Grando_ABC_all_param

March 16, 2021

1 Grando ABC - Estimating all paramters

Calculations here were made using the same variables as used by grando.

• 1 U ([5, 15]) , 2 U ([16, 25]) and 3 U ([26, 35]) ; • 1 U ([0.03, 0.07]) , 2 U ([0.008, 0.02]) and 3 U ([0.001, 0.007]) ; • 1 U ([0.8, 1.4]) , 2 U ([0.3, 0.7]) and 3 U ([0.07, 0.2]) .

The data includes 200 iterations, again as per Grando.

Computation took 42.2841 seconds.

The graphs below correspond to the ones found in Grando's paper pages 75 and 76. As one may notice the results are extremely close to those found in the original paper.

[1]:
```
import numpy as np
import seaborn as sns
import pandas as pd
import matplotlib.pyplot as plt
%matplotlib inline
```

[2]:
```
headers =['lambda1', 'lambda2', 'lambda3', 'xi_1', 'xi_2', 'xi_3', 'tau_1',␣
↪'tau_2', 'tau_3', 'distSit', 'distSitAss']
```

[3]:
```
oc_reader.cpp sampler.cpp -o ggdata = pd.read_csv('avg.csv', names = headers)
```

[4]:
```
data.head()
```

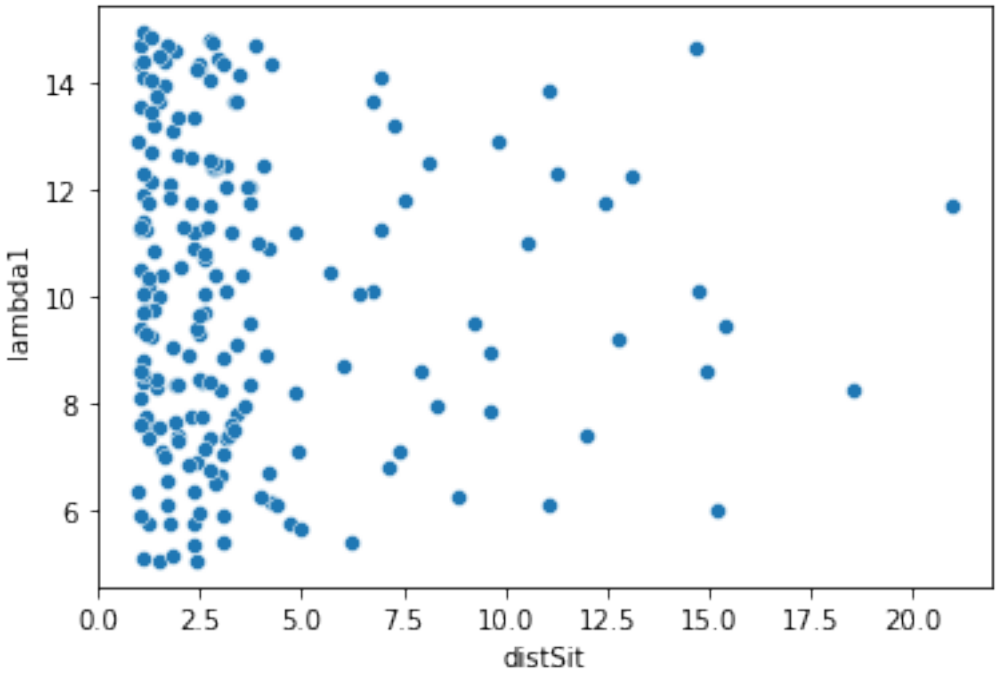
[4]:

	lambda1	lambda2	lambda3	xi_1	xi_2	xi_3	tau_1	tau_2	tau_3	distSit	distSitAss
0	7.72777	21.1273	33.5820	0.040752	0.019965	0.002872	1.056420	0.441652	0.145414	2.29789	40.3844
1	11.74540	17.3097	28.3375	0.041449	0.009954	0.001259	0.893861	0.656494	0.089387	12.41720	240.1140
2	12.46180	16.7491	28.1072	0.069705	0.017071	0.001841	1.293110	0.530221	0.134914	4.08530	74.9581
3	14.83420	16.1679	33.6090	0.037133	0.016443	0.005841	1.159330	0.653742	0.174706	2.74648	60.6030
4	11.20010	23.1095	27.7154	0.060054	0.010015	0.002161	1.370370	0.347369	0.141211	3.24587	57.1348

[5]:
```
# Lambda1 vs distance

sns.scatterplot(x = data['distSit'],y = data['lambda1'])
```

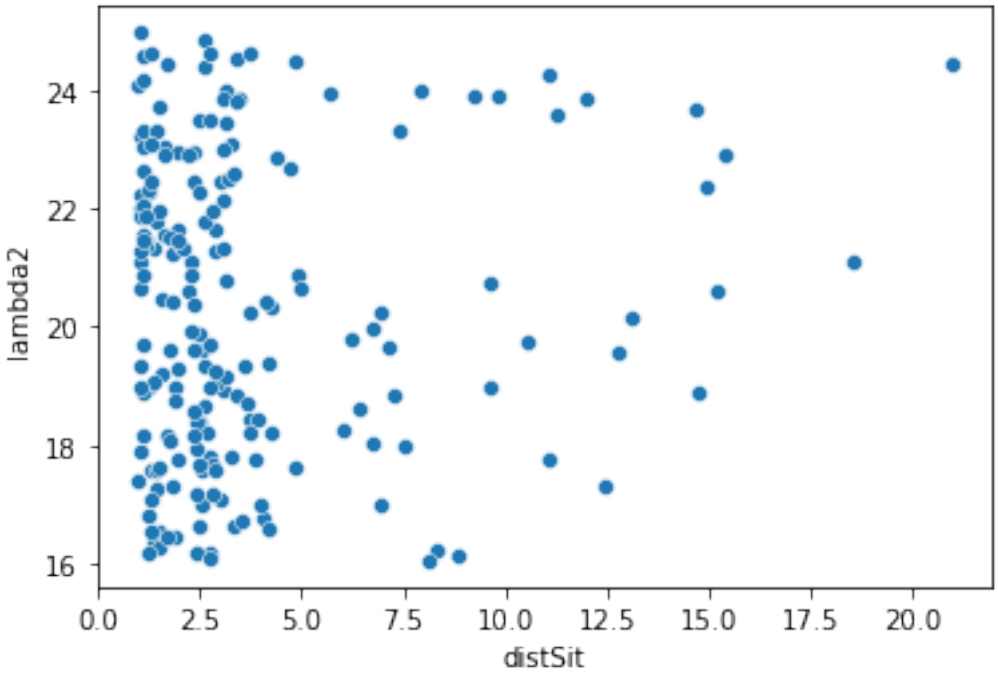
[5]: <AxesSubplot:xlabel='distSit', ylabel='lambda1'>



[6]:
```
# Lambda2 vs distance

sns.scatterplot(x = data['distSit'],y = data['lambda2'])
```

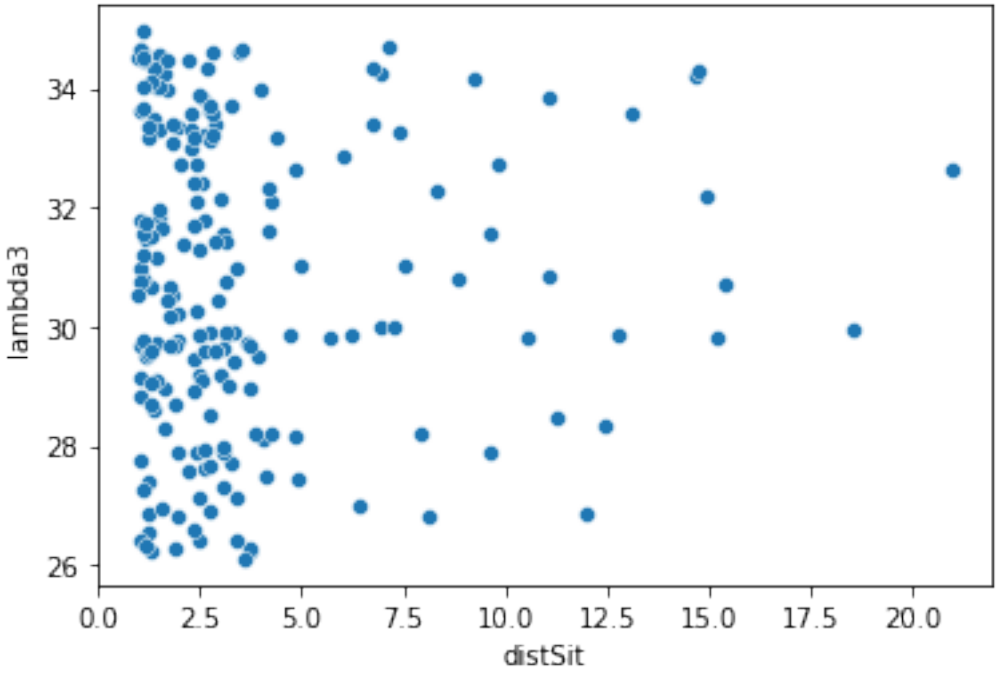
[6]: <AxesSubplot:xlabel='distSit', ylabel='lambda2'>



[7]:
```
# Lambda3 vs distance

sns.scatterplot(x = data['distSit'], y = data['lambda3'])
```

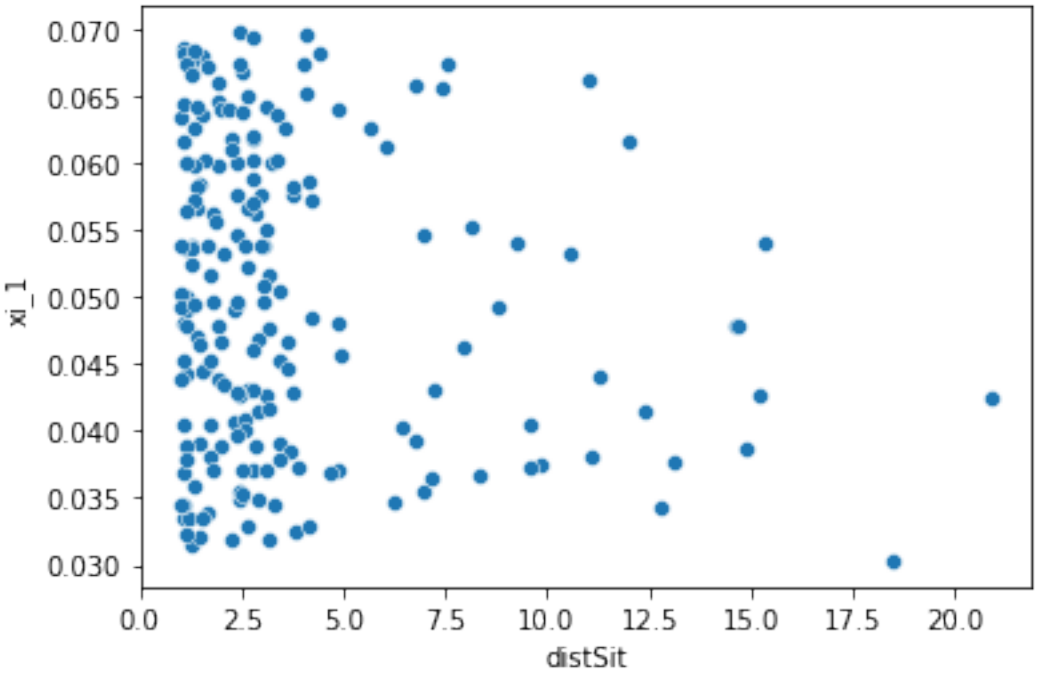
[7]: <AxesSubplot:xlabel='distSit', ylabel='lambda3'>



[8]:
```
# xi_1 vs distance

sns.scatterplot(x = data['distSit'],y = data['xi_1'])
```

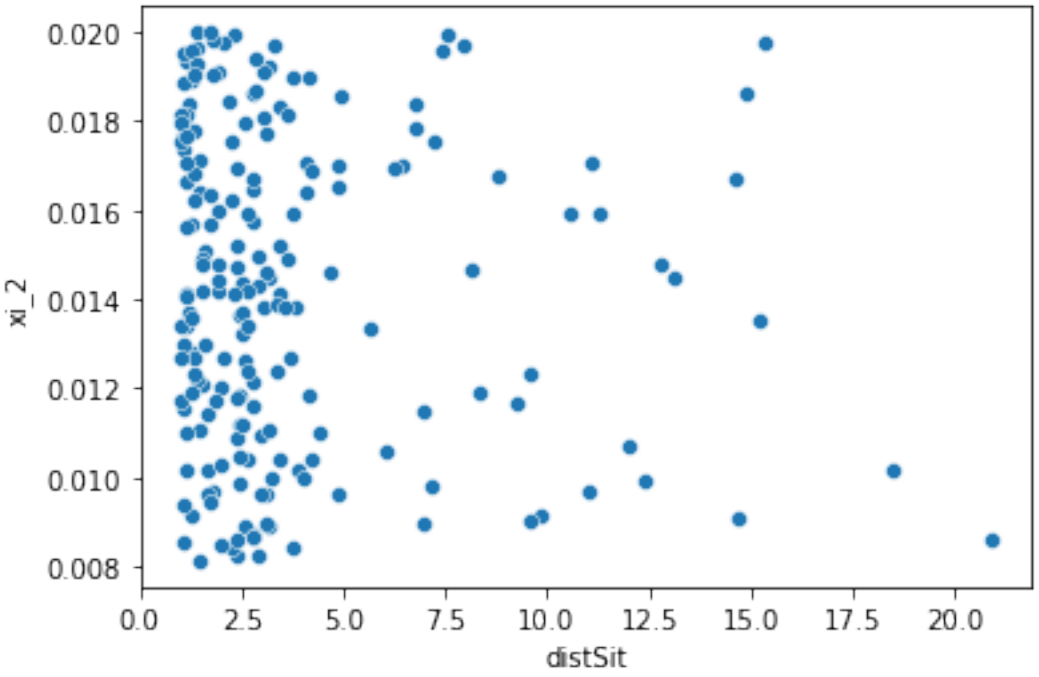
[8]: <AxesSubplot:xlabel='distSit', ylabel='xi_1'>



[9]:
```
# xi_2 vs distance

sns.scatterplot(x = data['distSit'],y = data['xi_2'])
```

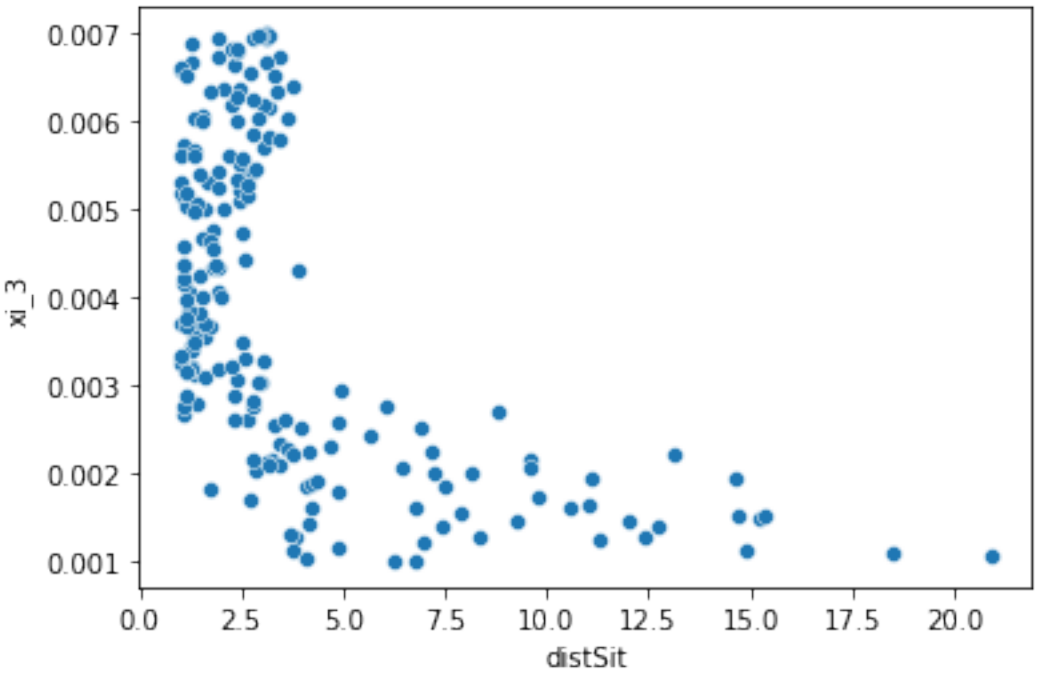
[9]: <AxesSubplot:xlabel='distSit', ylabel='xi_2'>



[10]:
```
# xi_3 vs distance

sns.scatterplot(x = data['distSit'], y = data['xi_3'])
```

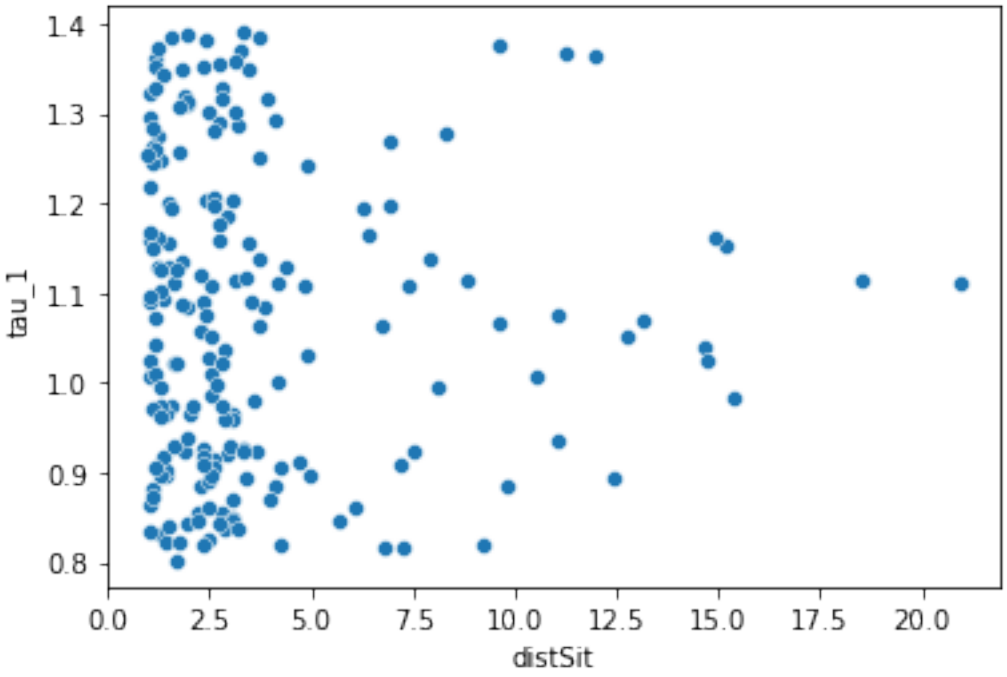
[10]: <AxesSubplot:xlabel='distSit', ylabel='xi_3'>



[11]:
```
# tau_1 vs distance

sns.scatterplot(x = data['distSit'], y = data['tau_1'])
```

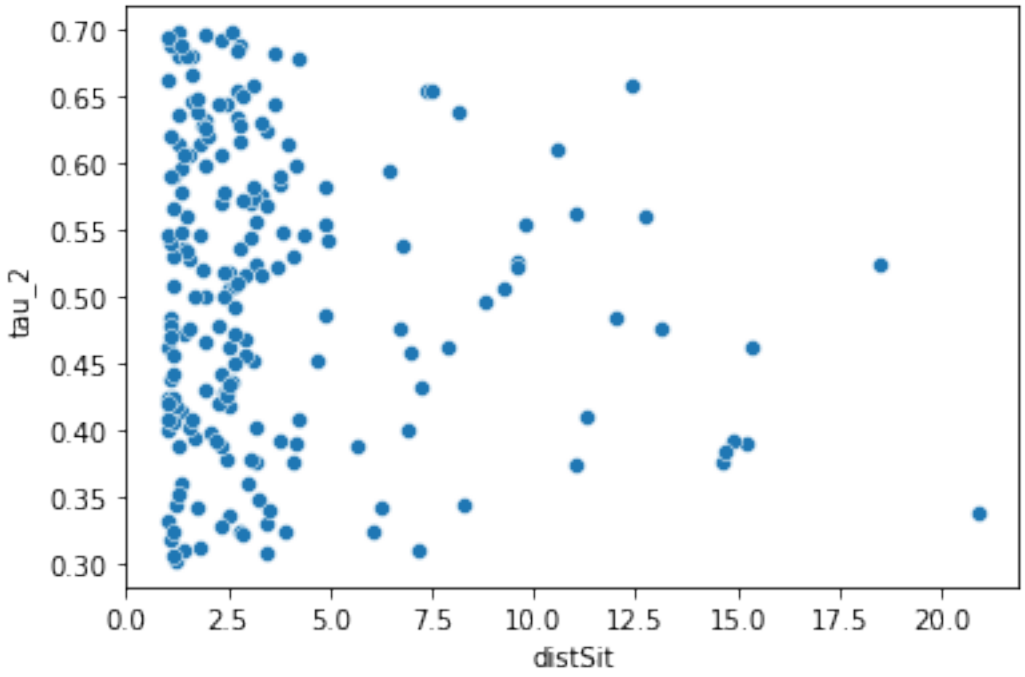
[11]: <AxesSubplot:xlabel='distSit', ylabel='tau_1'>



[12]:
```
# tau_2vs distance

sns.scatterplot(x = data['distSit'], y = data['tau_2'])
```

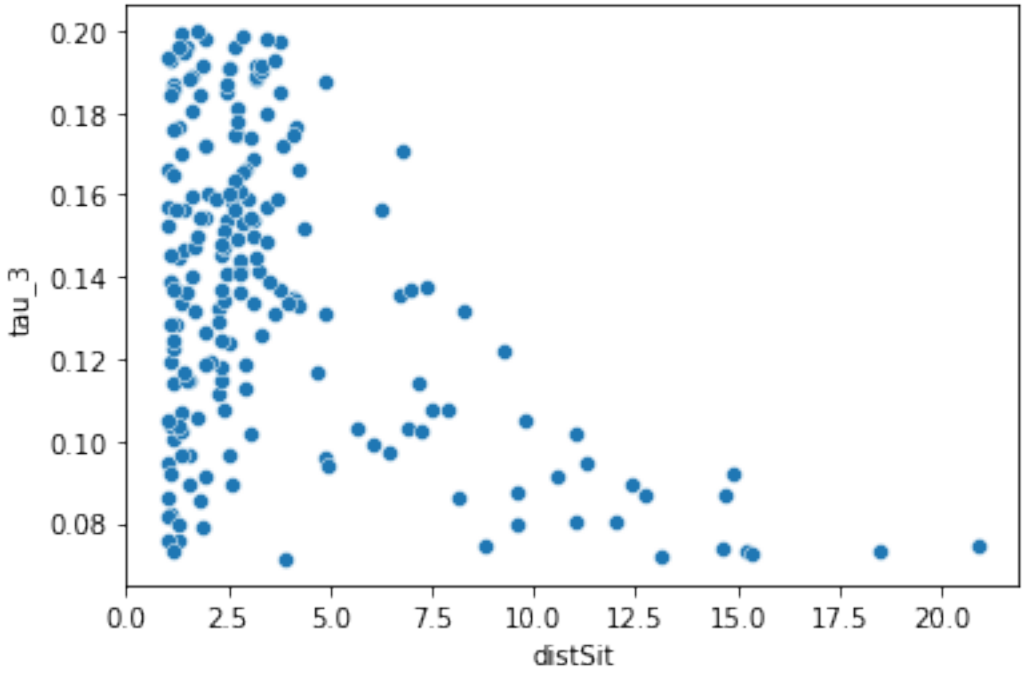
[12]: <AxesSubplot:xlabel='distSit', ylabel='tau_2'>



[13]:
```
# tau_3 vs distance

sns.scatterplot(x = data['distSit'], y = data['tau_3'])
```

[13]: <AxesSubplot:xlabel='distSit', ylabel='tau_3'>



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