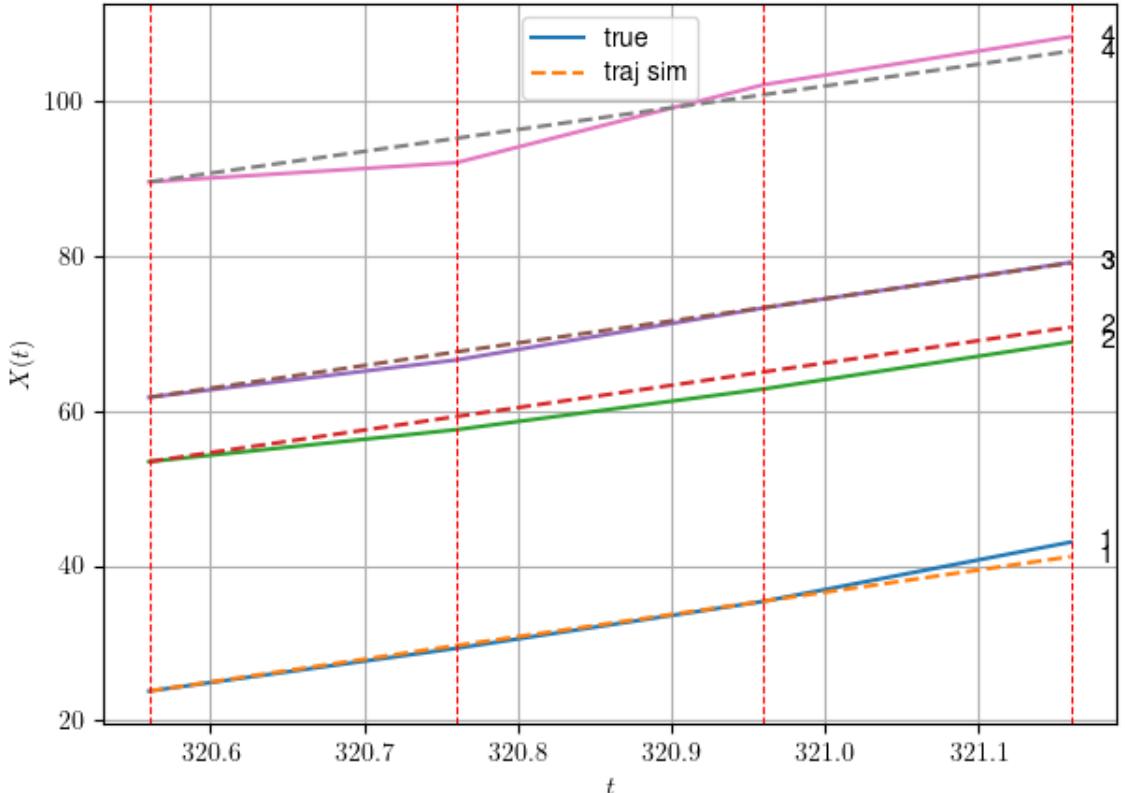
For scene 49/55

```
* use LR_NN=0.001 with err=14.136541601886695 at it=19
* v0_scn_mean = 30.229053771224255
* MAE = 0.4236201993124235
```

- Time interval n.0: [320.56, 320.76]
  - \* y\_true: [27.61038846 20.60122903 24.07186814]
  - \* v\_ann: [29.4158992767334, 29.08719825744629, 29.3043212890625, 28.13014094914222]
  
- Time interval n.1: [320.76, 320.96]
  - \* y\_true: [30.26064275 26.25184013 33.56317876]
  - \* v\_ann: [28.603628158569336, 28.7841854095459, 28.534055709838867, 28.13014094914222]
  
- Time interval n.2: [320.96, 321.16]
  - \* y\_true: [38.25114958 30.20253063 29.36323845]
  - \* v\_ann: [28.759532928466797, 28.842370986938477, 28.822629928588867, 28.13014094914222]

```
* err= 1.9511977561845169
* Learning rate NN = 2.952449540316593e-05
* diff = 0.0013186816279038222
```

df n. 3 – Scene n. 50, at it = 500



For scene 50/55

```
* use LR_NN=5e-05 with err=8.37015841730119 at it=19
* v0_scn_mean = 28.27972358844236
* MAE = 1.768427458347994
```

- 
- 
- Time interval n.0: [333.96, 334.16]
    - \* y\_true: [31.40121985 21.58136302 16.05156144]
    - \* v\_ann: [29.547033309936523, 29.479217529296875, 29.503509521484375, 24.218775367788385]
  


---



---

  - Time interval n.1: [334.16, 334.36]
    - \* y\_true: [27.67132891 33.9725354 36.25406589]
    - \* v\_ann: [29.257591247558594, 29.063350677490234, 28.991146087646484, 24.218775367788385]
  


---



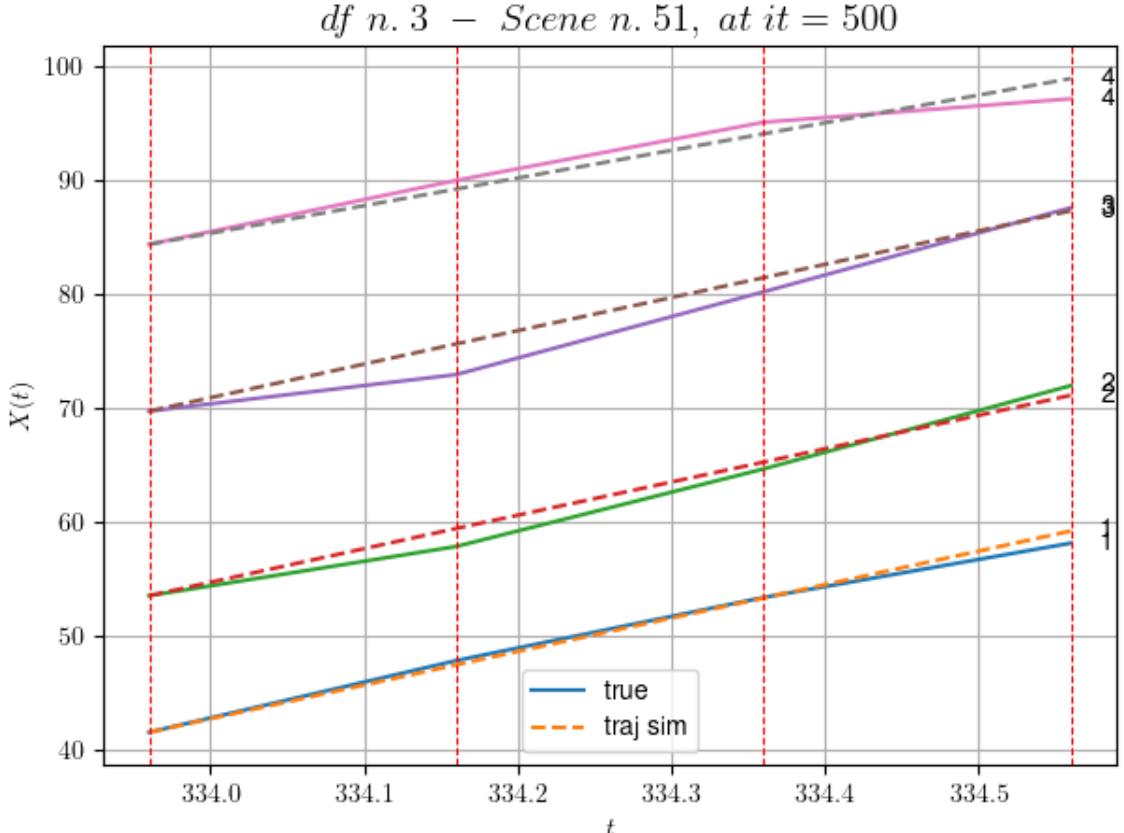
---

  - Time interval n.2: [334.36, 334.56]
    - \* y\_true: [23.81145278 36.52334008 36.85496039]
    - \* v\_ann: [29.39655876159668, 29.283843994140625, 29.300907135009766, 24.218775367788385]

```

* err= 1.1537890194423934
* Learning rate NN = 2.952449540316593e-05
* diff = 5.589352081636356e-05

```



For scene 51/55

```

* use LR_NN=5e-05 with err=4.525884534703643 at it=19
* v0_scn_mean = 24.681254525496225
* MAE = 1.1493595742523355

```

---



---

- Time interval n.0: [393.36, 393.56]  
\* y\_true: [28.21049617 36.91227562 35.66212709]  
\* v\_ann: [28.179054260253906, 30.474288940429688, 2  
9.626140594482422, 27.006293536405312]

---



---



---

- Time interval n.1: [393.56, 393.76]  
\* y\_true: [27.89067116 17.24119841 30.82238865]  
\* v\_ann: [29.35831069946289, 28.4139461517334, 30.1  
5904426574707, 27.006293536405312]

---



---

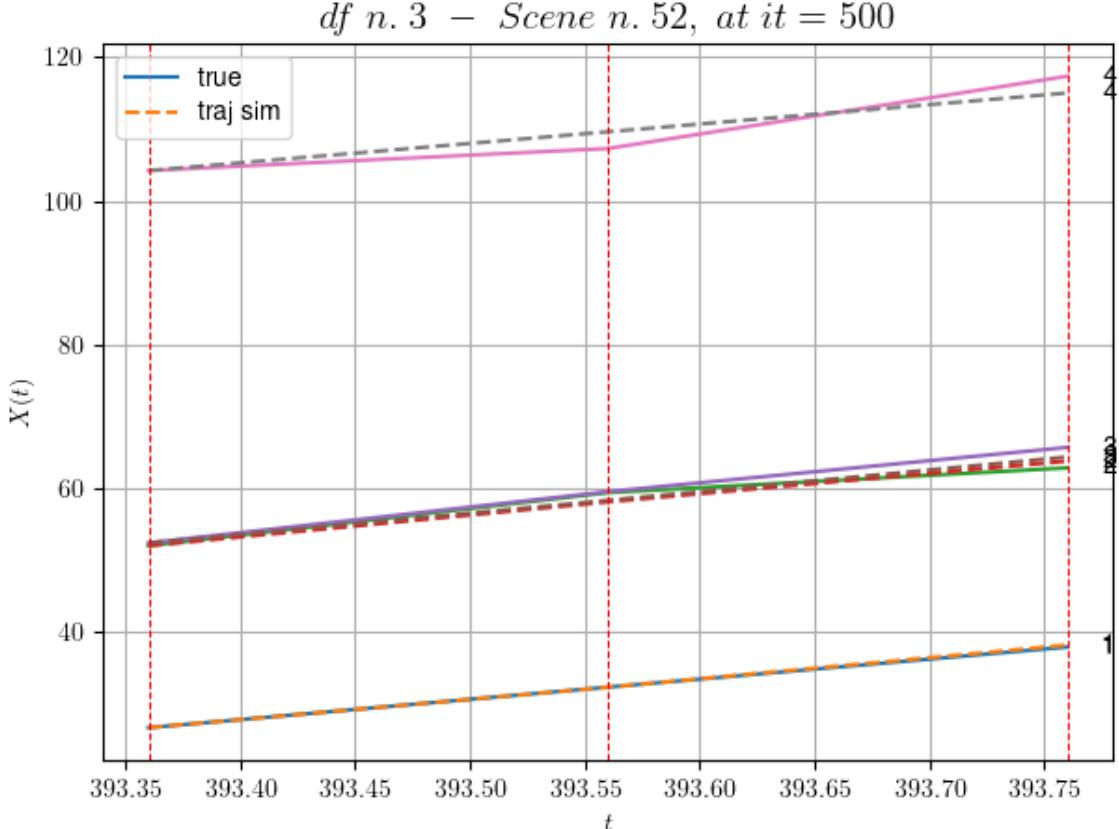


---

```

* err= 1.3960895520747123
* Learning rate NN = 7.289998757187277e-05
* diff = 7.668129728100048e-05

```



For scene 52/55

```
* use LR_NN=0.0001 with err=16.061439372212856 at it=19
* v0_scn_mean = 27.245780311576475
* MAE = 1.1080331615857388
```

---



---

- Time interval n.0: [521.76, 521.96]
  - \* y\_true: [10.54036018 15.07054541 11.30098461]
  - \* v\_ann: [15.029144287109375, 15.762028694152832, 1  
5.371233940124512, 17.247787667046758]

---

- Time interval n.1: [521.96, 522.16]
  - \* y\_true: [20.11080333 12.92054275 19.50185752]
  - \* v\_ann: [18.083938598632812, 14.383950233459473, 1  
4.658041954040527, 17.247787667046758]

---

- Time interval n.2: [522.16, 522.36]
  - \* y\_true: [16.31074126 16.85079656 12.50130097]
  - \* v\_ann: [12.872886657714844, 15.479191780090332, 1  
5.083634376525879, 17.247787667046758]

---

- Time interval n.3: [522.36, 522.56]
  - \* y\_true: [11.43058292 15.20080004 9.15100954]
  - \* v\_ann: [13.57381534576416, 15.45760726928711, 14.

7284517288208, 17.247787667046758]

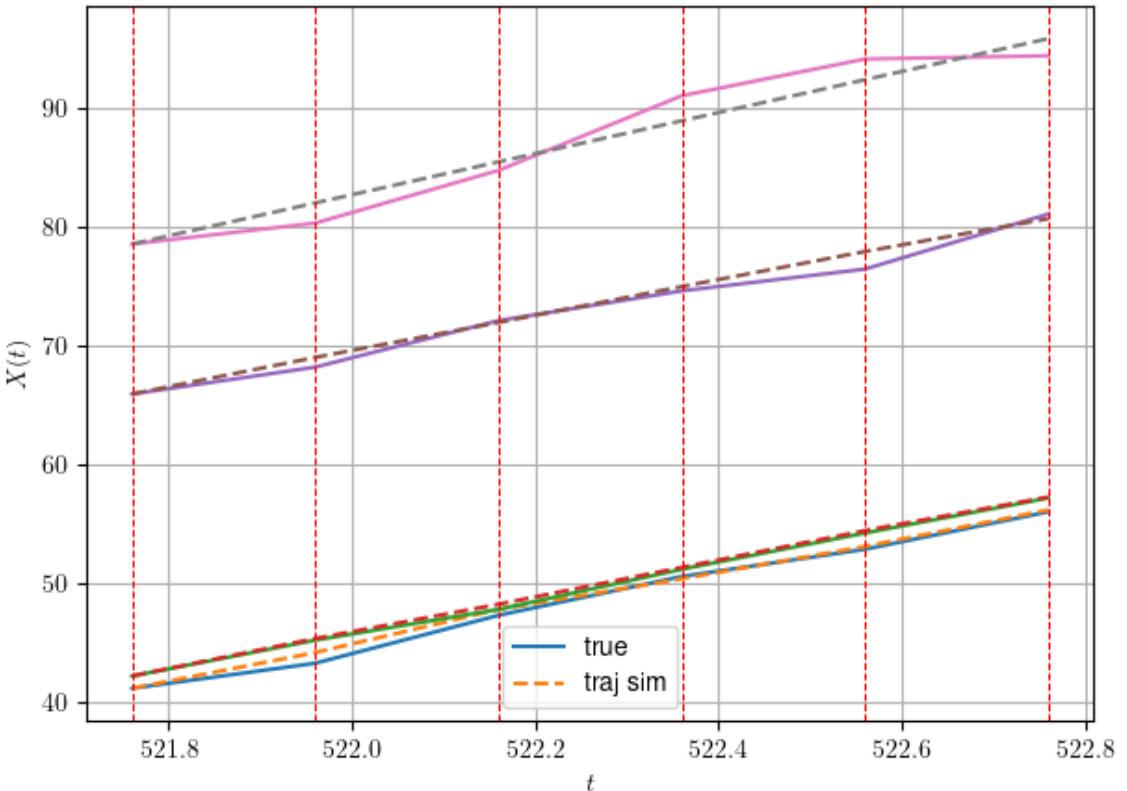
---

- Time interval n.4: [522.56, 522.76]
  - \* y\_true: [15.72089895 14.72089277 23.10276913]
  - \* v\_ann: [15.327886581420898, 14.095443725585938, 1 3.783026695251465, 17.247787667046758]

---

- \* err= 0.7278692091915265
- \* Learning rate NN = 0.0003874204121530056
- \* diff = 3.8918139922516914e-05

*df n. 3 – Scene n. 53, at it = 500*



For scene 53/55

- \* use LR\_NN=0.001 with err=22.056826572273405 at it=19
- \* v0\_scn\_mean = 18.267923156298462
- \* MAE = 0.7207268419184923

---



---

- Time interval n.0: [95.36, 95.56]
  - \* y\_true: [30.52238998 38.21809619 31.62683865 21.8 1676128]
  - \* v\_ann: [25.437328338623047, 27.690034866333008, 2 1.712739944458008, 28.914003372192383, 33.35137428698094]

---



---



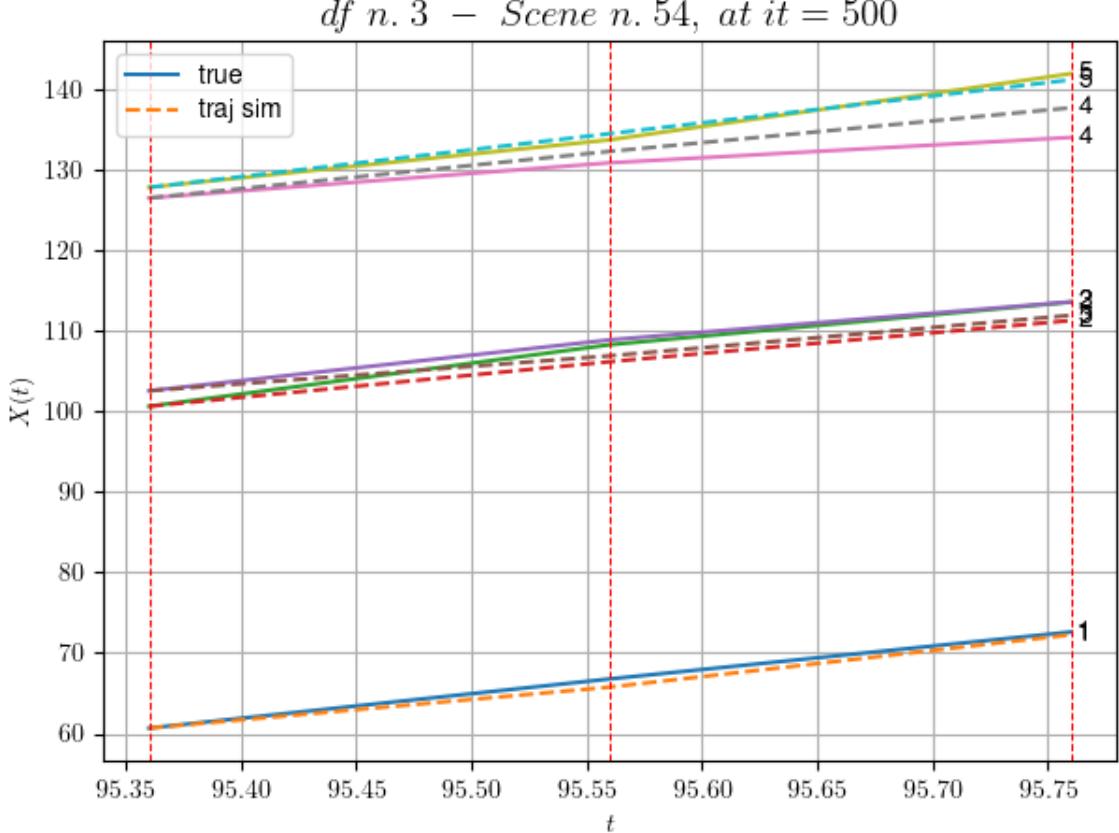
---

- Time interval n.1: [95.56, 95.76]
  - \* y\_true: [29.11270185 26.43618159 23.59563306 15.7 3527867]

```
* v_ann: [32.504302978515625, 25.540359497070312, 2
5.139118194580078, 27.03042984008789, 33.35137428698094]
```

---

```
* err= 2.2846672583718437
* Learning rate NN = 0.00036449998151510954
* diff = 0.000871775298805666
```



For scene 54/55

```
* use LR_NN=0.0005 with err=17.74799235423834 at it=19
* v0_scn_mean = 33.016376876139645
* MAE = 2.2842371956065355
```

---



---

For df=3 with 55 scenes, time taken: 784.55

---



---



---



---



---



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---



---

In df n.4/10 we have 30 scenes

---



---



---



---



---



---

For scene 0/30

```
* use LR_NN=0.0005 with err=11.820860063861959 at it=19
* v0_scn_mean = 35.55867617170093
* MAE = 2.570607763721573
```

```

 - Time interval n.0: [19.84, 20.04]
 * y_true: [38.50393497 35.76621737]
 * v_ann: [31.306928634643555, 28.790096282958984, 2
 6.058966670570186]

```

---

```

 - Time interval n.1: [20.04, 20.24]
 * y_true: [14.10165462 33.63672046]
 * v_ann: [32.085548400878906, 28.724994659423828, 2
 6.058966670570186]

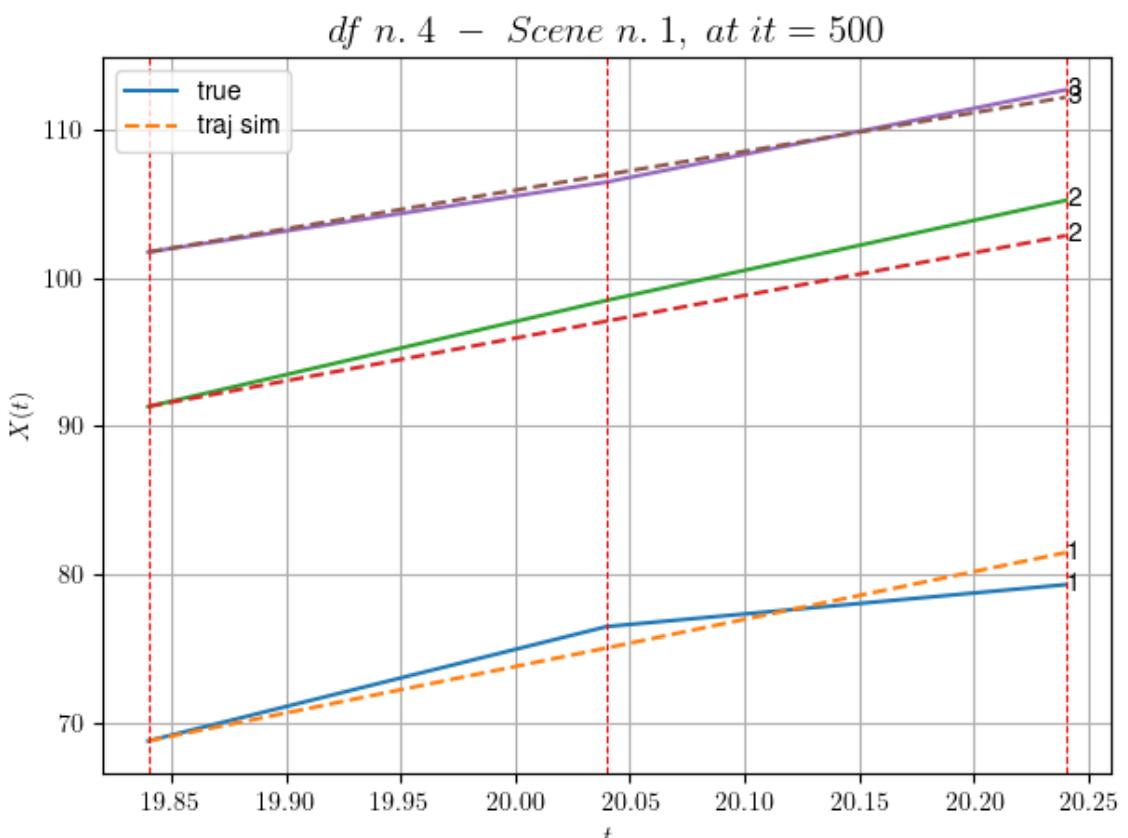
```

---

```

 * err= 1.646591549917269
 * Learning rate NN = 3.6449993785936385e-05
 * diff = 0.006786836917442862

```



For scene 1/30

```

* use LR_NN=5e-05 with err=10.336646914377313 at it=19
* v0_scn_mean = 26.295428493392116
* MAE = 1.646591549917269

```

---



---

```

 - Time interval n.0: [23.64, 23.84]
 * y_true: [16.50112189 27.57447859]
 * v_ann: [16.688203811645508, 22.055795669555664, 2
 5.974575559418614]

```

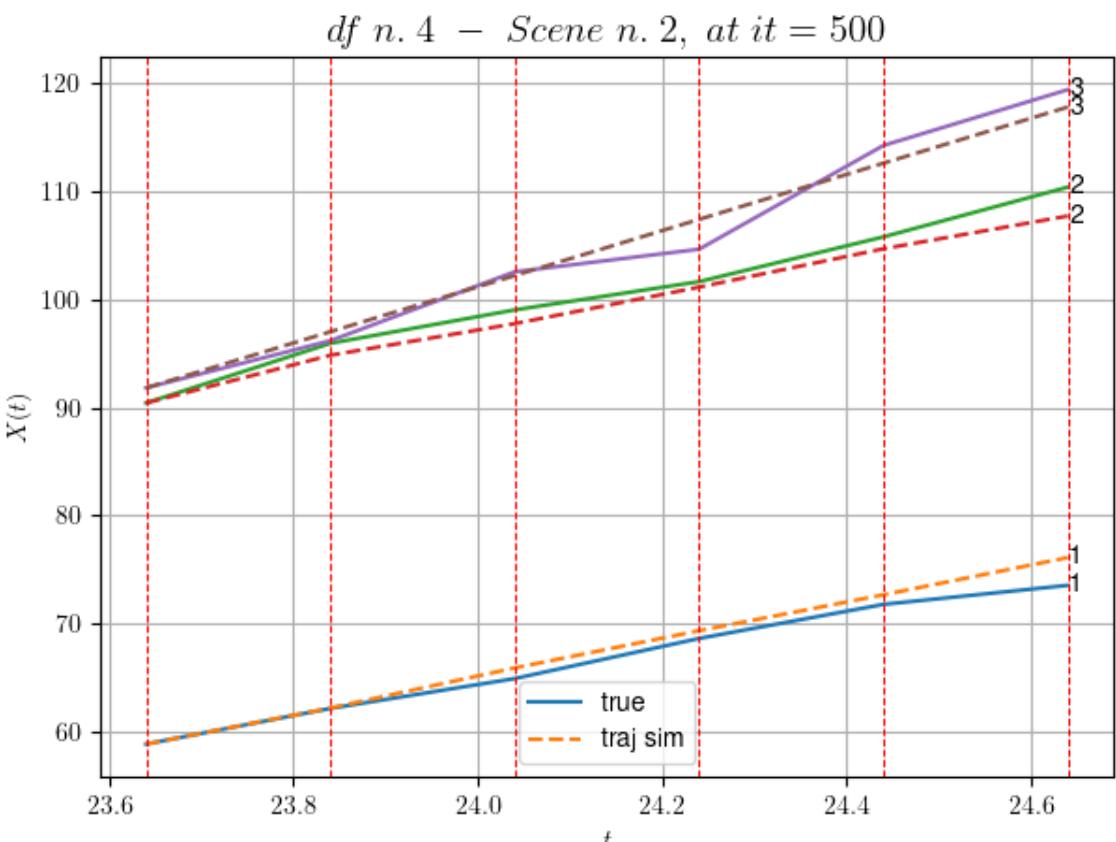
```
- Time interval n.1: [23.84, 24.04]
 * y_true: [13.80103575 15.46275359]
 * v_ann: [18.527671813964844, 14.624157905578613, 2
5.974575559418614]

- Time interval n.2: [24.04, 24.24]
 * y_true: [18.55153987 13.07248815]
 * v_ann: [17.220169067382812, 16.889707565307617, 2
5.974575559418614]

- Time interval n.3: [24.24, 24.44]
 * y_true: [15.75144675 20.6942352]
 * v_ann: [16.598520278930664, 17.730995178222656, 2
5.974575559418614]

- Time interval n.4: [24.44, 24.64]
 * y_true: [8.80086699 23.00509018]
 * v_ann: [17.22205924987793, 15.161831855773926, 2
5.974575559418614]

* err= 1.8884562918804433
* Learning rate NN = 0.0001937102060765028
* diff = 5.9681725993687706e-05
```



For scene 2/30  
\* use LR\_NN=0.0005 with err=32.93217310432872 at it=19  
\* v0\_scn\_mean = 26.216100845120657  
\* MAE = 1.8884562918804433

=====

=====

- Time interval n.0: [80.24, 80.44]  
\* y\_true: [20.8407888 28.56113721]  
\* v\_ann: [24.50701141357422, 28.331579208374023, 2  
2.367774273874453]

- Time interval n.1: [80.44, 80.64]  
\* y\_true: [28.49133895 28.481454 ]  
\* v\_ann: [26.51173210144043, 27.07913589477539, 22.  
367774273874453]

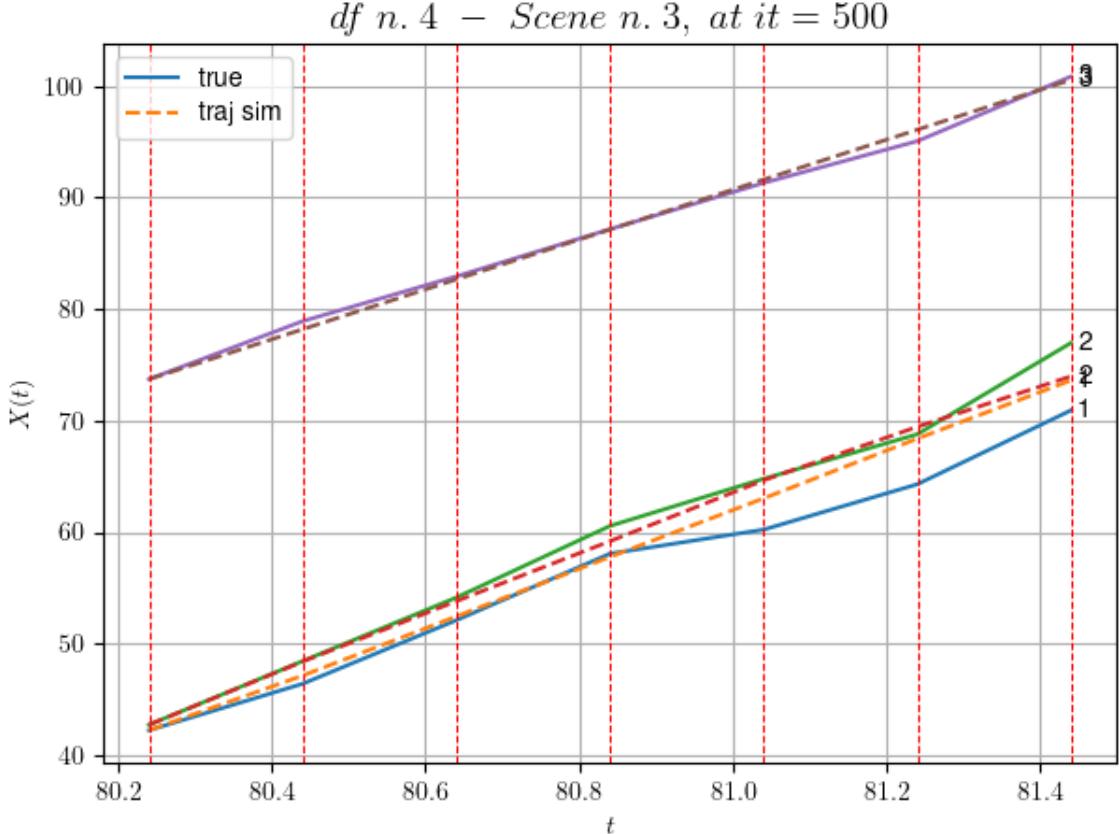
- Time interval n.2: [80.64, 80.84]  
\* y\_true: [29.84173661 32.11200361]  
\* v\_ann: [26.714778900146484, 26.901914596557617, 2  
2.367774273874453]

- Time interval n.3: [80.84, 81.04]  
\* y\_true: [10.79069268 21.14157827]  
\* v\_ann: [26.245708465576172, 27.29099464416504, 2  
2.367774273874453]

- Time interval n.4: [81.04, 81.24]  
\* y\_true: [20.33152897 19.96178137]  
\* v\_ann: [26.774906158447266, 23.997817993164062, 2  
2.367774273874453]

- Time interval n.5: [81.24, 81.44]  
\* y\_true: [33.14293198 40.94411969]  
\* v\_ann: [26.13363265991211, 22.646625518798828, 2  
2.367774273874453]

\* err= 2.180215233534015  
\* Learning rate NN = 0.00015690525469835848  
\* diff = 0.001712374756986712



For scene 3/30

\* use LR\_NN=0.0005 with err=62.05718872742715 at it=19  
 \* v0\_scn\_mean = 22.825707474771544  
 \* MAE = 2.180215233534015

---



---

- Time interval n.0: [89.04, 89.24]
  - \* y\_true: [19.34082001 24.8230577 ]
  - \* v\_ann: [19.560810089111328, 20.57744026184082, 3 2.775431632602164]

---

- Time interval n.1: [89.24, 89.44]
  - \* y\_true: [14.120693 17.32233598]
  - \* v\_ann: [19.65951919555664, 20.666749954223633, 3 2.775431632602164]

---

- Time interval n.2: [89.44, 89.64]
  - \* y\_true: [18.19104002 31.50485669]
  - \* v\_ann: [19.124557495117188, 19.58359146118164, 3 2.775431632602164]

---

- Time interval n.3: [89.64, 89.84]
  - \* y\_true: [22.07139916 11.31182118]
  - \* v\_ann: [19.605350494384766, 19.774791717529297, 3 2.775431632602164]

2.775431632602164]

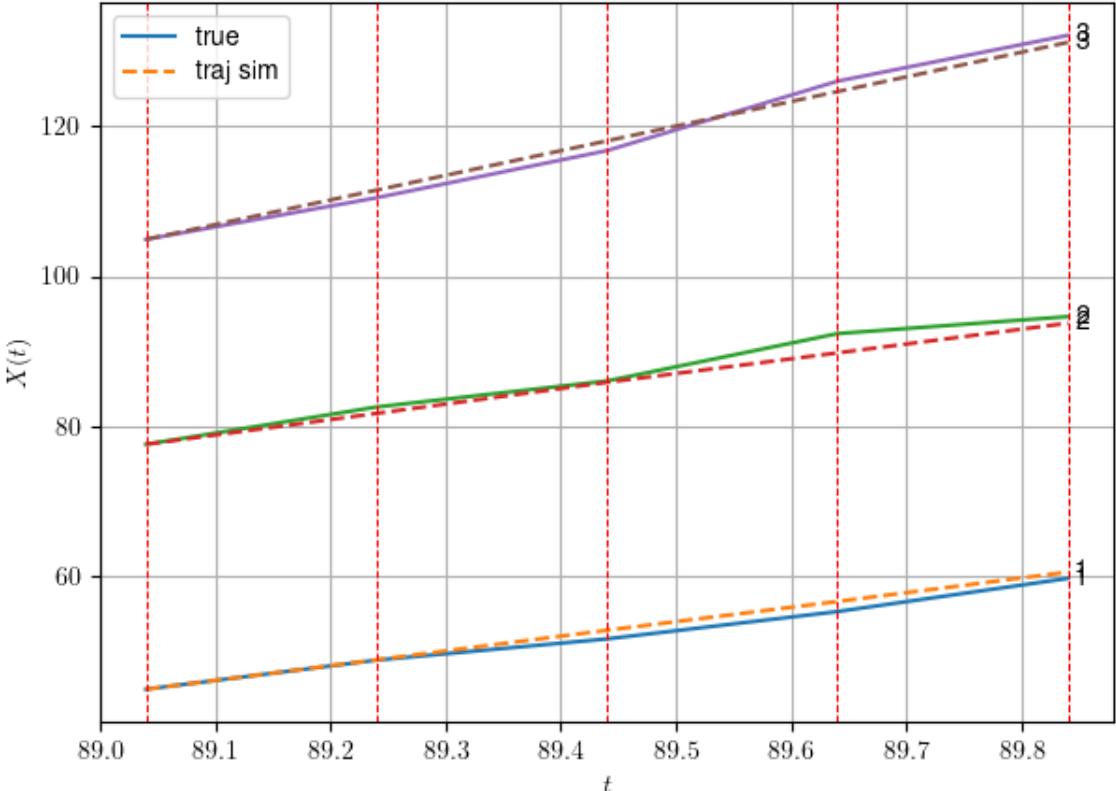
---



---

- \* err= 1.1615869692583054
- \* Learning rate NN = 2.3914839403005317e-05
- \* diff = 0.002853389781272808

*df n. 4 – Scene n. 4, at it = 500*



For scene 4/30

- \* use LR\_NN=5e-05 with err=4.104523285332205 at it=19
- \* v0\_scn\_mean = 32.608905859257035
- \* MAE = 1.1615869692583054

---



---

- Time interval n.0: [96.44, 96.64]  
 \* y\_true: [16.86045215 20.08121647]  
 \* v\_ann: [18.511245727539062, 18.694293975830078, 1  
 8.401280606024454]

---



---

- Time interval n.1: [96.64, 96.84]  
 \* y\_true: [17.24055532 8.93061591]  
 \* v\_ann: [18.320552825927734, 18.6866512298584, 18.  
 401280606024454]

---



---

- Time interval n.2: [96.84, 97.04]  
 \* y\_true: [21.11081641 16.18118624]  
 \* v\_ann: [17.228687286376953, 17.80231285095215, 1

8.401280606024454]

---

- Time interval n.3: [97.04, 97.24]
  - \* y\_true: [26.9212791 14.46120094]
  - \* v\_ann: [18.00201988220215, 17.994243621826172, 1]

8.401280606024454]

---

- Time interval n.4: [97.24, 97.44]
  - \* y\_true: [17.07093447 27.60253797]
  - \* v\_ann: [20.229610443115234, 18.626399993896484, 1]

8.401280606024454]

---

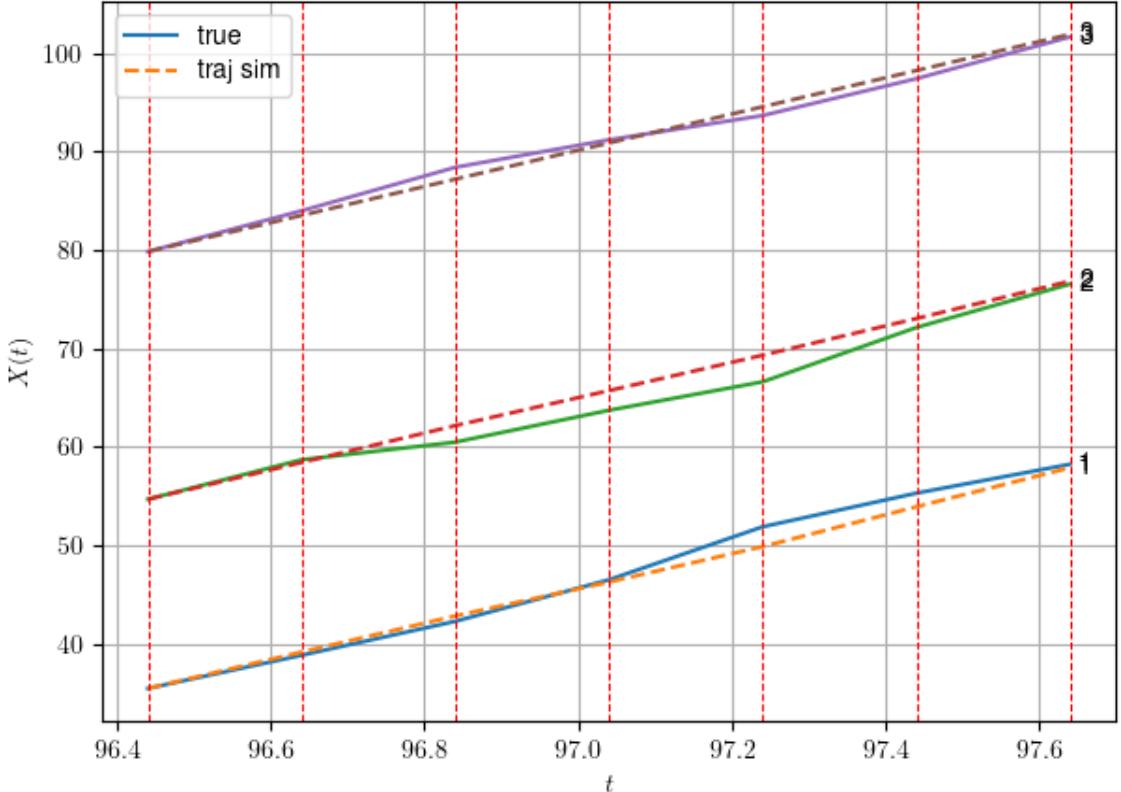
- Time interval n.5: [97.44, 97.64]
  - \* y\_true: [14.70092006 22.05229805]
  - \* v\_ann: [19.85250473022461, 19.00525665283203, 18.

401280606024454]

---

- \* err= 1.1895051230082705
- \* Learning rate NN = 0.00015690525469835848
- \* diff = 0 0003670846321375265

*df n. 4 – Scene n. 5, at it = 500*



For scene 5/30

- \* use LR\_NN=0.0005 with err=31.934804474734722 at it=19
- \* v0\_scn\_mean = 19.097203248905643
- \* MAE = 1.1895051230082705

```
=====
- Time interval n.0: [182.24, 182.44]
 * y_true: [18.61043577 13.125309]
 * v_ann: [20.92835235595703, 19.44847869873047, 20.
773199567272172]

- Time interval n.1: [182.44, 182.64]
 * y_true: [12.51734154 21.64870909]
 * v_ann: [13.744647979736328, 19.570377349853516, 2
0.773199567272172]

- Time interval n.2: [182.64, 182.84]
 * y_true: [15.03048681 24.29091592]
 * v_ann: [18.671138763427734, 19.482694625854492, 2
0.773199567272172]

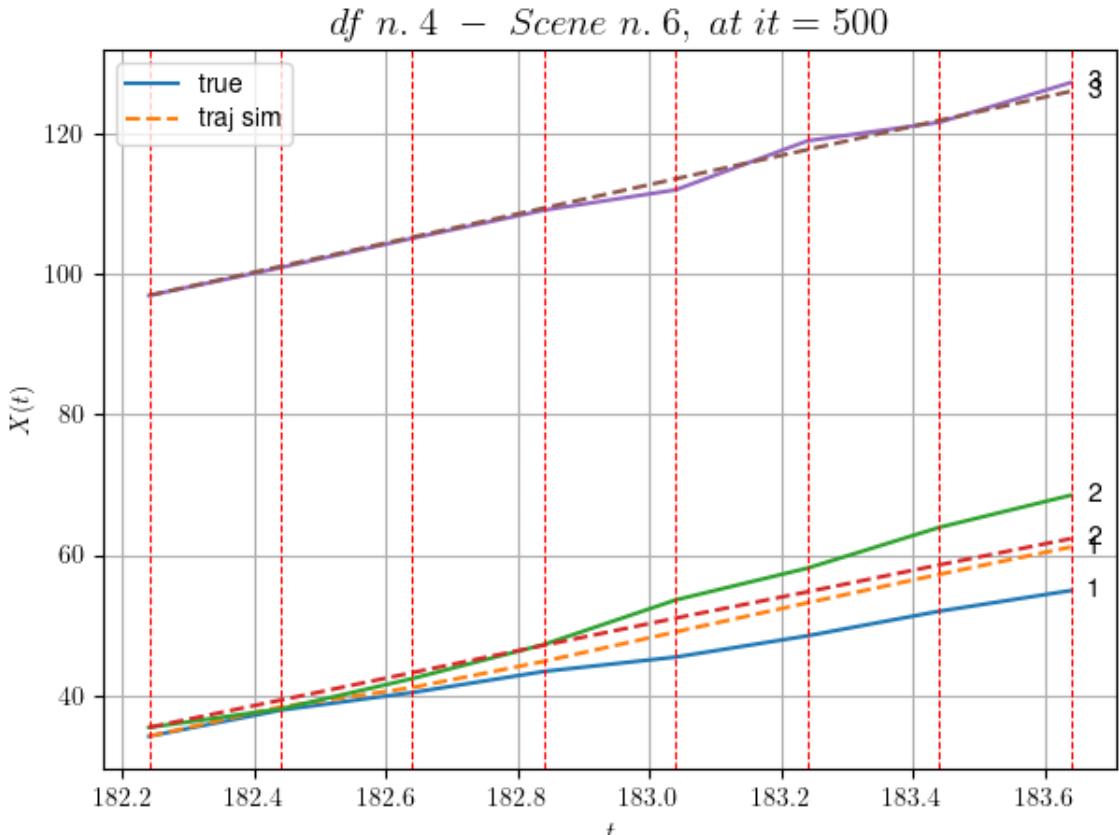
- Time interval n.3: [182.84, 183.04]
 * y_true: [10.23036632 31.71160501]
 * v_ann: [20.977596282958984, 19.3293399810791, 20.
773199567272172]

- Time interval n.4: [183.04, 183.24]
 * y_true: [15.12061978 22.63128316]
 * v_ann: [20.72417449951172, 18.70786476135254, 20.
773199567272172]

- Time interval n.5: [183.24, 183.44]
 * y_true: [17.50081627 28.99215837]
 * v_ann: [20.21017074584961, 19.173147201538086, 2
0.773199567272172]

- Time interval n.6: [183.44, 183.64]
 * y_true: [14.74077551 22.90183379]
 * v_ann: [19.50505828857422, 18.701168060302734, 2
0.773199567272172]

* err= 8.196162054059936
* Learning rate NN = 1.2709323527815286e-05
* diff = 0.0016633584024869918
```



For scene 6/30

- \* use LR\_NN=5e-05 with err=46.63206430209667 at it=19
- \* v0\_scn\_mean = 21.326807178972608
- \* MAE = 8.196162054059936

---



---

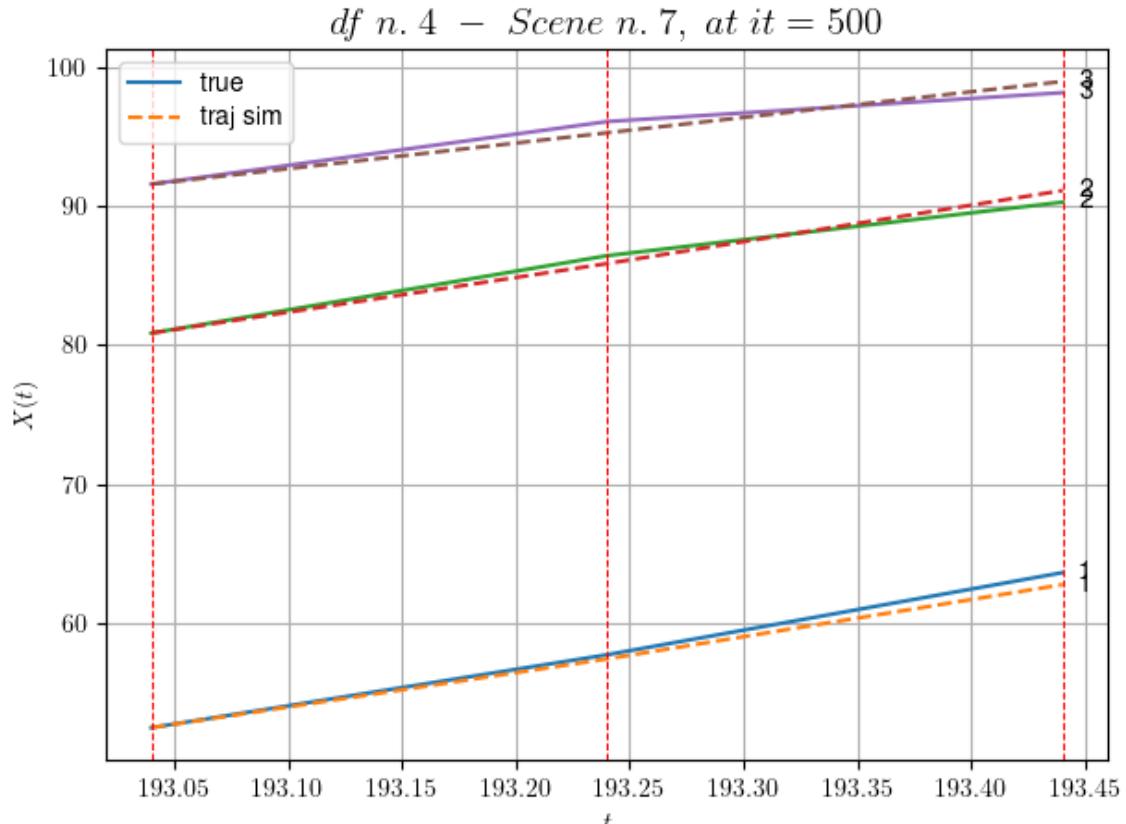
- Time interval n.0: [193.04, 193.24]
- \* y\_true: [26.28155868 27.90372348]
- \* v\_ann: [24.791481018066406, 25.067798614501953, 1  
8.506528748462443]

---

- Time interval n.1: [193.24, 193.44]
- \* y\_true: [29.63205884 19.30286837]
- \* v\_ann: [26.781129837036133, 26.334003448486328, 1  
8.506528748462443]

---

- \* err= 0.35247568398292595
- \* Learning rate NN = 0.00036449998151510954
- \* diff = 6.378693266273494e-05



For scene 7/30

- \* use LR\_NN=0.0005 with err=7.741270053991315 at it=19
- \* v0\_scn\_mean = 19.196136507522816
- \* MAE = 0.3510716071042974

---



---

For scene 8/30

- \* use LR\_NN=0.005 with err=2.7144365561709147 at it=19
- \* v0\_scn\_mean = 21.365874532040806
- \* MAE = 2.22142319018594

---



---

For scene 9/30

- \* use LR\_NN=1e-05 with err=4.9649589216660805 at it=19
- \* v0\_scn\_mean = 30.094441532938035
- \* MAE = 30.516185254276735

---



---

- Time interval n.0: [224.84, 225.04]
- \* y\_true: [17.10046829 25.29311811]
- \* v\_ann: [18.812883377075195, 20.05725860595703, 1  
5.713677130054943]

---

```

 - Time interval n.1: [225.04, 225.24]
 * y_true: [17.70062553 10.9614656]
 * v_ann: [19.166296005249023, 20.323415756225586, 1
5.713677130054943]

 - Time interval n.2: [225.24, 225.44]
 * y_true: [22.57087879 26.33405568]
 * v_ann: [18.403528213500977, 20.09040069580078, 1
5.713677130054943]

 - Time interval n.3: [225.44, 225.64]
 * y_true: [16.35079439 22.81365517]
 * v_ann: [19.21202278137207, 20.375850677490234, 1
5.713677130054943]

 - Time interval n.4: [225.64, 225.84]
 * y_true: [20.8811317 16.55300892]
 * v_ann: [19.273380279541016, 20.36713409423828, 1
5.713677130054943]

 - Time interval n.5: [225.84, 226.04]
 * y_true: [16.52103304 29.98602504]
 * v_ann: [19.137048721313477, 20.468151092529297, 1
5.713677130054943]

 - Time interval n.6: [226.04, 226.24]
 * y_true: [18.95135857 18.46388585]
 * v_ann: [19.79781723022461, 15.763665199279785, 1
5.713677130054943]

 - Time interval n.7: [226.24, 226.44]
 * y_true: [20.26160248 17.75418412]
 * v_ann: [19.708036422729492, 21.704639434814453, 1
5.713677130054943]

 - Time interval n.8: [226.44, 226.64]
 * y_true: [16.68150299 14.60353303]
 * v_ann: [19.54199981689453, 17.194835662841797, 1
5.713677130054943]

 - Time interval n.9: [226.64, 226.84]
 * y_true: [22.62228992 25.47686963]
 * v_ann: [19.038570404052734, 22.02974510192871, 1
```

5.713677130054943]

---

- Time interval n.10: [226.84, 227.04]
  - \* y\_true: [22.04244959 23.58655245]
  - \* v\_ann: [19.678468704223633, 22.25961685180664, 1]

5.713677130054943]

---

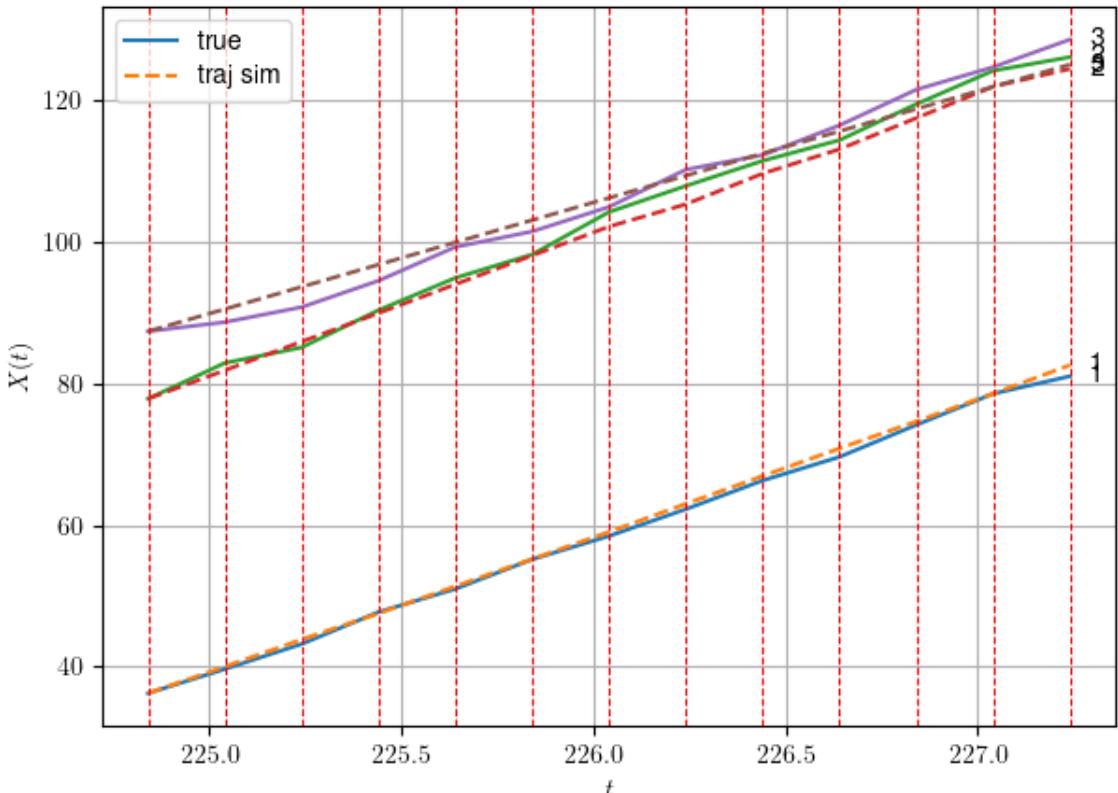
- Time interval n.11: [227.04, 227.24]
  - \* y\_true: [12.37151499 9.65291202]
  - \* v\_ann: [20.090068817138672, 12.48301887512207, 1]

5.713677130054943]

---

- \* err= 2.2314189494809793
- \* Learning rate NN = 4.431466732057743e-05

*df n. 4 – Scene n. 10, at it = 500*



For scene 10/30

- \* use LR\_NN=0.0005 with err=251.341516615911 at it=19
- \* v0\_scn\_mean = 16.570855860826573
- \* MAE = 1.9743029080802998

---



---

- Time interval n.0: [230.84, 231.04]
  - \* y\_true: [ 5.64695095 17.97864337]
  - \* v\_ann: [11.701591491699219, 14.004998207092285, 2

3.322723002586756]

```


 - Time interval n.1: [231.04, 231.24]
 * y_true: [5.72513489 21.19066695]
 * v_ann: [14.488941192626953, 13.693801879882812, 2
3.322723002586756]

 - Time interval n.2: [231.24, 231.44]
 * y_true: [6.01015392 28.29114422]
 * v_ann: [14.652421951293945, 13.769835472106934, 2
3.322723002586756]

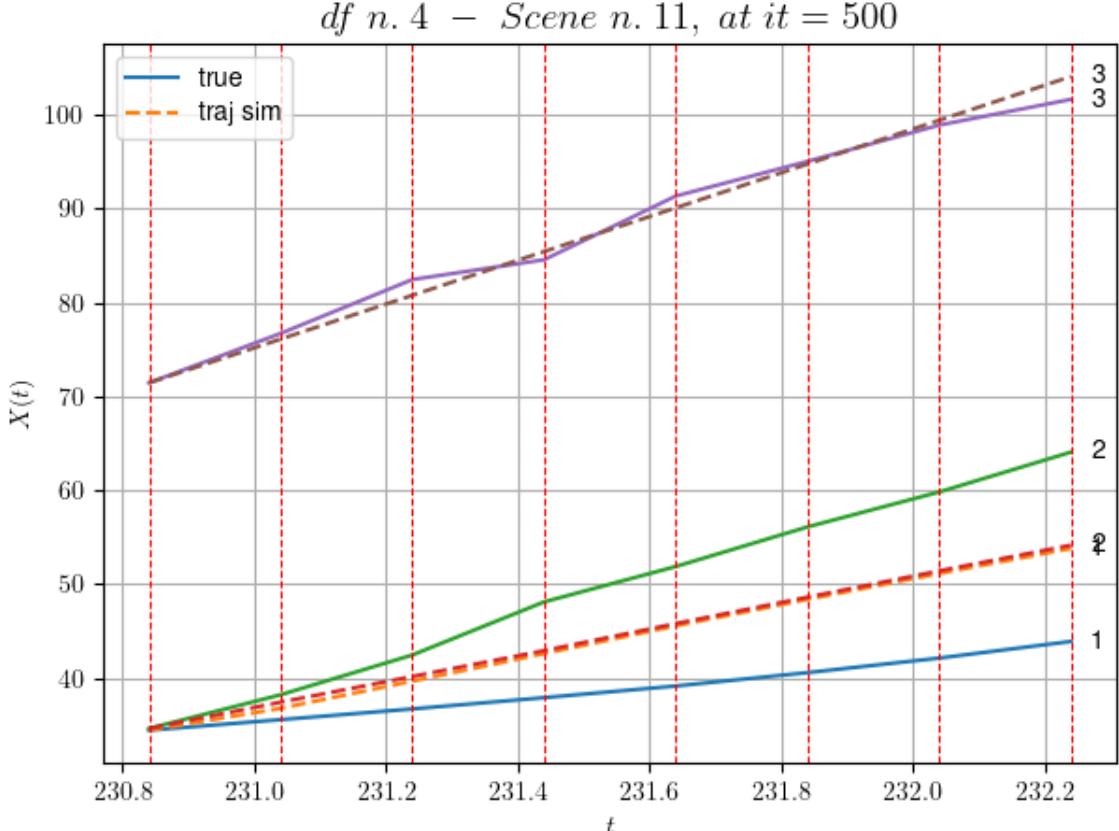
 - Time interval n.3: [231.44, 231.64]
 * y_true: [6.20016661 18.85086271]
 * v_ann: [14.831323623657227, 14.408238410949707, 2
3.322723002586756]

 - Time interval n.4: [231.64, 231.84]
 * y_true: [7.13021091 21.11121983]
 * v_ann: [14.079813003540039, 14.078566551208496, 2
3.322723002586756]

 - Time interval n.5: [231.84, 232.04]
 * y_true: [7.75024044 18.61116554]
 * v_ann: [13.799012184143066, 14.010109901428223, 2
3.322723002586756]

 - Time interval n.6: [232.04, 232.24]
 * y_true: [8.87530762 21.24160102]
 * v_ann: [13.342917442321777, 13.705795288085938, 2
3.322723002586756]

 * err= 25.880833391573006
 * Learning rate NN = 0.00025418648147024214
 * diff = 6.4594143047713715e-06
```



For scene 11/30

\* use LR\_NN=0.001 with err=20.444608734714617 at it=19  
 \* v0\_scn\_mean = 23.723359322636128  
 \* MAE = 25.674492828095865

- Time interval n.0: [233.84, 234.04]  
 \* y\_true: [14.14101026 12.7012637 ]  
 \* v\_ann: [21.335002899169922, 21.924379348754883, 2  
 1.46280647198854]

- Time interval n.1: [234.04, 234.24]  
 \* y\_true: [26.43219185 20.11227439]  
 \* v\_ann: [21.081356048583984, 21.99344253540039, 2  
 1.46280647198854]

- Time interval n.2: [234.24, 234.44]  
 \* y\_true: [22.40209801 33.22429882]  
 \* v\_ann: [21.21958351135254, 22.067337036132812, 2  
 1.46280647198854]

- Time interval n.3: [234.44, 234.64]  
 \* y\_true: [ 7.15071478 24.83361026]  
 \* v\_ann: [21.278085708618164, 22.16788673400879, 2

1.46280647198854]

- Time interval n.4: [234.64, 234.84]  
 \* y\_true: [26.44301464 23.06377261]  
 \* v\_ann: [20.861255645751953, 21.537267684936523, 2

1.46280647198854]

- Time interval n.5: [234.84, 235.04]  
 \* y\_true: [27.303494 31.34578132]  
 \* v\_ann: [21.045669555664062, 21.34596061706543, 2

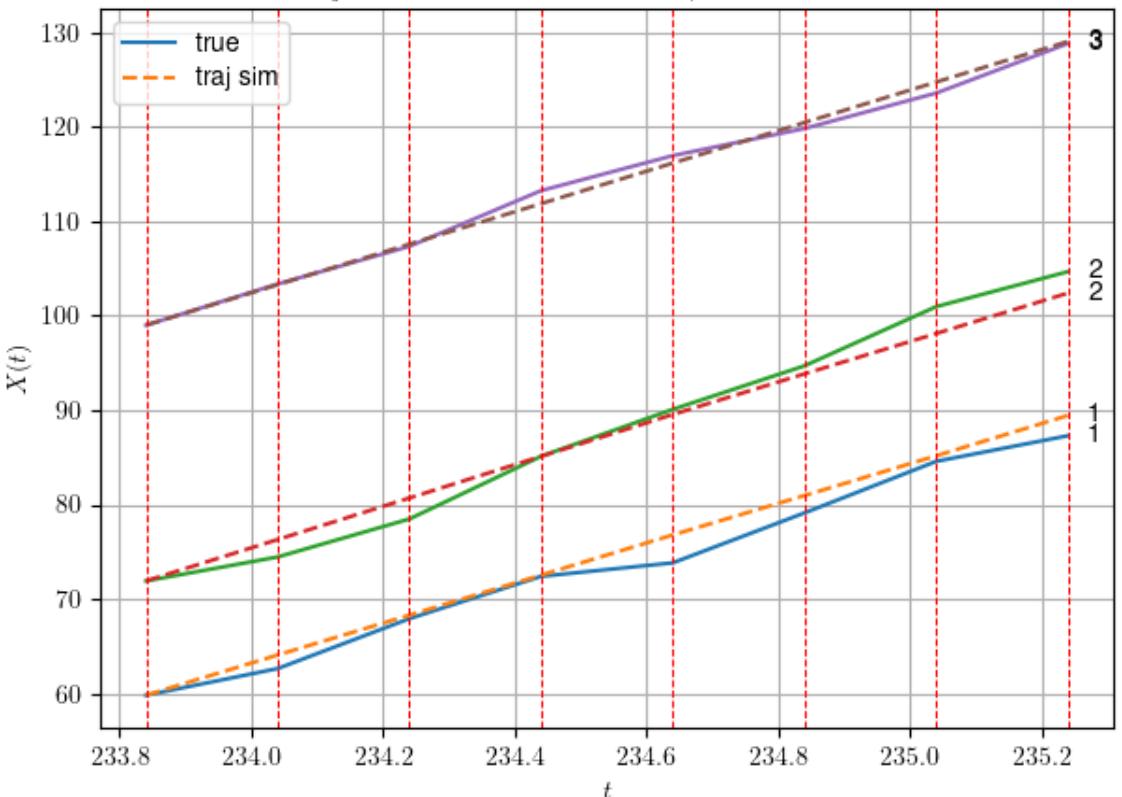
1.46280647198854]

- Time interval n.6: [235.04, 235.24]  
 \* y\_true: [13.58189317 18.51369375]  
 \* v\_ann: [21.352949142456055, 21.41361427307129, 2

1.46280647198854]

\* err= 1.9294300205155794  
 \* Learning rate NN = 2.5418647055630572e-05  
 \* diff = 0.004426971316027872

*df n. 4 – Scene n. 12, at it = 500*



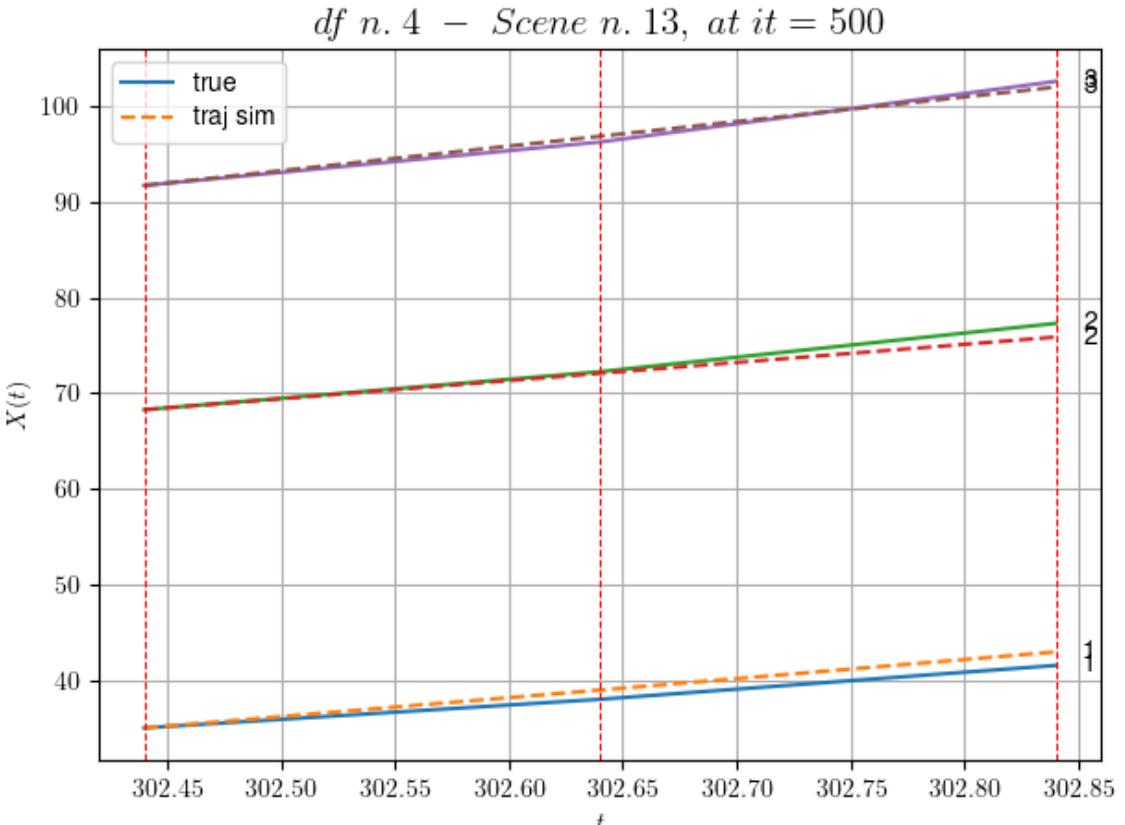
For scene 12/30

\* use LR\_NN=0.0001 with err=28.644771556120457 at it=19  
 \* v0\_scn\_mean = 21.975037700367576  
 \* MAE = 1.830388442388413

```
=====
=====
- Time interval n.0: [302.44, 302.64]
 * y_true: [15.00036276 19.90190261]
 * v_ann: [19.83414077758789, 19.044309616088867, 2
5.744538233029584]
```

```
=====
- Time interval n.1: [302.64, 302.84]
 * y_true: [17.72492583 25.30273749]
 * v_ann: [19.985586166381836, 18.98531723022461, 2
5.744538233029584]
```

```
* err= 0.6401874622073531
* Learning rate NN = 7.289998848136747e-06
* diff = 0.00105185222658322222
```



For scene 13/30

```
* use LR_NN=1e-05 with err=2.1103166435320357 at it=19
* v0 scn mean = 25.999865747986018
* MAE = 0.6401874622073531
```

```
=====
=====
- Time interval n.0: [364.64, 364.84]
 * y_true: [23.68175628 20.26218764]
 * v_ann: [18.44502830505371, 19.304824829101562, 2
8.20572489389836]
```

```

 - Time interval n.1: [364.84, 365.04]

 * y_true: [20.38169455 13.81168669]

 * v_ann: [18.803211212158203, 19.355274200439453, 2

8.20572489389836]

 - Time interval n.2: [365.04, 365.24]

 * y_true: [10.17092159 27.1635357]

 * v_ann: [19.078277587890625, 18.142332077026367, 2

8.20572489389836]

 - Time interval n.3: [365.24, 365.44]

 * y_true: [18.57186597 15.36227914]

 * v_ann: [18.118328094482422, 18.03053855895996, 2

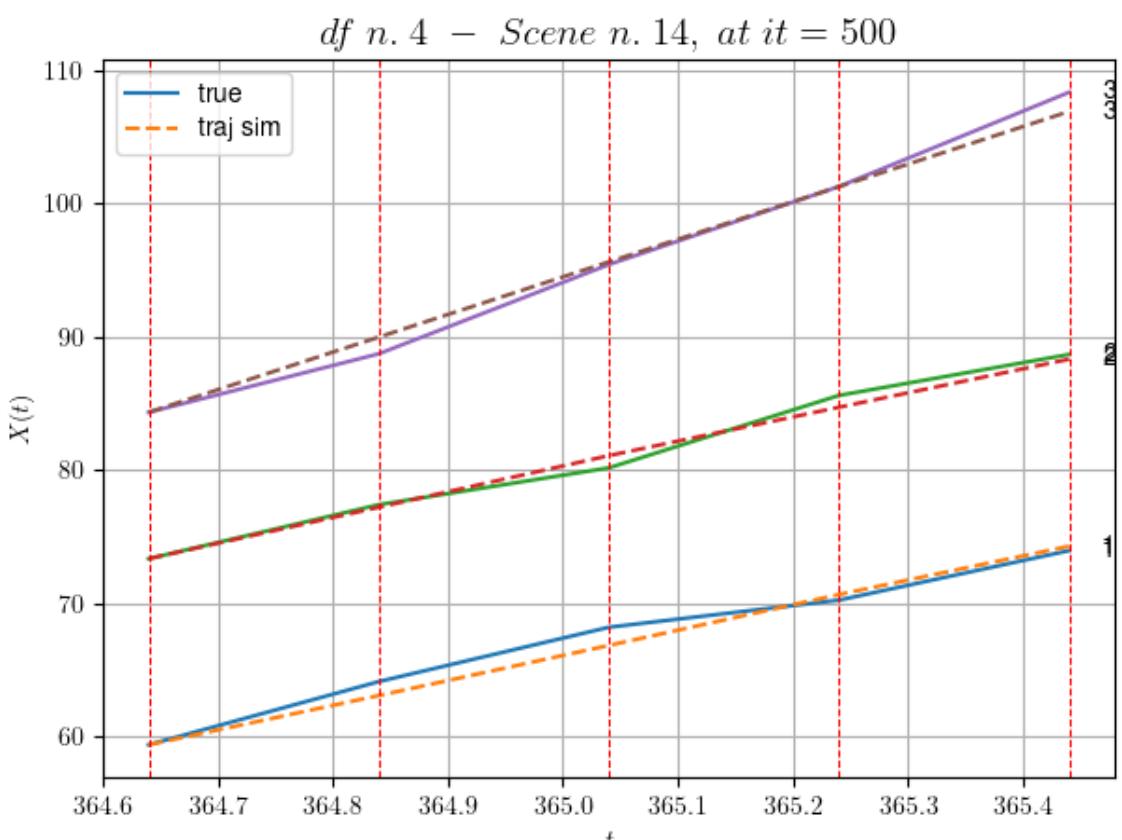
8.20572489389836]

 * err= 0.580593731867847

 * Learning rate NN = 4.7829678806010634e-05

 * diff = 4.2688592671868975e-05

```



For scene 14/30

```

* use LR_NN=0.0001 with err=1.008089455039172 at it=19
* v0_scn_mean = 28.313381319705673
* MAE = 0.5421588863475361
=====
```

```
=====
- Time interval n.0: [422.64, 422.84]
 * y_true: [18.36052369 19.91162557]
 * v_ann: [24.77986717224121, 24.34980583190918, 27.
54508960777655]

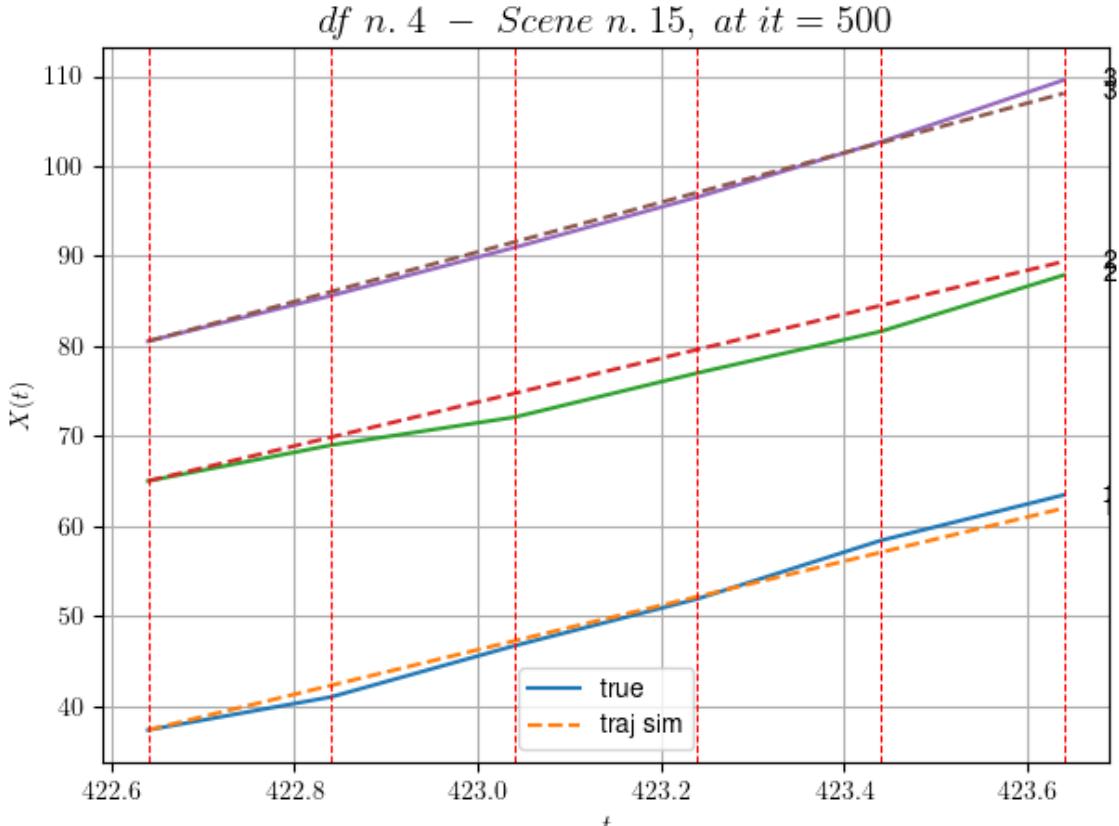
- Time interval n.1: [422.84, 423.04]
 * y_true: [28.40107569 15.51150308]
 * v_ann: [24.72893524169922, 24.335224151611328, 2
7.54508960777655]

- Time interval n.2: [423.04, 423.24]
 * y_true: [26.09121176 24.58263804]
 * v_ann: [24.579341888427734, 24.372920989990234, 2
7.54508960777655]

- Time interval n.3: [423.24, 423.44]
 * y_true: [32.41191994 23.07275882]
 * v_ann: [24.5777645111084, 24.400300979614258, 27.
54508960777655]

- Time interval n.4: [423.44, 423.64]
 * y_true: [25.31178577 31.31439465]
 * v_ann: [24.548141479492188, 24.477590560913086, 2
7.54508960777655]

* err= 1.896703049305459
* Learning rate NN = 3.874203684972599e-06
* diff = 0.00032524922518861743
```



For scene 15/30

```
* use LR_NN=1e-05 with err=2.8984411820506133 at it=19
* v0_scn_mean = 27.69238412108981
* MAE = 1.817211547502288
```

---



---

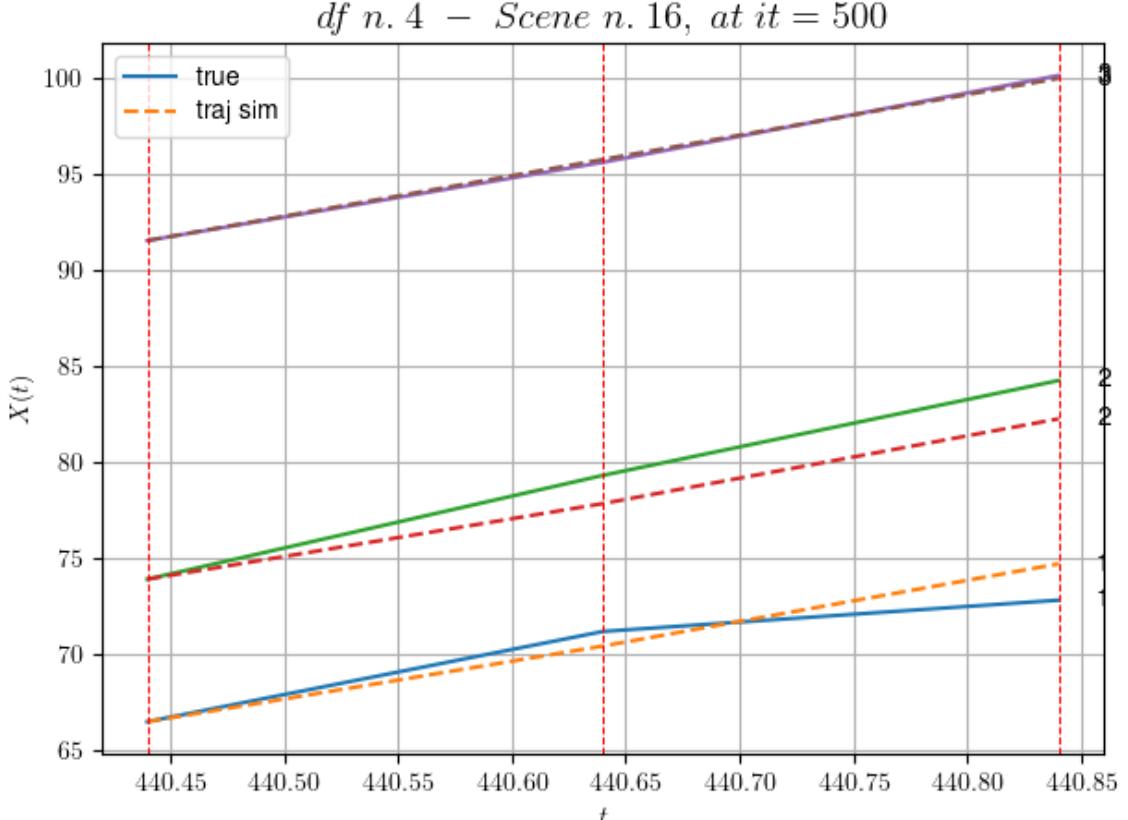
```
- Time interval n.0: [440.44, 440.64]
* y_true: [23.50209477 27.05306951]
* v_ann: [19.701526641845703, 19.702943801879883, 2
1.126994497573644]
```

---

```
- Time interval n.1: [440.64, 440.84]
* y_true: [8.15079495 24.70319187]
* v_ann: [21.417396545410156, 22.071439743041992, 2
1.126994497573644]
```

---

```
* err= 1.1504357364447164
* Learning rate NN = 0.00036449998151510954
* diff = 8.269730985777102e-06
```



For scene 16/30

\* use LR\_NN=0.0005 with err=2.92747760562461 at it=19  
 \* v0\_scn\_mean = 21.659374429339472  
 \* MAE = 1.1381510272431206

- 
- 
- Time interval n.0: [459.64, 459.84]
    - \* y\_true: [ 8.02057991 18.30147717]
    - \* v\_ann: [14.184366226196289, 19.113134384155273, 2 1.749477605227302]

---

  - Time interval n.1: [459.84, 460.04]
    - \* y\_true: [15.90126261 32.50305135]
    - \* v\_ann: [23.88715362548828, 18.336715698242188, 2 1.749477605227302]

---

  - Time interval n.2: [460.04, 460.24]
    - \* y\_true: [12.56106954 7.60079575]
    - \* v\_ann: [16.827308654785156, 17.060619354248047, 2 1.749477605227302]

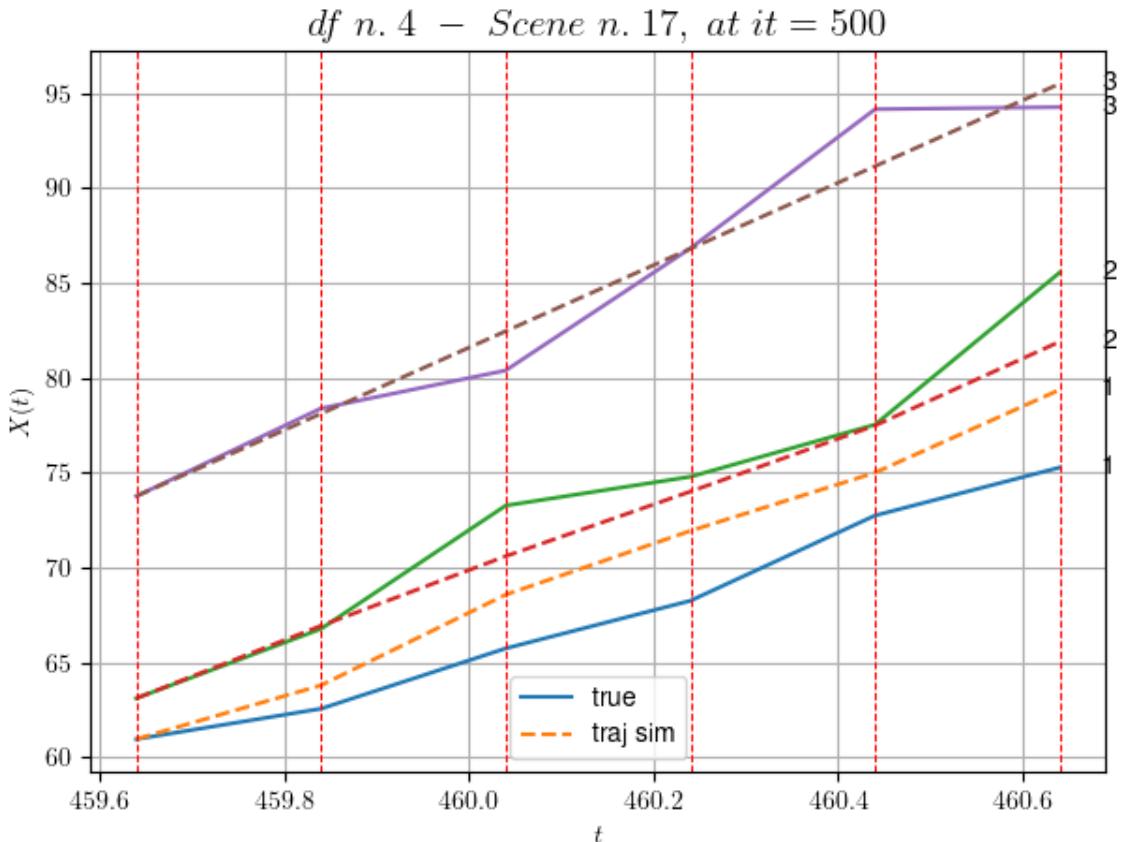
---

  - Time interval n.3: [460.24, 460.44]
    - \* y\_true: [22.47215871 13.7515264 ]
    - \* v\_ann: [15.3526029586792, 17.40047264099121, 21.7

49477605227302]

```
- Time interval n.4: [460.44, 460.64]
 * y_true: [12.66130245 40.10510628]
 * v_ann: [21.86190414428711, 22.114233016967773, 2
1.749477605227302]
```

```
* err= 4.499151383088024
* Learning rate NN = 0.0003874204121530056
* diff = 0.002731423005707610
```



For scene 17/30

```
* use LR_NN=0.001 with err=10.52215346276197 at it=19
* v0_scn_mean = 22.244508578483146
* MAE = 3.762214613219904
```

```
- Time interval n.0: [493.84, 494.04]
 * y_true: [22.94003108 21.75102788]
 * v_ann: [22.69402503967285, 24.250349044799805, 2
0.436941639155645]
```

```
- Time interval n.1: [494.04, 494.24]
 * y_true: [17.14085991 24.35137427]
 * v_ann: [20.6818790435791, 24.27555274963379, 20.4
36941639155645]
```

```


- Time interval n.2: [494.24, 494.44]
* y_true: [21.88131212 25.00167951]
* v_ann: [24.817729949951172, 23.240766525268555, 2
0.436941639155645]

- Time interval n.3: [494.44, 494.64]
* y_true: [18.45125037 31.00249487]
* v_ann: [21.96551513671875, 23.40933609008789, 20.
436941639155645]

- Time interval n.4: [494.64, 494.84]
* y_true: [23.98189292 7.35066295]
* v_ann: [20.79115867614746, 21.271085739135742, 2
0.436941639155645]

- Time interval n.5: [494.84, 495.04]
* y_true: [24.94226236 24.20238954]
* v_ann: [25.31874656677246, 23.027870178222656, 2
0.436941639155645]

- Time interval n.6: [495.04, 495.24]
* y_true: [23.43243252 31.70363737]
* v_ann: [25.682607650756836, 22.140701293945312, 2
0.436941639155645]

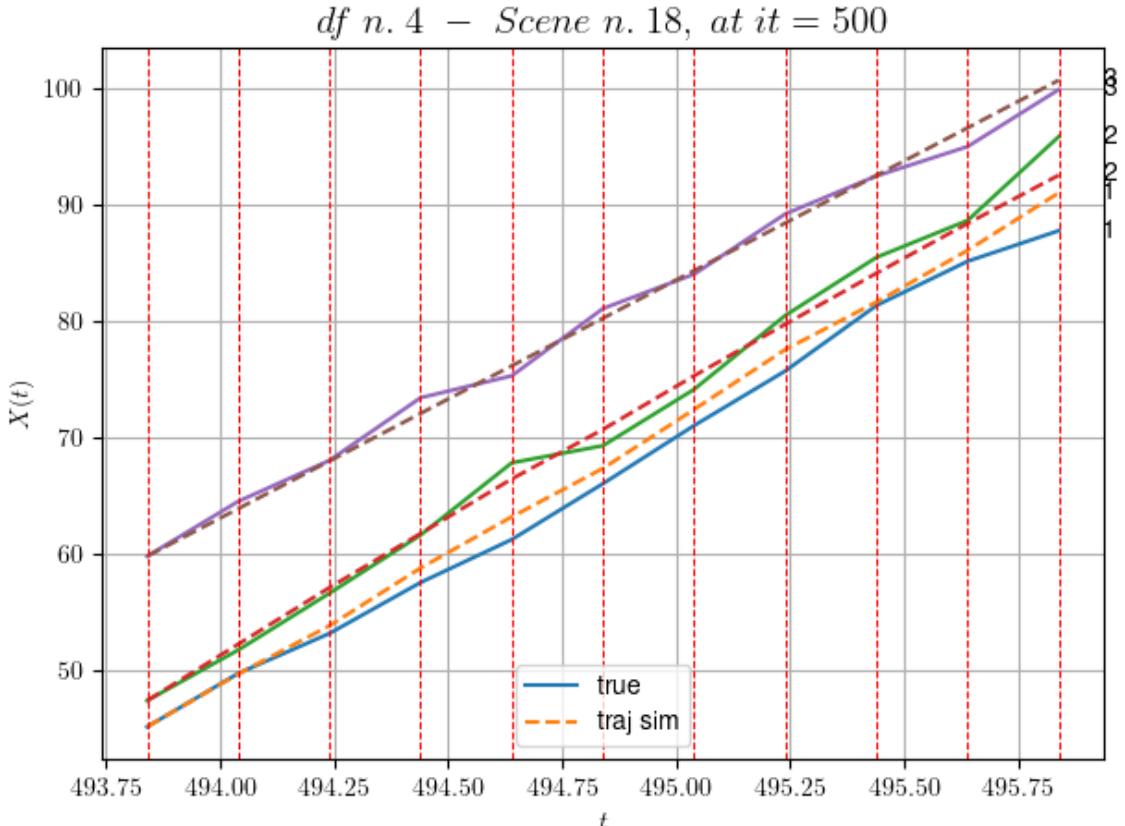
- Time interval n.7: [495.24, 495.44]
* y_true: [28.10335872 24.95329593]
* v_ann: [20.411766052246094, 21.895187377929688, 2
0.436941639155645]

- Time interval n.8: [495.44, 495.64]
* y_true: [18.99250639 15.85230368]
* v_ann: [22.196117401123047, 21.372220993041992, 2
0.436941639155645]

- Time interval n.9: [495.64, 495.84]
* y_true: [13.12188353 36.00587838]
* v_ann: [24.690948486328125, 20.707307815551758, 2
0.436941639155645]

* err= 1.5493380658423022
```

\* Learning rate NN = 0.00013508510892279446  
 \* diff = 0.00047459797348858856



For scene 18/30

\* use LR\_NN=0.001 with err=53.81562106113546 at it=19  
 \* v0\_scn\_mean = 21.01072471144566  
 \* MAE = 1.5423227043935173

- Time interval n.0: [520.04, 520.24]
  - \* y\_true: [17.72000935 17.53021327]
  - \* v\_ann: [21.638072967529297, 23.594722747802734, 25.962807327177213]
- Time interval n.1: [520.24, 520.44]
  - \* y\_true: [21.19003079 20.68032877]
  - \* v\_ann: [19.661678314208984, 19.81739044189453, 25.962807327177213]
- Time interval n.2: [520.44, 520.64]
  - \* y\_true: [20.95006602 20.21041565]
  - \* v\_ann: [20.09939193725586, 20.713674545288086, 25.962807327177213]
- Time interval n.3: [520.64, 520.84]

```
* y_true: [19.83010584 22.72061589]
* v_ann: [20.1220760345459, 20.828439712524414, 25.
962807327177213]

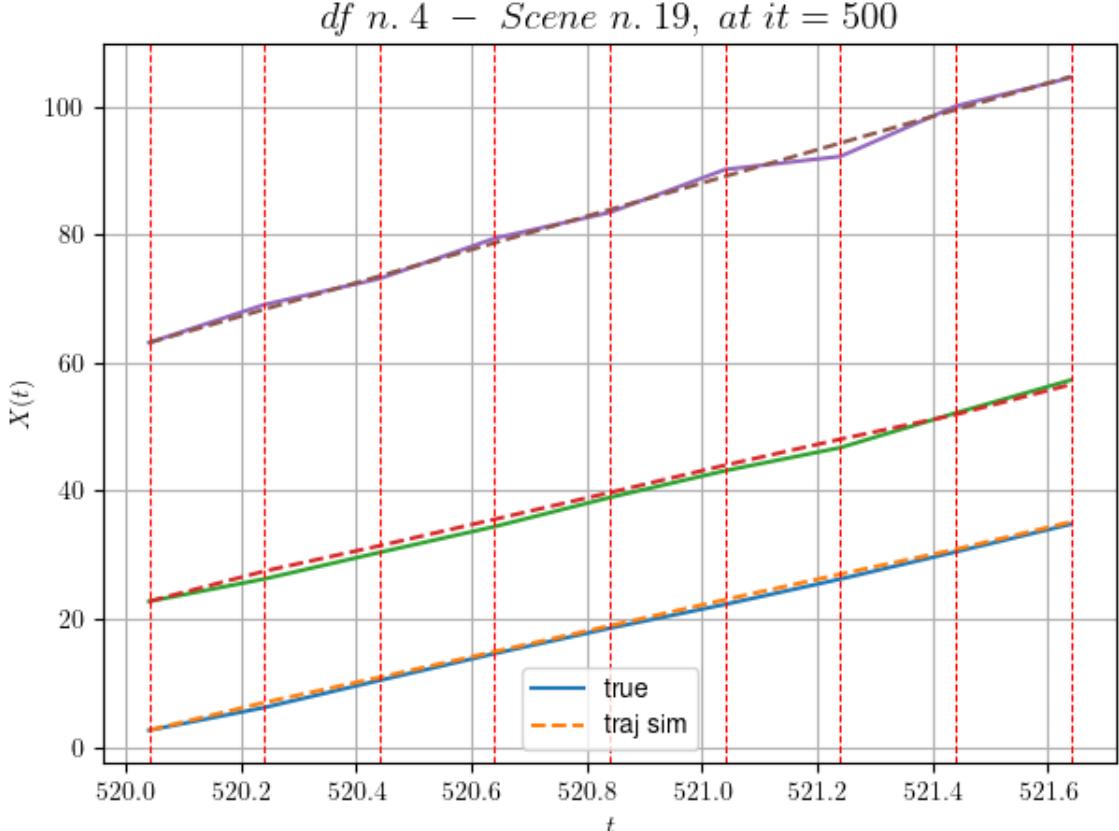
- Time interval n.4: [520.84, 521.04]
* y_true: [18.57015207 20.87066157]
* v_ann: [20.405109405517578, 21.36672019958496, 2
5.962807327177213]

- Time interval n.5: [521.04, 521.24]
* y_true: [19.76022757 18.03074501]
* v_ann: [19.884103775024414, 20.299089431762695, 2
5.962807327177213]

- Time interval n.6: [521.24, 521.44]
* y_true: [21.18033214 27.03127071]
* v_ann: [19.35437774658203, 19.157703399658203, 2
5.962807327177213]

- Time interval n.7: [521.44, 521.64]
* y_true: [21.65044512 25.69152055]
* v_ann: [21.41254425048828, 23.531023025512695, 2
5.962807327177213]

* err= 0.6355642285236817
* Learning rate NN = 0.00010294552339473739
* diff = 0.001200167505155770
```



For scene 19/30

\* use LR\_NN=0.0005 with err=28.612844469704996 at it=19  
 \* v0\_scn\_mean = 26.205038706285652  
 \* MAE = 0.41887300471914024

- 
- 
- 
- Time interval n.0: [550.44, 550.64]
    - \* y\_true: [23.95217582 22.66294351]
    - \* v\_ann: [23.895471572875977, 23.528486251831055, 2 0.148397636537467]

---

  - Time interval n.1: [550.64, 550.84]
    - \* y\_true: [22.2022957 28.49416646]
    - \* v\_ann: [23.60956382751465, 23.348073959350586, 2 0.148397636537467]

---

  - Time interval n.2: [550.84, 551.04]
    - \* y\_true: [19.80228834 20.61332089]
    - \* v\_ann: [24.87467384338379, 23.762300491333008, 2 0.148397636537467]

---

  - Time interval n.3: [551.04, 551.24]
    - \* y\_true: [31.50413614 18.88333685]
    - \* v\_ann: [22.232006072998047, 22.446584701538086, 2 0.148397636537467]

0.148397636537467]

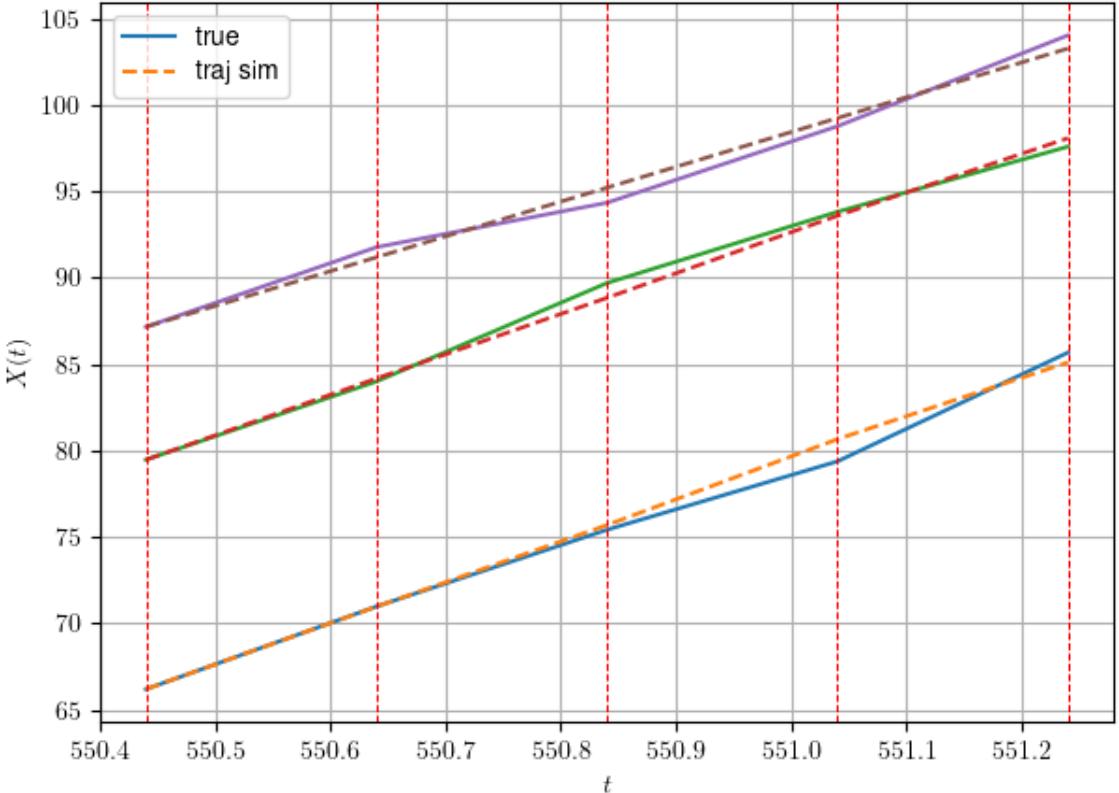
---



---

- \* err= 0.33361144880392063
- \* Learning rate NN = 0.000478296831715852
- \* diff = 2.9546684135128842e-05

*df n. 4 – Scene n. 20, at it = 500*



For scene 20/30

- \* use LR\_NN=0.001 with err=14.818551772345351 at it=19
- \* v0\_scn\_mean = 20.739493336030396
- \* MAE = 0.33361144880392063

---



---

- Time interval n.0: [554.64, 554.84]
- \* y\_true: [16.3871362 34.43556815]
- \* v\_ann: [25.392959594726562, 25.045454025268555, 2 0.440727818764053]

---



---

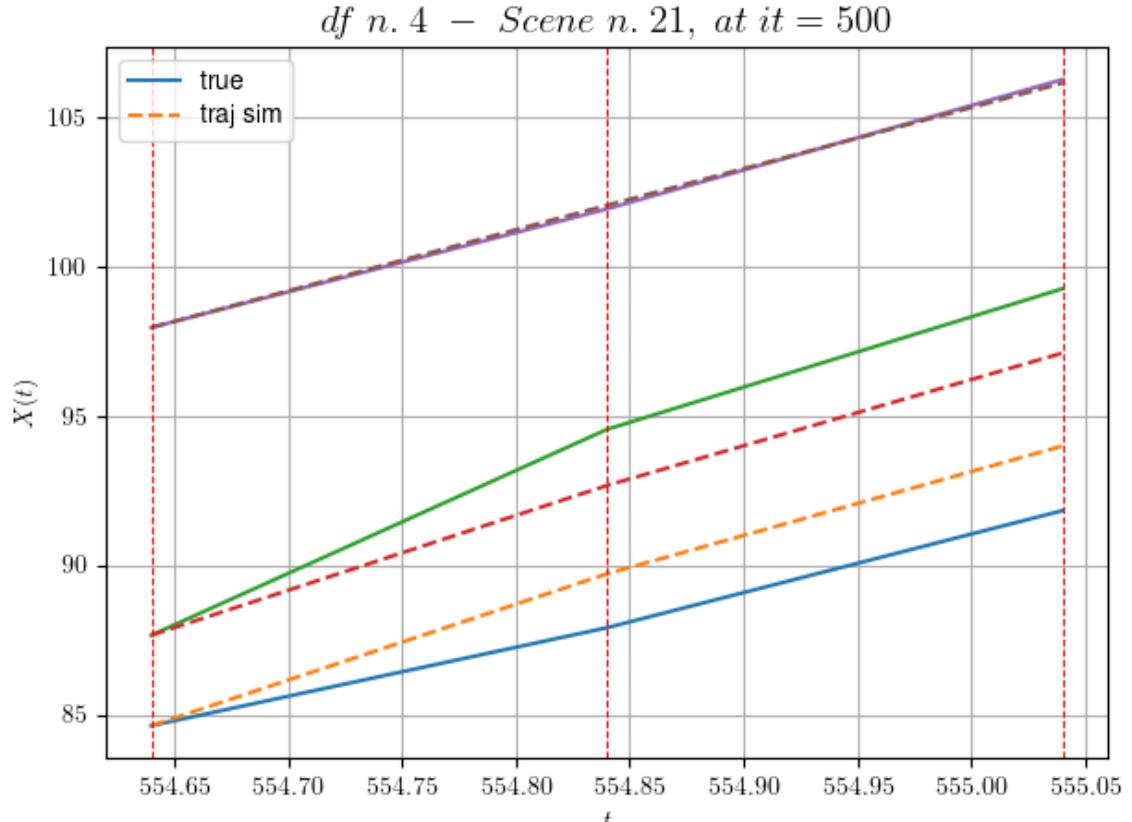
- Time interval n.1: [554.84, 555.04]
- \* y\_true: [19.58824641 23.53414882]
- \* v\_ann: [21.39519691467285, 22.1649169921875, 20.4 40727818764053]

---



---

- \* err= 1.7897571708651812
- \* Learning rate NN = 0.0007289999630302191
- \* diff = 0.0013135723582771153



For scene 21/30

- \* use LR\_NN=0.001 with err=2.3789478589912454 at it=19
- \* v0\_scn\_mean = 21.014283720448255
- \* MAE = 1.7897571708651812

---



---

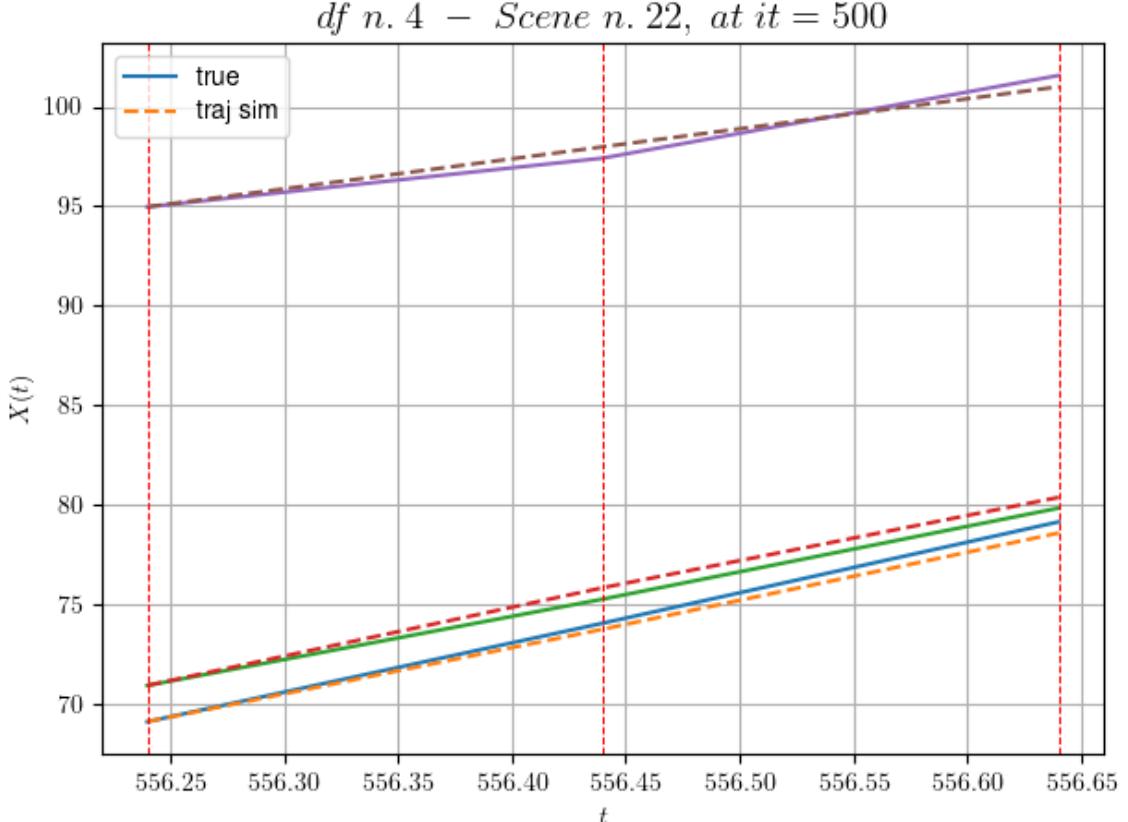
- Time interval n.0: [556.24, 556.44]
- \* y\_true: [24.75252122 21.70224237]
- \* v\_ann: [23.241525650024414, 24.561756134033203, 1  
5.086092436633097]

---

- Time interval n.1: [556.44, 556.64]
- \* y\_true: [25.4427559 22.85265518]
- \* v\_ann: [24.159225463867188, 22.684640884399414, 1  
5.086092436633097]

---

- \* err= 0.1847808639024944
- \* Learning rate NN = 0.0007289999630302191
- \* diff = 2.0187071668953394e-05



For scene 22/30

\* use LR\_NN=0.001 with err=11.230353150864708 at it=19  
 \* v0\_scn\_mean = 15.980926220832949  
 \* MAE = 0.18264763650210047

---



---

- Time interval n.0: [575.04, 575.24]  
 \* y\_true: [25.50060057 18.90068968]  
 \* v\_ann: [22.34381866455078, 22.3523006439209, 24.5  
 45621507402043]

---

- Time interval n.1: [575.24, 575.44]  
 \* y\_true: [27.95087423 28.65128625]  
 \* v\_ann: [22.33467674255371, 22.3006534576416, 24.5  
 45621507402043]

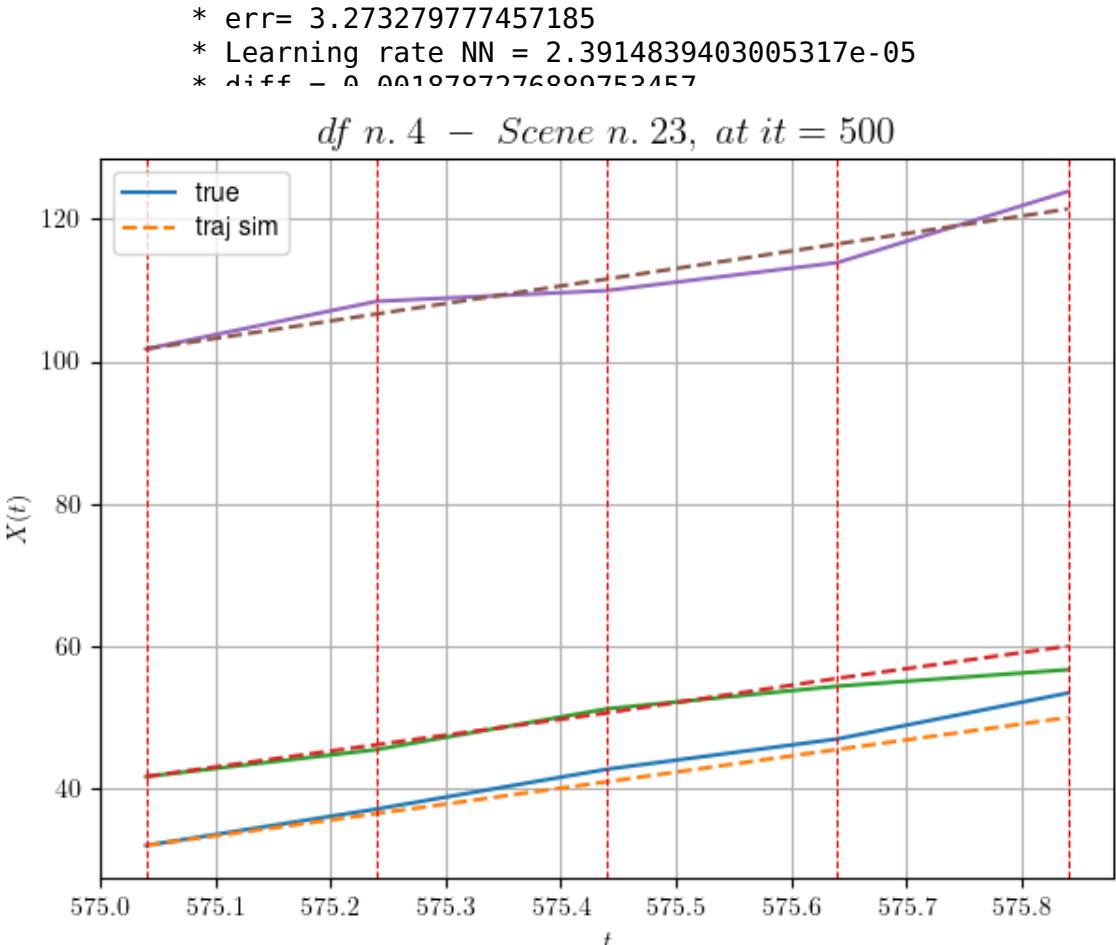
---

- Time interval n.2: [575.44, 575.64]  
 \* y\_true: [21.25083564 15.85084753]  
 \* v\_ann: [22.660568237304688, 24.291149139404297, 2  
 4.545621507402043]

---

- Time interval n.3: [575.64, 575.84]  
 \* y\_true: [32.20158375 11.5506833 ]  
 \* v\_ann: [22.370527267456055, 22.560523986816406, 2

4.545621507402043]



For scene 23/30

```

* use LR_NN=5e-05 with err=44.15496701921597 at it=19
* v0_scn_mean = 24.87288397206804
* MAE = 3.273279777457185

```

---



---

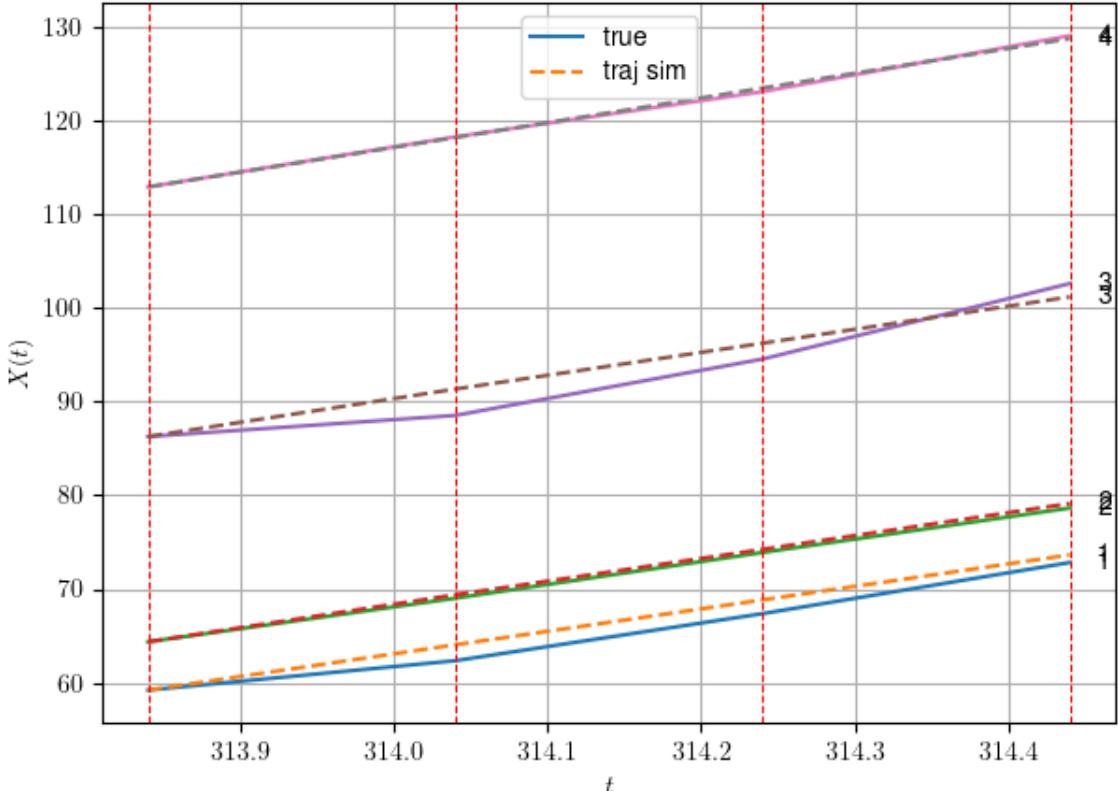
- Time interval n.0: [313.84, 314.04]
  - \* y\_true: [15.70108851 23.28855659 11.30165534]
  - \* v\_ann: [24.212141036987305, 25.121397018432617, 2  
5.38287925720215, 26.41552952480382]
- Time interval n.1: [314.04, 314.24]
  - \* y\_true: [25.15198981 24.43240479 30.10483754]
  - \* v\_ann: [23.974594116210938, 24.26814079284668, 2  
4.496376037597656, 26.41552952480382]
- Time interval n.2: [314.24, 314.44]
  - \* y\_true: [27.30252596 23.75264682 40.35752125]
  - \* v\_ann: [24.051055908203125, 24.500303268432617, 2  
4.747129440307617, 26.41552952480382]

```

* err= 1.2057996959190698
* Learning rate NN = 2.952449540316593e-05
* diff = 0.0005792781293492144

```

*df n. 4 – Scene n. 24, at it = 500*



For scene 24/30

```

* use LR_NN=5e-05 with err=8.57532358434582 at it=19
* v0_scn_mean = 26.70227549847893
* MAE = 1.1557468073653565

```

---



---

- Time interval n.0: [460.84, 461.04]  
\* y\_true: [19.8211655 14.23151831 20.23251805]  
\* v\_ann: [19.180587768554688, 18.886415481567383, 1  
8.94467544555664, 26.404314529227815]

---



---



---

- Time interval n.1: [461.04, 461.24]  
\* y\_true: [19.5413591 21.77263281 16.55223683]  
\* v\_ann: [18.25067901611328, 18.433555603027344, 1  
8.389387130737305, 26.404314529227815]

---



---

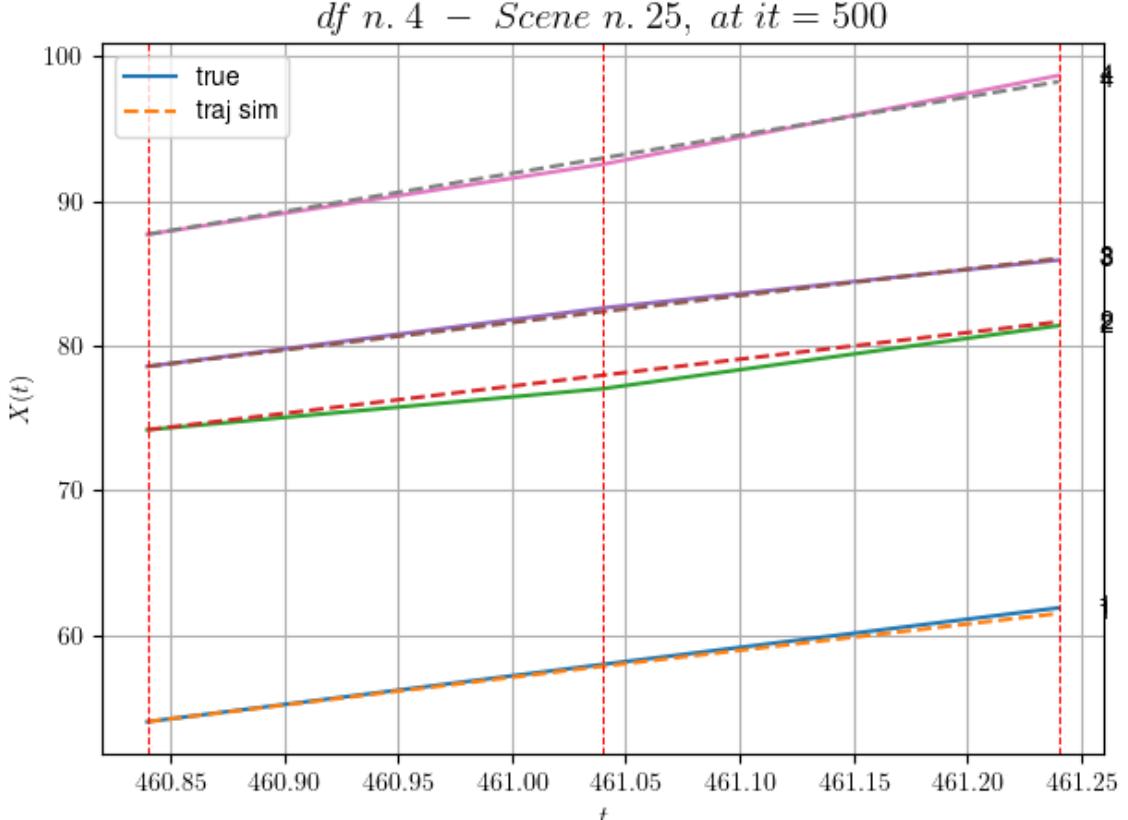


---

```

* err= 0.12916452147238364
* Learning rate NN = 0.0007289999630302191
* diff = 2.5331601805844706e-05

```



For scene 25/30

- \* use LR\_NN=0.001 with err=2.6931972115959013 at it=19
- \* v0\_scn\_mean = 26.691957666053604
- \* MAE = 0.12916452147238364

---



---

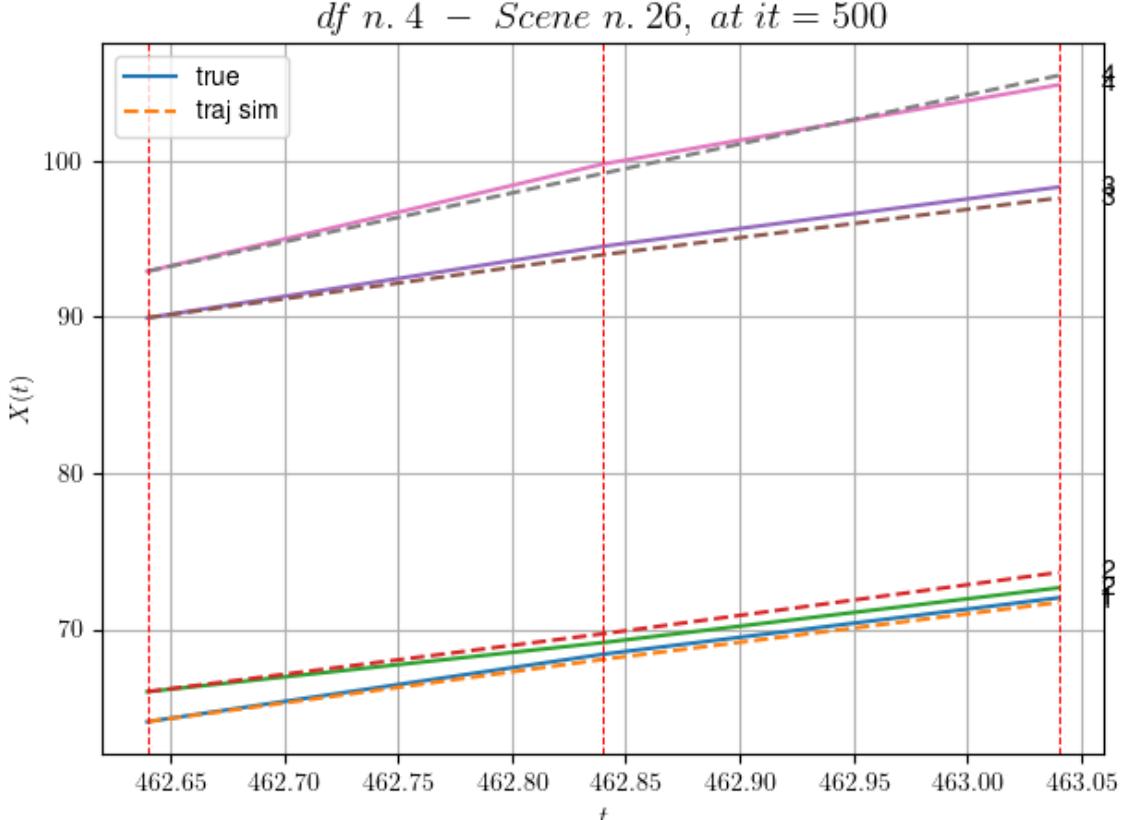
- Time interval n.0: [462.64, 462.84]
- \* y\_true: [21.60177307 15.7113741 22.90372044]
- \* v\_ann: [19.94827651977539, 18.530759811401367, 20.207595825195312, 31.352447205664888]

---

- Time interval n.1: [462.84, 463.04]
- \* y\_true: [18.06167929 17.53172974 18.9633766 ]
- \* v\_ann: [18.2294979095459, 19.6297664642334, 18.151208877563477, 31.352447205664888]

---

- \* err= 0.24897835039886432
- \* Learning rate NN = 0.0007289999630302191
- \* diff = 2.375929772738261e-05



For scene 26/30

- \* use LR\_NN=0.001 with err=7.315431544055847 at it=19
- \* v0\_scn\_mean = 31.244255830253046
- \* MAE = 0.22694625649880368

---



---

- Time interval n.0: [495.24, 495.44]
- \* y\_true: [12.91123632 28.10335872 24.95329593]
- \* v\_ann: [20.71137237548828, 20.734811782836914, 2  
2.72101593017578, 16.437805482235994]

---

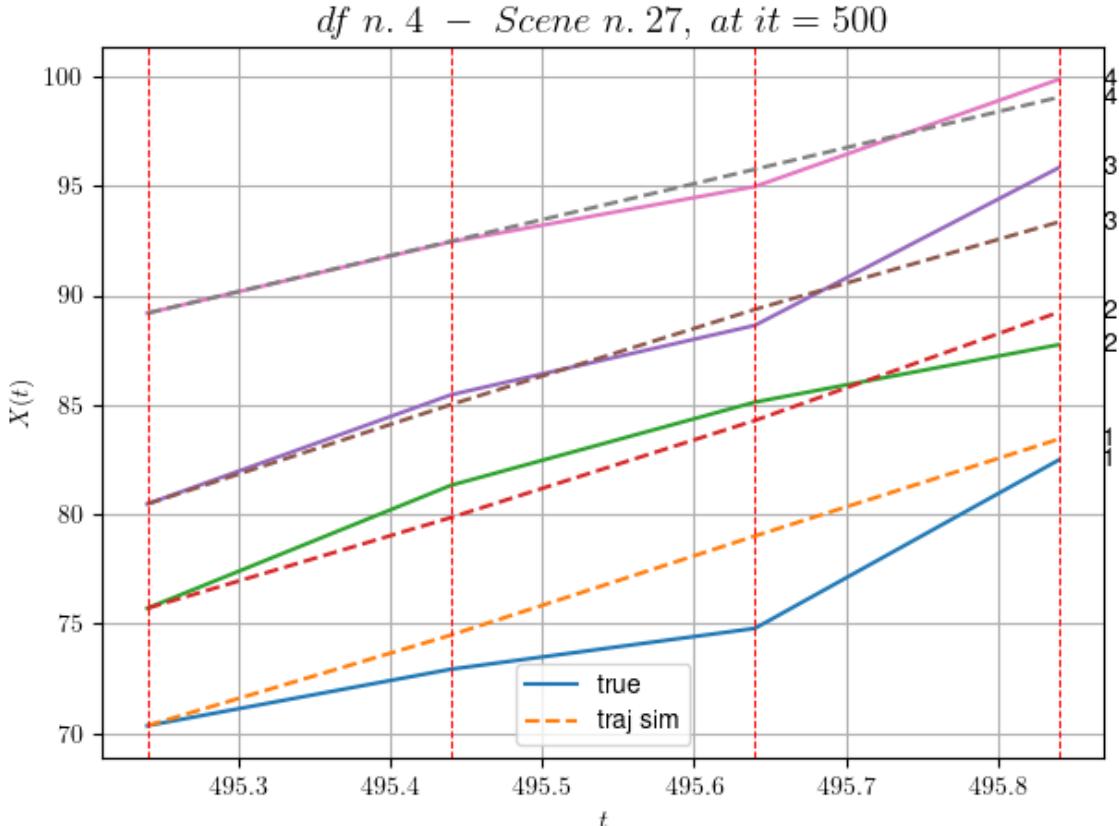
- Time interval n.1: [495.44, 495.64]
- \* y\_true: [ 9.32105302 18.99250639 15.85230368]
- \* v\_ann: [22.624460220336914, 22.178279876708984, 2  
1.73289680480957, 16.437805482235994]

---

- Time interval n.2: [495.64, 495.84]
- \* y\_true: [38.46439916 13.12188353 36.00587838]
- \* v\_ann: [22.138212203979492, 24.72247314453125, 1  
9.962303161621094, 16.437805482235994]

---

- \* err= 2.1502440706360755
- \* Learning rate NN = 0.0002952449722215533
- \* diff = 6.3724388463803905e-06



For scene 27/30

- \* use LR\_NN=0.0005 with err=10.226100918015112 at it=19
  - \* v0\_scn\_mean = 17.522736910483214
  - \* MAE = 2.14319511913435
- 
- 

For scene 28/30

- \* use LR\_NN=0.0001 with err=17.13671578692903 at it=19
  - \* v0\_scn\_mean = 25.80506185807524
  - \* MAE = 0.43926129584146734
- 
- 

- Time interval n.0: [559.04, 559.24]  
 \* y\_true: [23.32160164 21.40183754 23.15354324]  
 \* v\_ann: [18.75624656677246, 18.872385025024414, 1  
 8.7575626373291, 21.82083405246842]

---

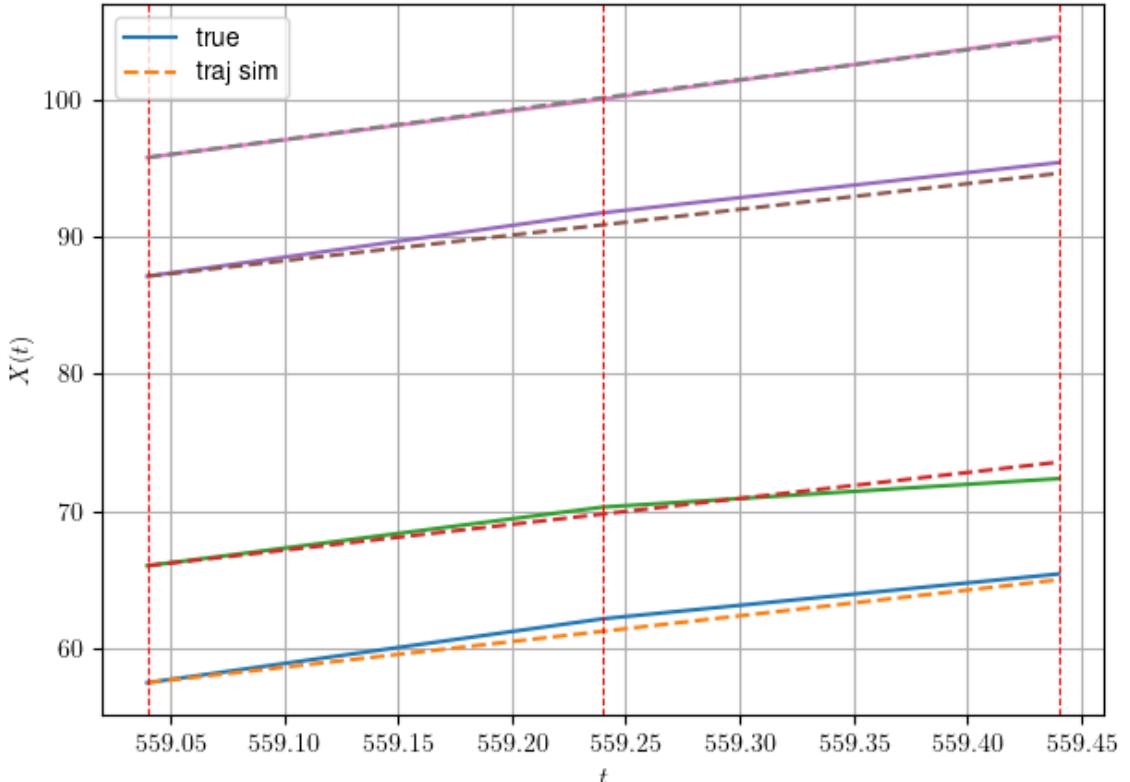
- Time interval n.1: [559.24, 559.44]  
 \* y\_true: [16.34126249 10.38103794 18.30306556]  
 \* v\_ann: [18.77423667907715, 18.919347763061523, 1  
 8.775981903076172, 21.82083405246842]

---

\* err= 0.3438116842521246

\* Learning rate NN = 7.289998848136747e-06  
 \* diff = 1.0007042052720277e-05

df n. 4 – Scene n. 29, at it = 500



For scene 29/30

\* use LR\_NN=1e-05 with err=5.535688571833875 at it=19  
 \* v0\_scn\_mean = 22.475140712184057  
 \* MAE = 0.3438116842521246

---



---

For df=4 with 30 scenes, time taken: 485.96

---



---



---



---



---



---

In df n.5/10 we have 14 scenes

---



---



---



---



---

- Time interval n.0: [23.72, 23.92]  
 \* y\_true: [21.79018354 24.07032953]  
 \* v\_ann: [25.917177200317383, 21.880752563476562, 2  
 4.53480373451939]

---



---



---



---

- Time interval n.1: [23.92, 24.12]  
 \* y\_true: [25.91031727 27.52052784]  
 \* v\_ann: [23.1496639251709, 21.816532135009766, 24.  
 53480373451939]

---



---

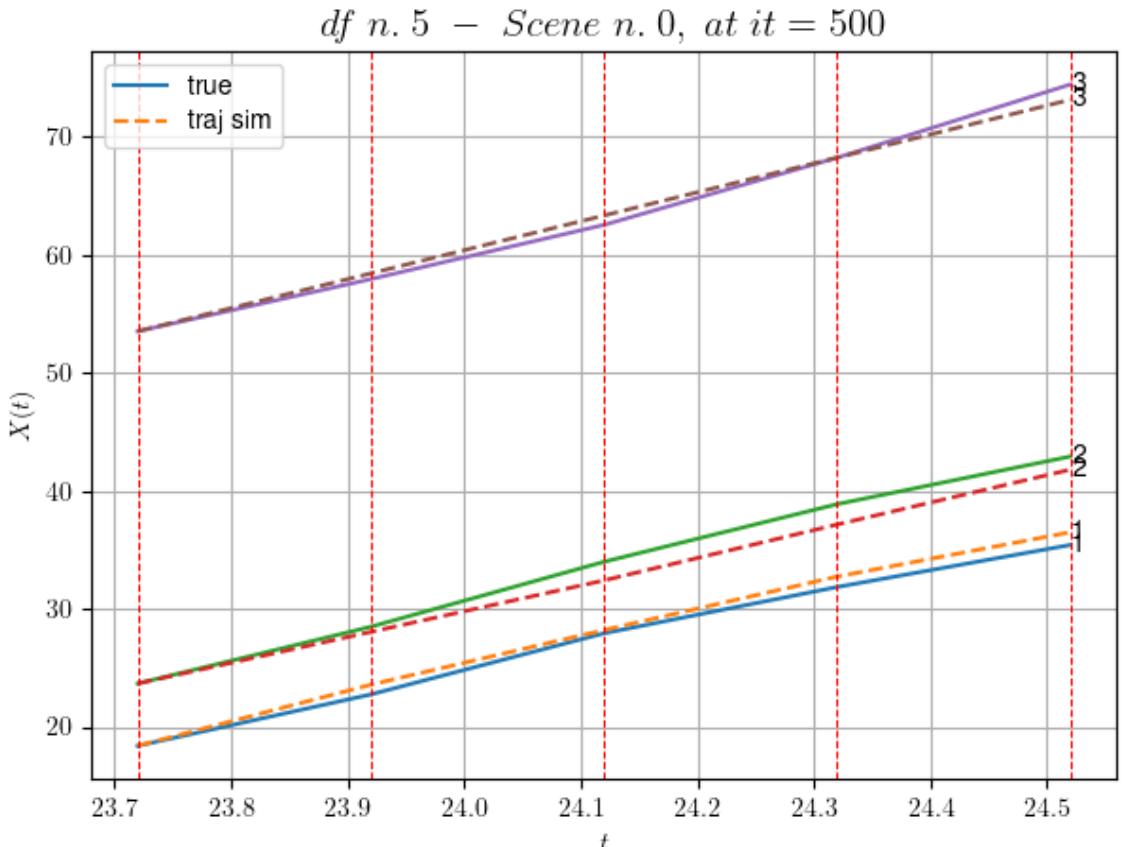
- Time interval n.2: [24.12, 24.32]  
 \* y\_true: [19.61033273 24.42062846]  
 \* v\_ann: [22.6627140045166, 23.692827224731445, 24.  
 53480373451939]

---

- Time interval n.3: [24.32, 24.52]  
 \* y\_true: [17.8304062 20.21066815]  
 \* v\_ann: [18.80282211303711, 23.259016036987305, 2  
 4.53480373451939]

---

\* err= 0.8097216350520265  
 \* Learning rate NN = 0.000239148415857926  
 \* diff = 1.2933587358876508e-05



For scene 0/14

\* use LR\_NN=0.0005 with err=16.087232223281614 at it=19  
 \* v0\_scn\_mean = 24.862715265072737  
 \* MAE = 0.5791045639553812

---

- Time interval n.0: [28.12, 28.32]  
 \* y\_true: [22.39001619 28.9506918 ]  
 \* v\_ann: [26.82656478881836, 25.231380462646484, 2  
 5.37938379248385]

---

```

- Time interval n.1: [28.32, 28.52]
 * y_true: [21.14004613 26.65085251]
 * v_ann: [27.221097946166992, 24.97747230529785, 2
5.37938379248385]

```

---

```

- Time interval n.2: [28.52, 28.72]
 * y_true: [24.23010561 33.45140848]
 * v_ann: [27.325767517089844, 24.488874435424805, 2
5.37938379248385]

```

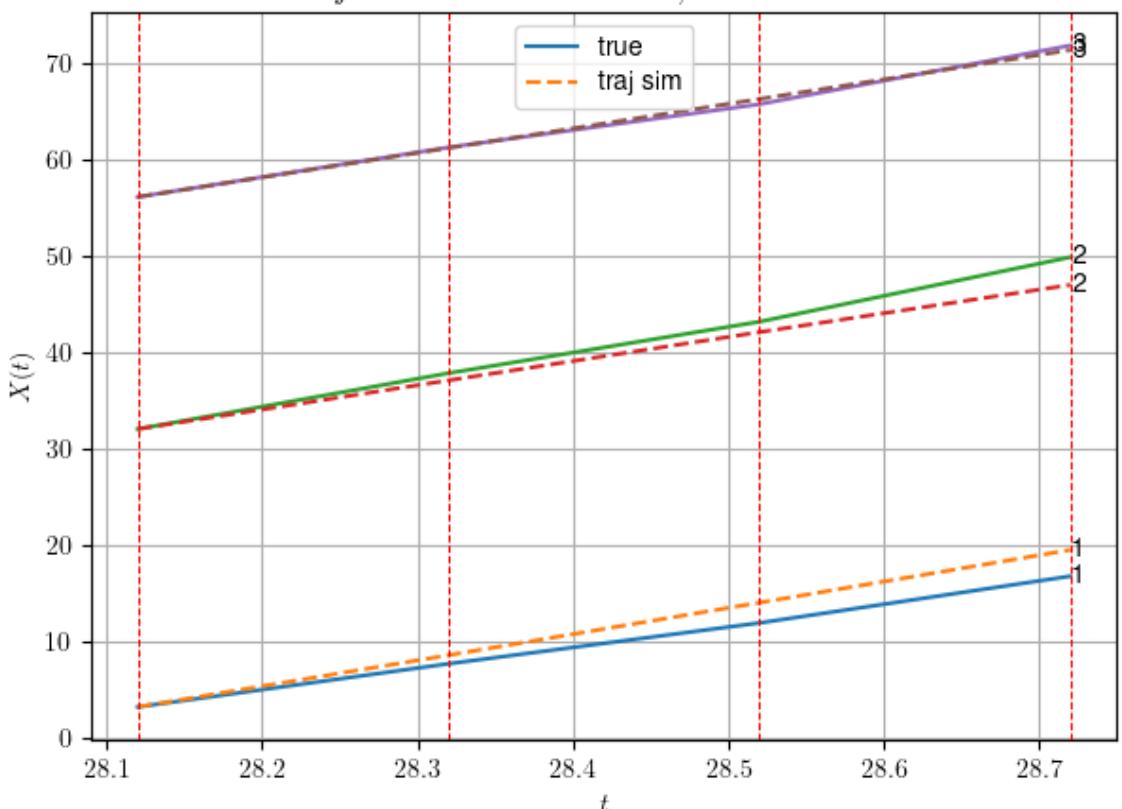
---

```

* err= 1.9258425418092786
* Learning rate NN = 2.952449540316593e-05
* diff = 0.002596770613597199

```

*df n. 5 – Scene n. 1, at it = 500*



For scene 1/14

```

* use LR_NN=5e-05 with err=4.851933199115061 at it=19
* v0_scn_mean = 25.65662055747913
* MAE = 1.9258425418092786

```

---



---

```

- Time interval n.0: [146.52, 146.72]
 * y_true: [32.70054419 14.69037585]
 * v_ann: [23.692089080810547, 24.200212478637695, 3
3.24718527812296]

```

---



---

```

- Time interval n.1: [146.72, 146.92]
 * y_true: [35.65090038 15.01046474]
 * v_ann: [25.32640266418457, 24.288448333740234, 3
 3.24718527812296]
```

---

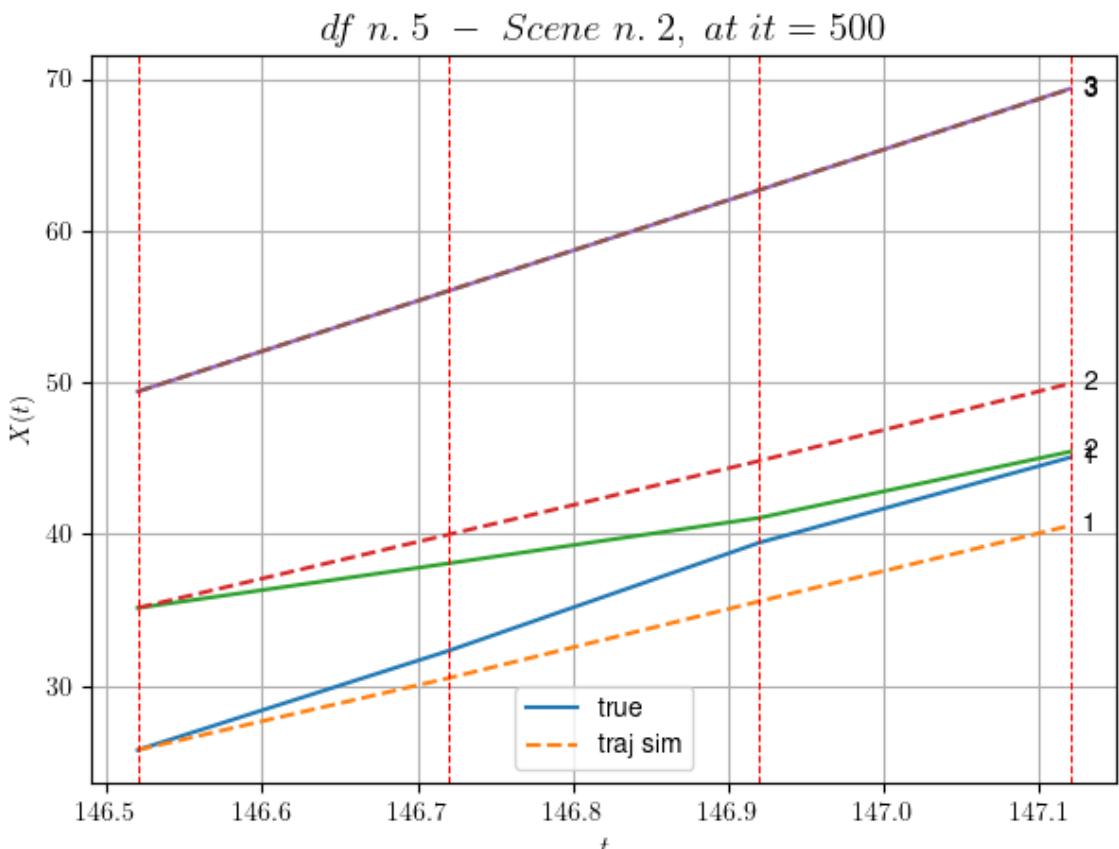
```

- Time interval n.2: [146.92, 147.12]
 * y_true: [28.09191726 21.83491468]
 * v_ann: [24.960283279418945, 25.495502471923828, 3
 3.24718527812296]
```

---

```

* err= 6.356524114286448
* Learning rate NN = 0.0005904899444431067
* diff = 0.000724091225326795
```



For scene 2/14

```

* use LR_NN=0.001 with err=25.63700794279123 at it=19
* v0_scn_mean = 33.05235430722725
* MAE = 5.640939009350046
```

---



---

```

- Time interval n.0: [151.12, 151.32]
 * y_true: [20.88055844 29.97204611]
 * v_ann: [28.329591751098633, 26.913427352905273, 3
 1.51613873795752]
```

---



---

```

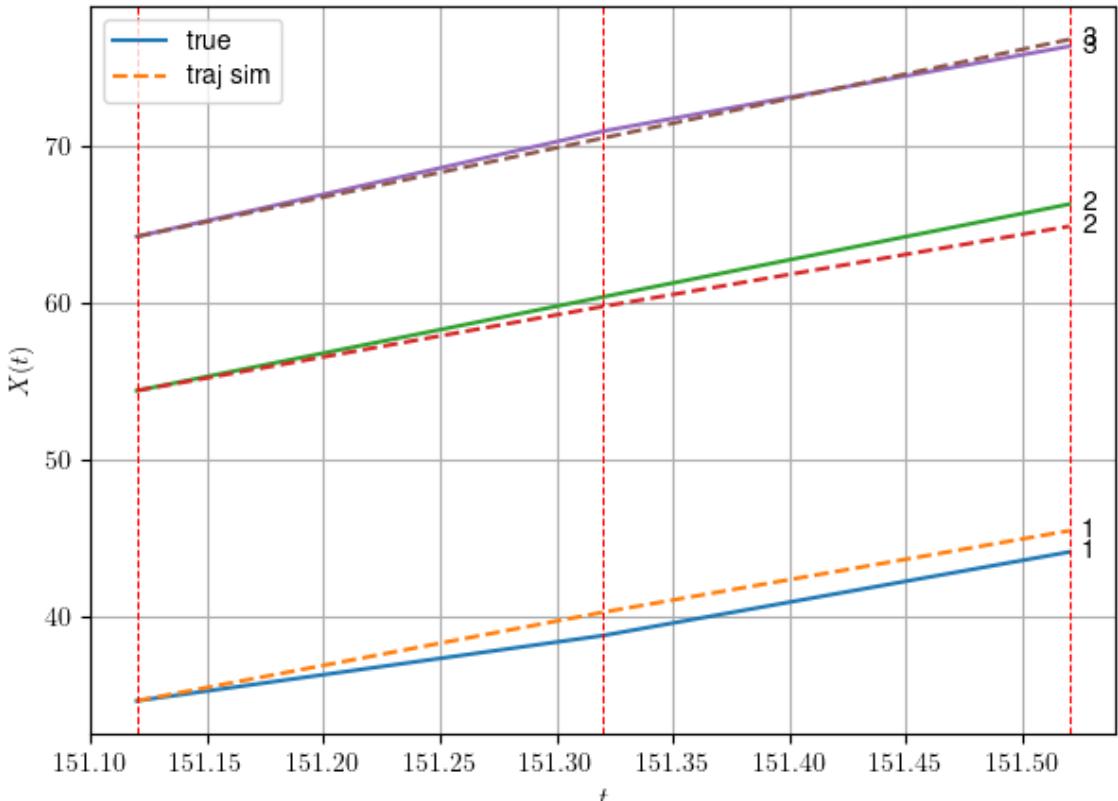
- Time interval n.1: [151.32, 151.52]
 * y_true: [26.72089495 29.6522691]
 * v_ann: [26.063249588012695, 25.63075828552246, 3
 1.51613873795752]
```

---

```

* err= 0.7584781088672222
* Learning rate NN = 0.00036449998151510954
* diff = 0.00027183242369632765
```

df n. 5 – Scene n. 3, at it = 500



For scene 3/14

```

* use LR_NN=0.0005 with err=5.217195503097768 at it=19
* v0_scn_mean = 31.425170481751753
* MAE = 0.7584781088672222
```

---



---

```

- Time interval n.0: [177.32, 177.52]
 * y_true: [23.78017477 21.57540501]
 * v_ann: [24.38089942932129, 25.520341873168945, 2
 6.180378384786284]
```

---

```

- Time interval n.1: [177.52, 177.72]
 * y_true: [28.99044664 21.37044807]
 * v_ann: [23.67272186279297, 24.80583953857422, 26.
 180378384786284]
```

---



---

```

- Time interval n.2: [177.72, 177.92]
 * y_true: [30.9005134 20.55062028]
 * v_ann: [25.535486221313477, 25.65567398071289, 2
6.180378384786284]

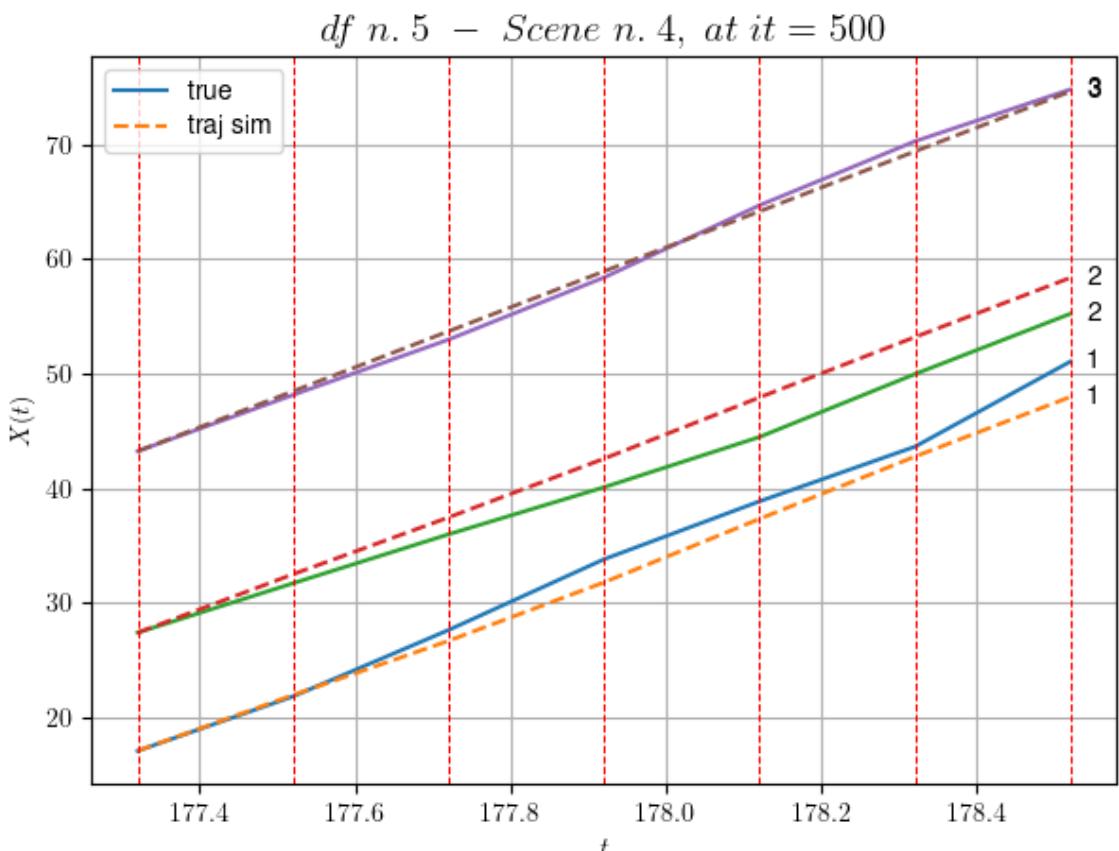
- Time interval n.3: [177.92, 178.12]
 * y_true: [25.28069635 21.93575232]
 * v_ann: [27.704509735107422, 26.728960037231445, 2
6.180378384786284]

- Time interval n.4: [178.12, 178.32]
 * y_true: [23.87574209 27.4762805]
 * v_ann: [27.218542098999023, 26.35577392578125, 2
6.180378384786284]

- Time interval n.5: [178.32, 178.52]
 * y_true: [37.1766426 26.34131635]
 * v_ann: [26.05326271057129, 25.9105167388916, 26.1
80378384786284]

* err= 2.9007448084181657
* Learning rate NN = 0.00031381050939671695
* diff = 0.0012160176121978061

```



For scene 4/14

\* use LR\_NN=0.001 with err=33.47308464702763 at it=19

\* v0\_scn\_mean = 26.409555510206484

\* MAE = 2.9007448084181657

---



---

- Time interval n.0: [266.92, 267.12]

\* y\_true: [18.75024149 31.34179995]

\* v\_ann: [29.733842849731445, 29.736751556396484, 2  
9.08570162592625]

---



---

- Time interval n.1: [267.12, 267.32]

\* y\_true: [26.80047756 43.40316595]

\* v\_ann: [31.233631134033203, 29.645851135253906, 2  
9.08570162592625]

---



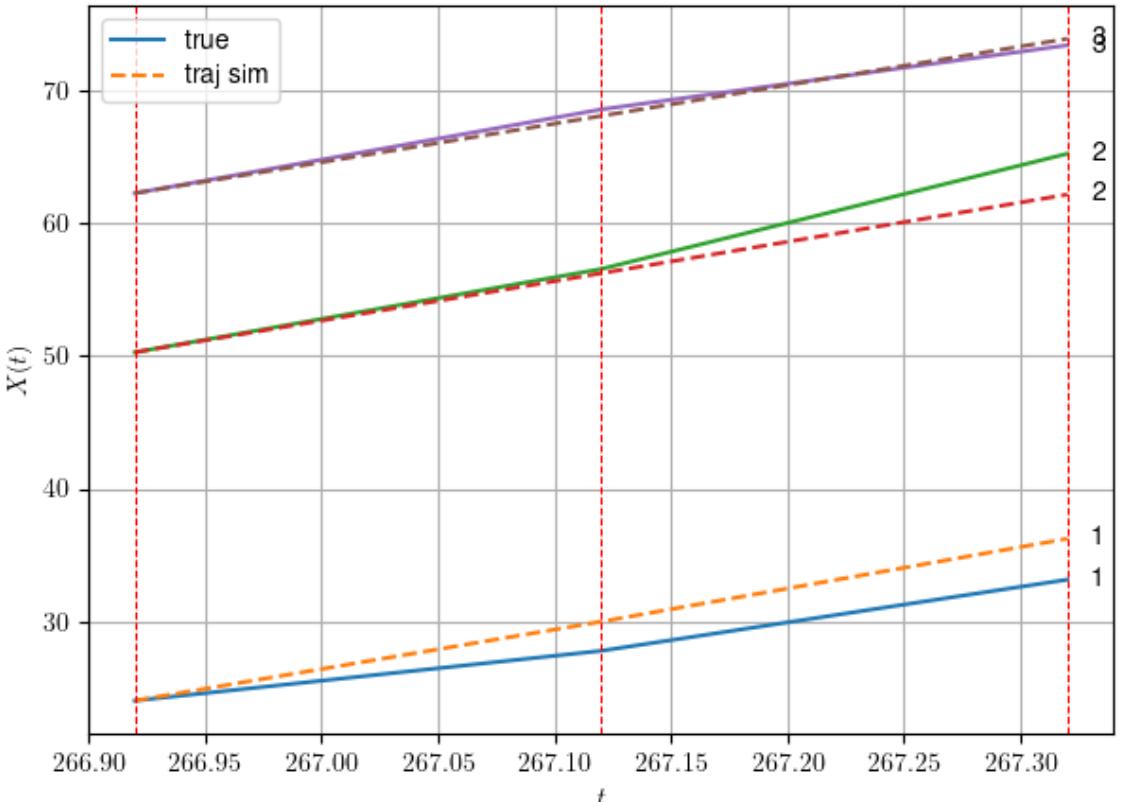
---

\* err= 2.70694745922149

\* Learning rate NN = 7.289998848136747e-06

\* diff = 0.0061220581000071226

*df n. 5 – Scene n. 5, at it = 500*



For scene 5/14

\* use LR\_NN=1e-05 with err=12.682999824045696 at it=19

\* v0\_scn\_mean = 29.14055948732099

\* MAE = 2.70694745922149

```

- Time interval n.0: [316.92, 317.12]
 * y_true: [22.23560763 28.12633872]
 * v_ann: [25.55179214477539, 25.482959747314453, 2
 2.34204586121076]

```

---

```

- Time interval n.1: [317.12, 317.32]
 * y_true: [22.67586827 27.74684297]
 * v_ann: [24.885116577148438, 24.87150764465332, 2
 2.34204586121076]

```

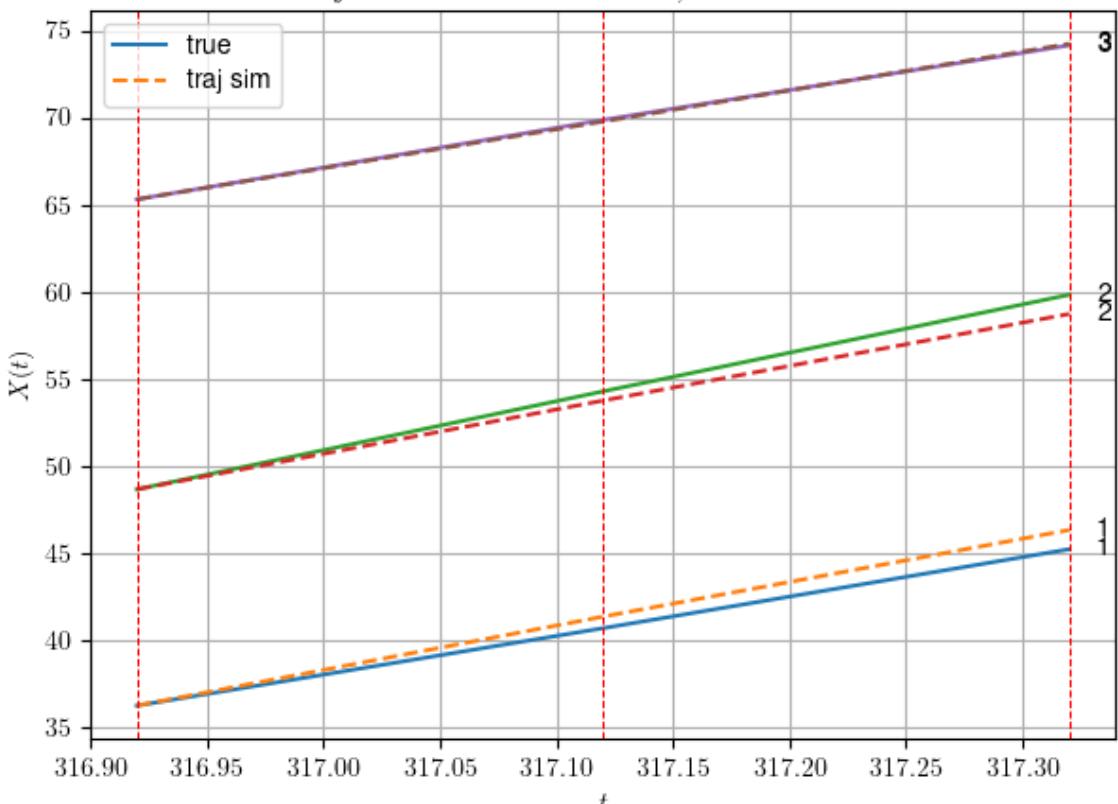
---

```

* err= 0.35294641556811696
* Learning rate NN = 0.00036449998151510954
* diff = 1 07997620550520520 0E

```

*df n. 5 – Scene n. 6, at it = 500*



For scene 6/14

```

* use LR_NN=0.0005 with err=1.344870857734816 at it=19
* v0_scn_mean = 22.80152276571268
* MAE = 0.352558372265051

```

---



---

```

- Time interval n.0: [319.52, 319.72]
 * y_true: [27.72084838 29.03197957]
 * v_ann: [28.071945190429688, 28.194747924804688, 2
 7.222459940407884]

```

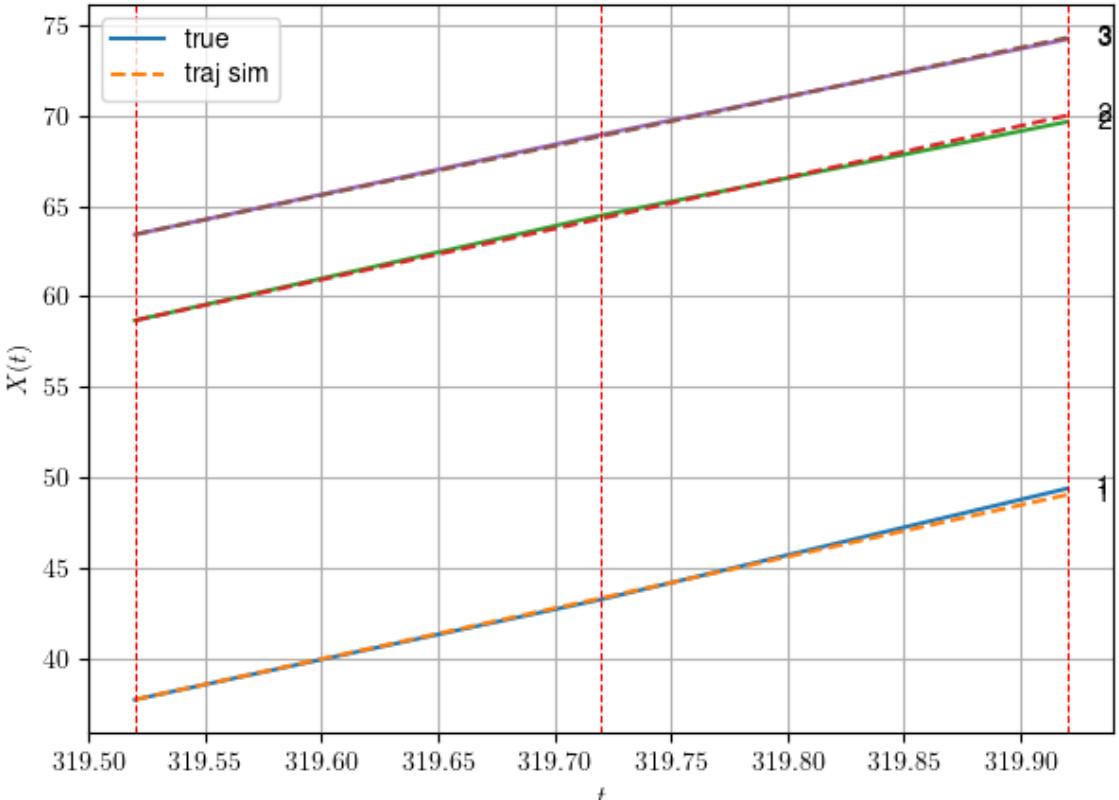
---

```
- Time interval n.1: [319.72, 319.92]
* y_true: [30.70139257 25.95234102]
* v_ann: [28.62664794921875, 28.51272964477539, 27.
```

```
222459940407884]
```

```
* err= 0.031707878594207234
* Learning rate NN = 0.0007289999630302191
* diff = 1 2487058176640723e-06
```

*df n. 5 – Scene n. 7, at it = 500*



For scene 7/14

```
* use LR_NN=0.001 with err=8.54801393802555 at it=19
* v0_scn_mean = 27.38911221927761
* MAE = 0.031707878594207234
```

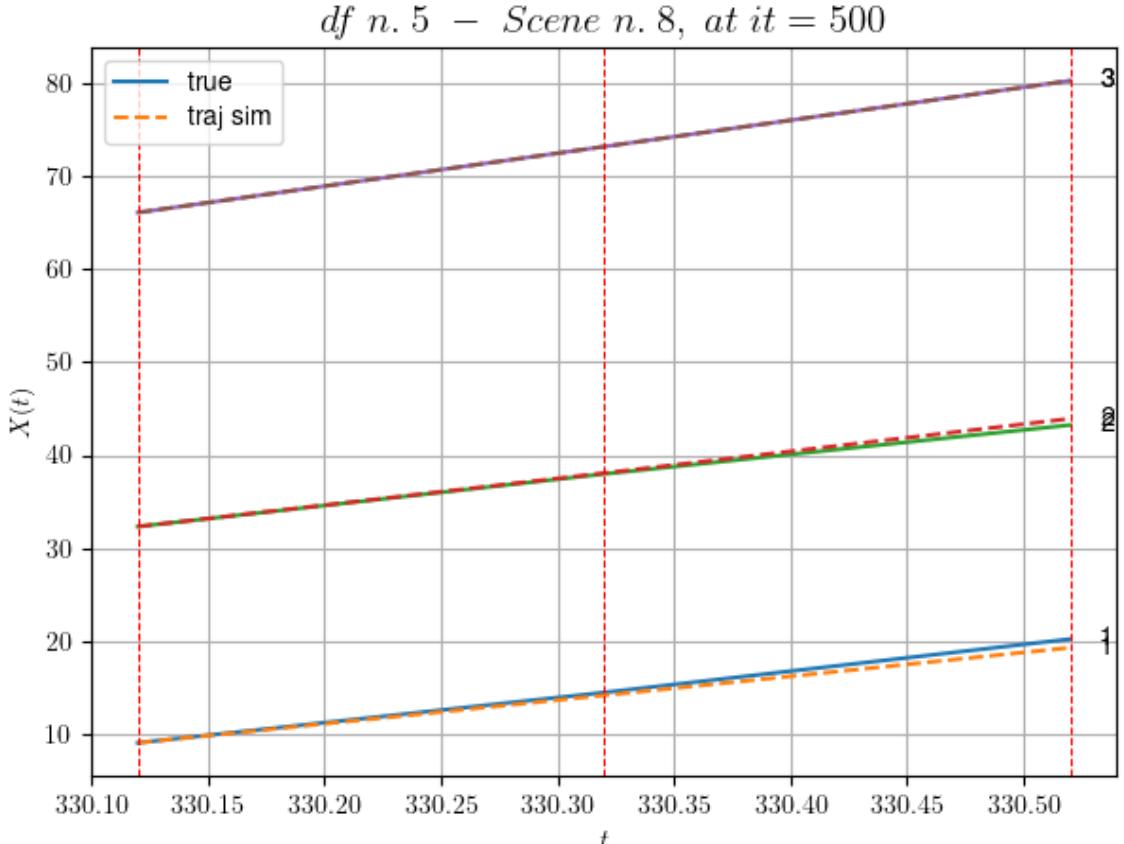
```
=====
=====
- Time interval n.0: [330.12, 330.32]
* y_true: [27.05007287 28.28069592]
* v_ann: [25.514497756958008, 28.746912002563477, 3
5.478683267492436]
```

```
=====
=====
- Time interval n.1: [330.32, 330.52]
* y_true: [28.75016695 26.32589786]
* v_ann: [25.661136627197266, 29.288837432861328, 3
5.478683267492436]
```

```

* err= 0.15876192131767788
* Learning rate NN = 7.289998757187277e-05
* diff = 0.0036036248833207496

```



For scene 8/14

```

* use LR_NN=0.0001 with err=1.9480877669414547 at it=19
* v0_scn_mean = 35.149962517422956
* MAE = 0.15876192131767788

```

- 
- 
- Time interval n.0: [338.52, 338.72]
    - \* y\_true: [22.83038671 20.44060351]
    - \* v\_ann: [23.836957931518555, 23.809852600097656, 2
    - 7.85392842609592]

---

  - Time interval n.1: [338.72, 338.92]
    - \* y\_true: [25.85061095 23.65082523]
    - \* v\_ann: [23.496746063232422, 23.38805389404297, 2
    - 7.85392842609592]

---

  - Time interval n.2: [338.92, 339.12]
    - \* y\_true: [28.6708889 22.23087004]
    - \* v\_ann: [23.73650360107422, 23.668930053710938, 2
    - 7.85392842609592]
-

```

- Time interval n.3: [339.12, 339.32]

* y_true: [26.0610325 19.88098798]

* v_ann: [24.054004669189453, 24.132034301757812, 2

7.85392842609592]

```

```

- Time interval n.4: [339.32, 339.52]

* y_true: [27.9415295 20.92126982]

* v_ann: [23.83875846862793, 24.49421501159668, 27.

85392842609592]

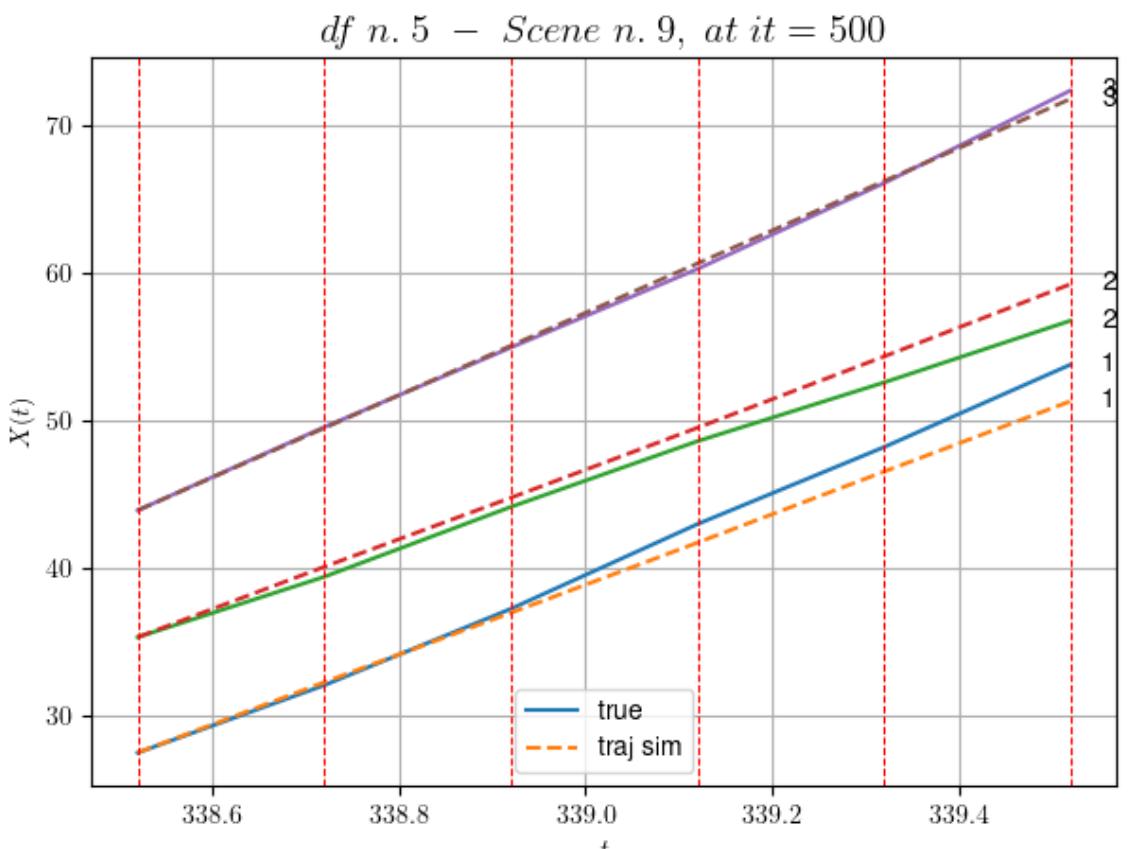
```

```

* err= 1.2200722040634089

* Learning rate NN = 0.0001937102060765028

* diff = 0.0005180640378346091
```



```

For scene 9/14
* use LR_NN=0.0005 with err=11.199054093173133 at it=19
* v0_scn_mean = 27.98269262417609
* MAE = 0.5090407255396395
=====
```

```

- Time interval n.0: [435.72, 435.92]

* y_true: [16.6003121 32.10080247]

* v_ann: [24.140865325927734, 20.10610580444336, 2

3.002269478052153]

```

```

 - Time interval n.1: [435.92, 436.12]

 * y_true: [17.55040576 22.4007406]

 * v_ann: [22.031063079833984, 20.058147430419922, 2

3.002269478052153]

 - Time interval n.2: [436.12, 436.32]

 * y_true: [16.72550921 26.8011085]

 * v_ann: [20.51081657409668, 19.943710327148438, 2

3.002269478052153]

 - Time interval n.3: [436.32, 436.52]

 * y_true: [16.72550921 28.00144696]

 * v_ann: [18.97787857055664, 20.673063278198242, 2

3.002269478052153]

 - Time interval n.4: [436.52, 436.72]

 * y_true: [20.80081615 7.85046318]

 * v_ann: [19.081485748291016, 20.72024154663086, 2

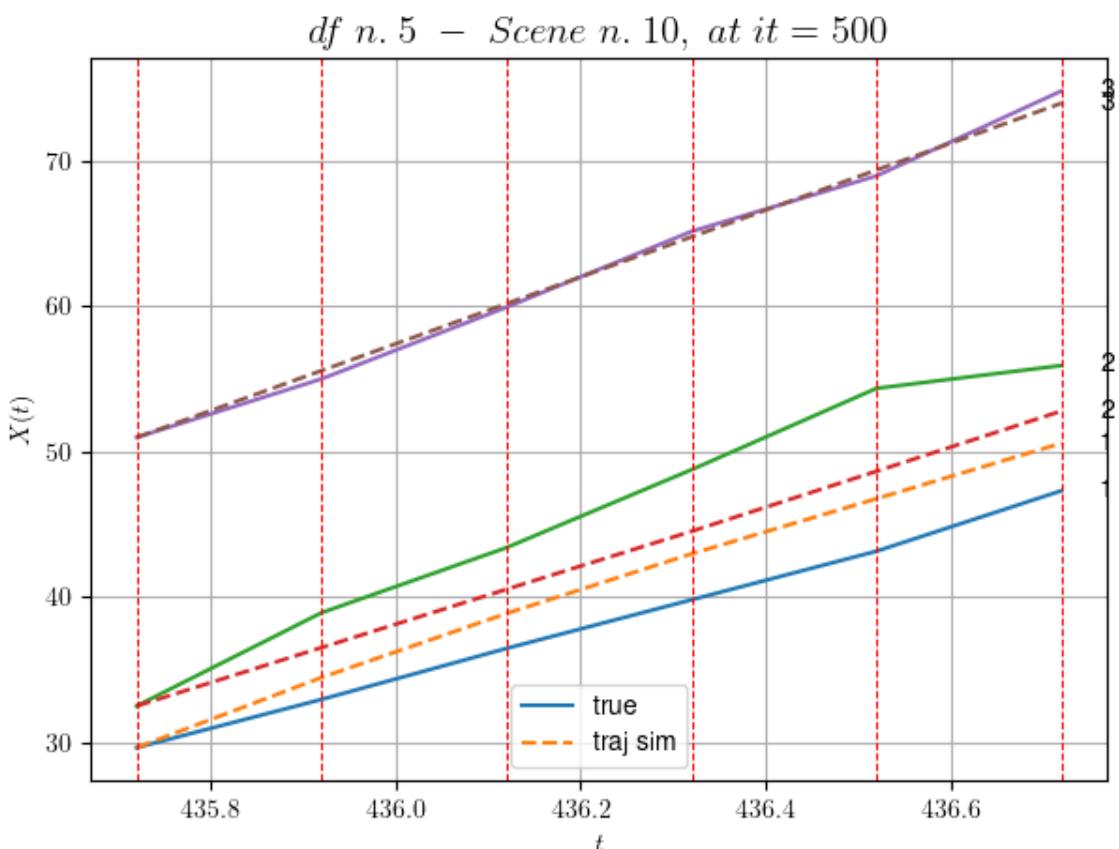
3.002269478052153]

 * err= 6.525582137728748

 * Learning rate NN = 0.0003874204121530056

 * diff = 0.004551022139978045

```



For scene 10/14

\* use LR\_NN=0.001 with err=13.020155880325499 at it=19

\* v0\_scn\_mean = 23.42213299518631

\* MAE = 6.525582137728748

---



---

- Time interval n.0: [565.12, 565.32]

\* y\_true: [12.82514463 16.9507403 ]

\* v\_ann: [16.537324905395508, 14.781834602355957, 2  
0.750313634269713]

---



---



---

- Time interval n.1: [565.32, 565.52]

\* y\_true: [14.2510345 19.19106683]

\* v\_ann: [16.744218826293945, 14.953173637390137, 2  
0.750313634269713]

---



---



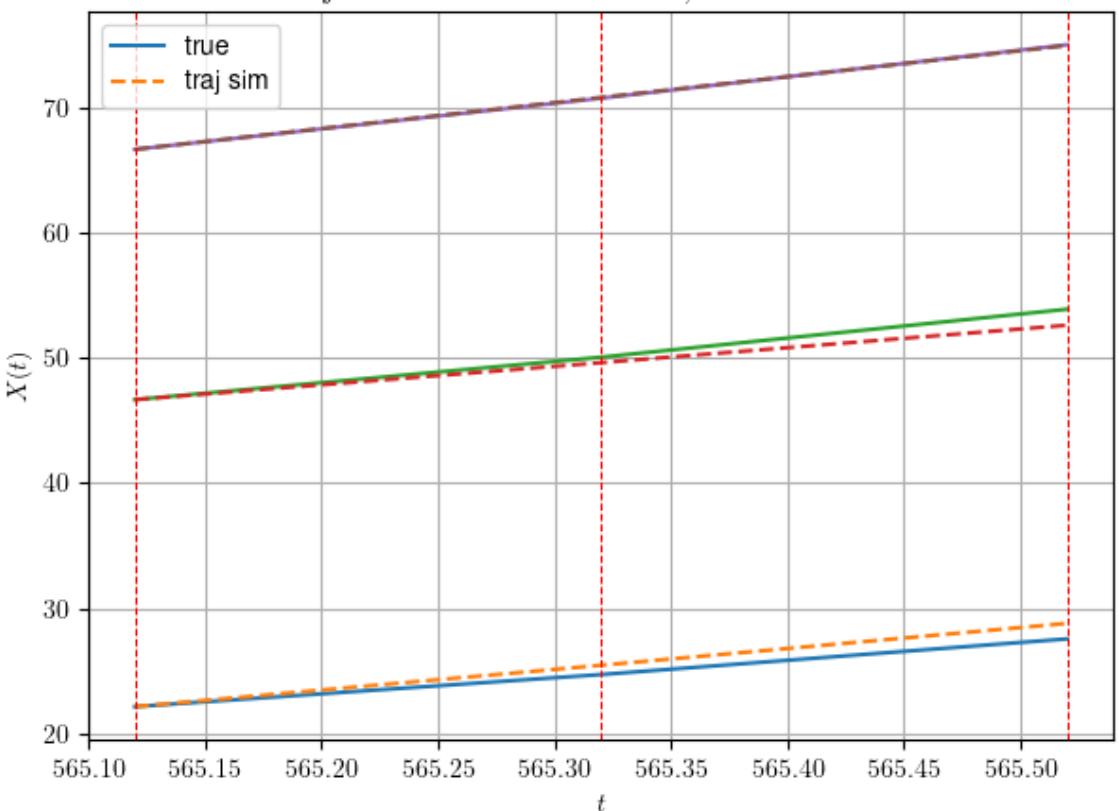
---

\* err= 0.43659785997020023

\* Learning rate NN = 7.289998757187277e-05

\* diff = 0.00016860305226323868

*df n. 5 – Scene n. 11, at it = 500*



For scene 11/14

\* use LR\_NN=0.0001 with err=2.500016765704738 at it=19

\* v0\_scn\_mean = 21.30529440092342

\* MAE = 0.43659785997020023

---



---

For scene 12/14

- \* use LR\_NN=5e-05 with err=3.627533033825135 at it=19
- \* v0\_scn\_mean = 21.653099316429902
- \* MAE = 0.09156089253506128

---



---

- Time interval n.0: [178.12, 178.32]

- \* y\_true: [23.59034379 23.87574209 27.4762805 ]
- \* v\_ann: [26.74294090270996, 26.688024520874023, 27.498580932617188, 26.192362108395336]

---



---

- Time interval n.1: [178.32, 178.52]

- \* y\_true: [17.35034213 37.1766426 26.34131635]
- \* v\_ann: [24.46786880493164, 25.25667953491211, 24.844932556152344, 26.192362108395336]

---



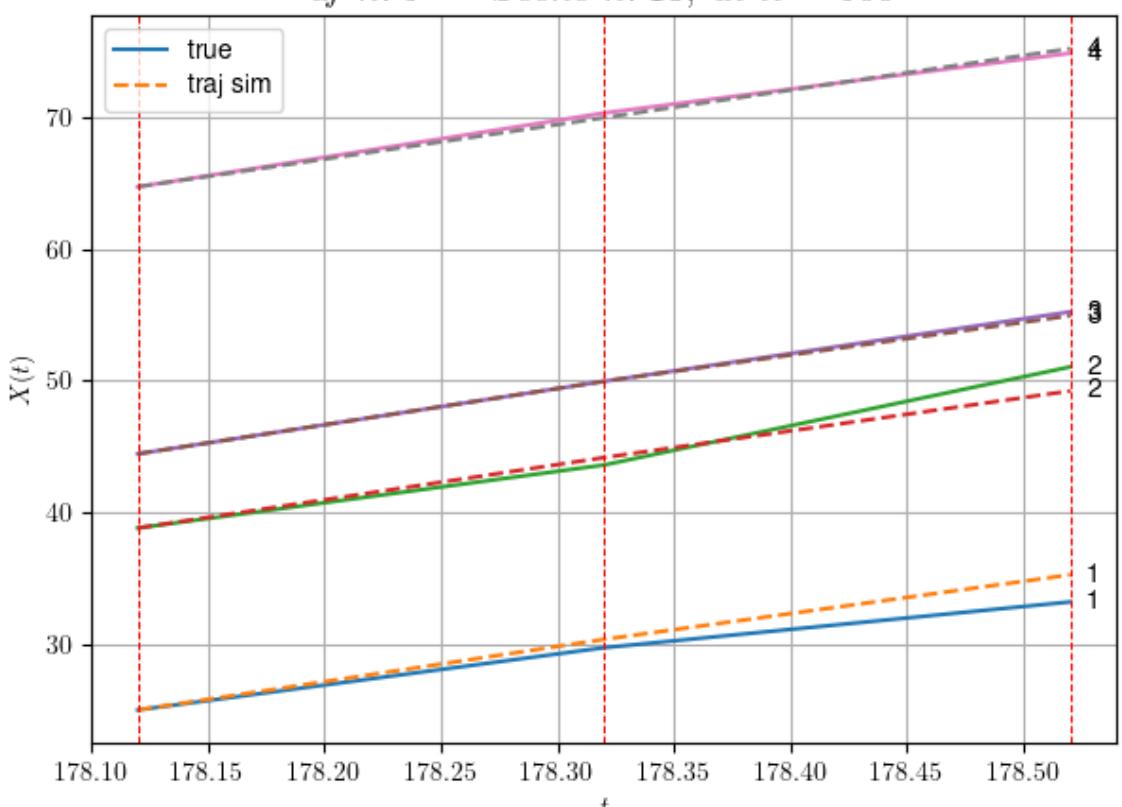
---

\* err= 0.7157079827172368

\* Learning rate NN = 0.0007289999630302191

\* diff = 0.00011420054646382738

*df n. 5 – Scene n. 13, at it = 500*



For scene 13/14

- \* use LR\_NN=0.001 with err=6.6556890252437295 at it=19
- \* v0\_scn\_mean = 26.49696074916671
- \* MAE = 0.4900511725543715

---



---

```
=====
For df=5 with 14 scenes, time taken: 173.88
=====

=====

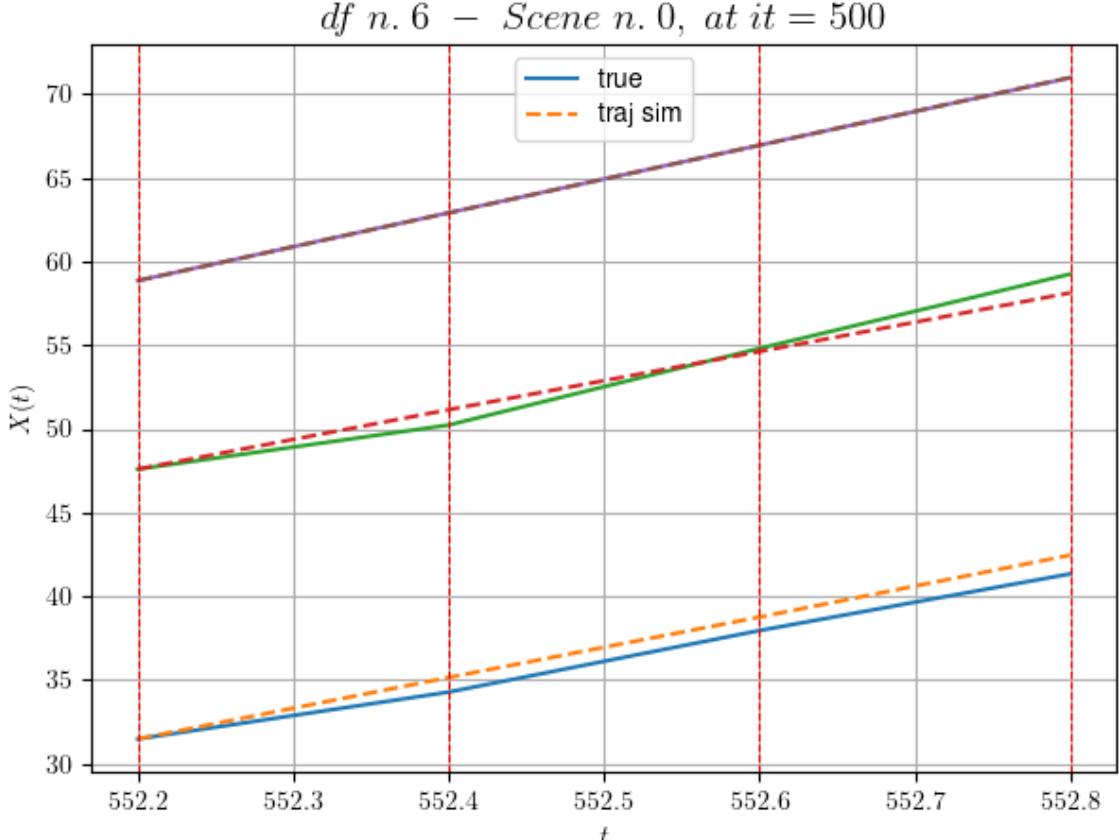
In df n.6/10 we have 3 scenes

- Time interval n.0: [552.20, 552.40]
 * y_true: [14.01030513 13.18063102]
 * v_ann: [18.378114700317383, 17.76280403137207, 2
0.23320503955198]

- Time interval n.1: [552.40, 552.60]
 * y_true: [18.39048446 22.9012939]
 * v_ann: [18.041091918945312, 17.376937866210938, 2
0.23320503955198]

- Time interval n.2: [552.60, 552.80]
 * y_true: [16.95052919 22.22132939]
 * v_ann: [18.528274536132812, 17.55910873413086, 2
0.23320503955198]

* err= 0.39946738666475884
* Learning rate NN = 5.904899080633186e-05
* diff = 0.0011342486543071129
```



For scene 0/3

- \* use LR\_NN=0.0001 with err=5.8795448359879225 at it=19
- \* v0\_scn\_mean = 20.819212298671278
- \* MAE = 0.3003657652452328

---



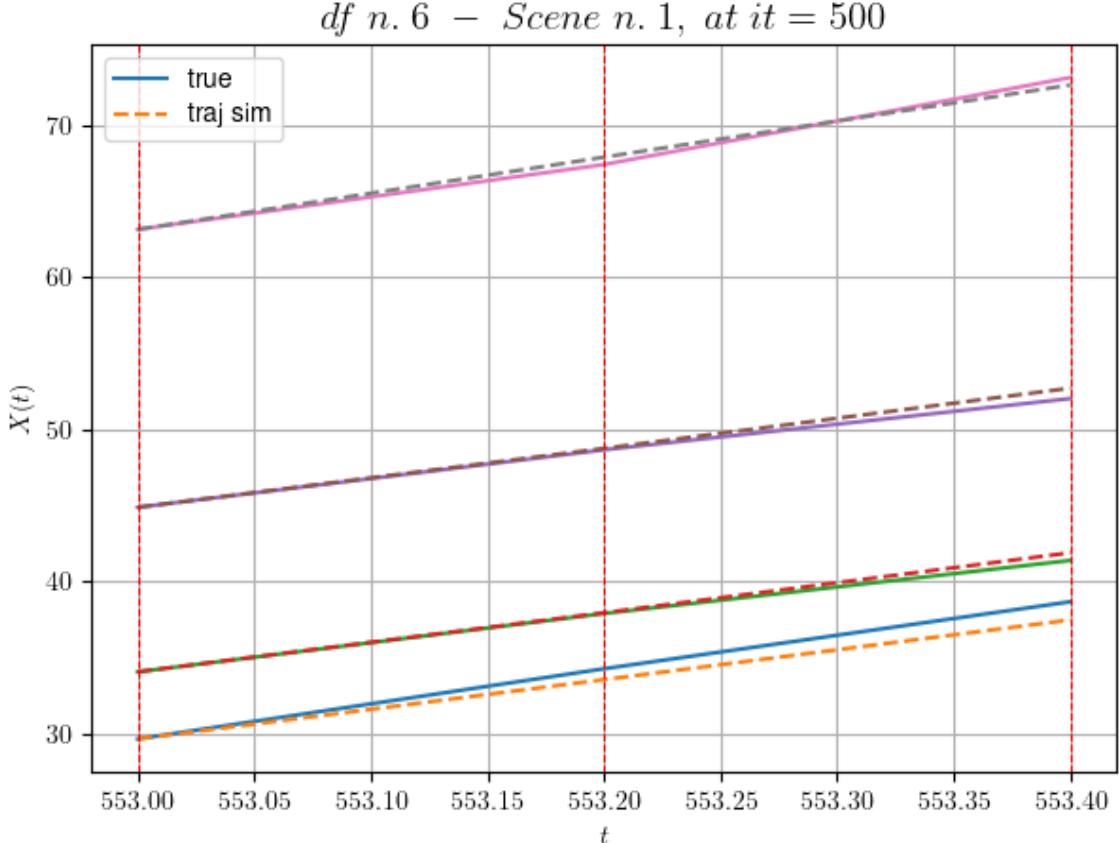
---

- Time interval n.0: [553.00, 553.20]
  - \* y\_true: [23.0804555 19.17546127 18.9008181 ]
  - \* v\_ann: [19.509307861328125, 19.41799545288086, 1 9.373035430908203, 23.748812608935015]
  
- Time interval n.1: [553.20, 553.40]
  - \* y\_true: [22.02058024 17.45053567 16.85079909]
  - \* v\_ann: [19.62229347229004, 19.730165481567383, 1 9.80609703063965, 23.748812608935015]
  
- \* err= 0.2618639303974644
- \* Learning rate NN = 0.00036449998151510954
- \* diff = 5.361045993301783e-05

---



---



For scene 1/3

- \* use LR\_NN=0.0005 with err=5.741371146335466 at it=19
- \* v0\_scn\_mean = 24.248887258031203
- \* MAE = 0.23753346064099065

---



---

- Time interval n.0: [554.00, 554.20]
- \* y\_true: [20.50061186 21.35116733 22.20133365]
- \* v\_ann: [21.398225784301758, 20.900882720947266, 22.30869483947754, 23.647050620331736]

---



---

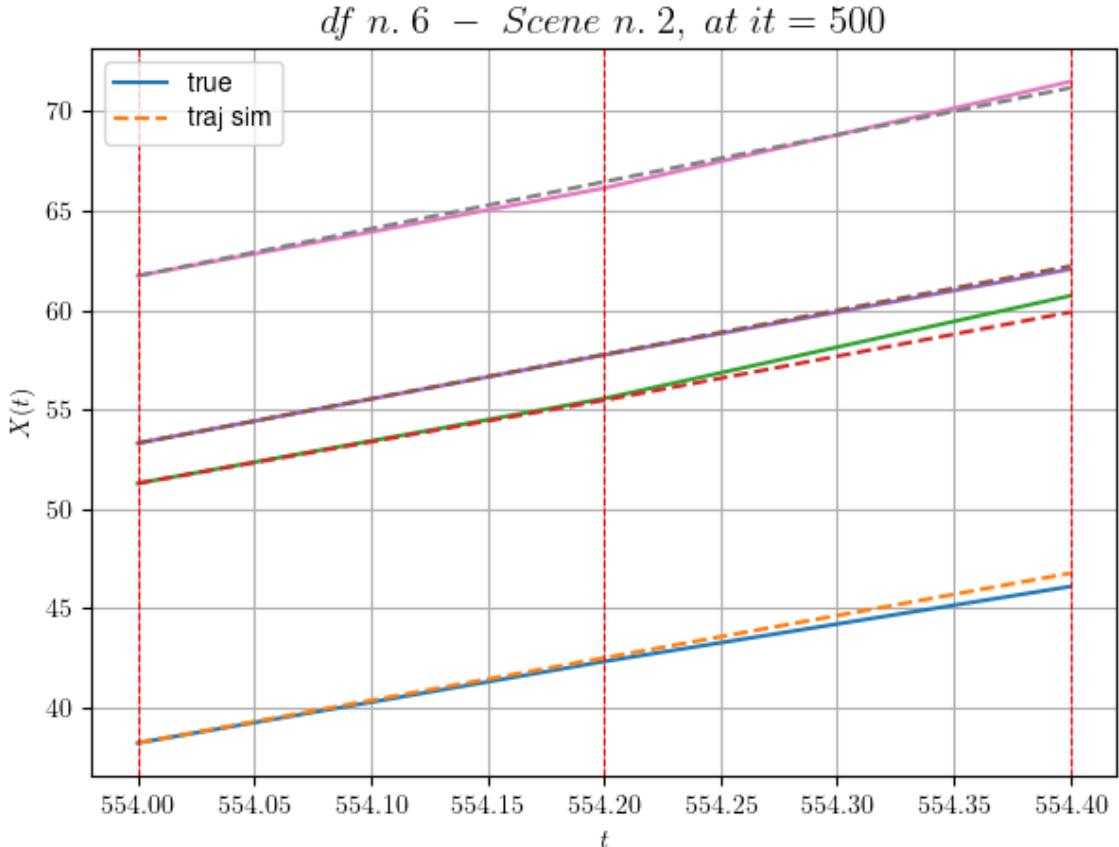
- Time interval n.1: [554.20, 554.40]
- \* y\_true: [18.86075328 25.85180384 21.5614577 ]
- \* v\_ann: [21.317045211791992, 22.16259765625, 22.24692726135254, 23.647050620331736]

---



---

- \* err= 0.11696755798609422
- \* Learning rate NN = 0.00036449998151510954
- \* diff = 3.290934342355112e-05



For scene 2/3

```
* use LR_NN=0.0005 with err=6.231289457913069 at it=19
* v0_scn_mean = 24.15526589736848
* MAE = 0.11696755798609422
```

---



---

For df=6 with 3 scenes, time taken: 30.48

---



---

In df n.7/10 we have 8 scenes

---



---

```
- Time interval n.0: [38.56, 38.76]
* y_true: [34.50899027 34.29923068]
* v_ann: [31.7630672454834, 32.74531936645508, 28.9
90010590084815]
```

---



---

```
- Time interval n.1: [38.76, 38.96]
* y_true: [33.76780394 27.40980382]
* v_ann: [32.34435272216797, 33.10243606567383, 28.
990010590084815]
```

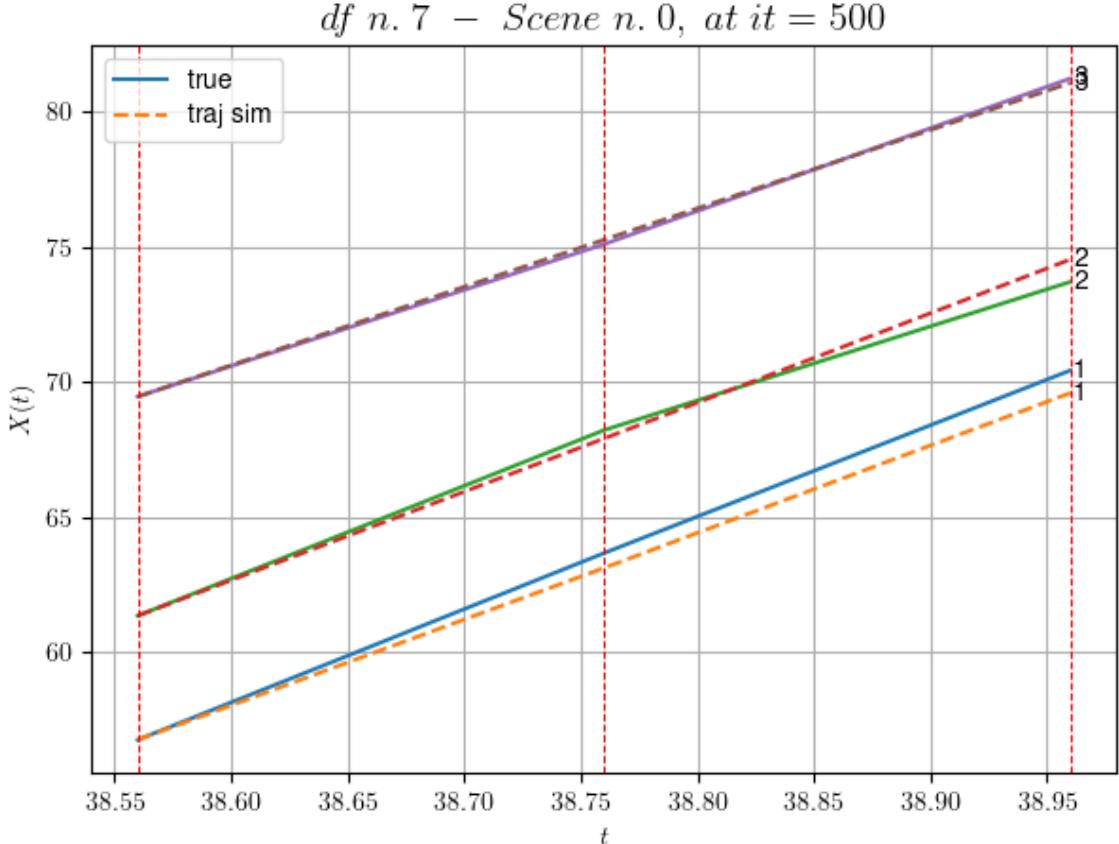
---



---

\* err= 0.20372015375688304

\* Learning rate NN = 0.00036449998151510954  
 \* diff = 3.8565703183668365e-05



For scene 0/8

\* use LR\_NN=0.0005 with err=3.4378317266812606 at it=19  
 \* v0\_scn\_mean = 29.05060990933345  
 \* MAE = 0.2023730468520901

---



---

- Time interval n.0: [39.76, 39.96]
  - \* y\_true: [22.5368218 26.50901133]
  - \* v\_ann: [27.288436889648438, 2.0808135769989633e-1, 28.629752721377205]

---

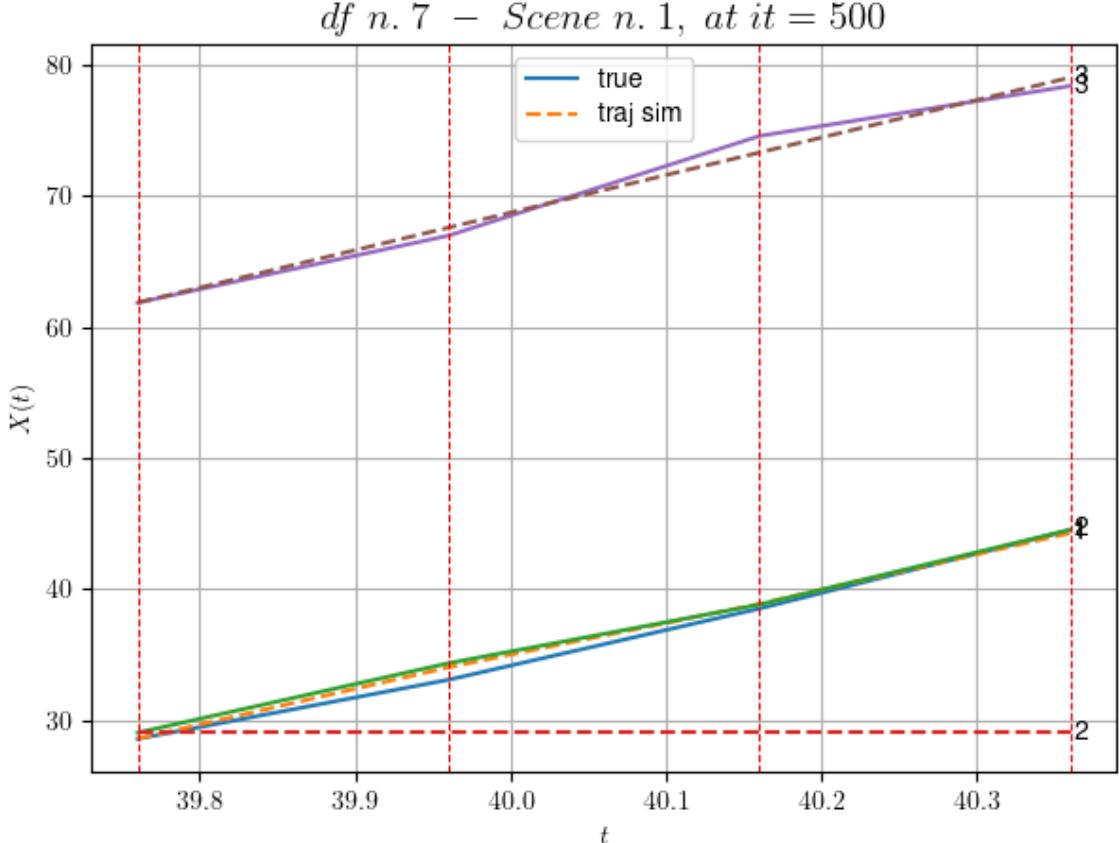
- Time interval n.1: [39.96, 40.16]
  - \* y\_true: [27.13488394 22.34107329]
  - \* v\_ann: [24.182146072387695, 2.3862209430625114e-1, 28.629752721377205]

---

- Time interval n.2: [40.16, 40.36]
  - \* y\_true: [29.97962766 28.56631616]
  - \* v\_ann: [27.029922485351562, 8.996048697640369e-1, 28.629752721377205]

\* err= 30.56259178152526

\* Learning rate NN = 0.0005904899444431067  
 \* diff = 0.00011297618335603943



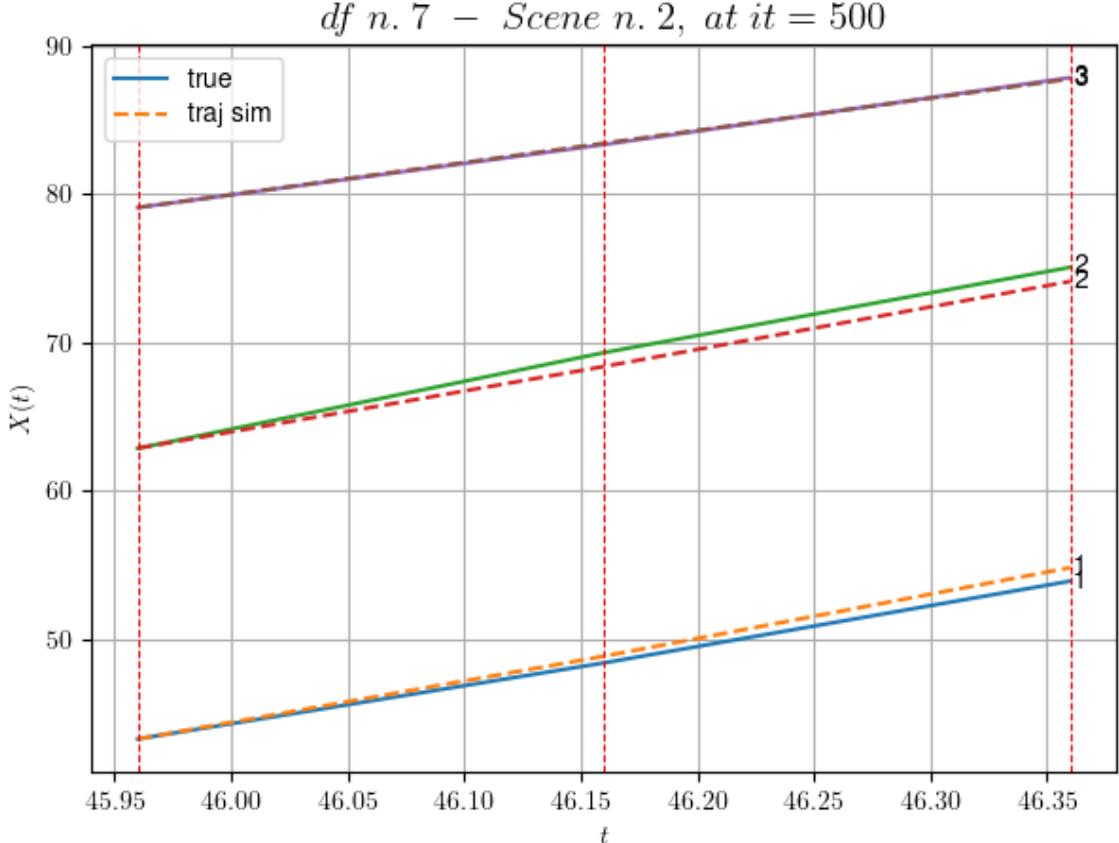
For scene 1/8

\* use LR\_NN=0.001 with err=10.76807738416584 at it=19  
 \* v0\_scn\_mean = 28.71196749657335  
 \* MAE = 25.07042816620098

- Time interval n.0: [45.96, 46.16]  
 \* y\_true: [25.63954073 32.24792255]  
 \* v\_ann: [27.89430046081543, 27.58676528930664, 21.  
 67936629607499]

- Time interval n.1: [46.16, 46.36]  
 \* y\_true: [27.5623729 28.76269973]  
 \* v\_ann: [29.85333824157715, 28.672924041748047, 2  
 1.67936629607499]

\* err= 0.3131947134622508  
 \* Learning rate NN = 0.00036449998151510954  
 \* diff = 0.0009330114670169087



For scene 2/8

- \* use LR\_NN=0.0005 with err=3.066089886622452 at it=19
- \* v0\_scn\_mean = 22.178603944732032
- \* MAE = 0.3131947134622508

---



---

- Time interval n.0: [162.76, 162.96]
- \* y\_true: [10.08699654 20.77195672]
- \* v\_ann: [17.504846572875977, 16.859453201293945, 3 3.51455461644857]

---



---

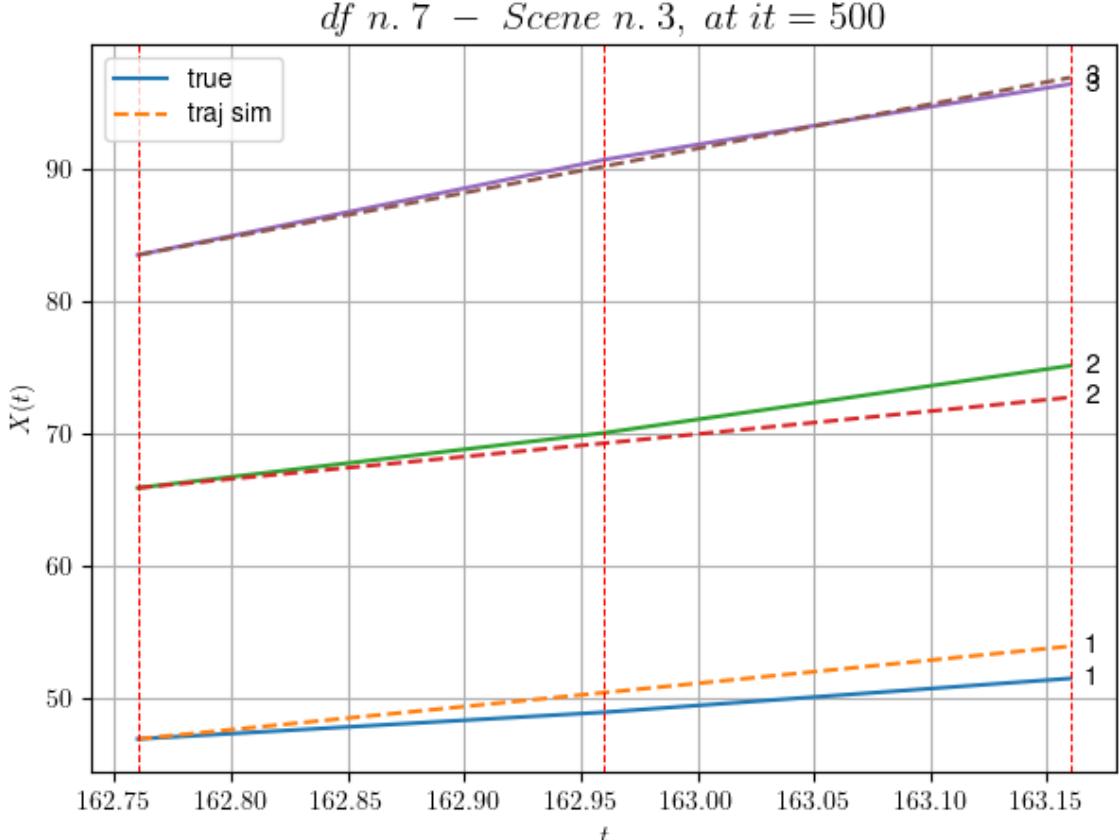
- Time interval n.1: [162.96, 163.16]
- \* y\_true: [12.77745535 25.37230132]
- \* v\_ann: [17.525920867919922, 17.320451736450195, 3 3.51455461644857]

---



---

- \* err= 1.661290248352761
- \* Learning rate NN = 0.00036449998151510954
- \* diff = 0.0004187568670577235



For scene 3/8

- \* use LR\_NN=0.0005 with err=1.9540611197786817 at it=19
- \* v0\_scn\_mean = 33.303681497257635
- \* MAE = 1.6237439955974635

---



---

- Time interval n.0: [165.76, 165.96]
- \* y\_true: [14.62535373 14.97522028]
- \* v\_ann: [14.379851341247559, 14.809757232666016, 2 7.262209824915317]

---

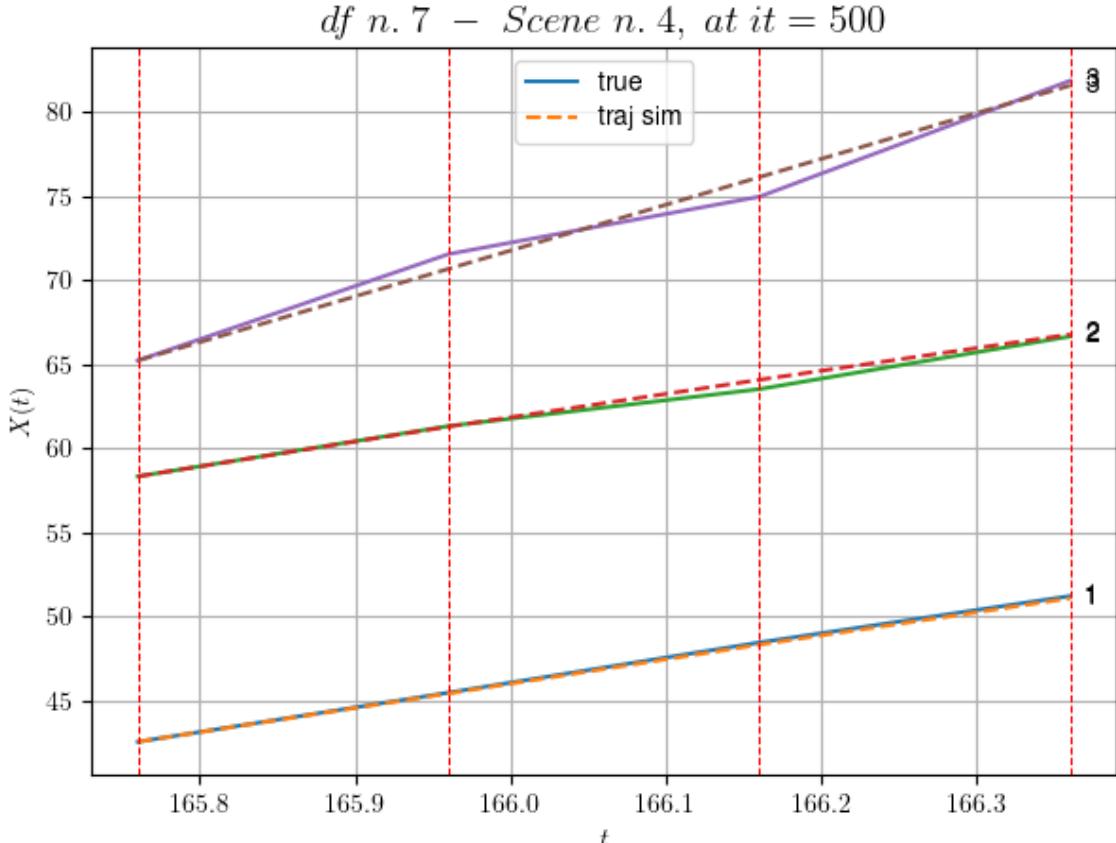
- Time interval n.1: [165.96, 166.16]
- \* y\_true: [14.90483904 10.97892299]
- \* v\_ann: [14.505119323730469, 13.915010452270508, 2 7.262209824915317]

---

- Time interval n.2: [166.16, 166.36]
- \* y\_true: [13.82116599 15.66867879]
- \* v\_ann: [13.790340423583984, 13.50533676147461, 2 7.262209824915317]

---

- \* err= 0.21365473097442353
- \* Learning rate NN = 0.0005904899444431067
- \* diff = 6.841317268141411e-05



For scene 4/8

- \* use LR\_NN=0.001 with err=1.5355186171378765 at it=19
- \* v0\_scn\_mean = 27.426477112500226
- \* MAE = 0.20468694738935375

---



---

- Time interval n.0: [188.16, 188.36]  
 \* y\_true: [18.26365072 21.2472937 ]  
 \* v\_ann: [19.848834991455078, 21.602048873901367, 2  
 4.898608242941904]

---

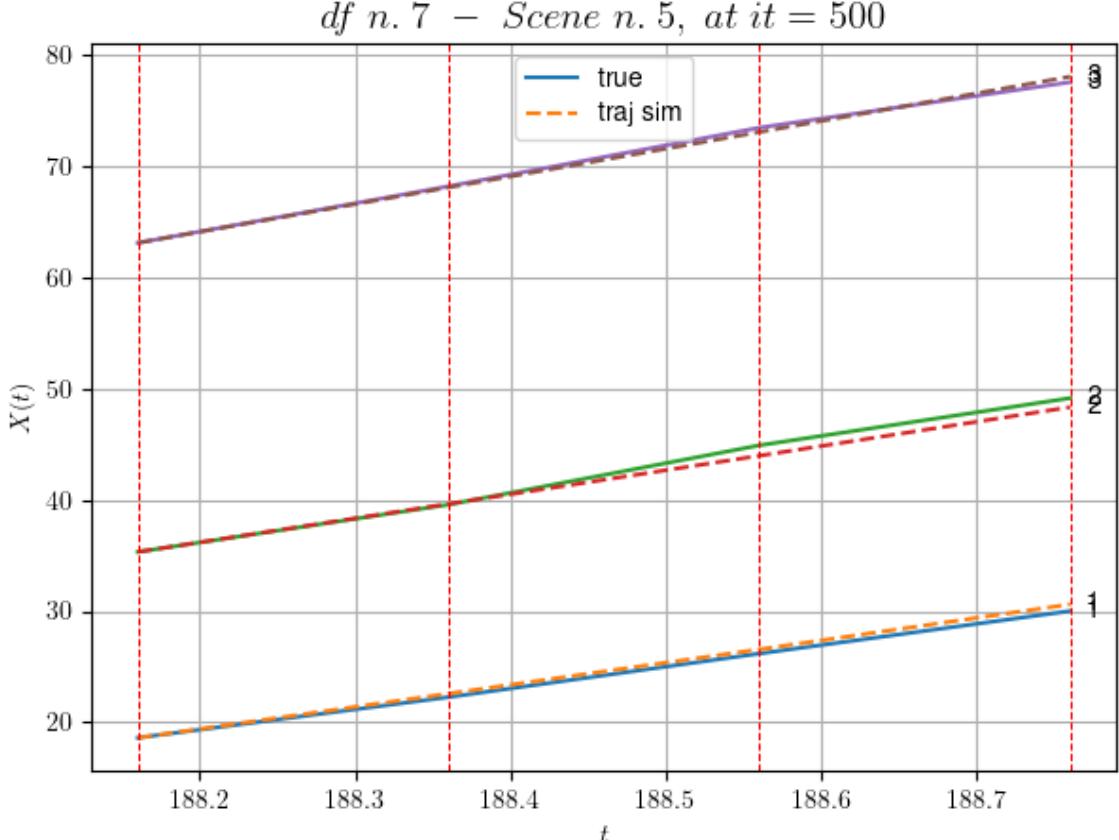
- Time interval n.1: [188.36, 188.56]  
 \* y\_true: [19.58083161 26.63811802]  
 \* v\_ann: [19.870994567871094, 21.62111473083496, 2  
 4.898608242941904]

---

- Time interval n.2: [188.56, 188.76]  
 \* y\_true: [19.1135942 21.22632097]  
 \* v\_ann: [20.23907470703125, 21.828107833862305, 2  
 4.898608242941904]

---

\* err= 0.2123518512706293  
 \* Learning rate NN = 2.952449540316593e-05  
 \* diff = 0.0018331588090589879



For scene 5/8

- \* use LR\_NN=5e-05 with err=2.1038149826309334 at it=19
- \* v0 scn mean = 25.2046915193239
- \* MAE = 0.12211447200799858

---



---

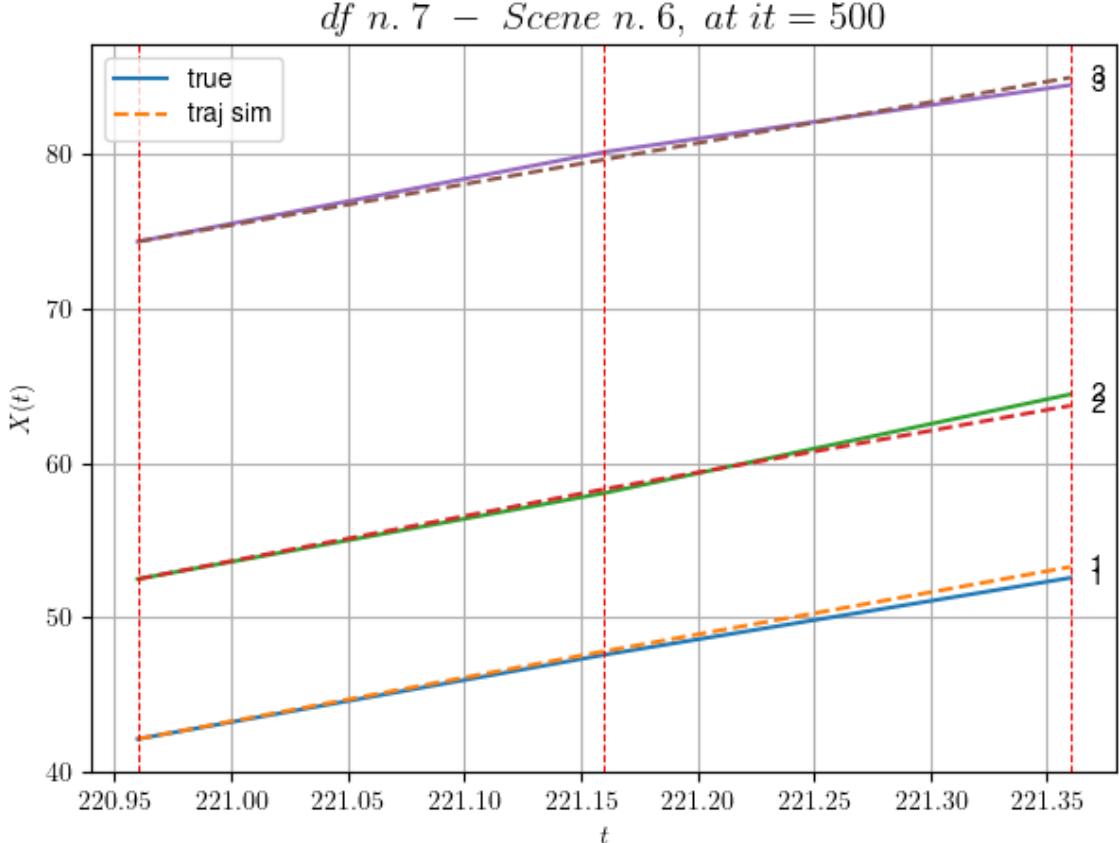
- Time interval n.0: [220.96, 221.16]
- \* y\_true: [27.25777683 27.84910592]
- \* v\_ann: [28.396446228027344, 29.121862411499023, 2  
6.579845406052538]

---

- Time interval n.1: [221.16, 221.36]
- \* y\_true: [24.9447965 32.01250046]
- \* v\_ann: [27.34884262084961, 27.058834075927734, 2  
6.579845406052538]

---

- \* err= 0.18177440463911498
- \* Learning rate NN = 0.00036449998151510954
- \* diff = 0.00012617908256898347



For scene 6/8

- \* use LR\_NN=0.0005 with err=2.7788050778047597 at it=19
- \* v0\_scn\_mean = 26.785054528132
- \* MAE = 0.14162400687582521

---



---

- Time interval n.0: [166.56, 166.76]
  - \* y\_true: [17.24164345 15.73752306 15.58083022]
  - \* v\_ann: [17.98533058166504, 17.46611785888672, 17.693635940551758, 17.3686359690662]

---



---

- Time interval n.1: [166.76, 166.96]
  - \* y\_true: [18.38470966 27.72552812 9.3330177 ]
  - \* v\_ann: [16.2385196685791, 16.81724739074707, 16.533964157104492, 17.3686359690662]

---



---

- Time interval n.2: [166.96, 167.16]
  - \* y\_true: [16.02323775 24.97208403 13.98221987]
  - \* v\_ann: [18.50531578063965, 18.666297912597656, 18.061948776245117, 17.3686359690662]

---



---

- Time interval n.3: [167.16, 167.36]
  - \* y\_true: [18.26534189 20.06151439 15.46259314]
  - \* v\_ann: [18.52901840209961, 17.86441421508789, 18.

038557052612305, 17.3686359690662]

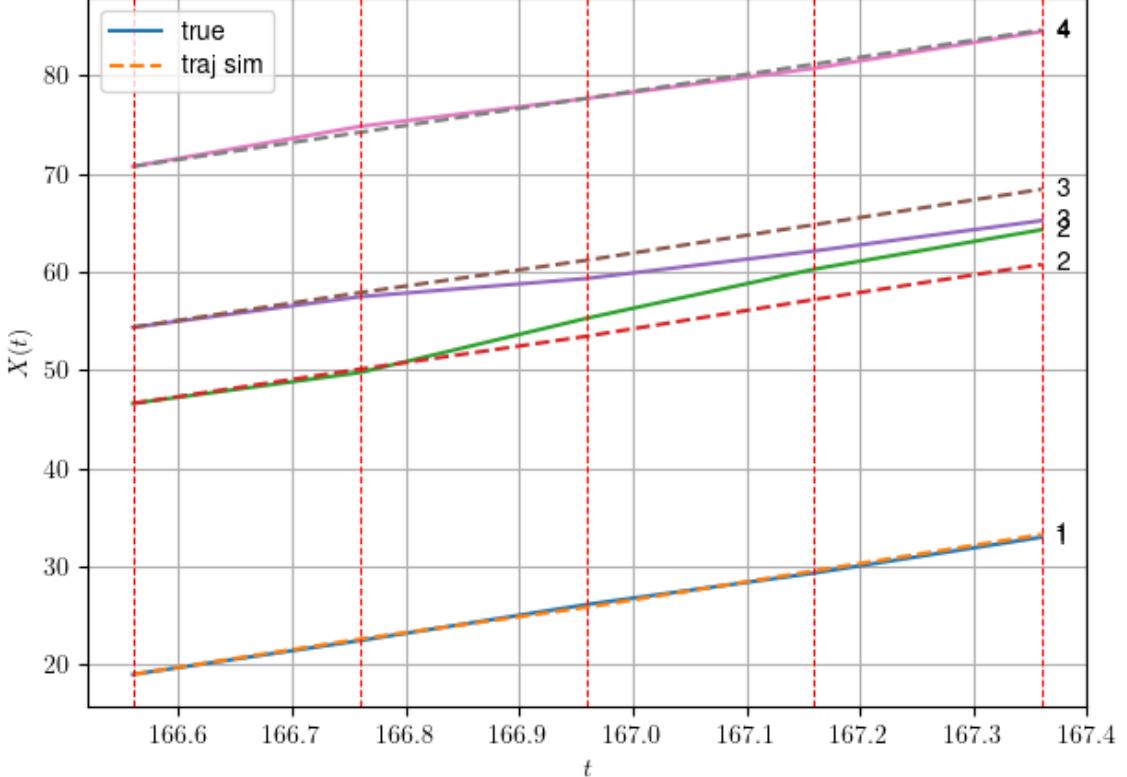
---



---

- \* err= 2.3699891523816685
- \* Learning rate NN = 0.000478296831715852
- \* diff = 0.00027044150344845974

*df n. 7 – Scene n. 7, at it = 500*



For scene 7/8

- \* use LR\_NN=0.001 with err=27.73058436705607 at it=19
- \* v0\_scn\_mean = 18.379103987412613
- \* MAE = 2.3575928764049623

---



---

For df=7 with 8 scenes, time taken: 87.60

---



---

In df n.8/10 we have 21 scenes

---



---

- Time interval n.0: [36.44, 36.64]
- \* y\_true: [16.4303266 8.20020738]
- \* v\_ann: [11.947038650512695, 12.120232582092285, 17.15679593462083]

---



---

- Time interval n.1: [36.64, 36.84]

```

* y_true: [18.55044671 6.80018642]
* v_ann: [13.100860595703125, 12.246076583862305, 1
7.15679593462083]

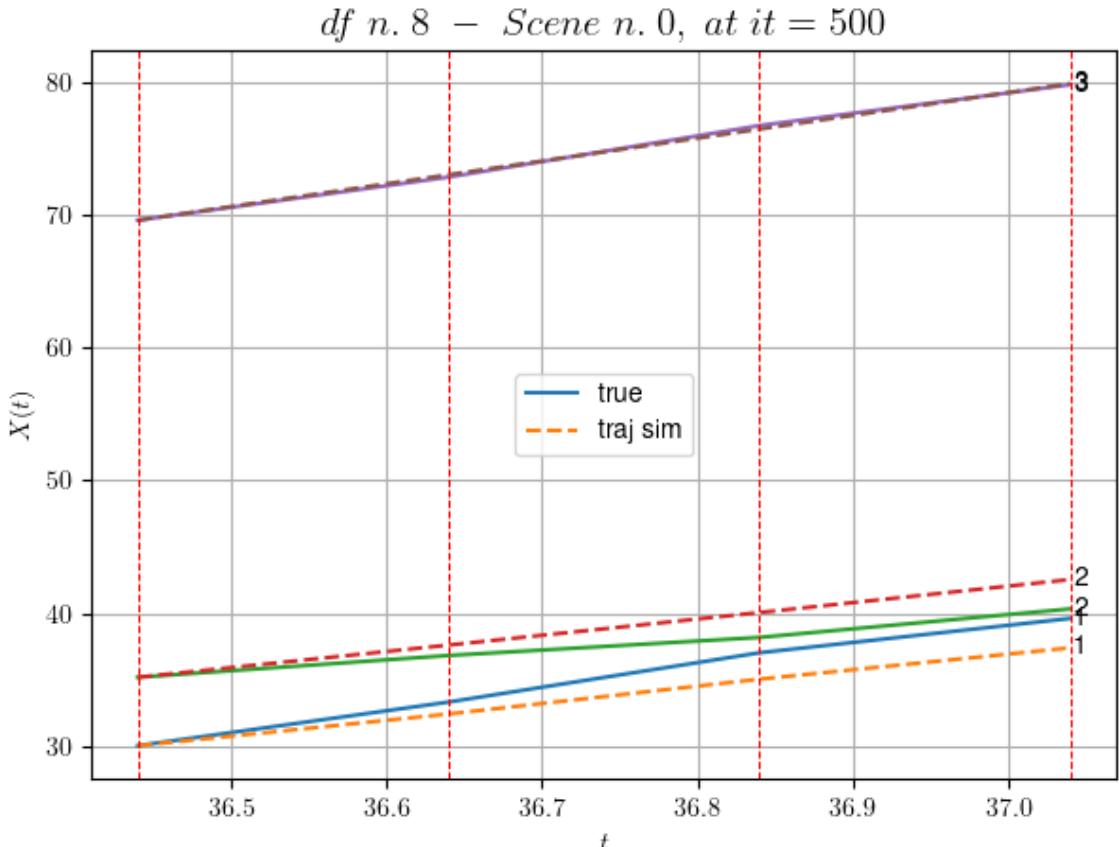
- Time interval n.2: [36.84, 37.04]
* y_true: [12.9262384 10.75446129]
* v_ann: [11.799117088317871, 12.428014755249023, 1
7.15679593462083]

```

```

* err= 1.562854184802833
* Learning rate NN = 0.0002952449722215533
* diff = 0.0203746802008210 05

```



For scene 0/21

```

* use LR_NN=0.0005 with err=17.432049658313378 at it=19
* v0_scn_mean = 17.927387601911526
* MAE = 1.5529437979477307

```

```

=====
=====
- Time interval n.0: [50.24, 50.44]
* y_true: [14.83043604 14.50055453]
* v_ann: [18.926925659179688, 23.249052047729492, 3
0.15766097411089]

```

```

=====
- Time interval n.1: [50.44, 50.64]

```

```

* y_true: [15.35052738 17.38080918]
* v_ann: [16.305599212646484, 16.11957550048828, 3
0.15766097411089]

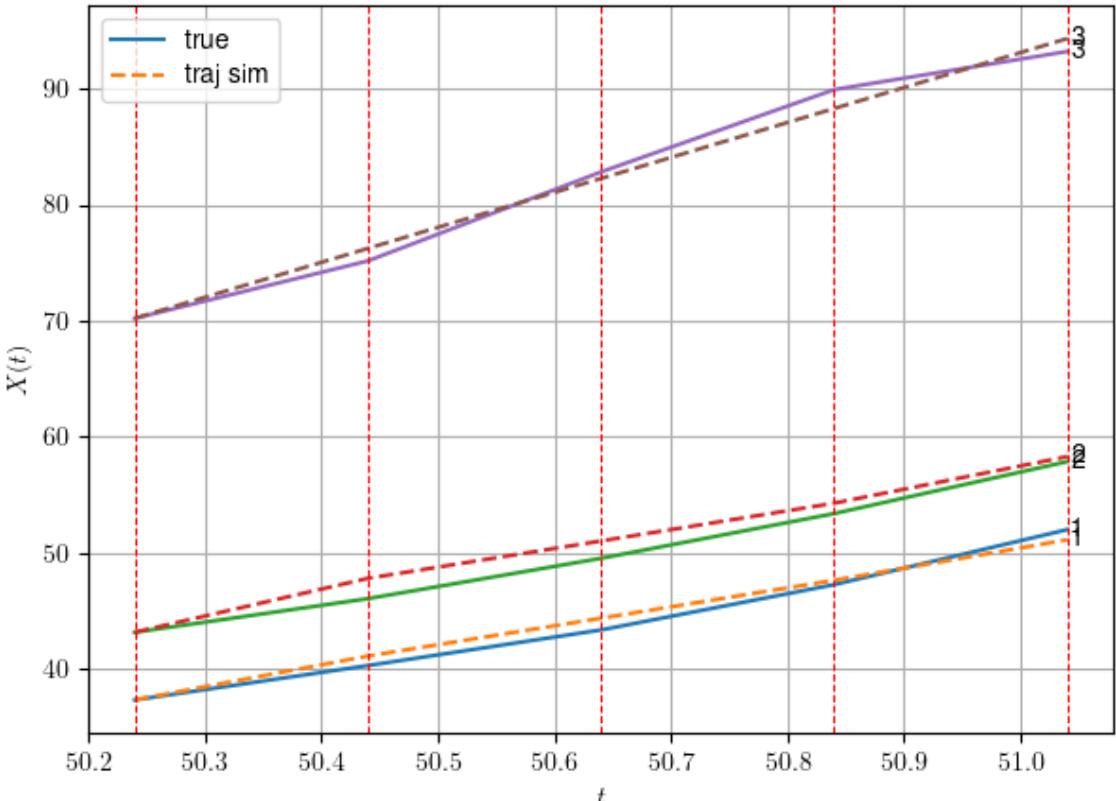
- Time interval n.2: [50.64, 50.84]
* y_true: [19.54078826 19.30097894]
* v_ann: [16.359729766845703, 16.287565231323242, 3
0.15766097411089]

- Time interval n.3: [50.84, 51.04]
* y_true: [23.72114006 22.40641196]
* v_ann: [17.451366424560547, 20.094696044921875, 3
0.15766097411089]

* err= 0.9508530071840883
* Learning rate NN = 0.000478296831715852
* diff = 9.255335600366621e-05

```

*df n. 8 – Scene n. 1, at it = 500*



For scene 1/21

```

* use LR_NN=0.001 with err=10.43201765761466 at it=19
* v0_scn_mean = 30.148201322742775
* MAE = 0.8198709678967654

```

---



---

- Time interval n.0: [102.24, 102.44]

```

* y_true: [22.78095819 15.94092959]
* v_ann: [20.755815505981445, 20.95039939880371, 3
1.34829198332158]

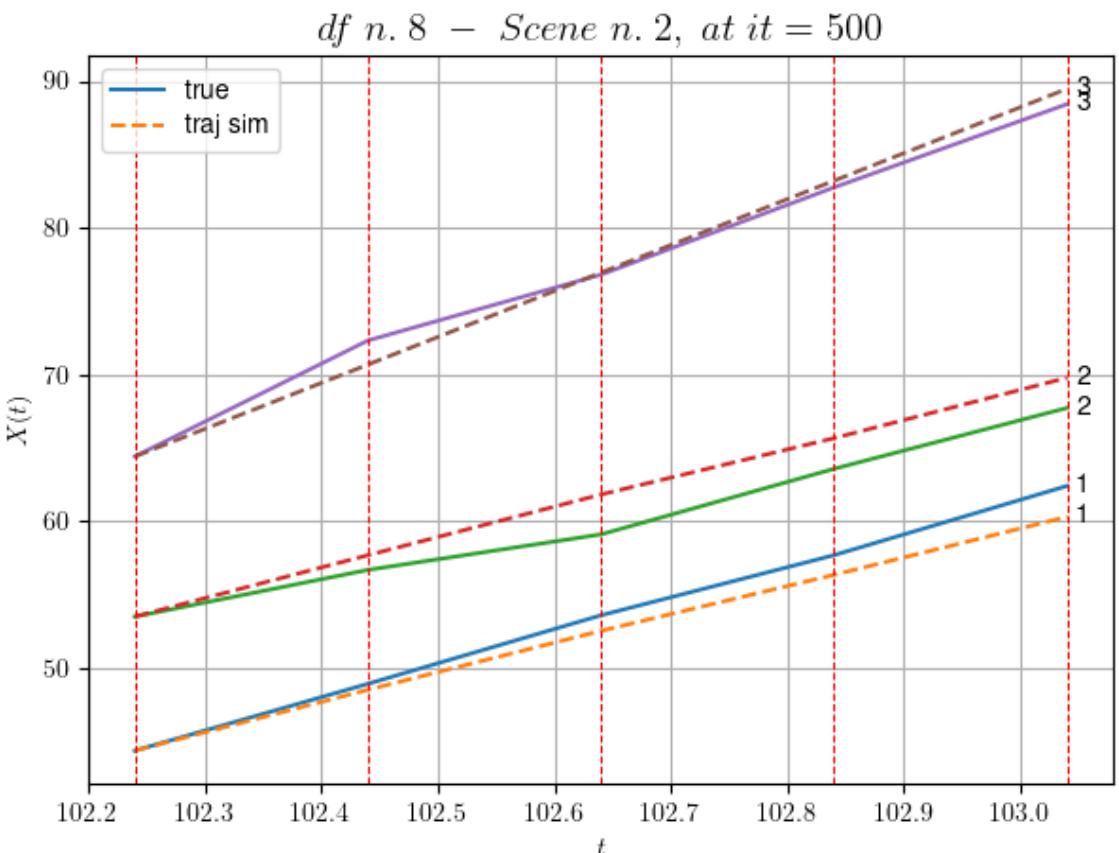
- Time interval n.1: [102.44, 102.64]
* y_true: [23.36120187 12.10080168]
* v_ann: [20.079795837402344, 20.690670013427734, 3
1.34829198332158]

- Time interval n.2: [102.64, 102.84]
* y_true: [20.51121756 22.37162153]
* v_ann: [19.111631393432617, 19.224044799804688, 3
1.34829198332158]

- Time interval n.3: [102.84, 103.04]
* y_true: [23.62167761 20.76175162]
* v_ann: [19.784955978393555, 20.613325119018555, 3
1.34829198332158]

* err= 1.9045146498014562
* Learning rate NN = 0.000478296831715852
* diff = 0.00014045197418122157

```



For scene 2/21

```

* use LR_NN=0.001 with err=12.079759408447622 at it=19
* v0_scn_mean = 31.267394524857778

```

\* MAE = 1.856663833887156

---



---

- Time interval n.0: [108.84, 109.04]  
 \* y\_true: [17.9810803 26.65193678]  
 \* v\_ann: [21.937318801879883, 20.976951599121094, 2  
 0.549015112613056]

---

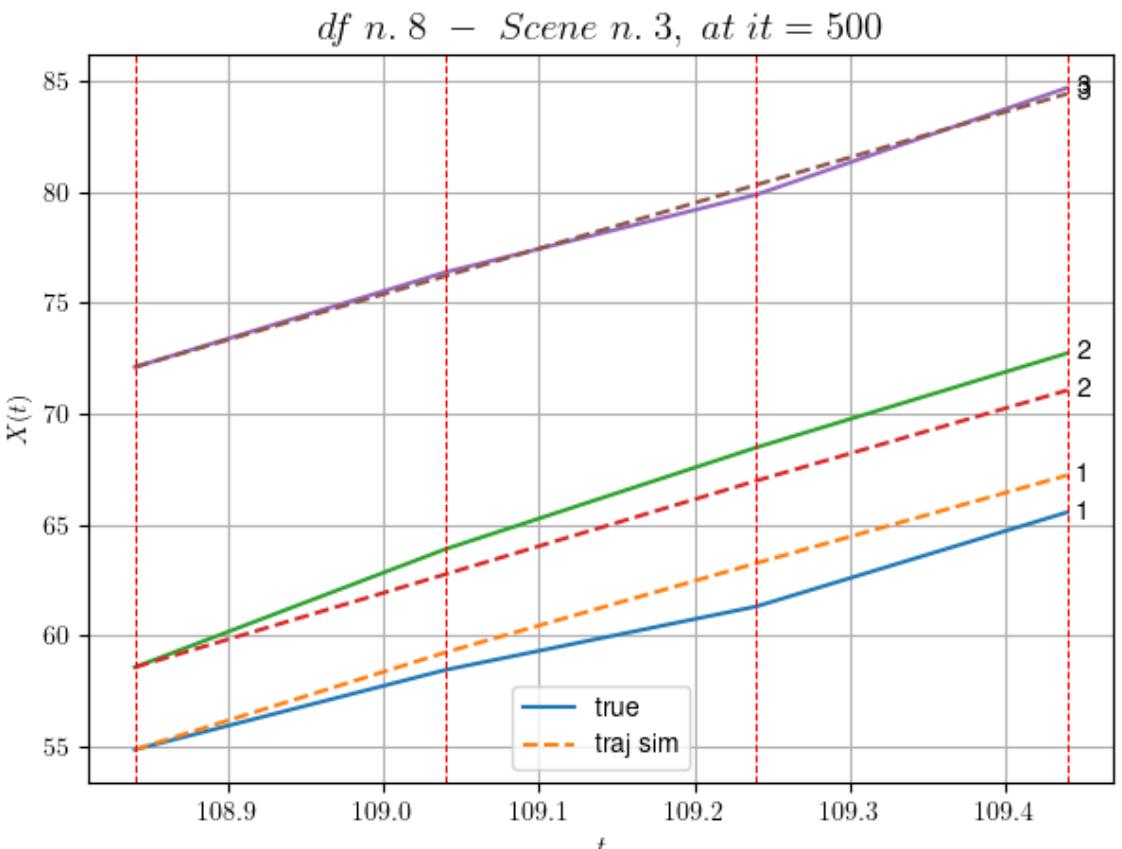
- Time interval n.1: [109.04, 109.24]  
 \* y\_true: [14.30252156 22.9019425 ]  
 \* v\_ann: [20.108285903930664, 21.077157974243164, 2  
 0.549015112613056]

---

- Time interval n.2: [109.24, 109.44]  
 \* y\_true: [21.24158827 21.25204953]  
 \* v\_ann: [19.820205688476562, 20.38874626159668, 2  
 0.549015112613056]

---

\* err= 1.1543519966136537  
 \* Learning rate NN = 0.0002952449722215533  
 \* diff = 0.0001798179852792181



For scene 3/21

\* use LR\_NN=0.0005 with err=6.405696041776676 at it=19  
 \* v0\_scn\_mean = 21.116073781527586

\* MAE = 1.1543519966136537

---



---

- Time interval n.0: [130.04, 130.24]  
 \* y\_true: [23.9806113 21.72216875]  
 \* v\_ann: [25.105867385864258, 23.560184478759766, 4  
 1.05562230485209]

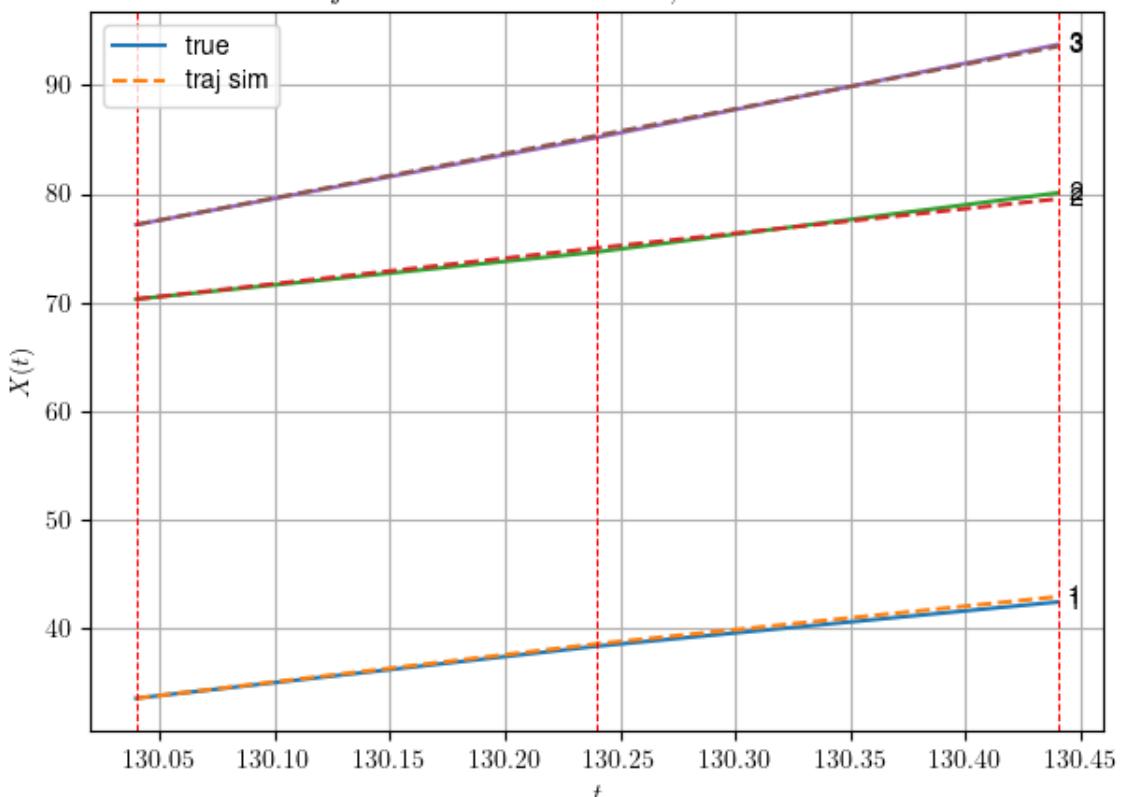
---

- Time interval n.1: [130.24, 130.44]  
 \* y\_true: [20.38064152 27.22317612]  
 \* v\_ann: [21.709169387817383, 22.604740142822266, 4  
 1.05562230485209]

---

\* err= 0.08896939736643739  
 \* Learning rate NN = 0.00036449998151510954  
 \* diff = 2.878702428778246e-05

*df n. 8 – Scene n. 4, at it = 500*



For scene 4/21

\* use LR\_NN=0.0005 with err=9.4268796249182 at it=19  
 \* v0\_scn\_mean = 40.392285462934666  
 \* MAE = 0.08896939736643739

---



---

- Time interval n.0: [215.24, 215.44]

```
* y_true: [1.34614625 10.42531549]
* v_ann: [19.14352035522461, 20.308204650878906, 1
5.100689610550218]

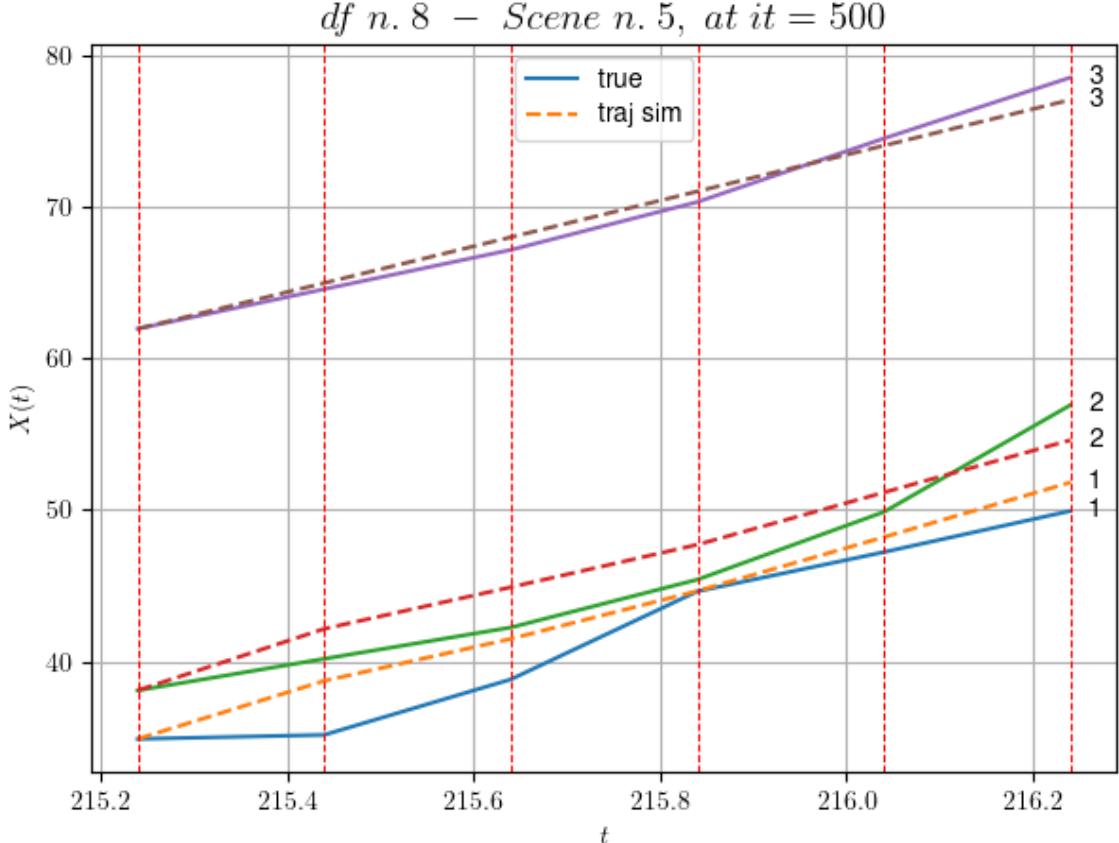
- Time interval n.1: [215.44, 215.64]
* y_true: [18.28906766 10.32533879]
* v_ann: [13.862594604492188, 13.726962089538574, 1
5.100689610550218]

- Time interval n.2: [215.64, 215.84]
* y_true: [29.02100933 15.78058213]
* v_ann: [15.774076461791992, 14.013826370239258, 1
5.100689610550218]

- Time interval n.3: [215.84, 216.04]
* y_true: [12.95052595 22.3009853]
* v_ann: [17.756114959716797, 17.213167190551758, 1
5.100689610550218]

- Time interval n.4: [216.04, 216.24]
* y_true: [13.56563519 35.25195514]
* v_ann: [18.054195404052734, 17.27355194091797, 1
5.100689610550218]

* err= 2.8517721995099468
* Learning rate NN = 0.0003874204121530056
* diff = 0.001995794645269555
```



For scene 5/21

- \* use LR\_NN=0.001 with err=37.256287230760556 at it=19
- \* v0\_scn\_mean = 15.994647564970446
- \* MAE = 2.8517721995099468

---



---

- Time interval n.0: [222.64, 222.84]
  - \* y\_true: [3.4148313 7.54419185]
  - \* v\_ann: [5.5204925537109375, 5.624382972717285, 1  
2.428538122911196]
- Time interval n.1: [222.84, 223.04]
  - \* y\_true: [1.34614625 9.61287691]
  - \* v\_ann: [5.36280632019043, 5.650845527648926, 12.4  
28538122911196]
- Time interval n.2: [223.04, 223.24]
  - \* y\_true: [ 1.34614625 10.20300693]
  - \* v\_ann: [6.21113395690918, 5.682614803314209, 12.4  
28538122911196]
- Time interval n.3: [223.24, 223.44]
  - \* y\_true: [ 1.34614625 10.35053943]
  - \* v\_ann: [5.382436752319336, 5.7010321617126465, 1

2.428538122911196]

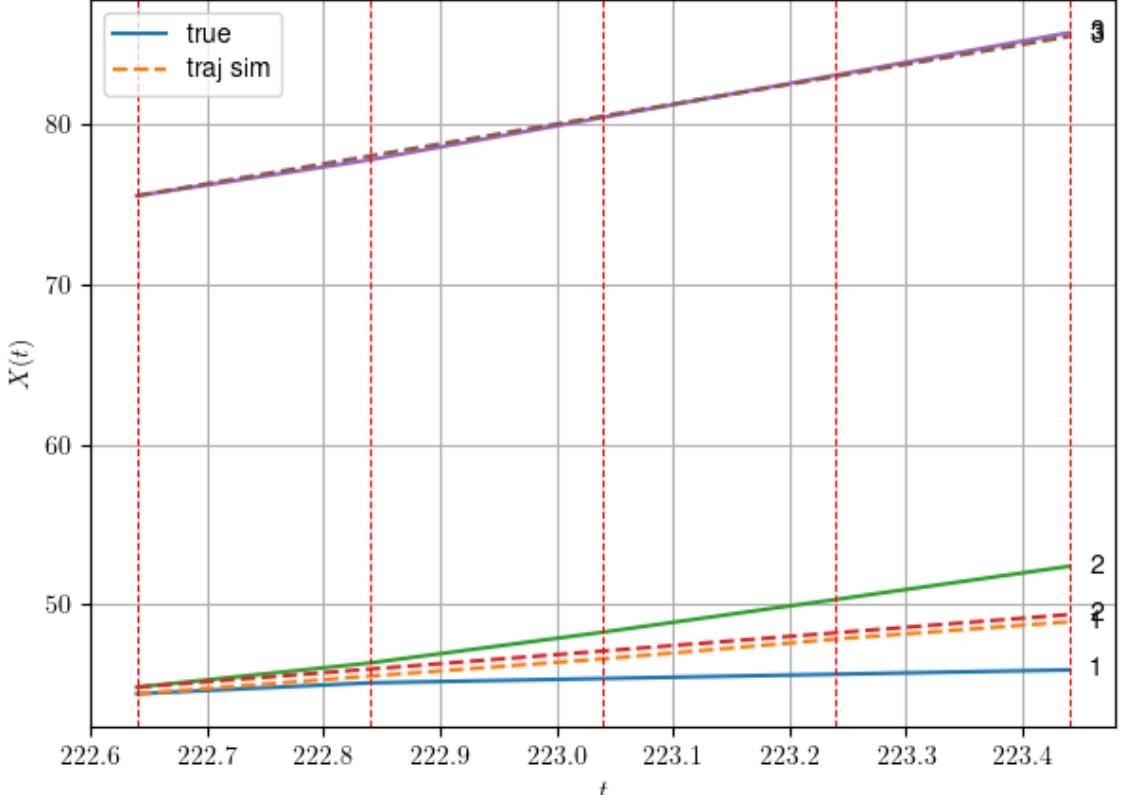
---



---

- \* err= 2.0388656332770045
- \* Learning rate NN = 0.000239148415857926
- \* diff = 8.147442042449882e-05

*df n. 8 – Scene n. 6, at it = 500*



For scene 6/21

- \* use LR\_NN=0.0005 with err=25.2331097479909 at it=19
- \* v0\_scn\_mean = 13.482825046615998
- \* MAE = 2.0387983322526453

---



---

- Time interval n.0: [225.24, 225.44]
- \* y\_true: [9.85023046 1.34614625]
- \* v\_ann: [7.132542610168457, 9.016210556030273, 13.143683398703326]

---



---

- Time interval n.1: [225.44, 225.64]
- \* y\_true: [11.30531094 1.34614625]
- \* v\_ann: [6.030161380767822, 8.197632789611816, 13.143683398703326]

---



---

- Time interval n.2: [225.64, 225.84]
- \* y\_true: [12.27536459 1.34614625]
- \* v\_ann: [6.496499061584473, 8.08131217956543, 13.1]

43683398703326]

---

- Time interval n.3: [225.84, 226.04]
  - \* y\_true: [16.30233516 1.34614625]
  - \* v\_ann: [9.182642936706543, 8.08656120300293, 13.1

43683398703326]

---

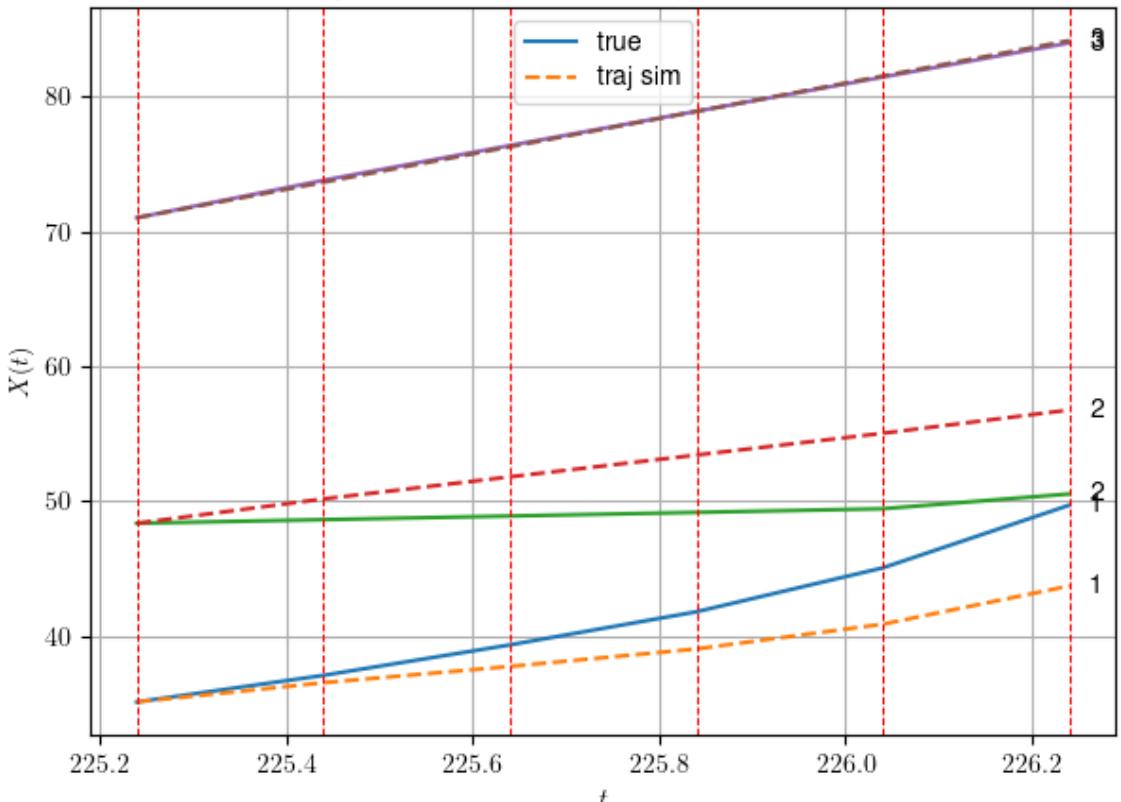
- Time interval n.4: [226.04, 226.24]
  - \* y\_true: [23.251759 5.49560672]
  - \* v\_ann: [14.184856414794922, 8.634404182434082, 1

3.143683398703326]

---

- \* err= 9.04777172002999
- \* Learning rate NN = 0.0003874204121530056
- \* diff = 0.00419373999037731

*df n. 8 – Scene n. 7, at it = 500*



For scene 7/21

- \* use LR\_NN=0.001 with err=50.912736758856774 at it=19
- \* v0\_scn\_mean = 14.155061637969052
- \* MAE = 8.257834437415744

---

- Time interval n.0: [227.04, 227.24]
  - \* y\_true: [ 1.34614625 11.86069537]
  - \* v\_ann: [6.644899368286133, 7.658974647521973, 26.

24315546538644]

```
- Time interval n.1: [227.24, 227.44]
 * y_true: [1.34614625 11.90074479]
 * v_ann: [7.083710193634033, 7.584390640258789, 26.
```

24315546538644]

```
- Time interval n.2: [227.44, 227.64]
 * y_true: [1.34614625 14.03099458]
 * v_ann: [7.124345302581787, 7.548944473266602, 26.
```

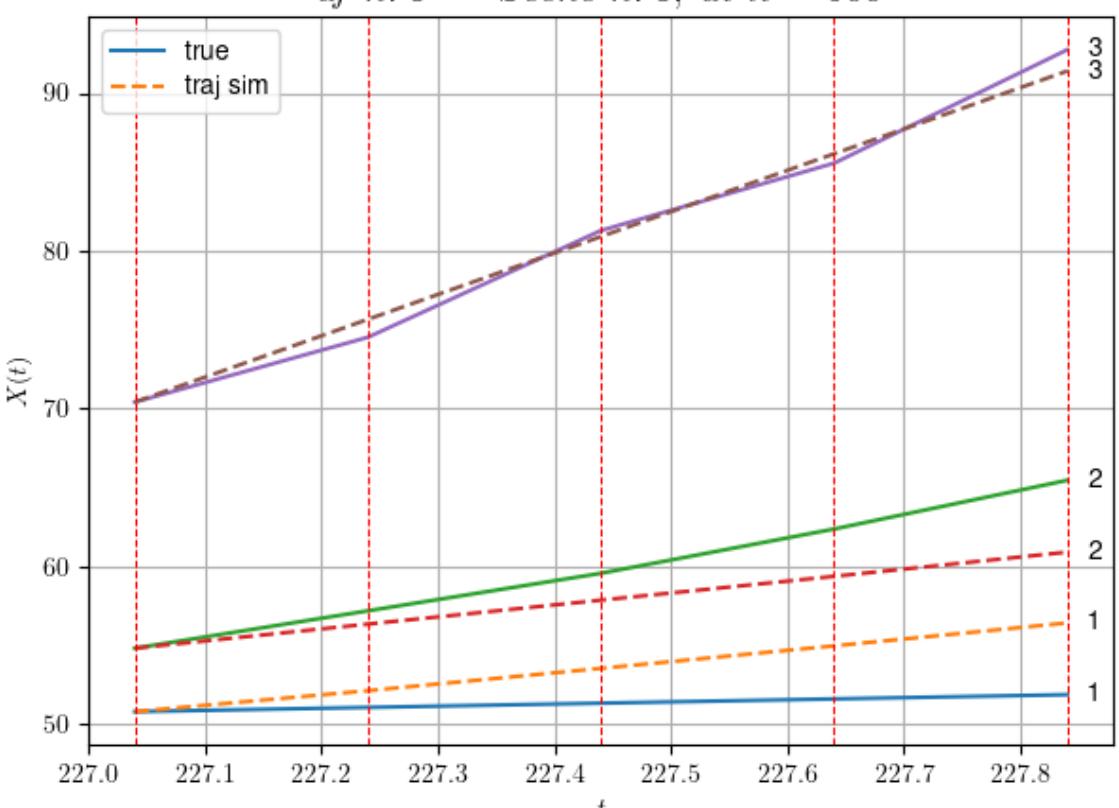
24315546538644]

```
- Time interval n.3: [227.64, 227.84]
 * y_true: [1.34614625 15.45116111]
 * v_ann: [7.277040481567383, 7.681207180023193, 26.
```

24315546538644]

```
* err= 4.997336435952232
* Learning rate NN = 0.000478296831715852
* diff = 0.00036923687783030346
```

*df n. 8 – Scene n. 8, at it = 500*



For scene 8/21

```
* use LR_NN=0.001 with err=2.8354262926466745 at it=19
* v0_scn_mean = 26.468565968789253
* MAE = 4.575930879687957
```

---



---

For scene 9/21

- \* use LR\_NN=0.001 with err=0.42159575044051095 at it=19
- \* v0\_scn\_mean = 29.72115314245223
- \* MAE = 0.2662570018422648

---



---

- Time interval n.0: [239.84, 240.04]

- \* y\_true: [16.30079237 13.85576065]

- \* v\_ann: [16.183500289916992, 16.291929244995117, 3

0.131239538599125]

---

- Time interval n.1: [240.04, 240.24]

- \* y\_true: [17.06097057 17.27611431]

- \* v\_ann: [16.008777618408203, 16.045839309692383, 3

0.131239538599125]

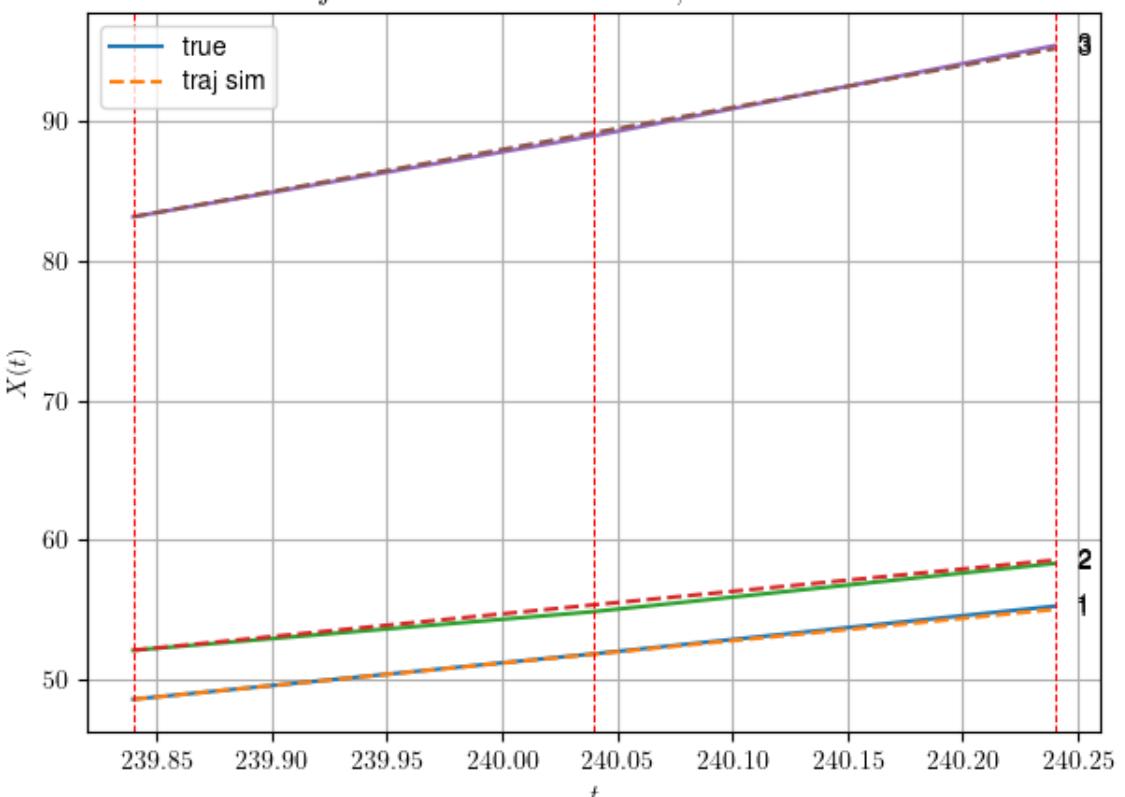
---

\* err= 0.05026991183129779

\* Learning rate NN = 7.289998757187277e-05

\* diff = 8.342521684592819e-06

*df n. 8 – Scene n. 10, at it = 500*



For scene 10/21

- \* use LR\_NN=0.0001 with err=4.08848344491164 at it=19
- \* v0\_scn\_mean = 30.12336517217561

\* MAE = 0.05006835575128817

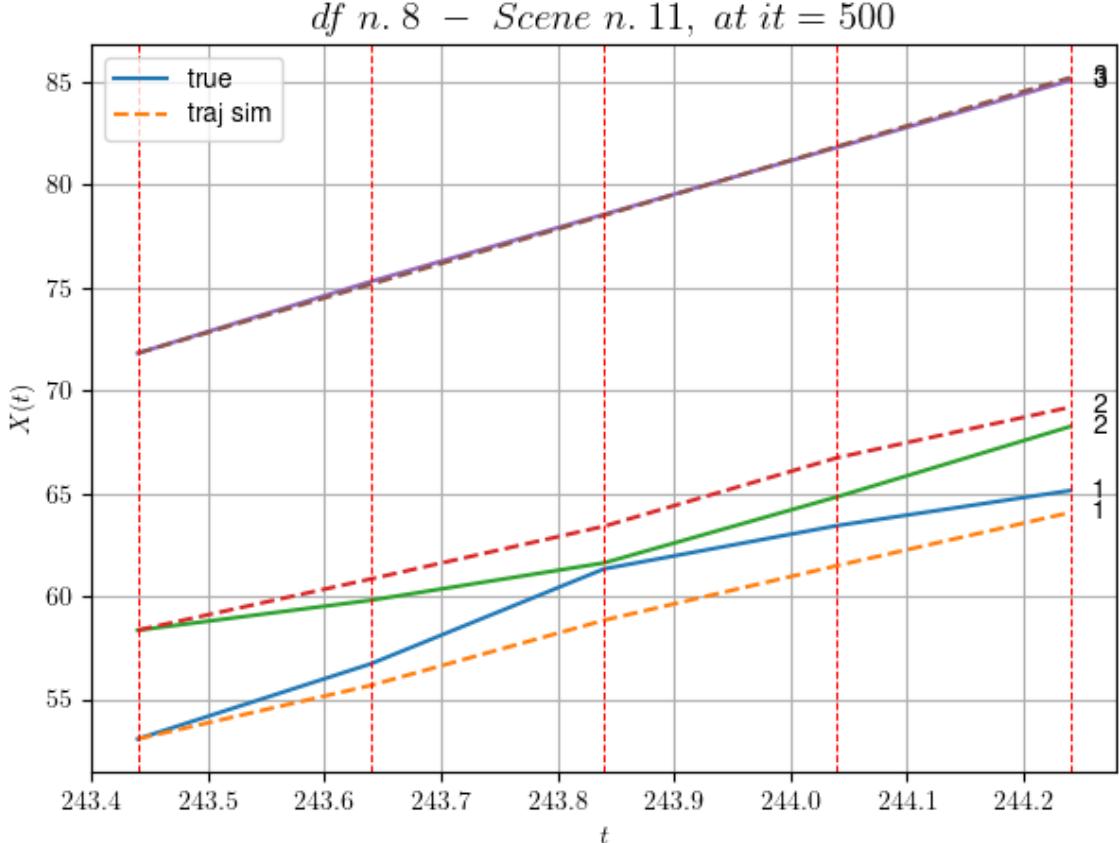
```
=====
=====
- Time interval n.0: [243.44, 243.64]
 * y_true: [18.26109982 7.28715228]
 * v_ann: [13.011420249938965, 12.454672813415527, 1
6.742914270051077]

- Time interval n.1: [243.64, 243.84]
 * y_true: [23.05153691 9.06731774]
 * v_ann: [15.824188232421875, 12.796893119812012, 1
6.742914270051077]

- Time interval n.2: [243.84, 244.04]
 * y_true: [10.52334632 16.05532609]
 * v_ann: [13.265159606933594, 16.658390045166016, 1
6.742914270051077]

- Time interval n.3: [244.04, 244.24]
 * y_true: [8.51398229 17.08146048]
 * v_ann: [12.921558380126953, 12.278740882873535, 1
6.742914270051077]

* err= 1.401835178564829
* Learning rate NN = 0.002391484100371599
* diff = 0.00026712630711722696
```



For scene 11/21

```
* use LR_NN=0.005 with err=18.720287711271837 at it=19
* v0_scn_mean = 17.53833881863342
* MAE = 0.6456589047601827
```

---



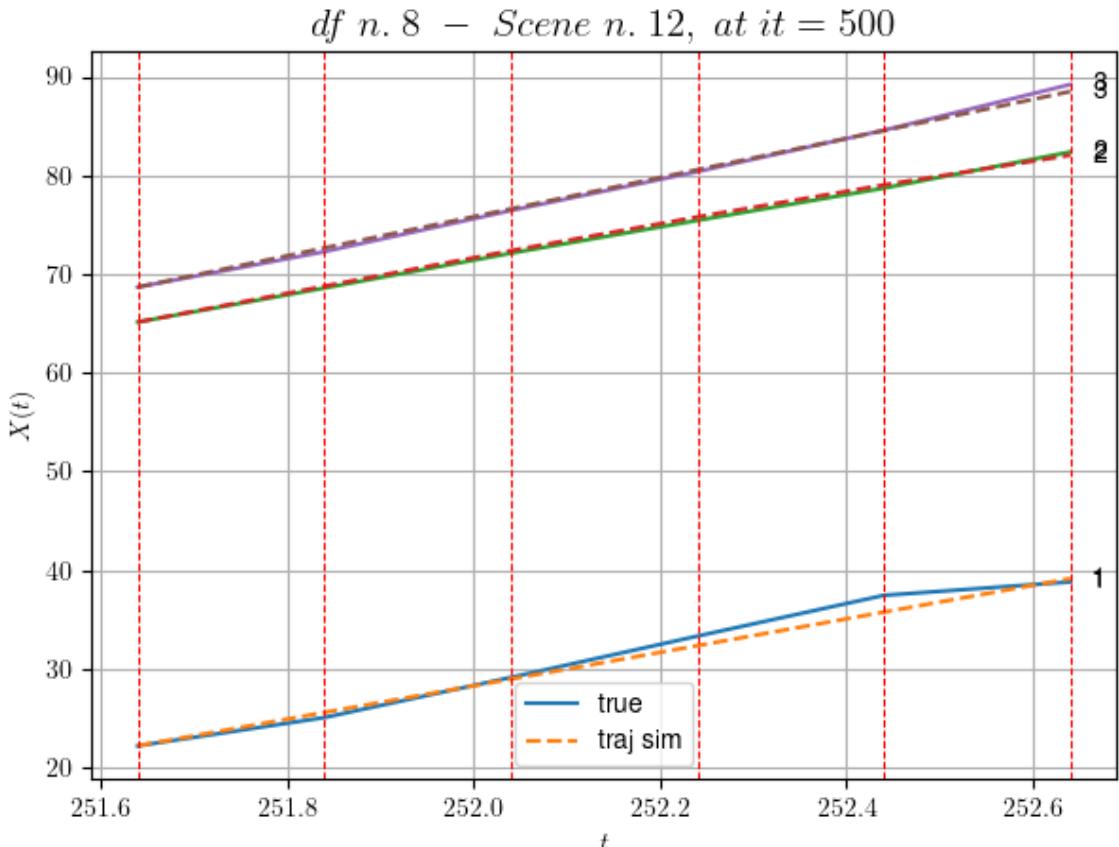
---

- Time interval n.0: [251.64, 251.84]
  - \* y\_true: [14.32016282 17.2315068 ]
  - \* v\_ann: [16.911603927612305, 18.20513153076172, 1  
9.824906088024306]
- Time interval n.1: [251.84, 252.04]
  - \* y\_true: [20.34029568 17.65159646]
  - \* v\_ann: [16.877981185913086, 17.984678268432617, 1  
9.824906088024306]
- Time interval n.2: [252.04, 252.24]
  - \* y\_true: [20.93040622 16.61174803]
  - \* v\_ann: [16.961467742919922, 17.08032989501953, 1  
9.824906088024306]
- Time interval n.3: [252.24, 252.44]
  - \* y\_true: [20.66049541 16.35178592]
  - \* v\_ann: [17.0017147064209, 16.21746826171875, 19.8

24906088024306]

```
- Time interval n.4: [252.44, 252.64]
 * y_true: [6.80019415 18.37232882]
 * v_ann: [17.02663230895996, 15.056882858276367, 1
9.824906088024306]
```

```
* err= 0.3009887350507499
* Learning rate NN = 1.9371018424862996e-05
* diff = 1.6616983635198146e-05
```



For scene 12/21

```
* use LR_NN=5e-05 with err=36.36927772166275 at it=19
* v0_scn_mean = 20.43541126590313
* MAE = 0.29777476781387785
```

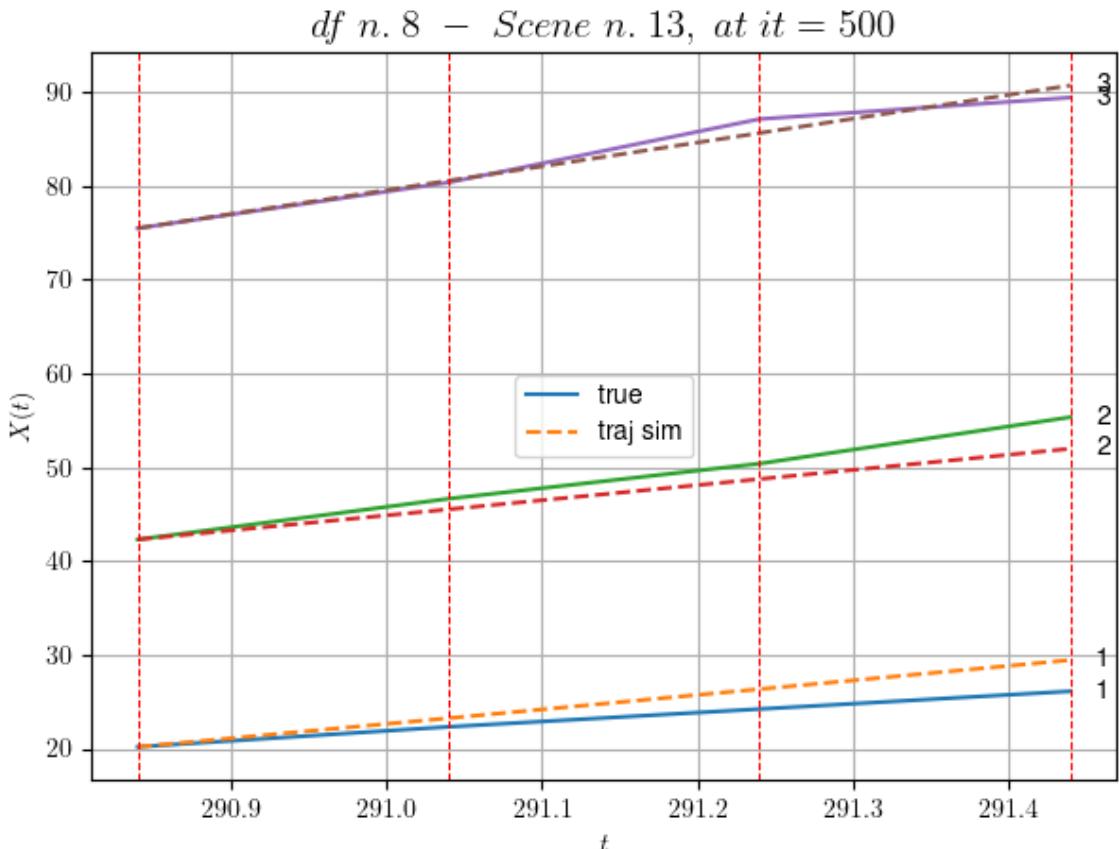
```
- Time interval n.0: [290.84, 291.04]
 * y_true: [10.67508652 21.71084933]
 * v_ann: [15.295683860778809, 16.06179428100586, 2
5.37824427977511]
```

```
- Time interval n.1: [291.04, 291.24]
 * y_true: [9.47510968 18.71084105]
 * v_ann: [15.48025131225586, 16.141498565673828, 2
```

5.37824427977511]

```
- Time interval n.2: [291.24, 291.44]
 * y_true: [9.47510968 24.76138307]
 * v_ann: [15.470195770263672, 16.16311264038086, 2
5.37824427977511]
```

```
* err= 2.9705445482803636
* Learning rate NN = 2.952449540316593e-05
* diff = 0.0009225286945255817
```



For scene 13/21

```
* use LR_NN=5e-05 with err=2.279647878831279 at it=19
* v0_scn_mean = 25.655549415481126
* MAE = 2.9209208973094207
```

```
=====
=====
```

```
- Time interval n.0: [350.64, 350.84]
 * y_true: [14.24956692 9.34769854]
 * v_ann: [13.748895645141602, 16.28334617614746, 2
4.01755603165779]
```

```
=====
=====
```

```
- Time interval n.1: [350.84, 351.04]
 * y_true: [4.06677119 24.77080184]
 * v_ann: [13.908018112182617, 15.671704292297363, 2
```

4.01755603165779]

```
- Time interval n.2: [351.04, 351.24]
 * y_true: [15.46321179 18.97073364]
 * v_ann: [17.039657592773438, 14.97912311553955, 2
```

4.01755603165779]

```
- Time interval n.3: [351.24, 351.44]
 * y_true: [19.89069297 18.71086293]
 * v_ann: [17.232784271240234, 16.252635955810547, 2
```

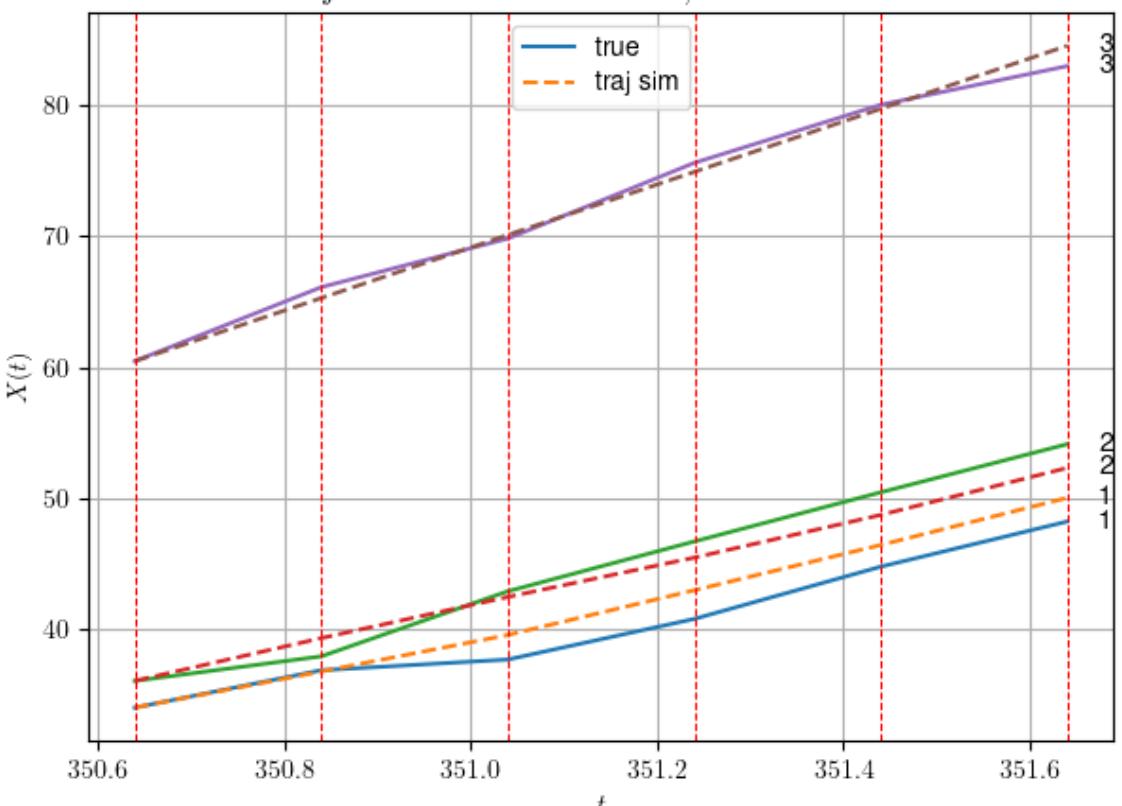
4.01755603165779]

```
- Time interval n.4: [351.44, 351.64]
 * y_true: [17.2007296 18.34097485]
 * v_ann: [17.971837997436523, 17.91558074951172, 2
```

4.01755603165779]

```
* err= 1.5467441177172716
* Learning rate NN = 0.0003874204121530056
* diff = 0.0019133728540041695
```

*df n. 8 – Scene n. 14, at it = 500*



For scene 14/21

```
* use LR_NN=0.001 with err=13.982833244640965 at it=19
* v0_scn_mean = 24.376502401159662
* MAE = 1.5467441177172716
```

```

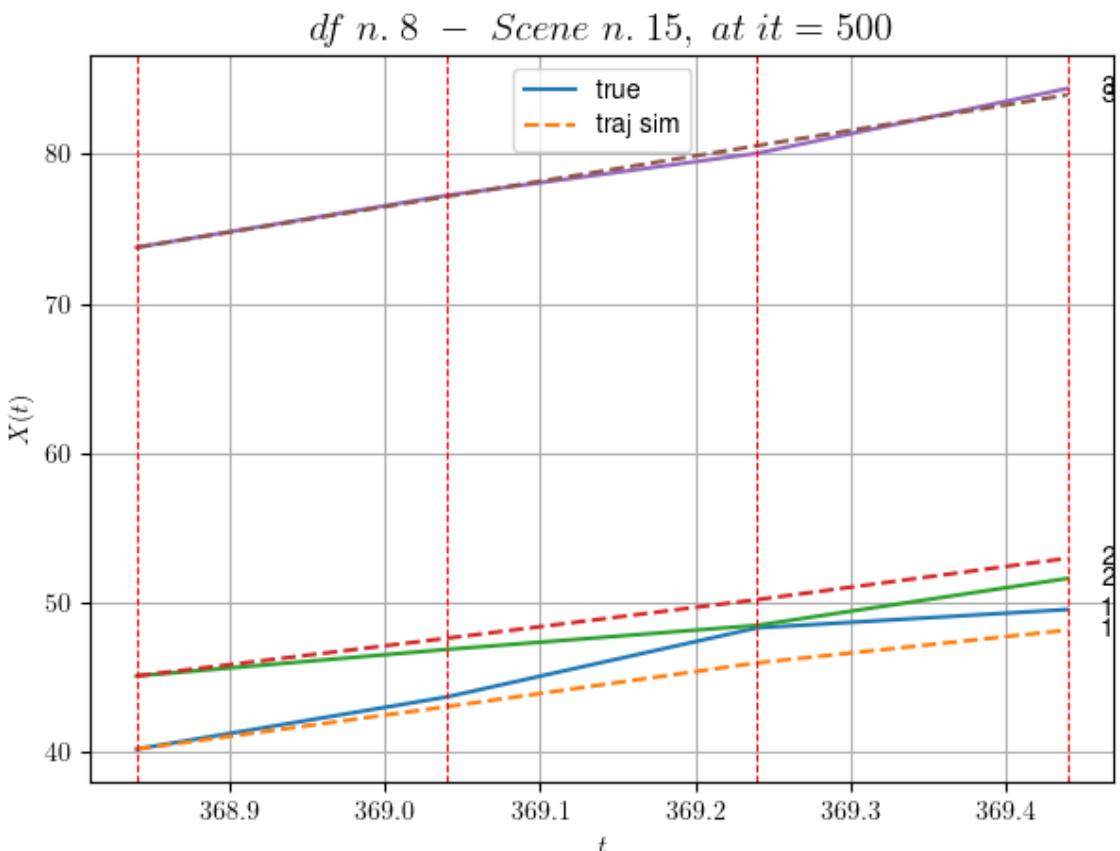
=====
=====
- Time interval n.0: [368.84, 369.04]
 * y_true: [17.45059381 8.87536169]
 * v_ann: [14.209531784057617, 12.607945442199707, 1
7.012012000819908]

- Time interval n.1: [369.04, 369.24]
 * y_true: [23.11801305 8.05829994]
 * v_ann: [14.652591705322266, 12.919320106506348, 1
7.012012000819908]

- Time interval n.2: [369.24, 369.44]
 * y_true: [6.12528304 15.69072344]
 * v_ann: [10.943634033203125, 13.849397659301758, 1
7.012012000819908]

* err= 1.131993775855629
* Learning rate NN = 0.0002952449722215533
* diff = 0.00027842158315016796

```



For scene 15/21  
\* use LR\_NN=0.0005 with err=17.546009781356677 at it=19  
\* v0\_scn\_mean = 17.79129069763837  
\* MAE = 1.0900426748442744

```
=====
=====

For scene 16/21
* use LR_NN=5e-05 with err=6.095046083803713 at it=19
* v0_scn_mean = 16.31874023403081
* MAE = 0.8400787534842142
```

```
=====
=====

For scene 17/21
* use LR_NN=0.0005 with err=15.790621699714672 at it=19
* v0_scn_mean = 21.907073523740767
* MAE = 0.15445417457729824
```

```
=====
=====

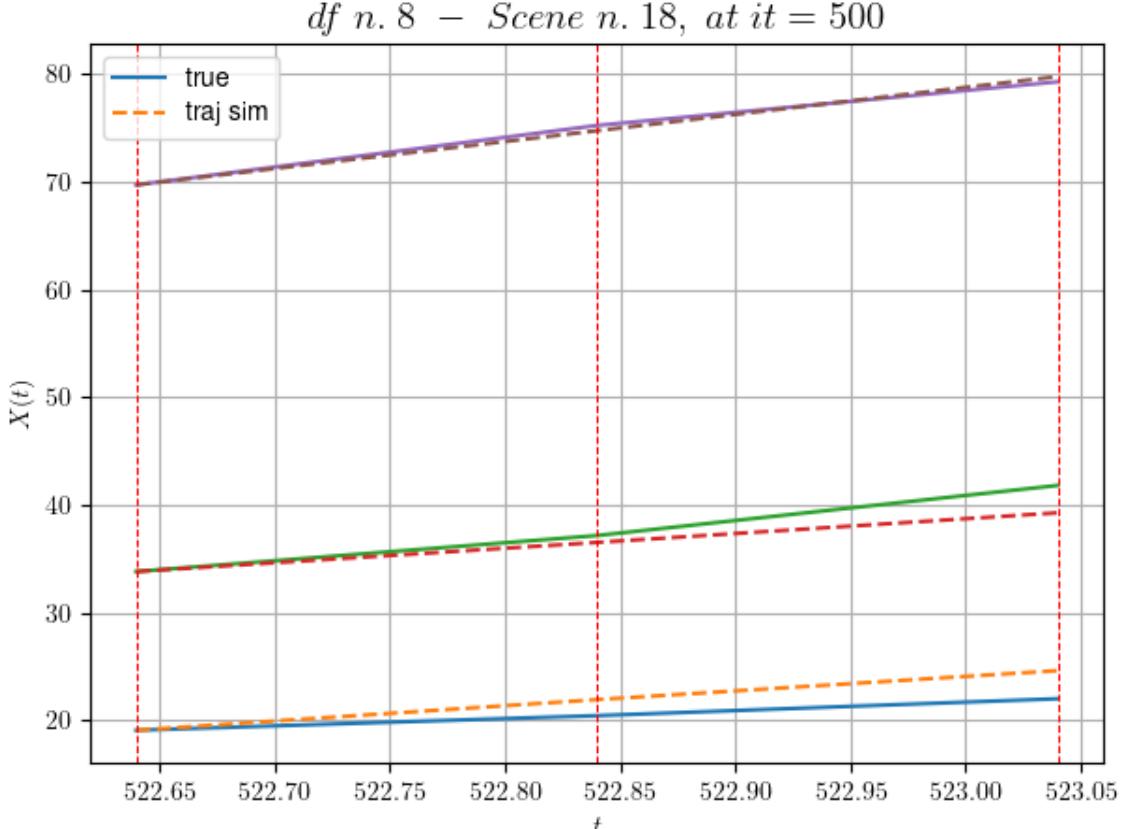
- Time interval n.0: [522.64, 522.84]
* y_true: [6.78505349 16.71042372]
* v_ann: [14.229853630065918, 13.521499633789062, 2
5.15597288259432]
```

```


- Time interval n.1: [522.84, 523.04]
* y_true: [7.85007105 23.28071684]
* v_ann: [13.463550567626953, 13.757328987121582, 2
5.15597288259432]
```

```


* err= 1.8204084164202188
* Learning rate NN = 7.289998848136747e-06
* diff = 0.0018233518545054395
```



For scene 18/21

```
* use LR_NN=1e-05 with err=0.7314312908514277 at it=19
* v0_scn_mean = 25.44661429215233
* MAE = 1.8204084164202188
```

---



---

For scene 19/21

```
* use LR_NN=0.001 with err=29.66678945219317 at it=19
* v0_scn_mean = 21.510251186339474
* MAE = 4.553696233143573
```

---



---

```
- Time interval n.0: [256.44, 256.64]
 * y_true: [7.48303167 10.07767618 21.73093279]
 * v_ann: [12.189599990844727, 13.628543853759766, 1
 5.59067440032959, 17.104258674666323]
```

---



---

```
- Time interval n.1: [256.64, 256.84]
 * y_true: [13.09283525 13.17831107 21.42106847]
 * v_ann: [15.957622528076172, 16.12359046936035, 1
 5.056987762451172, 17.104258674666323]
```

---



---

```
- Time interval n.2: [256.84, 257.04]
```

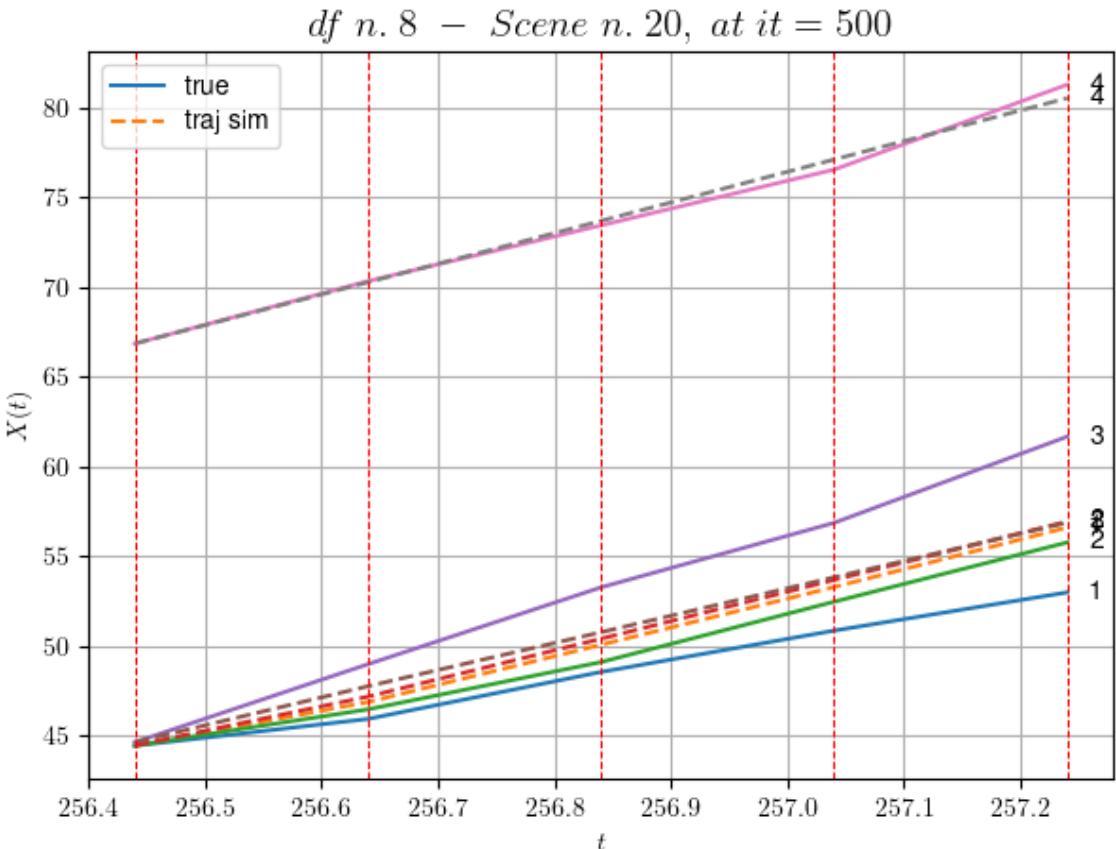
```

* y_true: [11.5255681 16.82586504 17.99104223]
* v_ann: [16.089563369750977, 16.403141021728516, 1
5.314141273498535, 17.104258674666323]

- Time interval n.3: [257.04, 257.24]
* y_true: [10.66053629 16.53589178 24.03163218]
* v_ann: [16.620275497436523, 16.28592300415039, 1
5.237059593200684, 17.104258674666323]

* err= 3.4057699899815206
* Learning rate NN = 0.000478296831715852
* diff = 6.765521477003489e-05

```



For scene 20/21

```

* use LR_NN=0.001 with err=13.275234538897031 at it=19
* v0_scn_mean = 18.135876016246183
* MAE = 3.380600403675692

```

---



---

For df=8 with 21 scenes, time taken: 292.05

---



---



---



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---

In df n.9/10 we have 9 scenes

---



---

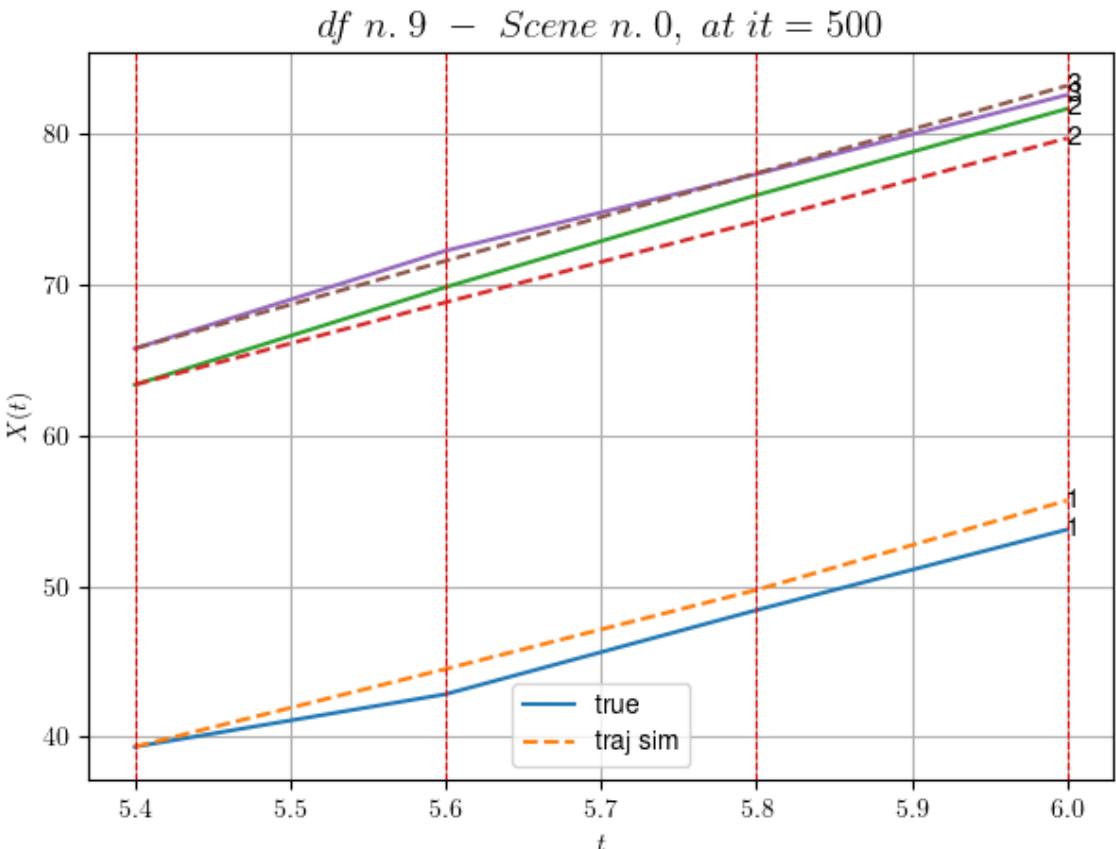
```

- Time interval n.0: [5.40, 5.60]
 * y_true: [17.46255149 32.38946228]
 * v_ann: [25.83567237854004, 27.365333557128906, 2
 9.081107080157135]

- Time interval n.1: [5.60, 5.80]
 * y_true: [27.89361325 30.52270411]
 * v_ann: [26.21583366394043, 26.763999938964844, 2
 9.081107080157135]

- Time interval n.2: [5.80, 6.00]
 * y_true: [26.75613901 28.6867411]
 * v_ann: [29.71533966064453, 27.701704025268555, 2
 9.081107080157135]

* err= 1.4222190368634706
* Learning rate NN = 0.0005904899444431067
* diff = 0.0002333826090643587
```



For scene 0/9

\* use LR\_NN=0.001 with err=25.442983921329198 at it=19  
 \* v0\_scn\_mean = 29.13624061409139  
 \* MAE = 1.1892567223639834

```

- Time interval n.0: [20.80, 21.00]
 * y_true: [29.01888251 26.46522664]
 * v_ann: [27.679340362548828, 27.50980567932129, 3
 2.73331157196295]
```

---

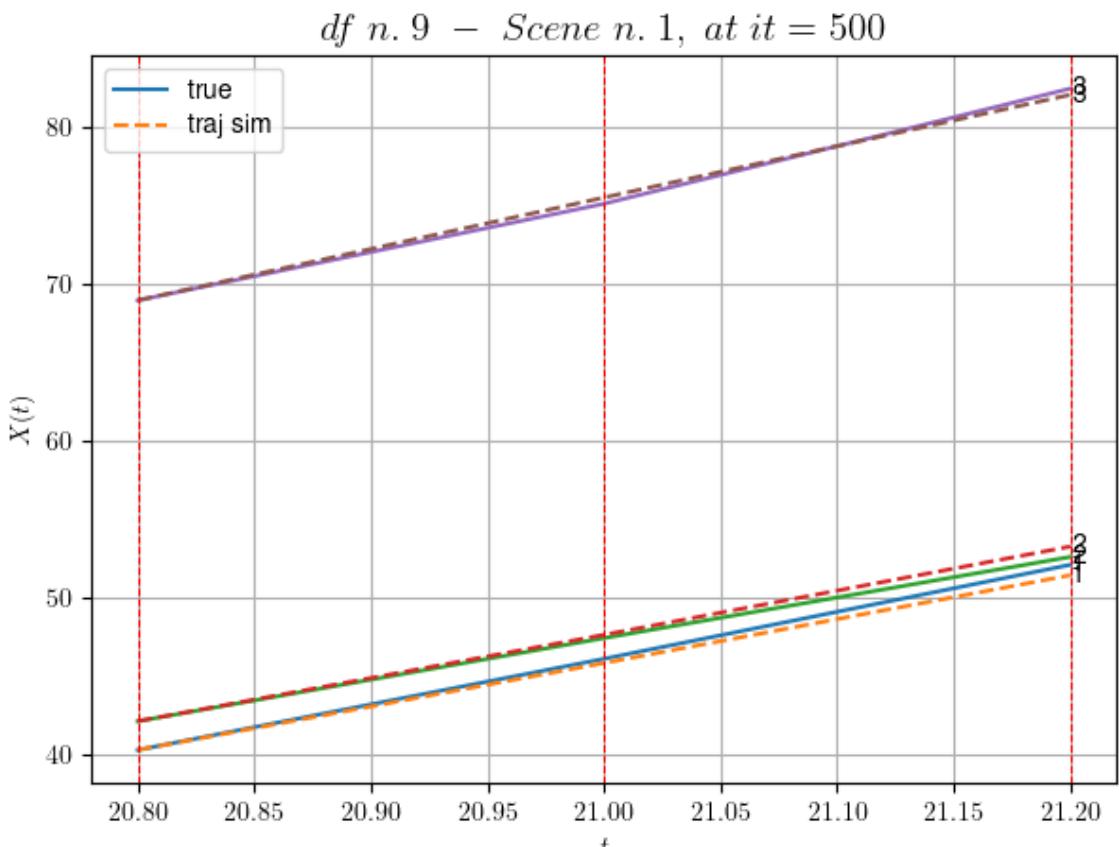
```

- Time interval n.1: [21.00, 21.20]
 * y_true: [29.93697896 25.84808908]
 * v_ann: [27.9519100189209, 28.11995506286621, 32.7
 3331157196295]
```

---

```

* err= 0.14543589431075643
* Learning rate NN = 0.00036449998151510954
* diff = 1.9902566277679723e-05
```



For scene 1/9

```

* use LR_NN=0.0005 with err=11.121669181261232 at it=19
* v0_scn_mean = 32.56931300036487
* MAE = 0.14543589431075643
```

---



---

```

- Time interval n.0: [37.80, 38.00]
 * y_true: [21.35828745 27.25004814]
 * v_ann: [21.595680236816406, 21.892066955566406, 2
 3.639051069298]
```

---

```

 - Time interval n.1: [38.00, 38.20]
 * y_true: [19.23626153 17.91519282]
 * v_ann: [22.635433197021484, 22.391279220581055, 2
3.639051069298]

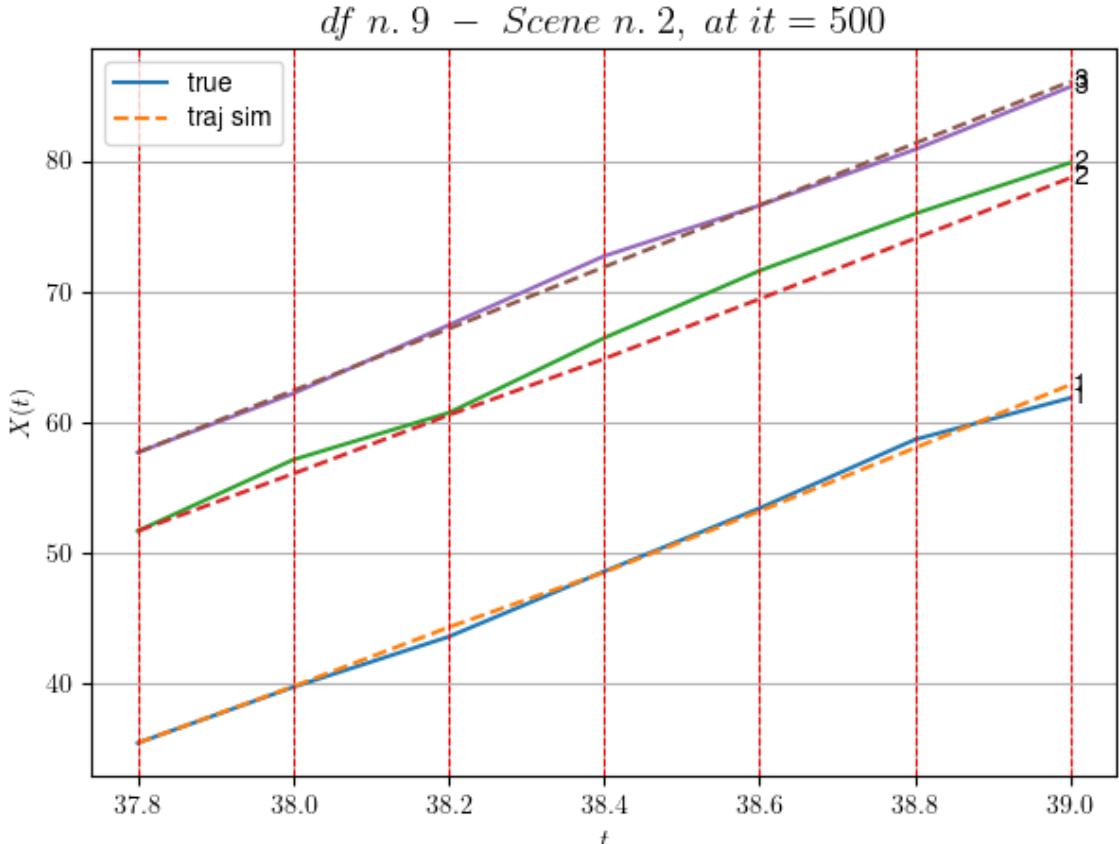
 - Time interval n.2: [38.20, 38.40]
 * y_true: [24.96063116 28.62771944]
 * v_ann: [21.04199981689453, 21.560766220092773, 2
3.639051069298]

 - Time interval n.3: [38.40, 38.60]
 * y_true: [24.1844348 25.71934895]
 * v_ann: [23.356061935424805, 22.87603759765625, 2
3.639051069298]

 - Time interval n.4: [38.60, 38.80]
 * y_true: [26.26418379 21.80127307]
 * v_ann: [24.18104362487793, 23.128284454345703, 2
3.639051069298]

 - Time interval n.5: [38.80, 39.00]
 * y_true: [15.9216195 19.51476921]
 * v_ann: [24.15688705444336, 23.179157257080078, 2
3.639051069298]

 * err= 0.7861124561150156
 * Learning rate NN = 0.00031381050939671695
 * diff = 7.806605452409521e-05
```



For scene 2/9

- \* use LR\_NN=0.001 with err=30.87541515149222 at it=19
- \* v0\_scn\_mean = 24.02070771954729
- \* MAE = 0.7843516972376436

---



---

- Time interval n.0: [44.40, 44.60]
- \* y\_true: [24.95803839 22.94664651]
- \* v\_ann: [25.862171173095703, 26.217805862426758, 1  
8.016106720508347]

---



---

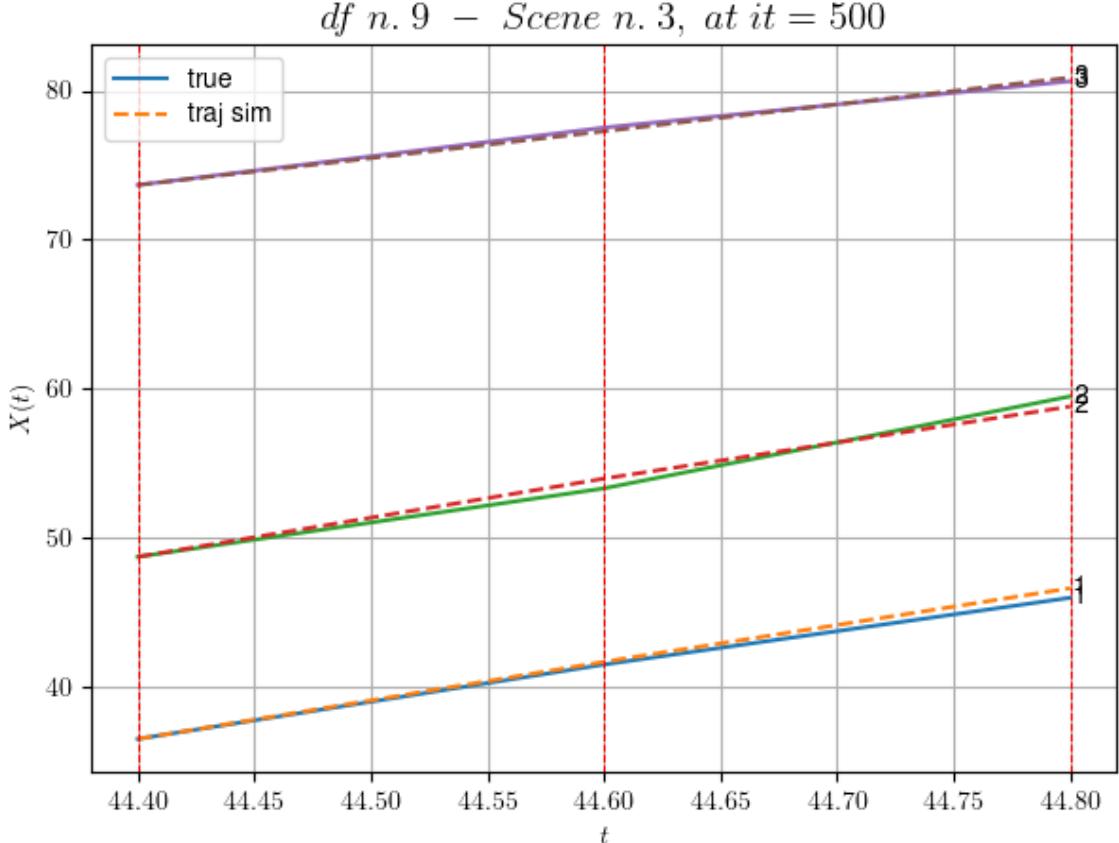
- Time interval n.1: [44.60, 44.80]
- \* y\_true: [22.38974011 30.85088397]
- \* v\_ann: [24.686241149902344, 24.189455032348633, 1  
8.016106720508347]

---



---

- \* err= 0.16140179120633083
- \* Learning rate NN = 0.00036449998151510954
- \* diff = 2.6861136588784973e-05



For scene 3/9

- \* use LR\_NN=0.0005 with err=5.593150463766858 at it=19
- \* v0\_scn\_mean = 18.735139779226905
- \* MAE = 0.15852344998180176

---



---

- Time interval n.0: [117.80, 118.00]
- \* y\_true: [26.21501314 26.51617559]
- \* v\_ann: [25.89620590209961, 25.34485626220703, 32.94782563350116]

---

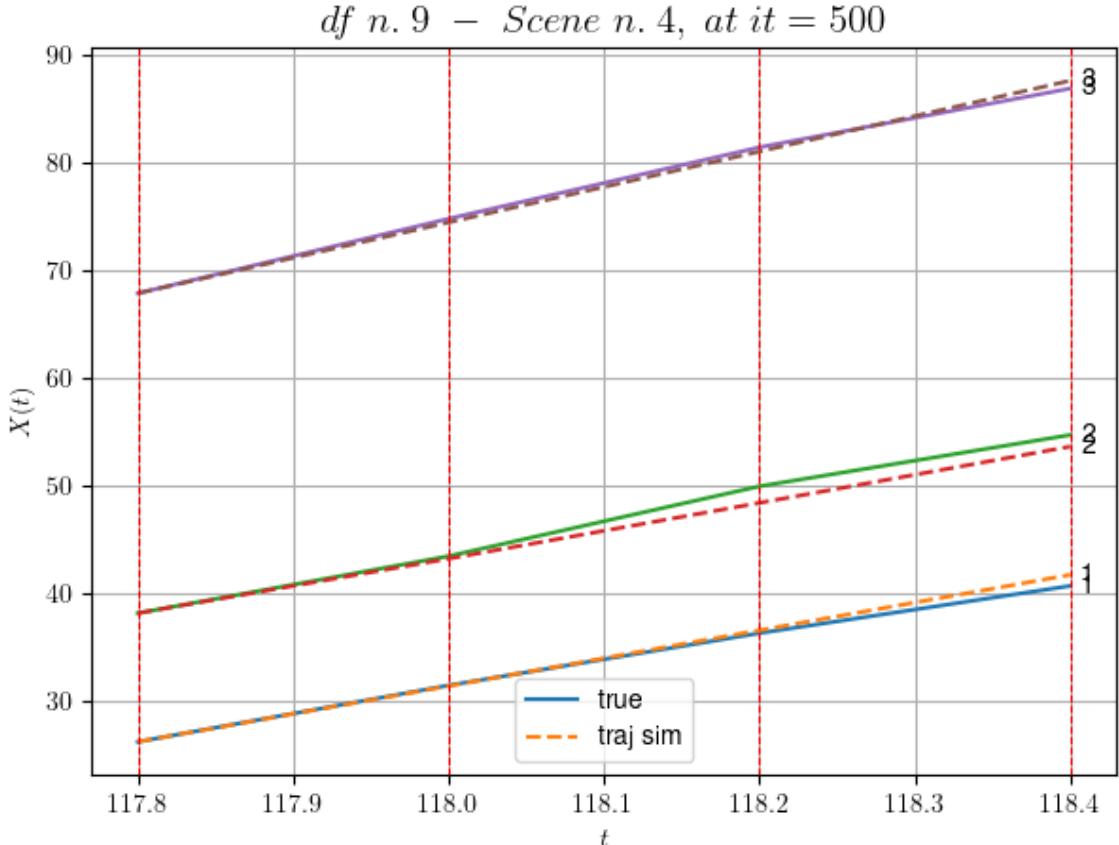
- Time interval n.1: [118.00, 118.20]
- \* y\_true: [24.27291409 32.45579962]
- \* v\_ann: [25.92425537109375, 25.913782119750977, 32.94782563350116]

---

- Time interval n.2: [118.20, 118.40]
- \* y\_true: [21.96072195 23.86482679]
- \* v\_ann: [25.788423538208008, 26.186365127563477, 32.94782563350116]

---

- \* err= 0.461670545058197
- \* Learning rate NN = 2.952449540316593e-05
- \* diff = 0.00012242151203173401



For scene 4/9

- \* use LR\_NN=5e-05 with err=7.065254338566198 at it=19
- \* v0\_scn\_mean = 32.77095622784199
- \* MAE = 0.3795253059044048

---



---

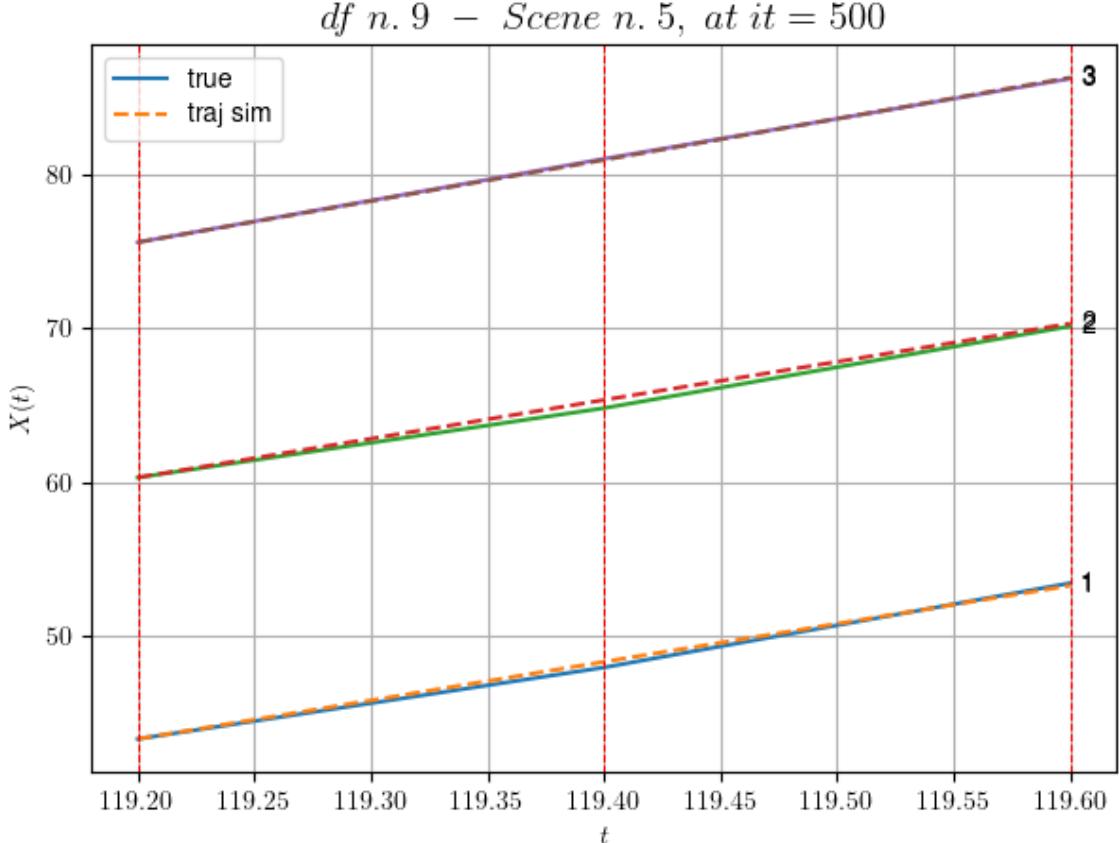
- Time interval n.0: [119.20, 119.40]
  - \* y\_true: [23.20444186 22.52067771]
  - \* v\_ann: [25.042177200317383, 25.180368423461914, 2 6.734589830538418]

---

- Time interval n.1: [119.40, 119.60]
  - \* y\_true: [27.39348249 26.5570173 ]
  - \* v\_ann: [24.728160858154297, 24.789710998535156, 2 6.734589830538418]

---

- \* err= 0.05423339842380392
- \* Learning rate NN = 7.289998757187277e-05
- \* diff = 4.3462489977171004e-05



For scene 5/9

- \* use LR\_NN=0.0001 with err=0.30416345579693227 at it=19
- \* v0\_scn\_mean = 26.93051429409624
- \* MAE = 0.05416895770108467

---



---

- Time interval n.0: [120.20, 120.40]
  - \* y\_true: [30.48045094 26.16776015]
  - \* v\_ann: [26.738513946533203, 27.022621154785156, 27.348987307571747]

---



---

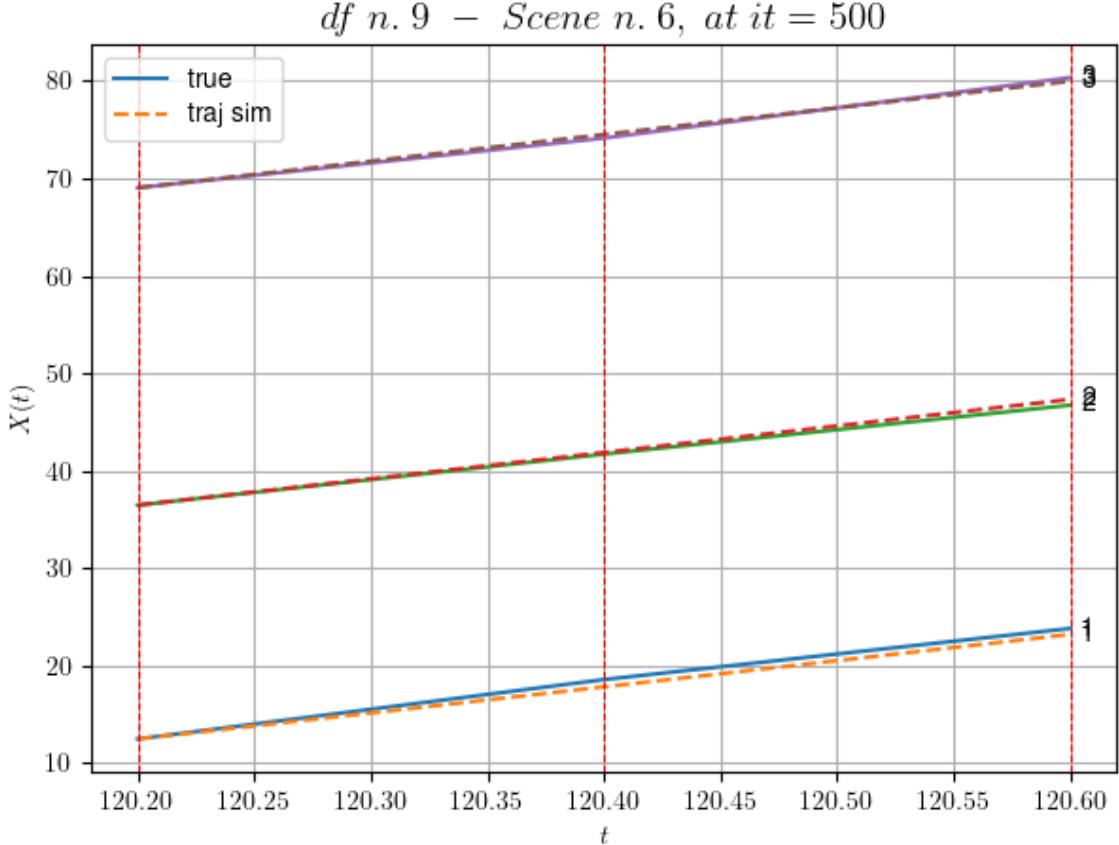
- Time interval n.1: [120.40, 120.60]
  - \* y\_true: [26.23623075 25.12734403]
  - \* v\_ann: [26.9464111328125, 27.268207550048828, 27.348987307571747]

---



---

- \* err= 0.17745889861738237
- \* Learning rate NN = 3.6449993785936385e-05
- \* diff = 0.00016095752586137158



For scene 6/9

- \* use LR\_NN=5e-05 with err=1.6304596122676027 at it=19
- \* v0\_scn\_mean = 27.508047950092337
- \* MAE = 0.17745889861738237

---



---

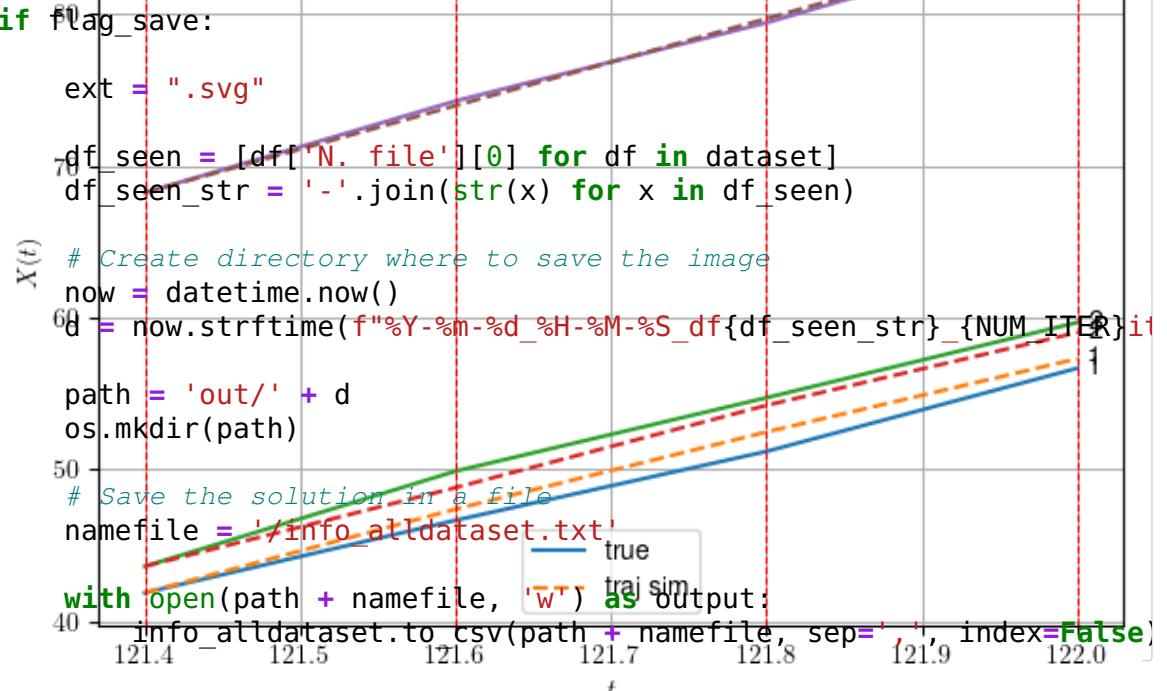
- Time interval n.0: [121.40, 121.60]
    - \* y\_true: [23.88369588 31.34452269]
    - \* v\_ann: [27.562976837158203, 25.920917510986328, 2 8.65752843457779]
  
  - Time interval n.1: [121.60, 121.80]
    - \* y\_true: [22.66516063 24.1738881 ]
    - \* v\_ann: [25.390140533447266, 27.090717315673828, 2 8.65752843457779]
  
  - Time interval n.2: [121.80, 122.00]
    - \* y\_true: [27.39865086 24.79107704]
    - \* v\_ann: [24.13347816467285, 23.988746643066406, 2 8.65752843457779]
- 
- 

In [6]:

```
To better handling info dataset
err= 0.3845010718917244
tmp = info_alldataset
Learning rate_NN = 0.0005904899444431067
info_alldataset*diff=pd.concat([tmp,info_alldataset],axis=1)
info_alldataset*diff=6.879695343014859e-05
```

## df n. 9 – Scene n. 7, at it = 500

```
In [7]: # Create the directory..
```



For scene 7/9

- \* use LR\_NN=0.001 with err=14.12140143433227 at it=19
- \* v0\_scn\_mean = 28.738076668229077
- \* MAE = 0.2577835906632179

---



---

- Time interval n.0: [205.80, 206.00]  
 \* y\_true: [16.81767795 9.52209489]  
 \* v\_ann: [12.113150596618652, 12.635169982910156, 2  
 3.15865117600696]

---

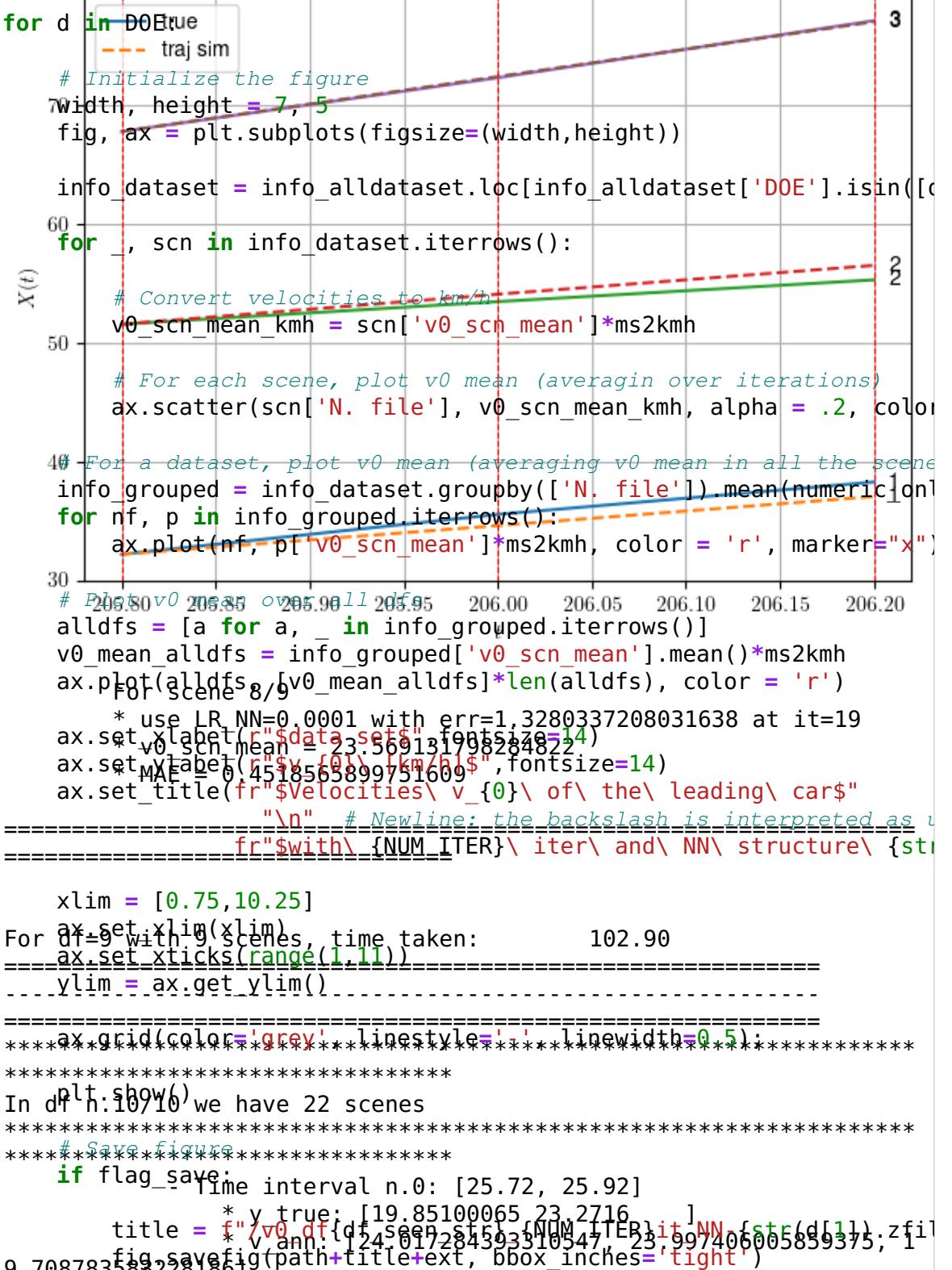
- Time interval n.1: [206.00, 206.20]  
 \* y\_true: [13.65726133 9.1692133 ]  
 \* v\_ann: [12.247503280639648, 12.169502258300781, 2  
 3.15865117600696]

---

\* err= 0.47564232460390504  
 \* Learning rate NN = 7.289998757187277e-05  
 \* diff = 0.00012116806317596929

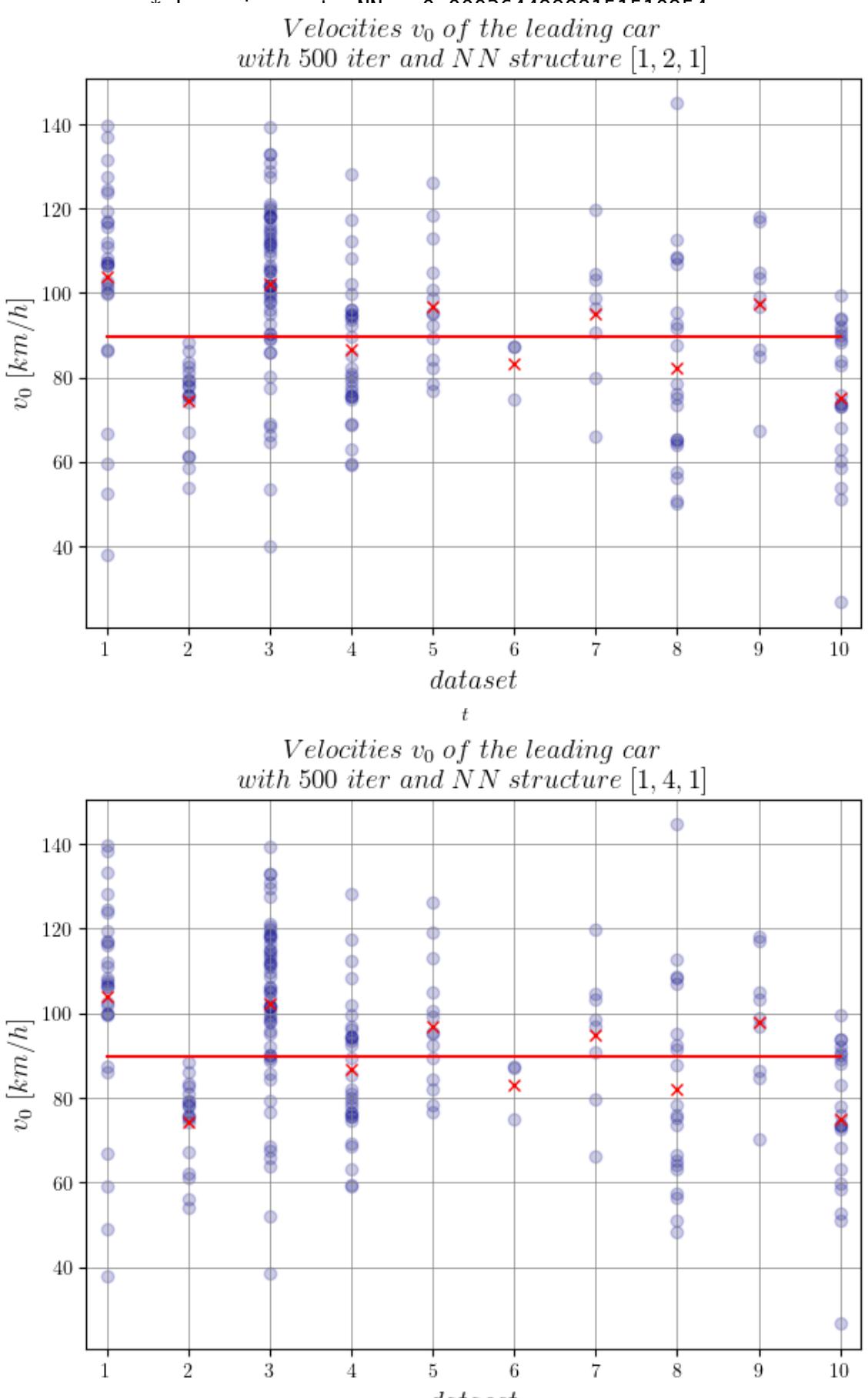
In [8]: ms2kmh = 3.6

df n. 9 - Scene n. 8, at it = 500



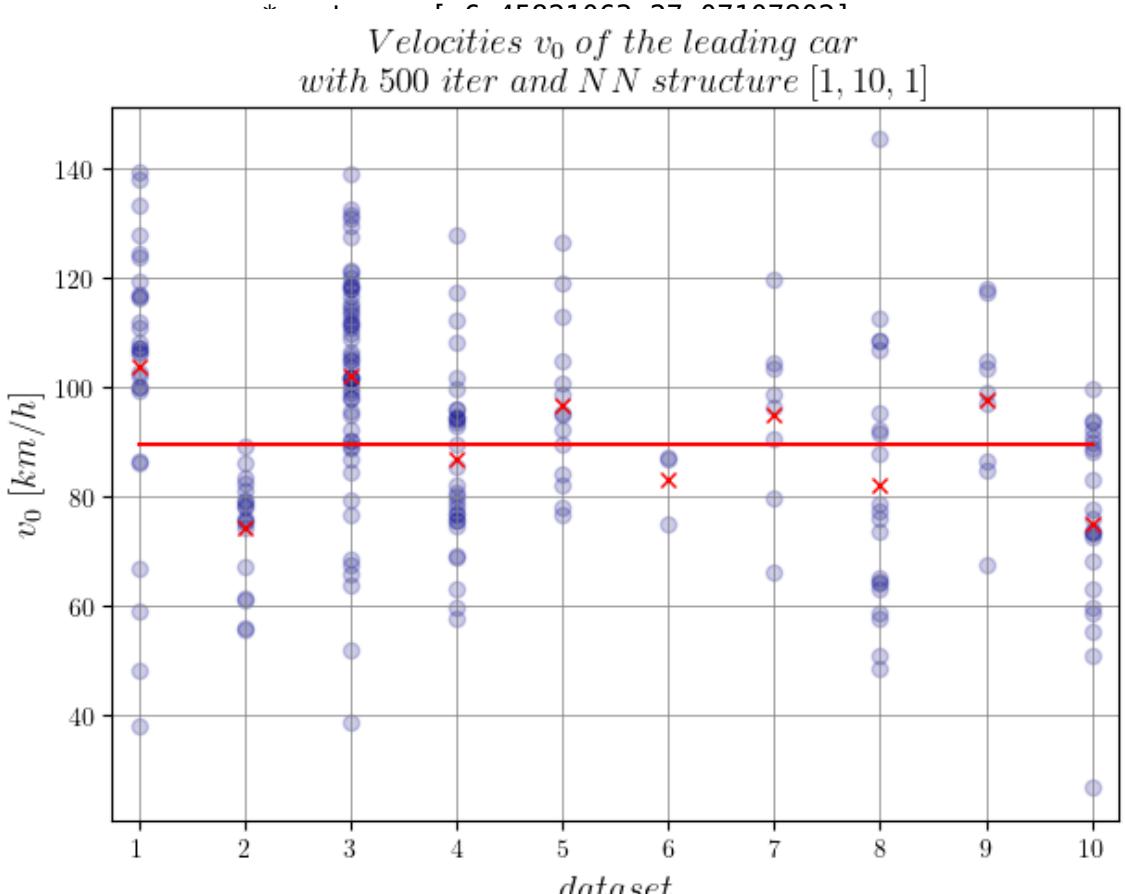
- Time interval n.1: [25.92, 26.12]  
 \* y\_true: [21.59125574 29.46240542]  
 \* v\_ann: [23.142475128173828, 22.91452407836914, 1  
 9.708783583228186]

\* err= 0.39155279191579667



4.696180100224403]

- Time interval n.3: [72.32, 72.52]

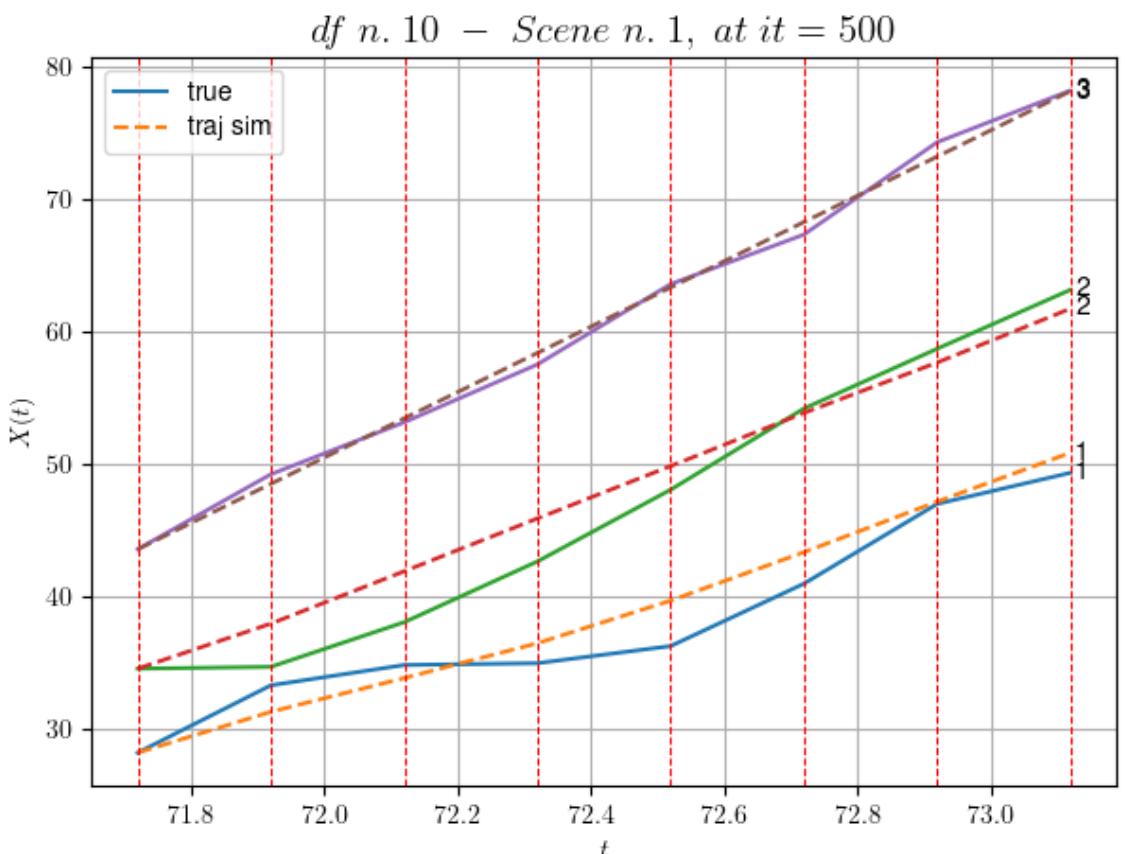


\* err= 3.03549/21/1994503

\* Learning rate NN = 1.2709323527815286e-05

\* diff = 0.0038813219748279337

### Plot together



For scene 1/22

\* use LR\_NN=5e-05 with err=12.283448633776665 at it=19

\* v0\_scn\_mean = 25.01440905608093

```
* MAE = 3.0354972171994503
In [9]: # define subplot grid
width, height = 7, 5
nfig = len(DOE)

```

fig, axes = plt.subplots(nrows=1, ncols=nfig, figsize = (width\*nfig, height))
plt.subplots\_adjust(hspace=0.4)
\* y\_true: [2.40007998 4.01291198]
suptitle = fr"\$Velocities\ v\_0[0]\ of\ the\ leading\ car,\ using\ NN\\"
fig.suptitle(suptitle, fontsize=30, y=1.075)

ms2kmh = 3.6

```
for ax, d in zip(axes.ravel(), DOE):
 * y_true: [3.94779745 3.96114827]
 # get the right df
 v_ann = info_alldataset.loc[info_alldataset['DOE'].isin([d])].copy()
 for _, scn in info_dataset.iterrows():
 # Convert velocities to km/h
 v0_scn_mean_kmh = scn['v0 mean']*ms2kmh
 * v_ann: [6.867963790893555, 8.353361129760742, 19.87543626344988]
 # For each scene, plot v0 mean (averaging over iterations)
 ax.scatter(scn['N. file'], v0_scn_mean_kmh, alpha = .2, color='blue')

```

# For a dataset, plot v0 mean (averaging v0 mean in all the scenes)
info\_grouped = info\_dataset.groupby(['N. file']).mean(numeric\_only=True)
for nf, p in info\_grouped.iterrows():
 ax.plot(nf, p['v0 mean']\*ms2kmh, color = 'r', marker="x")

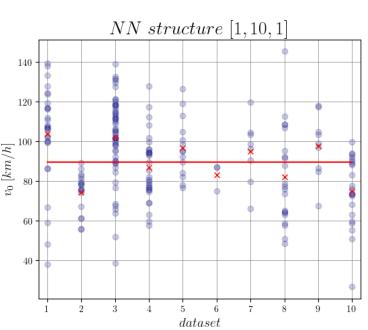
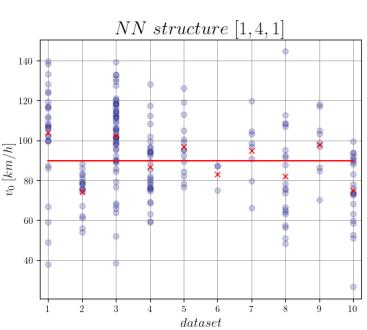
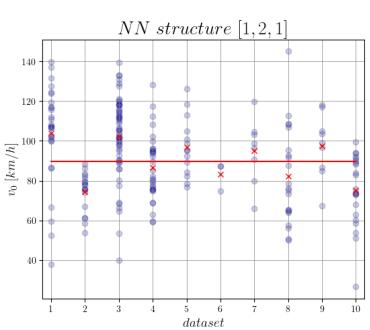
```
Plot v0 mean over all dfs
alldfs = [a for a, _ in info_grouped.iterrows()]
v0_mean_alldfs = info_grouped['v0 mean'].mean()*ms2kmh
ax.plot(alldfs, [v0_mean_alldfs]*len(alldfs), color = 'r')

```

ax.set\_xlabel(r"\$data\ set\$", fontsize=14)
ax.set\_ylabel(r"\$v\_0[0]\ [km/h]\$", fontsize=14)
ax.set\_title(fr"\$NN\ structure\ [d]\$", fontsize=20)

# Limits
xlim = [0.75,10.25]
ax.set\_xlim(xlim)
ax.set\_xticks(range(1,11))
ylim = ax.get\_ylim()
ax.grid(color='grey', linestyle='--', linewidth=0.5);

plt.show()



\* MAE = 1.2754209790956512

In [10]: # Save figure

```
if ftag_save==1:
 title = f"/v0_df{df_seen_str}_{NUM_ITER}it_NN-ALL"
 fig.savefig(path+title+ext, bbox_inches='tight')
 - Time interval n.0: [122.12, 122.32]
 * y_true: [20.84138029 3.6661027]
 * v_ann: [12.075495719909668, 12.438743591308594, 2
```

**Plot comparing**  
7.527679985064857]

```
- Time interval n.1: [122.32, 122.52]
* y_true: [11.80149783 9.92593948]
* v_ann: [10.715973854064941, 10.959381103515625, 2
```

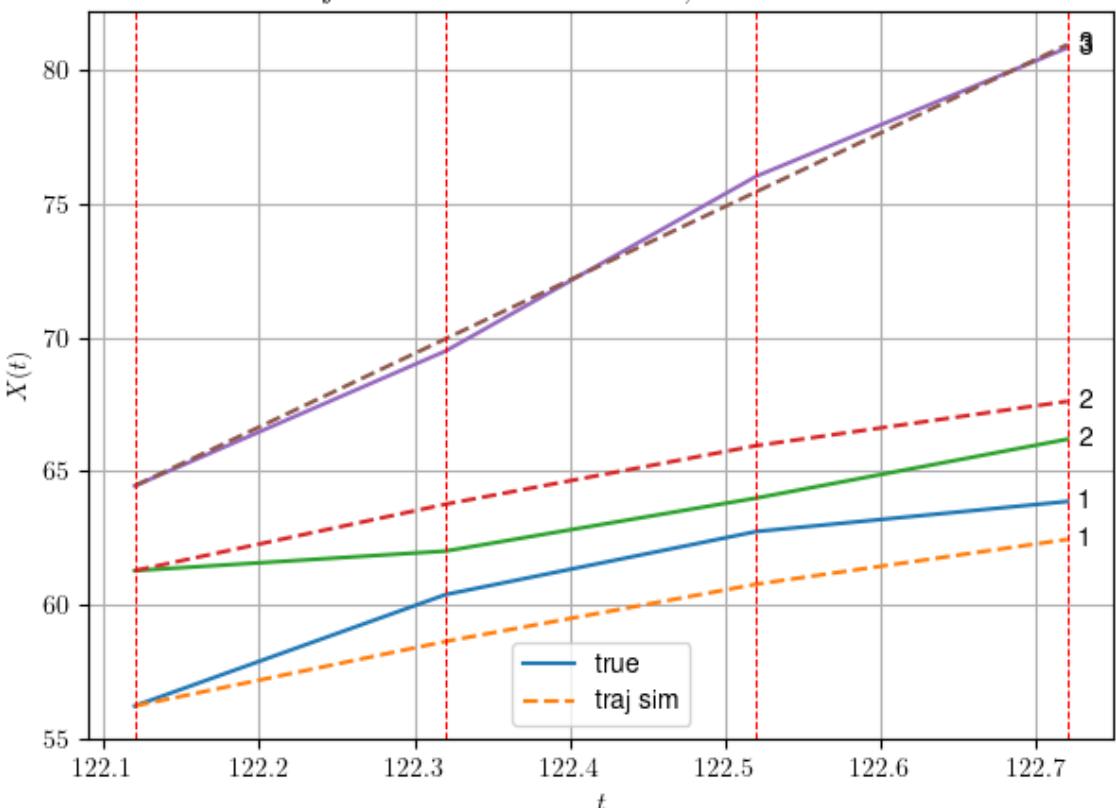
7.527679985064857]

```
- Time interval n.2: [122.52, 122.72]
* y_true: [5.61571017 11.00089954]
* v_ann: [8.37350845336914, 8.288256645202637, 27.5
```

27679985064857]

```
* err= 1.5388601065878538
* Learning rate NN = 0.0029524494893848896
* diff = 0.0003851937501775371
```

df n. 10 – Scene n. 3, at it = 500



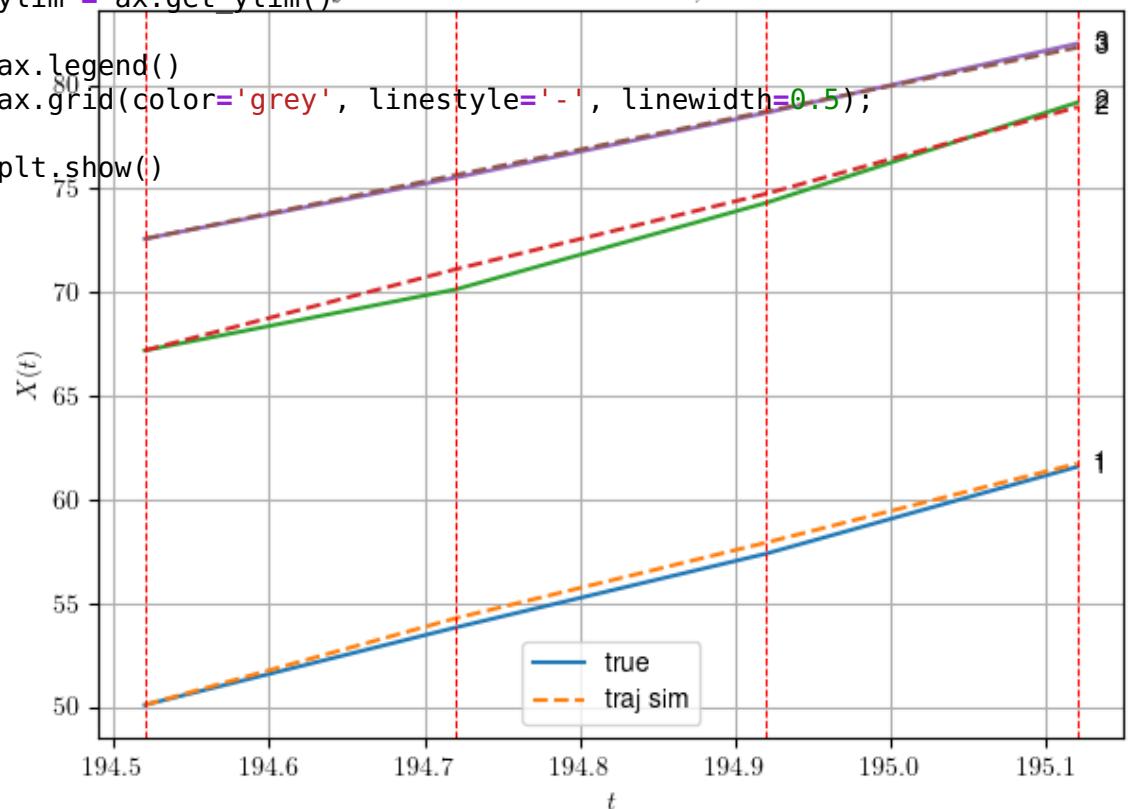
For scene 3/22

\* use LR\_NN=0.005 with err=2.307862968051874 at it=19

```
In [11]: # Initialize the figure
width, height = 7, 5
fig, ax = plt.subplots(figsize=(width, height))
=====
ms2kmh = 3.6

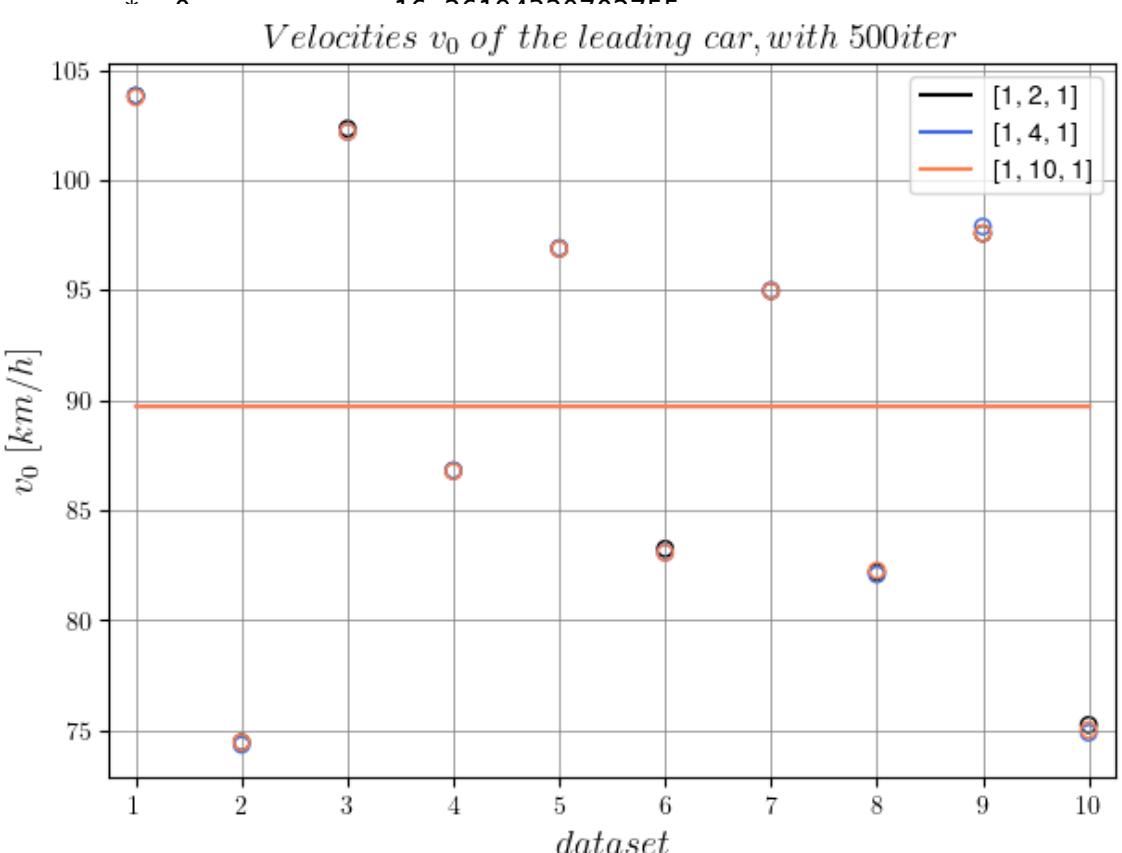
palette = ['black', 'royalblue', 'coral']
for step, d in enumerate(DOE):
 info_dataset = info_alldataset.loc[info_alldataset['DOE'].isin([d])]
 color = palette[step]
 - Time interval n.0: [194.52, 194.72]
 * y true: [18.69097642 14.73135237]
 for nf, v_ahn in info_dataset[['v0_mean', 'v0_mean_err']].iterrows():
 ax.scatter(nf, v_ahn['v0_mean'] * ms2kmh, facecolors='none', edgecolors=color)
 - Time interval n.1: [194.72, 194.92]
 # For a dataset, plot v0 mean for training + mean in all the scenes
 info_grouped = info_dataset.groupby(['N_file']).mean()
 for nf, v_ahn in info_grouped.iterrows():
 ax.scatter(nf, v_ahn['v0_mean'] * ms2kmh, facecolors='none', edgecolors='black')

 # Plot v0 mean over all dfs
 alldfs = [a for a in info_grouped.itertuples()]
 v0_mean_alldfs = info_grouped['v0_mean'].mean() * ms2kmh
 ax.plot(alldfs[v_ahn['N_file']:len(alldfs)], v0_mean_alldfs, label=v_ahn['N_file'])
 ax.set_xlabel(r"$data\ set$", fontsize=14)
 ax.set_ylabel(r"$v_{\{0\}}\ [km/h]$".format(step), fontsize=14)
 ax.set_title(fr"${'Vélocités'}\ v_{\{0\}}\ of\ the\ leading\ car,\ with\ {NUM}$".format(step))
 * err= 0.14619110492750634
 xlim = [0.75*10^25, Learning rate NN = 0.0005904899444431067
```



For scene 4/22

\* use LR NN=0.001 with err=15.063746008520743 at it=19



```
In [12]: # Save figure
if flag_save:
 * y_true: [33.22042439 22.87050849]
 * v_ann: [28.91706085205078, 29.256940841674805, 2
5.797423357466446]
 title = f"/v0_df[df_seen_str]{NUM_ITER}iter_NN-ALL-comparing"
 fig.savefig(path+title+ext, bbox_inches='tight')

- Time interval n.4: [202.32, 202.52]
 * y_true: [33.45065979 24.47068757]
 * v_ann: [28.995695114135742, 28.842147827148438, 2
5.797423357466446]
```

































