MOHID Postprocessing Notebook

User Guide

V1.0

Mohid-Water-Modelling-System / MOHID_Jupyter-Notebooks

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About

Jupyter Notebooks for the MOHID Water Modelling System

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GitHub - Mohid-Water-Modelli

github.com/Mohid-Water-Modelling-System/MOHID_Jupyter-Notebooks

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MOHID_Water	Multi-day animatic	
UserGuides	Create MOHID_Lag	
README.md	Update README.md	6 months ago

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HTTPS GitHub CLI

https://github.com/Mohid-Water-Modelling-Syster

Clone using the web URL.

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About

Jupyter Notebooks for the MOHID Water Modelling System

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https://github.com/Mohid-Water-Modelling-System/MOHID_Jupyter-Notebooks/archive/refs/heads/master.zip

ENG PTB2

12:17 PM 10-Nov-25

README

Below is a step-by-step guide on how to set up and launch MOHID Jupyter Notebooks for interactive computing:

1. Download and Install Miniconda:

- Visit the Miniconda download page.
- Download the Miniconda installer for your operating system (Windows, macOS, or Linux).
- Follow the installation instructions to install Miniconda on your system.

2. Open the Terminal or Command Prompt:

- Windows: Open the Anaconda Prompt or Command Prompt.
- macOS/Linux: Open your preferred Terminal application.

3. Create a Conda Environment:

It's best practice to use a dedicated environment for each project. To create the MOHID environment, follow these steps:

- Download the YAML file:

README

- Download the YAML file:

  Obtain the .yaml (or .yml) file that lists all required packages.

- Create the environment:

  Run the following command (make sure you're in the directory where your yml file is located):

```
conda env create --file ENV_NAME
```

  Replace ENV_NAME with the name of the environment you wish to create.

4. Activate the environment:

To work within the new environment, activate it by running:

```
conda activate ENV_NAME
```

Replace ENV_NAME with the name of the environment you wish to activate.

5. Launch Jupyter Notebook:

README

5. Launch Jupyter Notebook:

Once the environment is activated and all necessary packages are installed, launch Jupyter Lab (or Notebook) by issuing:

```
jupyter lab
```

This command will open the Jupyter interface in your default web browser. Tip: If you prefer the classic Jupyter Notebook interface, use jupyter notebook instead.

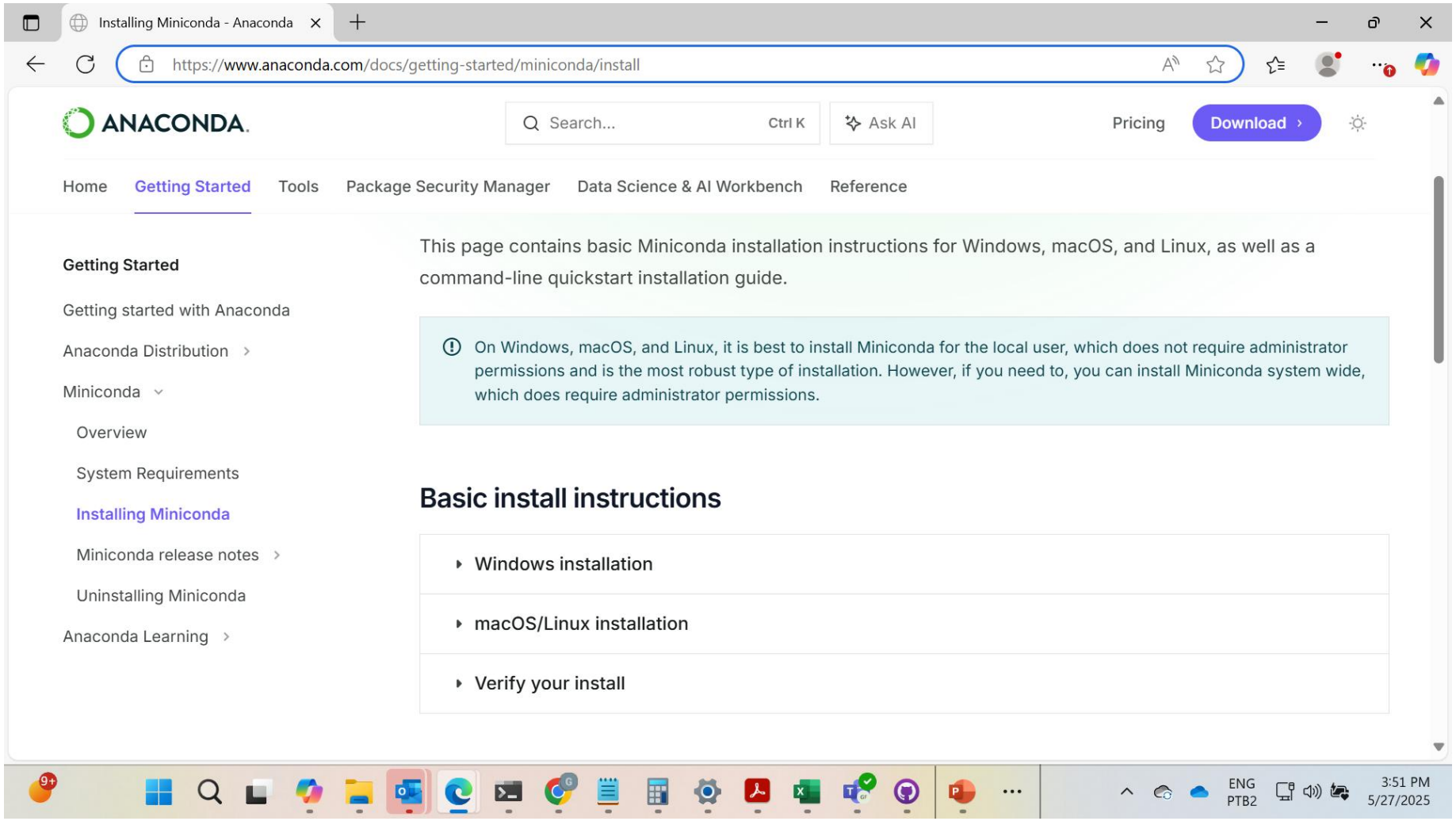
6. Open the Notebook

Within the Jupyter interface:

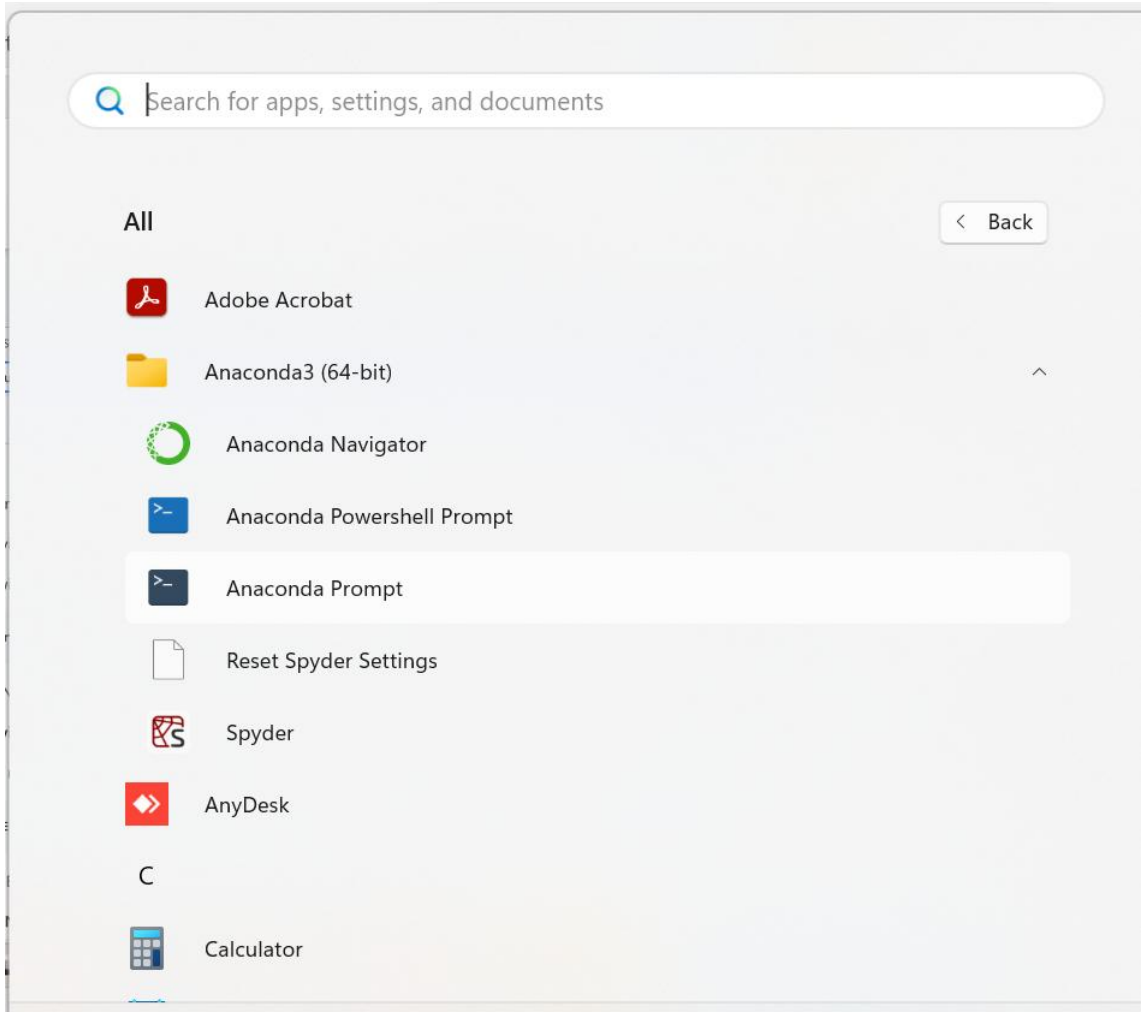
- Navigate to the directory where the notebook file (.ipynb) is located.
- Click on the the notebook file (.ipynb) to open it.

By following these steps, you´ll have a fully functional MOHID Jupyter Notebook environment for interactive computing.

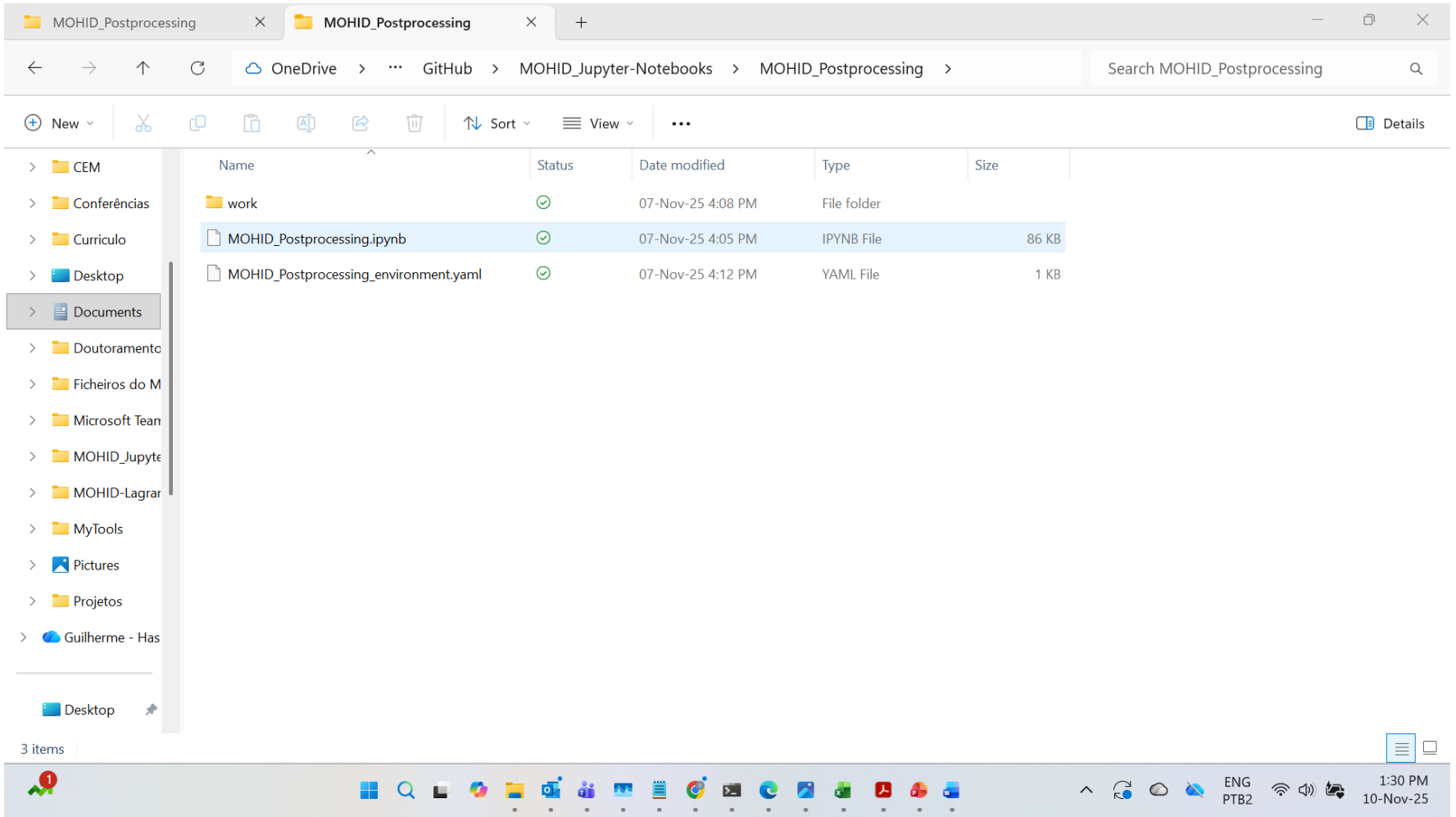
1. Download and Install Miniconda:



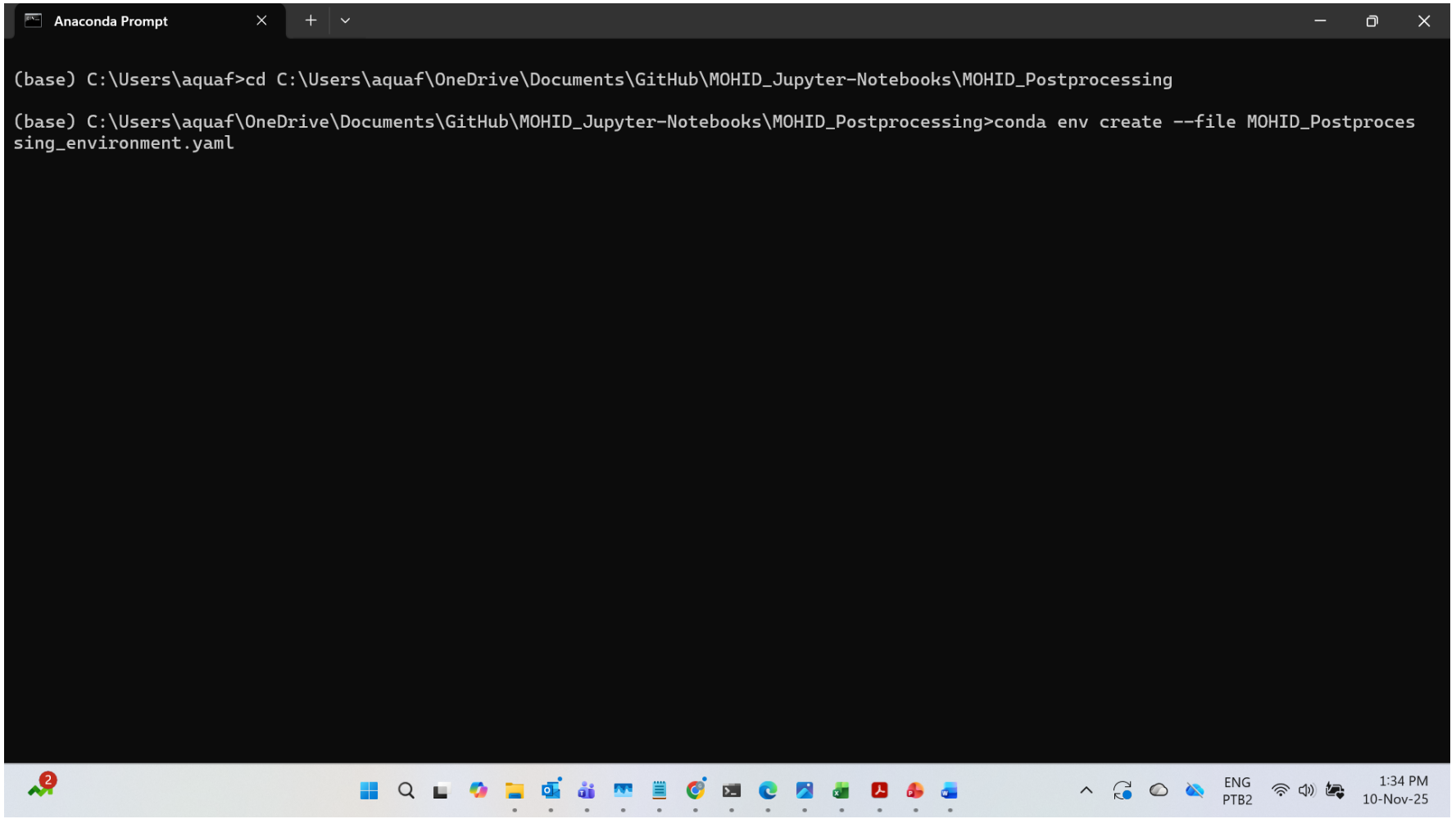
2. Open the Terminal or Command Prompt:



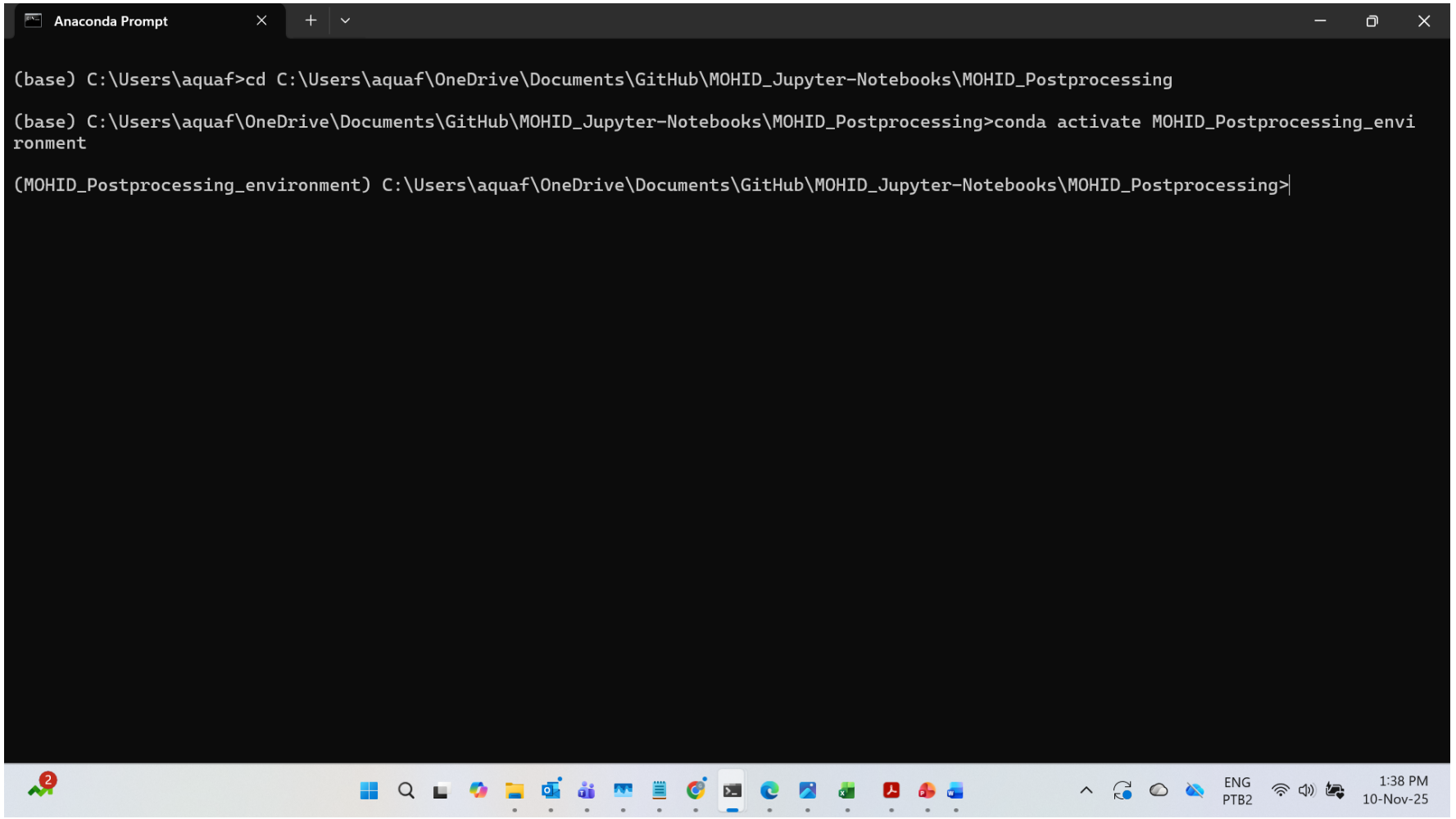
3. Create a Conda Environment:



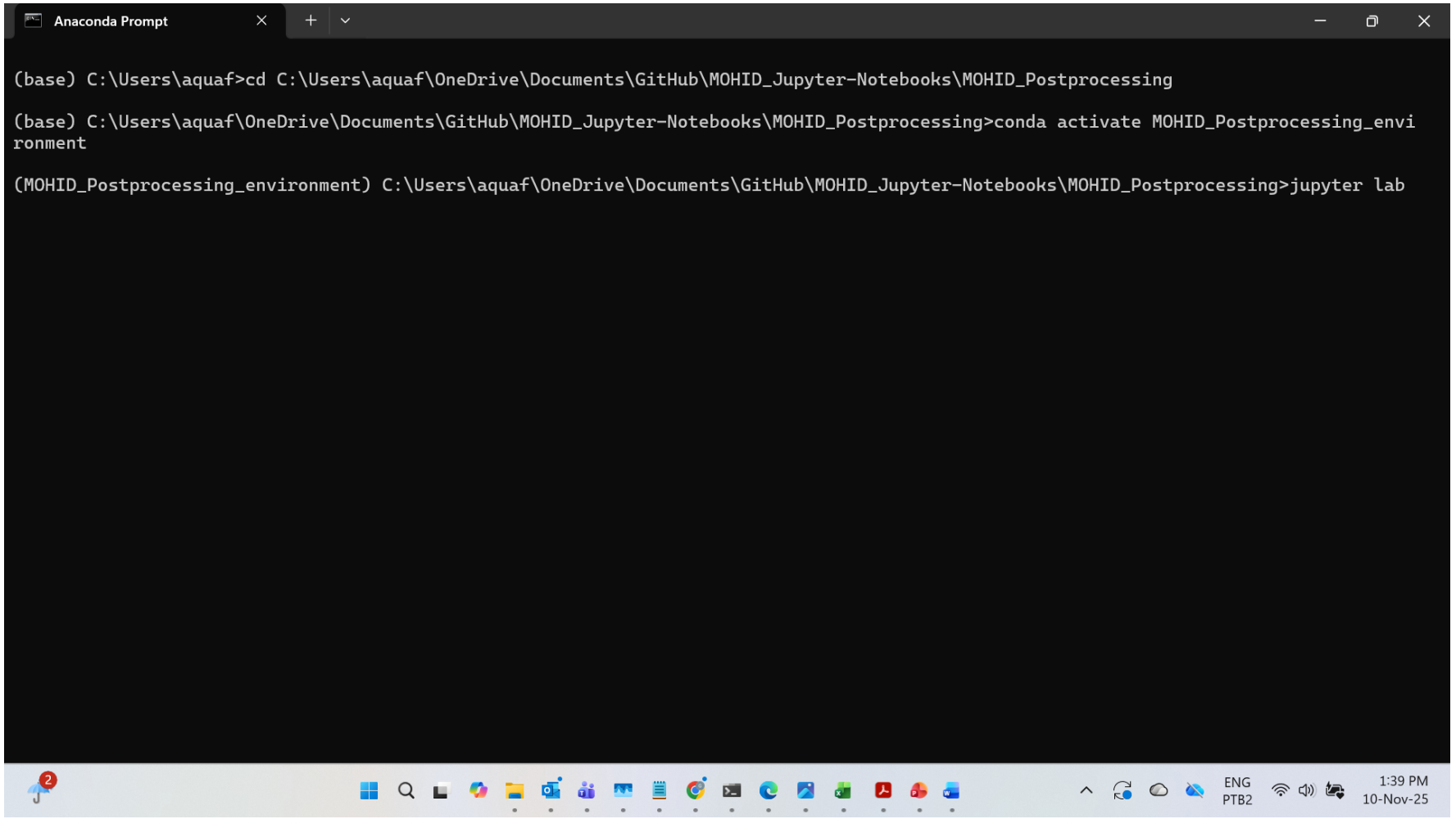
3. Create a Conda Environment:



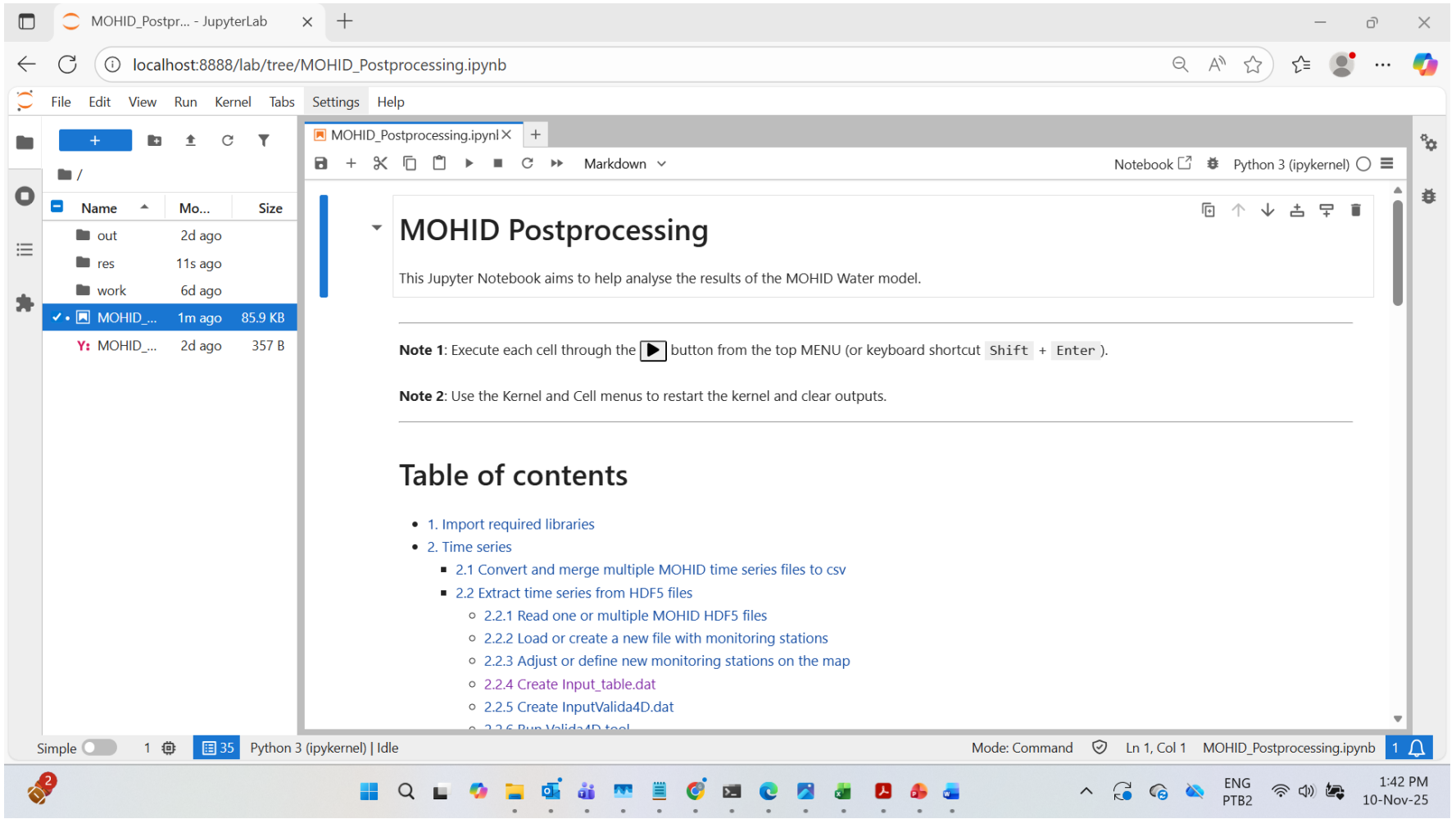
4. Activate the environment:



5. Launch Jupyter Notebook



5. Launch Jupyter Notebook



MOHID_Postpr... - JupyterLab

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#1.-Import-required-libraries

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Name	Mo...	Size
res	1h ago	
work	6d ago	
MOHID_...	1h ago	85.9 KB
MOHID_...	2d ago	357 B

MOHID_Postprocessing.ipynl

Code

Notebook

Python 3 (ipykernel)

Run this cell and advance (Shift+Enter)

1. Import required libraries

[ ]:

```
import os
from ipyleaflet import Map, TileLayer, DrawControl, GeoJSON, Marker, basemaps, Popup, Polyline, Circle, GeoData, Polygon, LayerGroup
import json
import re
import datetime
import time
from datetime import datetime, timedelta
import numpy as np
import xarray as xr
import matplotlib.pyplot as plt
from matplotlib.colors import Normalize, to_hex
import ipywidgets as widgets
from IPython.display import display
import pandas as pd
import shutil
import subprocess
import sys
import matplotlib as mpl
from folium.plugins import MeasureControl
import glob
import zipfile
import h5py
import requests
import pathlib
from tqdm import tqdm
from IPython.display import Video
```

Simple 1 35 Python 3 (ipykernel) | Idle

Mode: Edit Ln 2, Col 15 MOHID_Postprocessing.ipynb

4

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localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#1.-Import-required-libraries

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MOHID_Postprocessing.ipynl

Code

Notebook

Python 3 (ipykernel)

Run this cell and advance (Shift+Enter)

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Name	Mo...	Size
out	3s ago	
res	1h ago	
work	6d ago	
MOHID_...	now	86.1 KB
MOHID_...	2d ago	357 B

2. Time series

2.1 Convert and merge multiple MOHID time series files to csv

[3]:

```
master_dir = os.path.join(os.getcwd(),'res') #files can be inside subfolders of master_dir
filename='FPOLIS.srh'

out_dir   = os.path.join(os.getcwd(),'out')
os.makedirs(out_dir, exist_ok=True)

output_csv = os.path.join(os.getcwd(),out_dir,'FPOLIS.csv')

script_folder = os.path.join(os.getcwd(), "work", "Merge_TimeSeries")
script_name = os.path.join(script_folder, "merge_timeseries.py")
input_file  = os.path.join(script_folder, "input_merge_timeseries.py")

with open(input_file, 'w', encoding='utf-8') as f:
    f.write(f"master_dir       = r'{master_dir}'\n")
    f.write(f"filename         =r'{filename}'\n")
    f.write(f"output_csv=r'{output_csv}'\n")

try:
    result = subprocess.run(
        ["python", os.path.basename(script_name)],
        cwd=script_folder,
        capture_output=True,
        text=True
```

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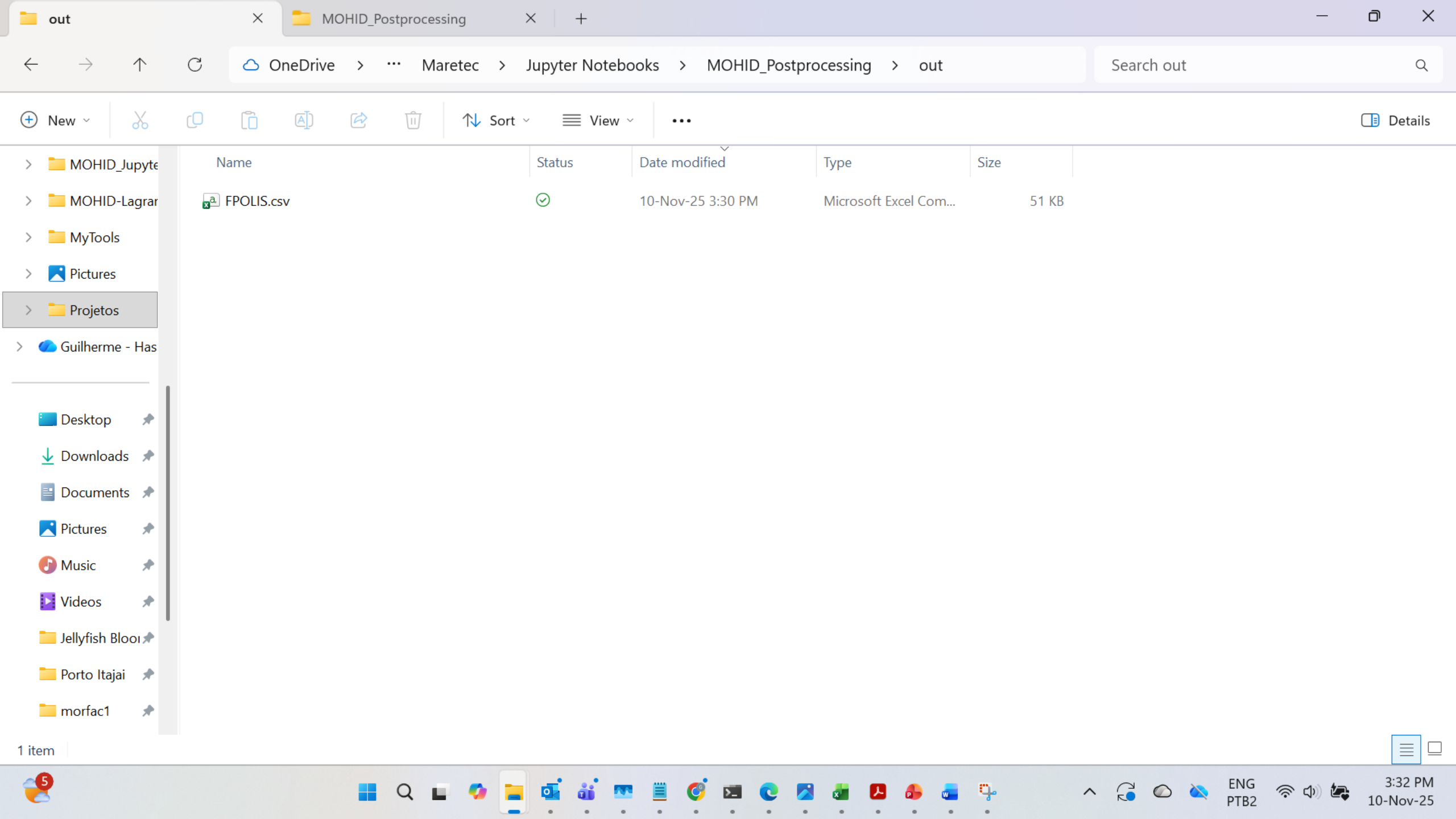
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Pictures
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Guilherme - Has
Desktop
Downloads
Documents
Pictures
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Videos
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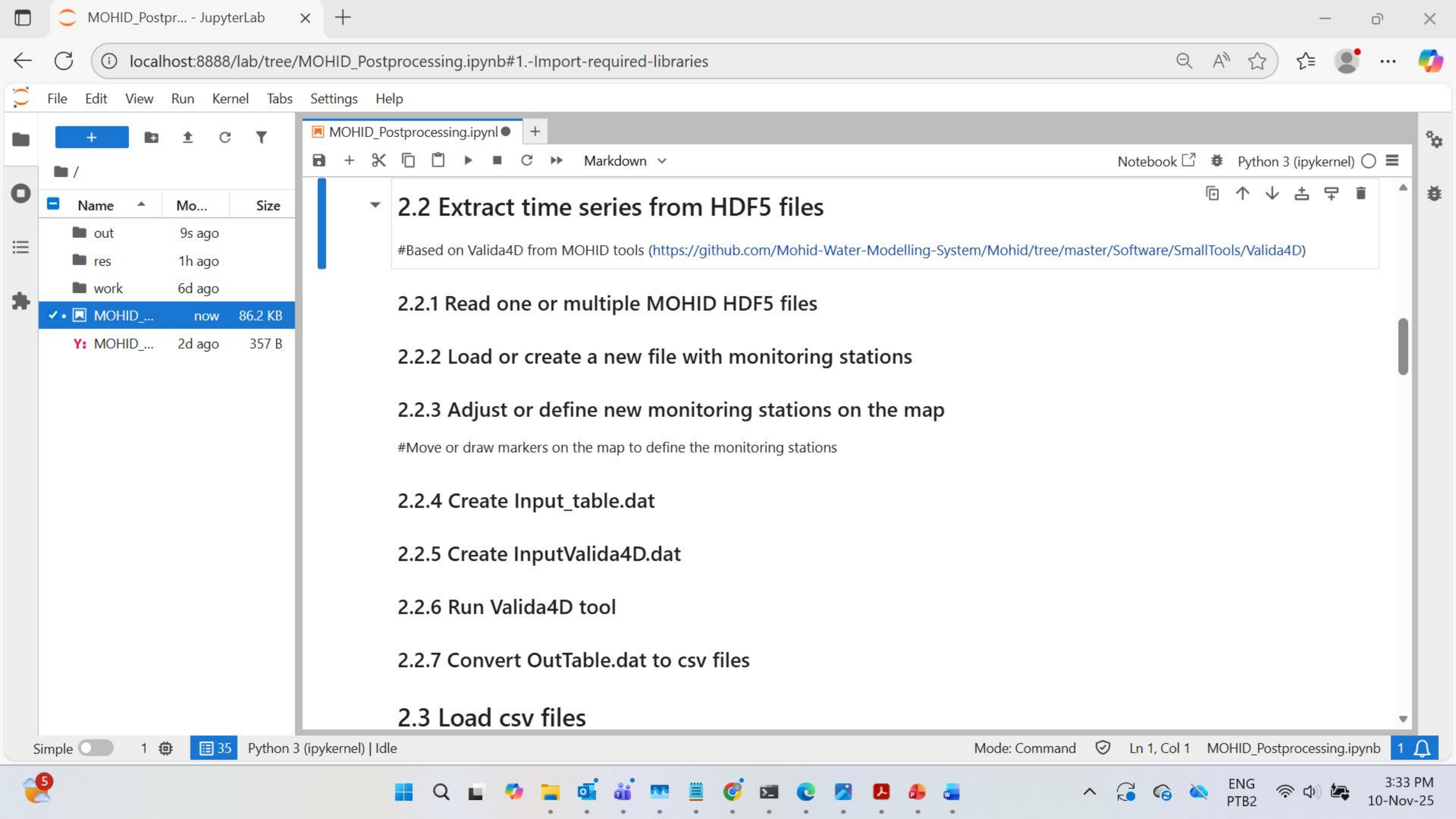
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MOHID_Postprocessing.ipynl
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Notebook
Python 3 (ipykernel)
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Mo...
Size
out 9s ago
res 1h ago
work 6d ago
MOHID_... now 86.2 KB
MOHID_... 2d ago 357 B
2.2 Extract time series from HDF5 files
#Based on Valida4D from MOHID tools (https://github.com/Mohid-Water-Modelling-System/Mohid/tree/master/Software/SmallTools/Valida4D)
2.2.1 Read one or multiple MOHID HDF5 files
2.2.2 Load or create a new file with monitoring stations
2.2.3 Adjust or define new monitoring stations on the map
#Move or draw markers on the map to define the monitoring stations
2.2.4 Create Input_table.dat
2.2.5 Create InputValida4D.dat
2.2.6 Run Valida4D tool
2.2.7 Convert OutTable.dat to csv files
2.3 Load csv files
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MOHID_...	2d ago	357 B

MOHID_Postprocessing.ipynl

Markdown

Notebook

Python 3 (ipykernel)

2.2 Extract time series from HDF5 files

#Based on Valida4D from MOHID tools (https://github.com/Mohid-Water-Modelling-System/Mohid/tree/master/Software/SmallTools/Valida4D)

2.2.1 Read one or multiple MOHID HDF5 files

[ ]:
```
multiple_files    = True
backup_root       = os.path.join(os.getcwd(),'res')
hdf5_file         =r'Hydrodynamic_2_Surface.hdf5'
start_date_str    = '2025-9-25'
end_date_str      = '2025-9-27'

# ----------------------------------------
def collect_hdf5_paths(root, h5file, sd, ed):
    paths = []
    for entry in os.scandir(root):
        if not entry.is_dir():
            continue
        try:
            day = datetime.strptime(entry.name.split('_')[0], "%Y%m%d").date()
        except Exception:
            continue
        if sd <= day <= ed:
            # Look directly inside the date-folder
            pattern = os.path.join(entry.path, h5file)
            for f in glob.glob(pattern):
                if os.path.isfile(f):
```

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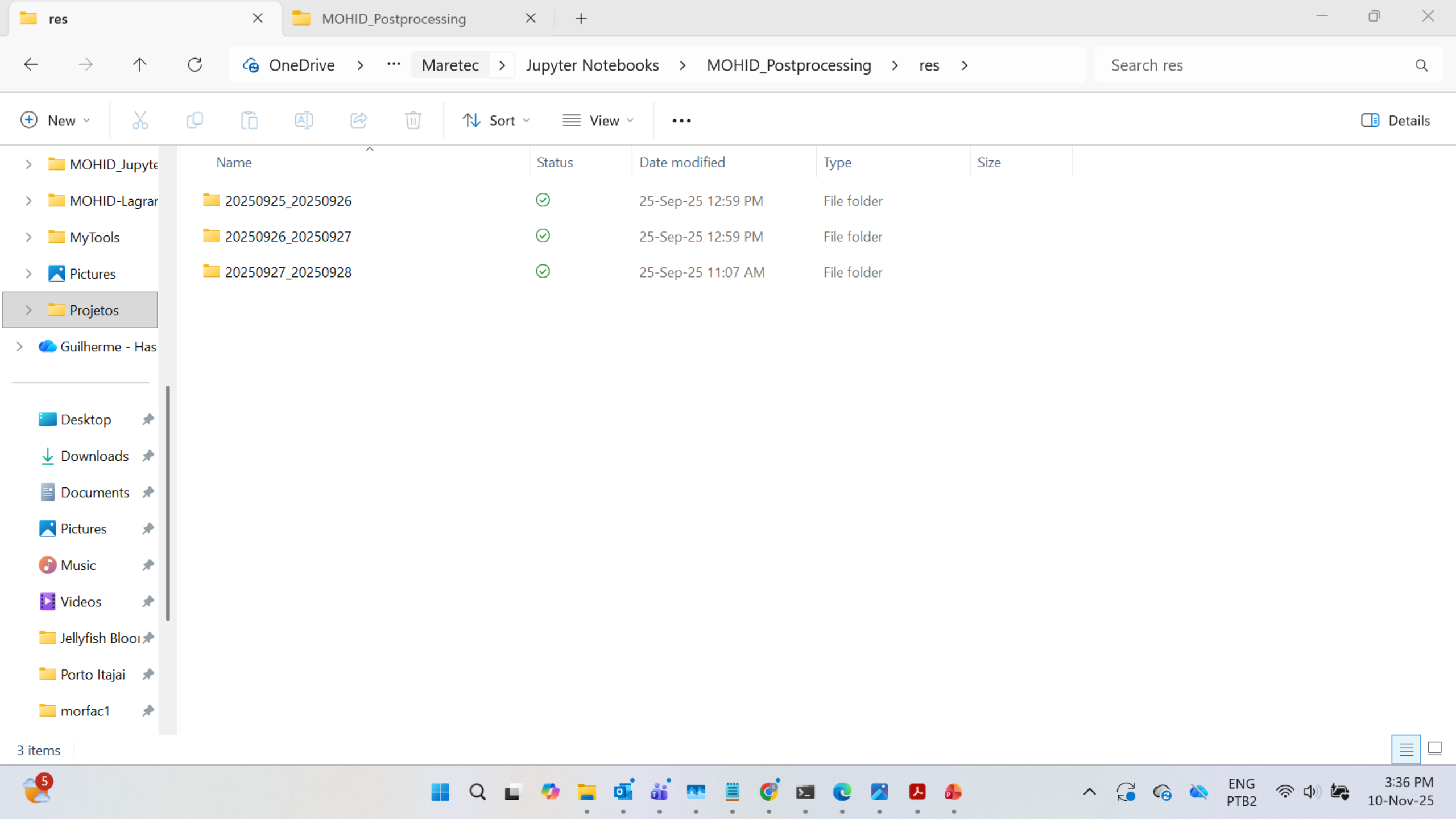
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Size
20250925_20250926
25-Sep-25 12:59 PM
File folder
20250926_20250927
25-Sep-25 12:59 PM
File folder
20250927_20250928
25-Sep-25 11:07 AM
File folder
3 items
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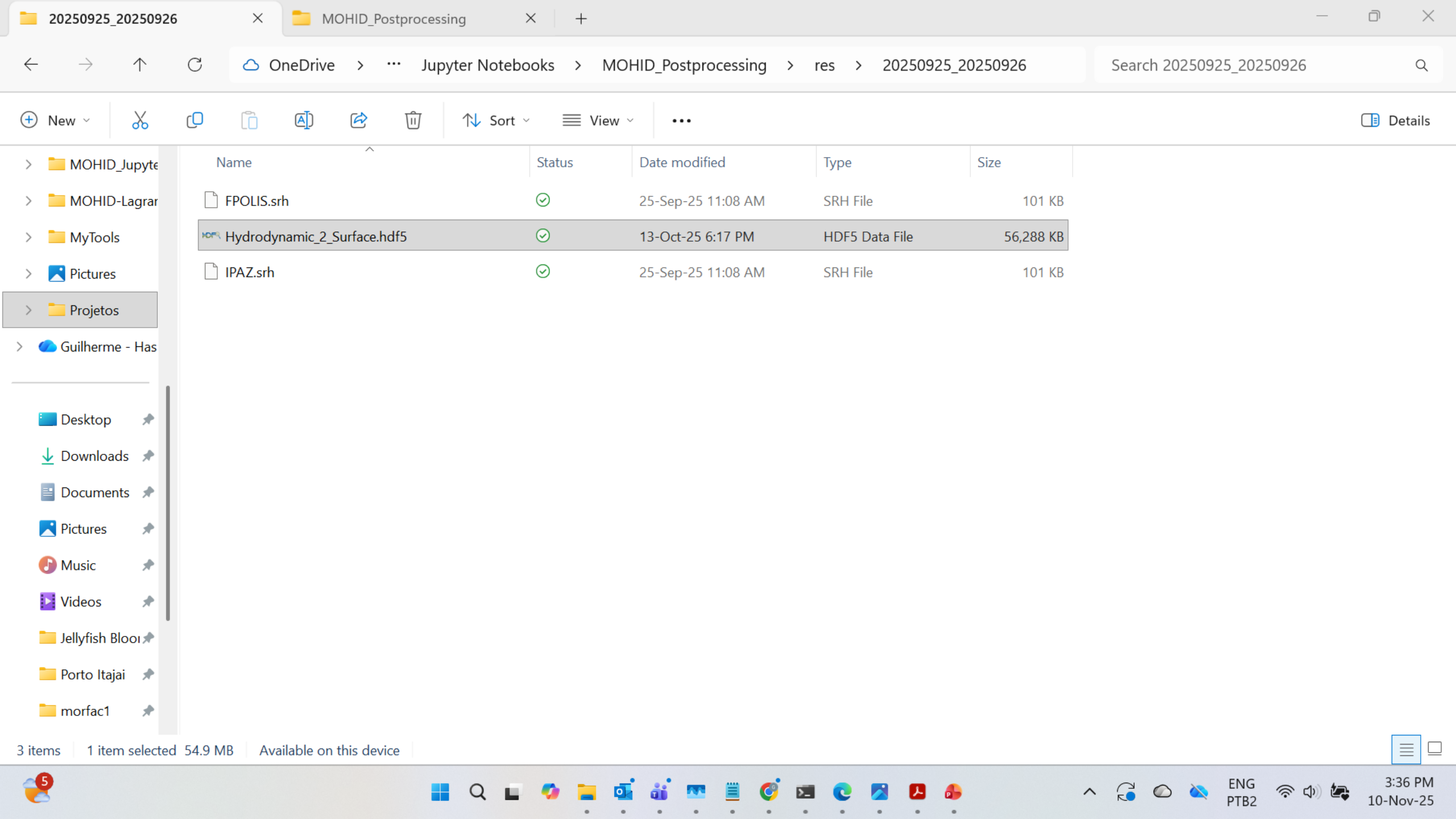
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Videos
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Size
FPOLIS.srh
25-Sep-25 11:08 AM
SRH File
101 KB
Hydrodynamic_2_Surface.hdf5
13-Oct-25 6:17 PM
HDF5 Data File
56,288 KB
IPAZ.srh
25-Sep-25 11:08 AM
SRH File
101 KB
3 items
1 item selected 54.9 MB
Available on this device
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Notebook

Python 3 (ipykernel)

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out	9s ago	
res	now	
work	6d ago	
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2.2.2 Load or create a new file with monitoring stations

[6]:
```
stations_file = 'stations.csv'

# Load existing stations (format: lon lat name)
if os.path.exists(stations_file):
    stations_df = pd.read_csv(
        stations_file,
        sep=',',
        header=None,
        names=['lon', 'lat', 'station_name'],
        engine='python'
    )
    print(f"Loaded {len(stations_df)} stations from {stations_file}")
else:
    stations_df = pd.DataFrame(columns=['lon', 'lat', 'station_name'])
    print(f"No '{stations_file}' found. Starting with zero stations.")
```

```
No 'stations.csv' found. Starting with zero stations.
```

2.2.3 Adjust or define new monitoring stations on the map

#Move or draw markers on the map to define the monitoring stations

2.2.4 Create Input_table.dat

Simple 1 35 Python 3 (ipykernel) | Idle Mode: Command Ln 1, Col 1 MOHID_Postprocessing.ipynb 1

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out	9s ago	
res	now	
work	6d ago	
MOHID_...	now	86.3 KB

MOHID_Postprocessing.ipynl

Code

Notebook

Python 3 (ipykernel)

2.2.3 Adjust or define new monitoring stations on the map

#Move or draw markers on the map to define the monitoring stations

[ ]:

```
# ------------------------------
# Start timing
# ------------------------------
start_time = time.time()

# ------------------------------
# Assume Xr, Yr, zi defined elsewhere
# ------------------------------
LonGrid = np.array(Xr)
LatGrid = np.array(Yr)

# ------------------------------
# Build discrete colormap
# ------------------------------
_nbins = 10
_bins = None
_discrete_colors = None

def map_value_to_color(value):
    if value == -99:
        return "#ffffff00"
    idx = np.digitize(value, _bins) - 1
    idx = int(np.clip(idx, 0, _nbins - 1))
    return _discrete_colors[idx]
```

Simple 1 35 Python 3 (ipykernel) | Idle Mode: Edit Ln 3, Col 27 MOHID_Postprocessing.ipynb 1

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localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#1.-Import-required-libraries

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Name	Mo...	Size
out	9s ago	
res	now	
work	6d ago	
MOHID_...	now	86.3 KB

MOHID_Postprocessing.ipynl

Code

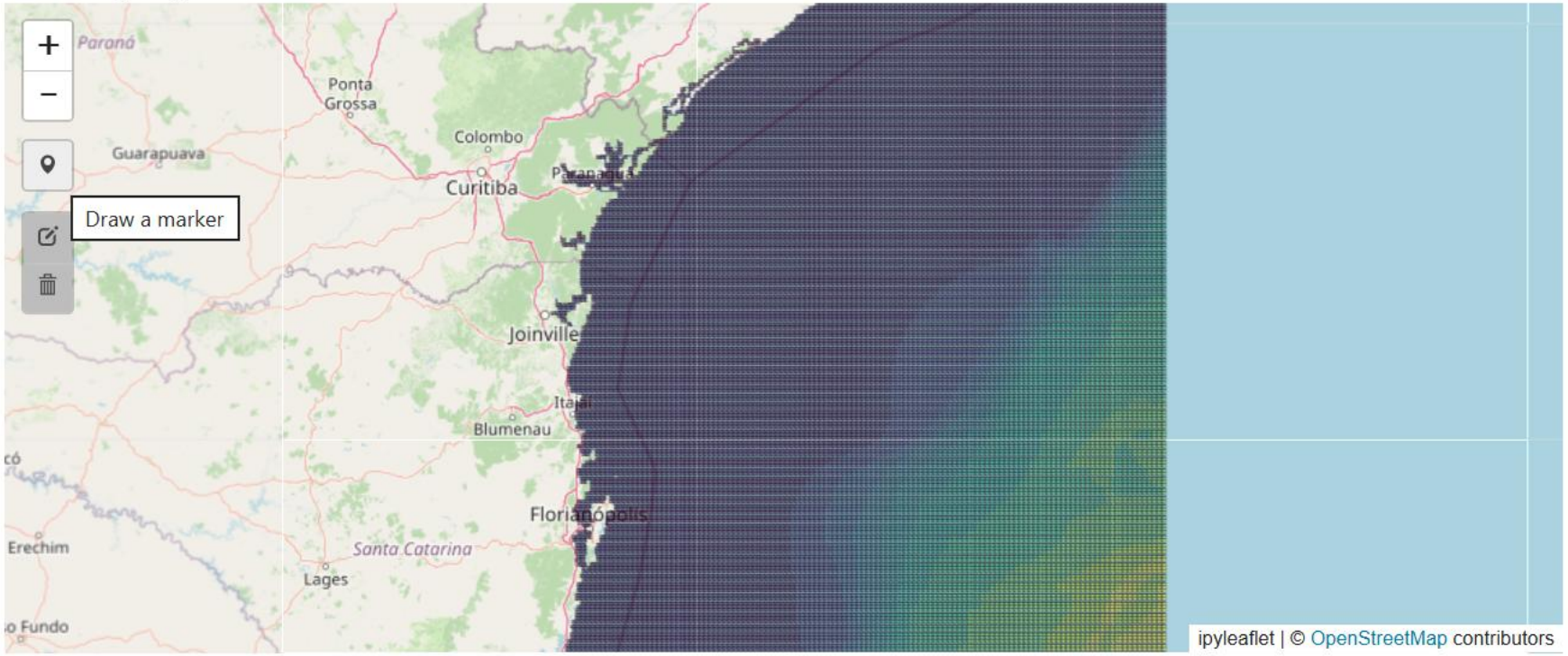
Notebook

Python 3 (ipykernel)

```
display(m)
```

Save stations

```
Raster layering time: 13.89 sec
```




```
[ ]: print(markers_dict)
```

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb# ...el) | Idle

Mode: Command Ln 3, Col 27 MOHID_Postprocessing.ipynb 1

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MOHID_Postpr... - JupyterLab

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#1.-Import-required-libraries

File Edit View Run Kernel Tabs Settings Help

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Name	Mo...	Size
out	9s ago	
res	now	
work	6d ago	
MOHID_...	now	87.3 KB

MOHID_Postprocessing.ipynl

Code

Notebook

Python 3 (ipykernel)

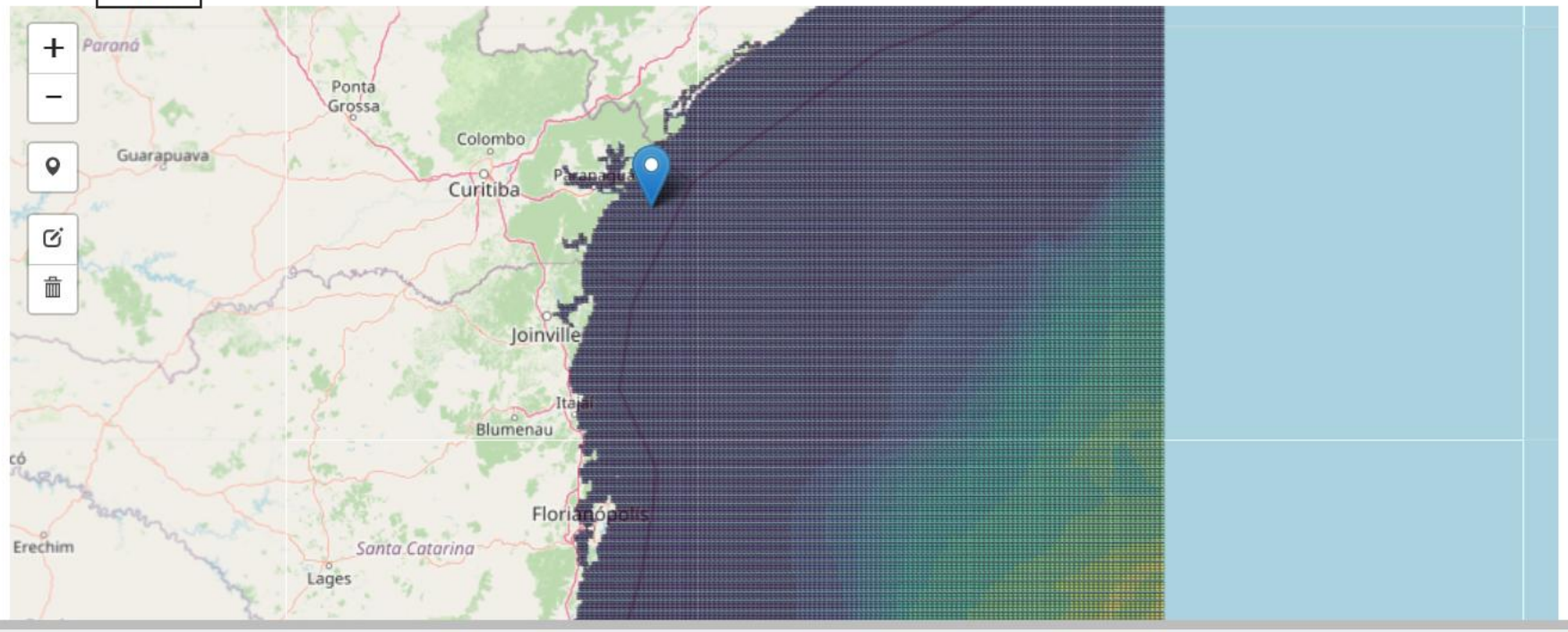
```
display(m)
```

Save stations

Station name: PR

Confirm

Raster Confirm time: 13.89 sec



Simple 1 35 Python 3 (ipykernel) | Idle

Mode: Command Ln 3, Col 27 MOHID_Postprocessing.ipynb 1

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localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#1.-Import-required-libraries

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Name	Mo...	Size
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res	now	
work	6d ago	
MOHID_...	now	87.3 KB

MOHID_Postprocessing.ipynl

Code

Notebook

Python 3 (ipykernel)

```
display(m)
```

Save stations

```
Raster layering time: 13.89 sec
```


```
[ ]: print(markers_dict)
```

Simple 1 36 Python 3 (ipykernel) | Idle Mode: Command Ln 3, Col 27 MOHID_Postprocessing.ipynb 1

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MOHID_Postpr... - JupyterLab

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#1.-Import-required-libraries

File Edit View Run Kernel Tabs Settings Help

MOHID_Postprocessing.ipynl

Code

Notebook

Python 3 (ipykernel)

```
display(m)
```

Save stations

Station name: SC

Confirm

Raster la me: 13.89 sec

Confirm

Paraná
Ponta Grossa
Colombo
Guarapuava
Curitiba
Joinville
Blumenau
Florianópolis
Santa Catarina
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Name Mo... Size

out 9s ago

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MOHID_... now 87.3 KB

Simple 1 36 Python 3 (ipykernel) | Idle

Mode: Command Ln 3, Col 27 MOHID_Postprocessing.ipynb 1

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MOHID_Postprocessing.ipynl

Code

Notebook

Python 3 (ipykernel)

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Name	Mo...	Size
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res	now	
work	6d ago	
MOHID_...	now	87.3 KB

```
display(m)
```

Save stations

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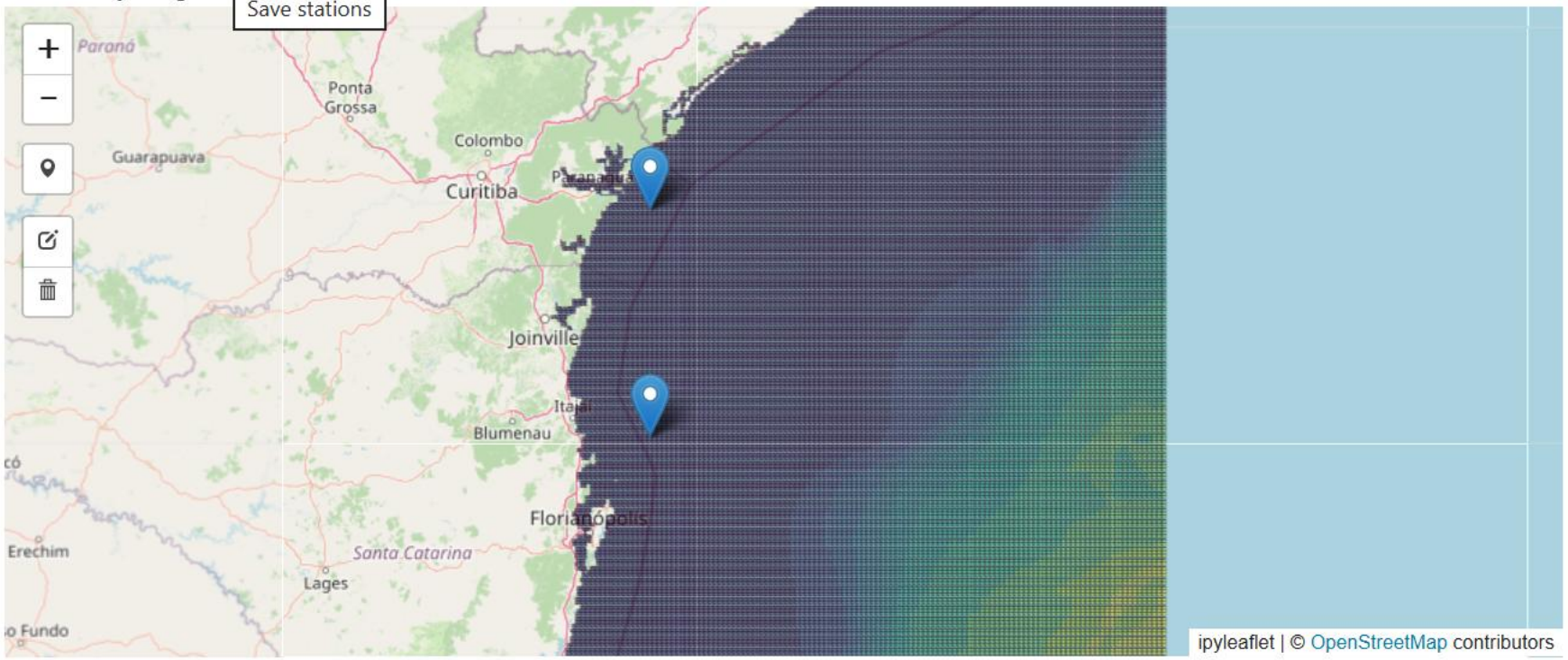
Save stations




```
[ ]: print(markers_dict)
```

Simple 1 37 Python 3 (ipykernel) | Idle Mode: Command Ln 3, Col 27 MOHID_Postprocessing.ipynb 1

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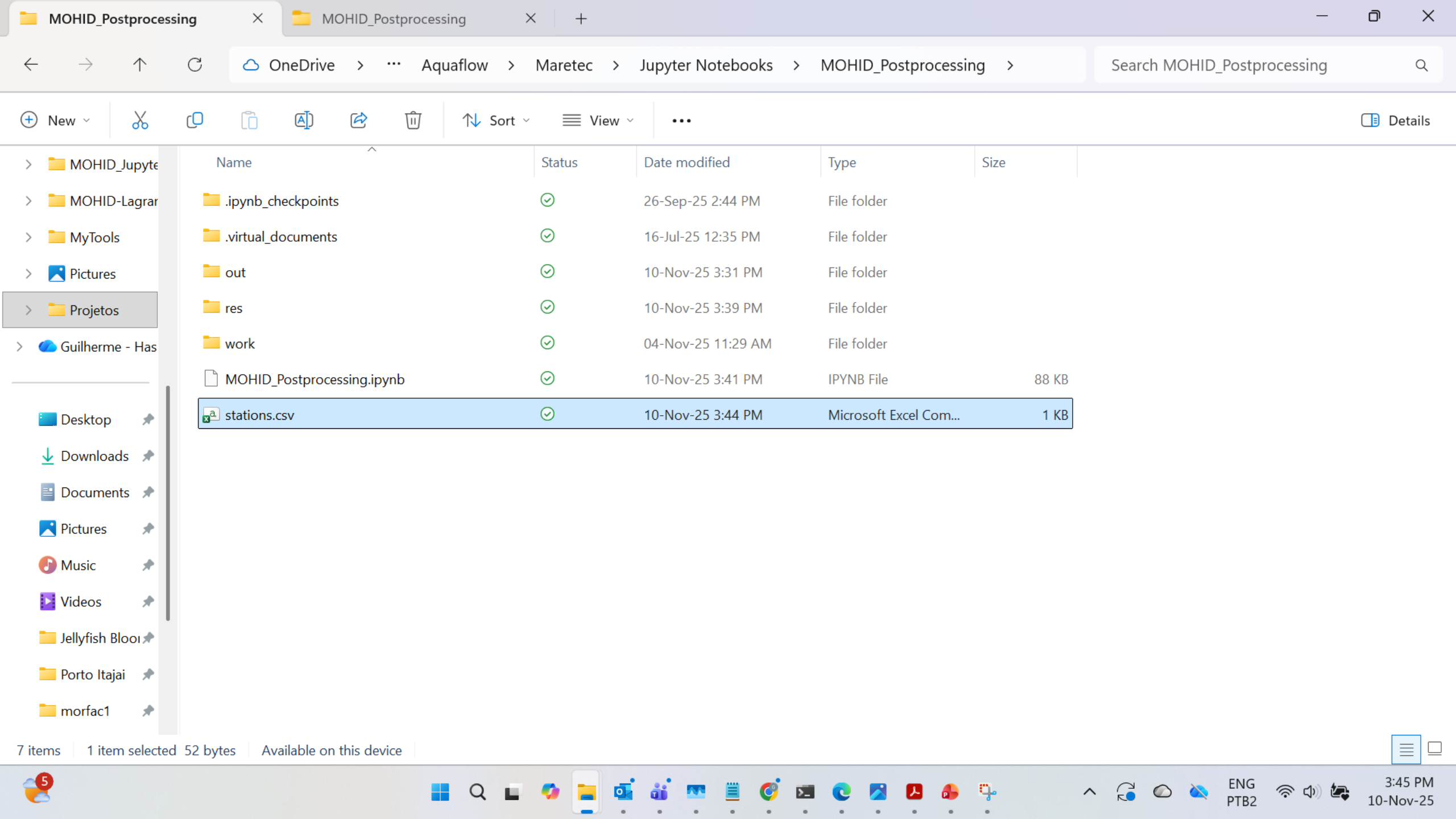
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MOHID_Jupyte
MOHID-Lagrar
MyTools
Pictures
Projetos
Guilherme - Has
Desktop
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Documents
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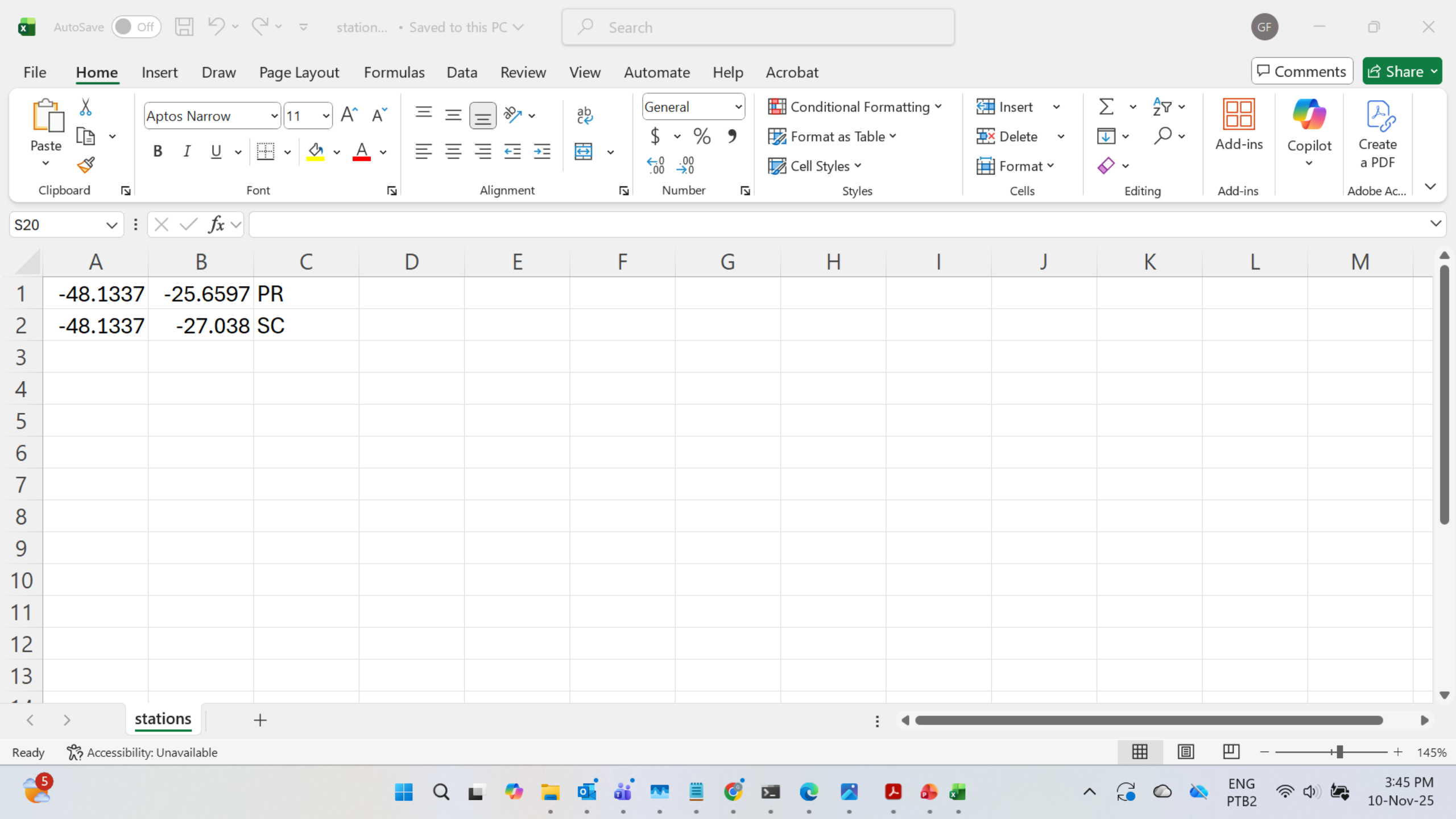
26-Sep-25 2:44 PM
File folder
.virtual_documents
16-Jul-25 12:35 PM
File folder
out
10-Nov-25 3:31 PM
File folder
res
10-Nov-25 3:39 PM
File folder
work
04-Nov-25 11:29 AM
File folder
MOHID_Postprocessing.ipynb
10-Nov-25 3:41 PM
IPYNB File
88 KB
stations.csv
10-Nov-25 3:44 PM
Microsoft Excel Com...
1 KB
7 items
1 item selected 52 bytes
Available on this device
ENG
PTB2
3:45 PM
10-Nov-25


AutoSave Off
station... • Saved to this PC
Search
GF
File Home Insert Draw Page Layout Formulas Data Review View Automate Help Acrobat
Comments Share
Paste
Clipboard
Aptos Narrow 11
Font
Alignment
General
Number
Conditional Formatting
Format as Table
Cell Styles
Styles
Insert
Delete
Format
Cells
Editing
Add-ins
Copilot
Create a PDF
Adobe Ac...
S20
A B C D E F G H I J K L M
1 -48.1337 -25.6597 PR
2 -48.1337 -27.038 SC
3
4
5
6
7
8
9
10
11
12
13
stations
Ready
Accessibility: Unavailable
145%
ENG PTB2
3:45 PM 10-Nov-25

MOHID_Postpr... - JupyterLab

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#1.-Import-required-libraries

File Edit View Run Kernel Tabs Settings Help

/

Name	Mo...	Size
out	9s ago	
res	now	
work	6d ago	
MOHID_...	now	87.3 KB
stations....	now	52 B

MOHID_Postprocessing.ipynl

Markdown

Notebook

Python 3 (ipykernel)

2.2.4 Create Input_table.dat

[8]:

```
Z_DEPTHS = 0. #depth relative to the surface

stations_df = pd.read_csv(
    stations_file,
    sep=',',
    header=None,
    names=['lon', 'lat', 'station_name'],
    engine='python',
    dtype={'lon': float, 'lat': float, 'station_name': str}
)
print(f"Loaded {len(stations_df)} stations from {stations_file}")

script_folder = os.path.join(os.getcwd(), "work", "valida4D")
script_name = os.path.join(script_folder, "Valida4D.exe")
input_table = os.path.join(script_folder, "Input_table.dat")

float_fmt='{:.6f}'
delimiter = ' '
encoding = 'utf-8'  # change if needed

sd = datetime.strptime(start_date_str, "%Y-%m-%d").date()

lines = []
lines.append('SERIE_INITIAL_DATA :' + sd.strftime('%Y %m %d %H %M %S'))
lines.append('<BeginTable>')

for _, row in stations_df.iterrows():
```

Simple 1 38 Python 3 (ipykernel) | Idle Mode: Command Ln 1, Col 1 MOHID_Postprocessing.ipynb 1

ENG PTB2 3:46 PM 10-Nov-25

C:\Users\aquaf\OneDrive\Projetos\Aquaflow\Maretec\Jupyter Notebooks\MOHID_Postprocessing\work\valida4D\Input_table.dat - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

InputValida4D.dat | Input_table.dat

```
1  SERIE_INITIAL_DATA :2025 09 25 00 00 00
2  <BeginTable>
3  -48.133659 -25.659748 0.0 , PR
4  -48.133659 -27.038029 0.0 , SC
5  <EndTable>
6
```

Normal text file | length : 126 | lines : 6 | Ln : 1 | Col : 1 | Pos : 1 | Unix (LF) | UTF-8 | INS

ENG PTB2 3:52 PM 10-Nov-25

MOHID_Postpr... - JupyterLab

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#1.-Import-required-libraries

File Edit View Run Kernel Tabs Settings Help

MOHID_Postprocessing.ipynl

Code

Notebook

Python 3 (ipykernel)

/

Name	Mo...	Size
out	9s ago	
res	now	
work	6d ago	
MOHID_...	now	87.8 KB
stations....	now	52 B

2.2.5 Create InputValida4D.dat

[10]:

```
output_dir = os.path.join(os.getcwd(),'out')
output_table = os.path.join(output_dir, "OutTable.dat")

#Get hdf5 variables and units

def decode_attr(x):
    if isinstance(x, (bytes, np.bytes_)):
        return x.decode("utf-8")
    if isinstance(x, (list, tuple, np.ndarray)):
        return tuple(decode_attr(i) for i in x)
    return x

variable = []
with h5py.File(hdf5_files[0], "r") as h5f:
    results = h5f["Results"]
    for name, group in results.items():
        # expected child inside the group
        child_name = f"{name}_00001"
        if child_name in group:
            item = group[child_name]
            units = item.attrs.get("Units", None)
            units = decode_attr(units) if units is not None else None
        else:
            units = None
        variable.append((name, units))
```

Simple 1 38 Python 3 (ipykernel) | Idle Mode: Edit Ln 1, Col 1 MOHID_Postprocessing.ipynb 1

ENG PTB2 3:50 PM 10-Nov-25

C:\Users\aquaf\OneDrive\Projetos\Aquaflow\Maretec\Jupyter Notebooks\MOHID_Postprocessing\work\valida4D\InputValida4D.dat - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

InputValida4D.dat | Input_table.dat

```
FIELD4D          : 1
EXTRAPOLATE      : 0
INPUT_TABLE      : C:\Users\aquaf\OneDrive\Projetos\Aquaflow\Maretec\Jupyter Notebooks\MOHID_Postprocessing\work\valida4D\Input_table.dat
Z_DEPTHS         : 0.0
X_COLUMN         : 1
Y_COLUMN         : 2
Z_COLUMN         : 3
OUTPUT_TABLE     : C:\Users\aquaf\OneDrive\Projetos\Aquaflow\Maretec\Jupyter Notebooks\MOHID_Postprocessing\out\OutTable.dat
START            :2025 09 25 00 00 00
END              :2025 09 27 00 00 00
DT               : 3600
<BeginHDF5>
C:\Users\aquaf\OneDrive\Projetos\Aquaflow\Maretec\Jupyter Notebooks\MOHID_Postprocessing\res\20250925_20250926\Hydrodynamic_2_Surface.hdf5
C:\Users\aquaf\OneDrive\Projetos\Aquaflow\Maretec\Jupyter Notebooks\MOHID_Postprocessing\res\20250926_20250927\Hydrodynamic_2_Surface.hdf5
<EndHDF5>
<beginproperty>
NAME        :  velocity U
UNITS       :  m/s
DESCRIPTION :  velocity U
COLUMN      :  5
<endproperty>
<beginproperty>
NAME        :  velocity V
UNITS       :  m/s
DESCRIPTION :  velocity V
COLUMN      :  6
<endproperty>
<beginproperty>
NAME        :  velocity modulus
UNITS       :  m/s
DESCRIPTION :  velocity modulus
COLUMN      :  7
<endproperty>
<beginproperty>
NAME        :  water level
```

Normal text file | length : 1,264 lines : 40 | Ln : 1 Col : 1 Pos : 1 | Unix (LF) | UTF-8 | INS

ENG PTB2 3:52 PM 10-Nov-25

MOHID_Postpr... - JupyterLab

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#1.-Import-required-libraries

File Edit View Run Kernel Tabs Settings Help

/

Name	Mo...	Size
out	9s ago	
res	now	
work	6d ago	
MOHID_...	21s ago	87.9 KB
stations....	now	52 B

MOHID_Postprocessing.ipynl

Markdown

Notebook

Python 3 (ipykernel)

2.2.6 Run Valida4D tool

[11]:

```
try:
    result = subprocess.run(
        [script_name],
        cwd=script_folder,
        capture_output=True,
        text=True,
        check=True
    )

    result.check_returncode()
    print("STDOUT:\n", result.stdout)
    print("Completed successfully.")
except subprocess.CalledProcessError as e:
    print("ERROR: exited with code", e.returncode)
    print("---- STDOUT ----")
    print(e.stdout)
    print("---- STDERR ----")
    print(e.stderr)
    raise

print(f"Wrote results to {output_table}")
```

```
STDOUT:

 Running Valida4D...

 ------------------------- MOHID -------------------------
```

Simple 1 38 Python 3 (ipykernel) | Idle Mode: Command Ln 1, Col 1 MOHID_Postprocessing.ipynb 1

ENG PTB2 3:53 PM 10-Nov-25

C:\Users\aquaf\OneDrive\Projetos\Aquaflow\Maretec\Jupyter Notebooks\MOHID_Postprocessing\out\OutTable.dat - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

InputValida4D.dat | Input_table.dat | OutTable.dat

```
SERIE_INITIAL_DATA :    2025.00000000000       9.00000000000000       25.0000000000000      0.000000000000000E+000  0.000000000000000E+000  0.000000
Seconds X      Y      Z velocity_U velocity_V velocity_modulus water_level StationName
 <BeginTable>
0.000000000000000E+000  -48.1336590000000       -25.6597480000000       0.000000000000000E+000  1.533581744366705E-002  1.813518919038676E-002  2.39315
0.000000000000000E+000  -48.1336590000000       -27.0380290000000       0.000000000000000E+000 -8.966751625985496E-002  0.328655470100382       0.34067
3600.00000000000        -48.1336590000000       -25.6597480000000      0.000000000000000E+000 -8.932417486382629E-002  8.223323503783460E-002  0.12142
3600.00000000000        -48.1336590000000       -27.0380290000000      0.000000000000000E+000 -0.141717998187394       0.365714621566313       0.39222
7200.00000000000        -48.1336590000000       -25.6597480000000      0.000000000000000E+000 -0.127790402671980       0.136481316015480       0.18697
7200.00000000000        -48.1336590000000       -27.0380290000000      0.000000000000000E+000 -0.190899567135656       0.376949069749101       0.42253
10800.0000000000        -48.1336590000000       -25.6597480000000      0.000000000000000E+000 -5.116841841463743E-002  0.119563325839148       0.13043
10800.0000000000        -48.1336590000000       -27.0380290000000      0.000000000000000E+000 -0.182038674584178       0.323006342372341       0.37078
14400.0000000000        -48.1336590000000       -25.6597480000000      0.000000000000000E+000 -8.263009118319831E-002  0.105150250183047       0.13381
14400.0000000000        -48.1336590000000       -27.0380290000000      0.000000000000000E+000 -0.178997348718993       0.290972937253631       0.34163
18000.0000000000        -48.1336590000000       -25.6597480000000      0.000000000000000E+000 -7.409631694349229E-002  0.143541372045153       0.16154
18000.0000000000        -48.1336590000000       -27.0380290000000      0.000000000000000E+000 -0.196555228157997       0.263125747151853       0.32844
21600.0000000000        -48.1336590000000       -25.6597480000000      0.000000000000000E+000 -1.923996510005817E-003  0.137807719269109       0.13786
21600.0000000000        -48.1336590000000       -27.0380290000000      0.000000000000000E+000 -0.184866901140664       0.227286233169611       0.29297
25200.0000000000        -48.1336590000000       -25.6597480000000      0.000000000000000E+000 -3.473611397221651E-002  1.802283950068363E-002  3.96818
25200.0000000000        -48.1336590000000       -27.0380290000000      0.000000000000000E+000 -0.133929318335978       0.154673412159244       0.20462
28800.0000000000        -48.1336590000000       -25.6597480000000      0.000000000000000E+000 -4.761672070177115E-002  6.898869875163684E-002  8.39084
28800.0000000000        -48.1336590000000       -27.0380290000000      0.000000000000000E+000 -0.107767537048319       7.948203833396537E-002  0.13392
32400.0000000000        -48.1336590000000       -25.6597480000000      0.000000000000000E+000  2.083425515339192E-003 -8.503075614426801E-002  8.51217
32400.0000000000        -48.1336590000000       -27.0380290000000      0.000000000000000E+000 -7.278972619430384E-002  7.592846345392690E-002  0.10520
36000.0000000000        -48.1336590000000       -25.6597480000000      0.000000000000000E+000  0.223415124840900      -9.212907417675606E-002  0.24169
36000.0000000000        -48.1336590000000       -27.0380290000000      0.000000000000000E+000 -5.757305714350926E-002  5.209797963552632E-002  7.76919
39600.0000000000        -48.1336590000000       -25.6597480000000      0.000000000000000E+000  0.140438073980251       1.973722754430839E-002  0.14184
39600.0000000000        -48.1336590000000       -27.0380290000000      0.000000000000000E+000 -7.493807872585863E-002  6.357145517384587E-002  9.82964
43200.0000000000        -48.1336590000000       -25.6597480000000      0.000000000000000E+000  5.670838501514316E-002  4.892353010107151E-002  7.53074
43200.0000000000        -48.1336590000000       -27.0380290000000      0.000000000000000E+000 -8.273617974059227E-002  0.125969974313452       0.15071
46800.0000000000        -48.1336590000000       -25.6597480000000      0.000000000000000E+000 -1.805578765406780E-003  9.825296201015599E-002  9.83311
46800.0000000000        -48.1336590000000       -27.0380290000000      0.000000000000000E+000 -0.125811283701247       0.196948705090950       0.23371
50400.0000000000        -48.1336590000000       -25.6597480000000      0.000000000000000E+000 -9.065613537422114E-002  0.201158505245920       0.22065
50400.0000000000        -48.1336590000000       -27.0380290000000      0.000000000000000E+000 -0.130952206448461       0.203254032948874       0.24179
54000.0000000000        -48.1336590000000       -25.6597480000000      0.000000000000000E+000 -7.471444734005064E-002  0.136589516717264       0.15574
```

Normal text file | length : 19,687 lines : 103 | Ln : 1 Col : 1 Pos : 1 | Windows (CR LF) | UTF-8 | INS

ENG PTB2 3:56 PM 10-Nov-25

MOHID_Postpr... - JupyterLab

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#1.-Import-required-libraries

File Edit View Run Kernel Tabs Settings Help

/

Name	Mo...	Size
out	2s ago	
res	now	
work	6d ago	
MOHID_...	1m ago	89.5 KB
stations....	now	52 B

MOHID_Postprocessing.ipynl

Markdown

Notebook

Python 3 (ipykernel)

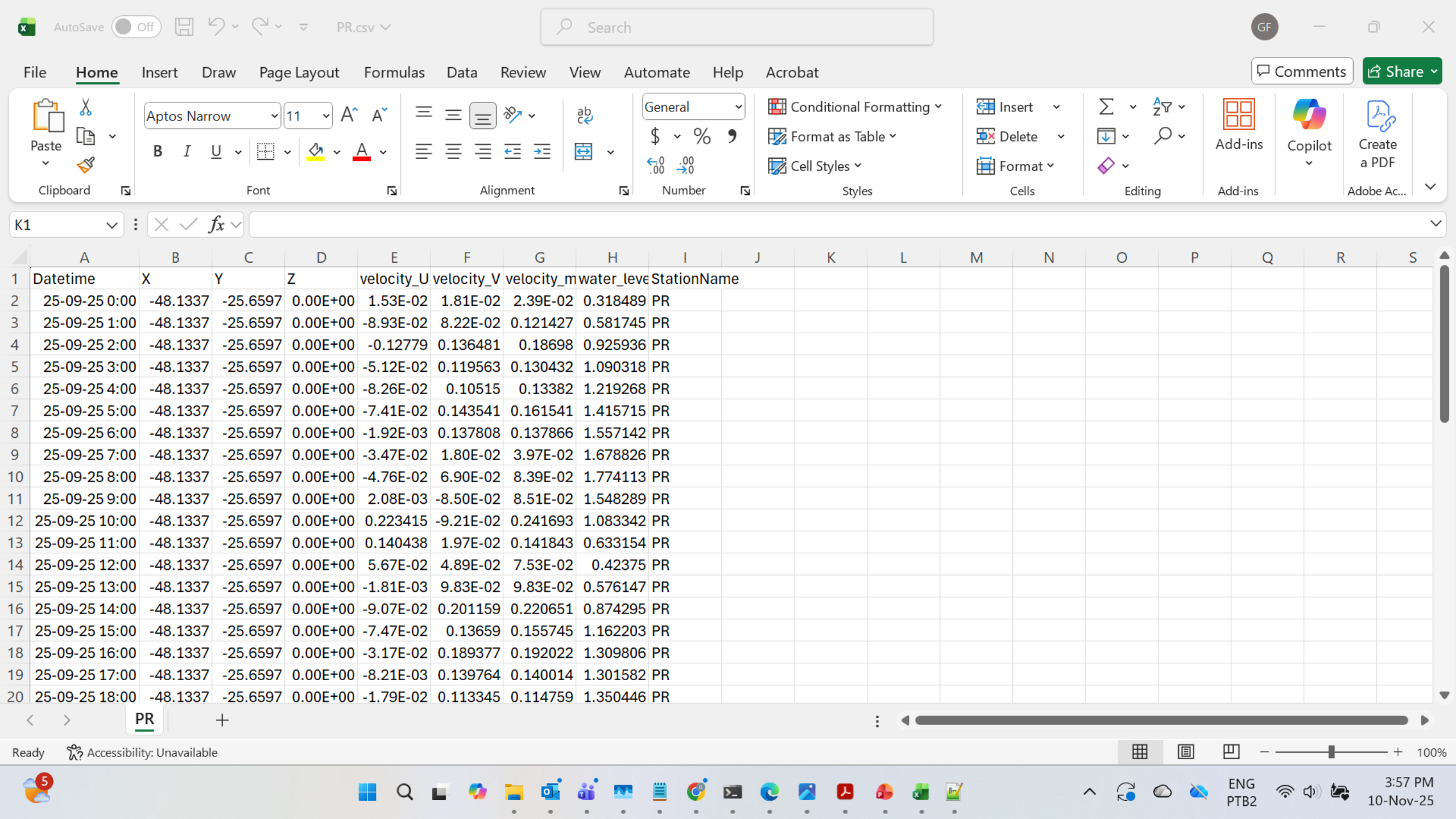
2.2.7 Convert OutTable.dat to csv files

[12]:

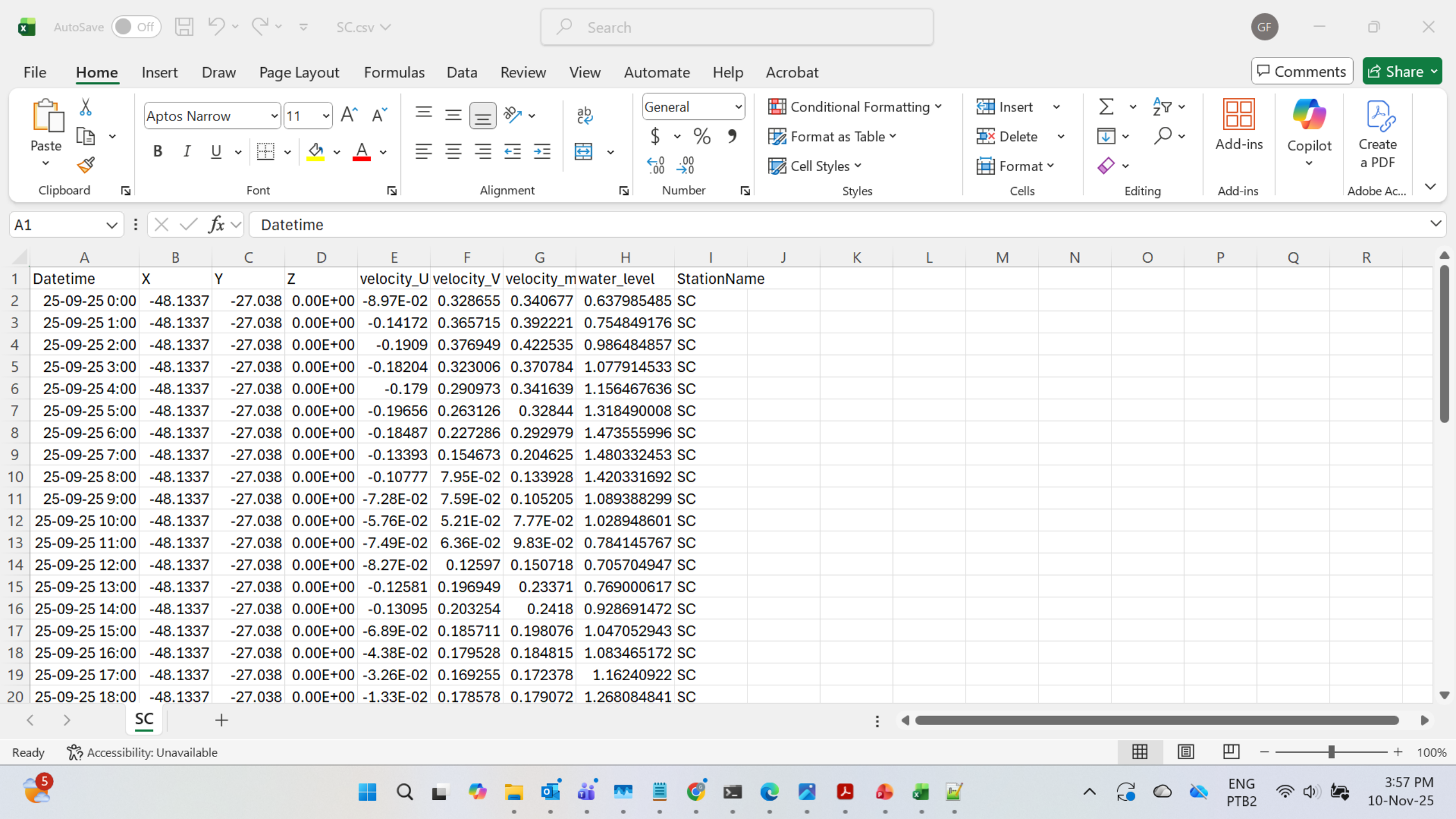
```
"""
- Finds the first numeric line with at least 3 numbers and interprets them as YEAR MONTH DAY.
- Finds the table header line (contains the token 'Seconds' and 'Station' or 'StationName' case-insensitive).
- Uses header tokens as CSV column names (keeps order).
- Parses rows after the header, supports variable whitespace and station names containing spaces.
- Adds a Datetime column computed as start_of_day + Seconds (Seconds must be numeric).
- Groups rows by station and writes <Station>.csv in outdir; also writes outdir/groups.txt with detected pre-table tokens.
"""


def read_lines(path):
    return Path(path).read_text(encoding='utf-8').splitlines()

def find_start_date(lines):
    num_re = re.compile(r'([+\-]?\d+(\.\d+)?([Ee][+\-]?\d+)?)')
    for line in lines:
        tokens = re.findall(num_re, line)
        # tokens is list of tuples; we want the first elements
        if len(tokens) >= 3:
            try:
                year = int(float(tokens[0][0]))
                month = int(float(tokens[1][0]))
                day = int(float(tokens[2][0]))
                return datetime(year, month, day)
            except Exception:
                continue
    raise ValueError("Start date not found: expected a line with at least three numeric tokens (year month day).")
```

Simple 1 38 Python 3 (ipykernel) | Idle Mode: Command Ln 1, Col 1 MOHID_Postprocessing.ipynb 1

ENG PTB2 3:56 PM 10-Nov-25



Datetime	X	Y	Z	velocity_U	velocity_V	velocity_m	water_leve	StationName
25-09-25 0:00	-48.1337	-25.6597	0.00E+00	1.53E-02	1.81E-02	2.39E-02	0.318489	PR
25-09-25 1:00	-48.1337	-25.6597	0.00E+00	-8.93E-02	8.22E-02	0.121427	0.581745	PR
25-09-25 2:00	-48.1337	-25.6597	0.00E+00	-0.12779	0.136481	0.18698	0.925936	PR
25-09-25 3:00	-48.1337	-25.6597	0.00E+00	-5.12E-02	0.119563	0.130432	1.090318	PR
25-09-25 4:00	-48.1337	-25.6597	0.00E+00	-8.26E-02	0.10515	0.13382	1.219268	PR
25-09-25 5:00	-48.1337	-25.6597	0.00E+00	-7.41E-02	0.143541	0.161541	1.415715	PR
25-09-25 6:00	-48.1337	-25.6597	0.00E+00	-1.92E-03	0.137808	0.137866	1.557142	PR
25-09-25 7:00	-48.1337	-25.6597	0.00E+00	-3.47E-02	1.80E-02	3.97E-02	1.678826	PR
25-09-25 8:00	-48.1337	-25.6597	0.00E+00	-4.76E-02	6.90E-02	8.39E-02	1.774113	PR
25-09-25 9:00	-48.1337	-25.6597	0.00E+00	2.08E-03	-8.50E-02	8.51E-02	1.548289	PR
25-09-25 10:00	-48.1337	-25.6597	0.00E+00	0.223415	-9.21E-02	0.241693	1.083342	PR
25-09-25 11:00	-48.1337	-25.6597	0.00E+00	0.140438	1.97E-02	0.141843	0.633154	PR
25-09-25 12:00	-48.1337	-25.6597	0.00E+00	5.67E-02	4.89E-02	7.53E-02	0.42375	PR
25-09-25 13:00	-48.1337	-25.6597	0.00E+00	-1.81E-03	9.83E-02	9.83E-02	0.576147	PR
25-09-25 14:00	-48.1337	-25.6597	0.00E+00	-9.07E-02	0.201159	0.220651	0.874295	PR
25-09-25 15:00	-48.1337	-25.6597	0.00E+00	-7.47E-02	0.13659	0.155745	1.162203	PR
25-09-25 16:00	-48.1337	-25.6597	0.00E+00	-3.17E-02	0.189377	0.192022	1.309806	PR
25-09-25 17:00	-48.1337	-25.6597	0.00E+00	-8.21E-03	0.139764	0.140014	1.301582	PR
25-09-25 18:00	-48.1337	-25.6597	0.00E+00	-1.79E-02	0.113345	0.114759	1.350446	PR



AutoSave Off SC.csv Search GF

File Home Insert Draw Page Layout Formulas Data Review View Automate Help Acrobat Comments Share

Paste Clipboard Aptos Narrow 11 Font Alignment General Number Conditional Formatting Format as Table Cell Styles Styles Insert Delete Format Cells Editing Add-ins Add-ins Copilot Create a PDF Adobe Ac...

A1 Datetime

	A	B	C	D	E	F	G	H	I
1	Datetime	X	Y	Z	velocity_U	velocity_V	velocity_m	water_level	StationName
2	25-09-25 0:00	-48.1337	-27.038	0.00E+00	-8.97E-02	0.328655	0.340677	0.637985485	SC
3	25-09-25 1:00	-48.1337	-27.038	0.00E+00	-0.14172	0.365715	0.392221	0.754849176	SC
4	25-09-25 2:00	-48.1337	-27.038	0.00E+00	-0.1909	0.376949	0.422535	0.986484857	SC
5	25-09-25 3:00	-48.1337	-27.038	0.00E+00	-0.18204	0.323006	0.370784	1.077914533	SC
6	25-09-25 4:00	-48.1337	-27.038	0.00E+00	-0.179	0.290973	0.341639	1.156467636	SC
7	25-09-25 5:00	-48.1337	-27.038	0.00E+00	-0.19656	0.263126	0.32844	1.318490008	SC
8	25-09-25 6:00	-48.1337	-27.038	0.00E+00	-0.18487	0.227286	0.292979	1.473555996	SC
9	25-09-25 7:00	-48.1337	-27.038	0.00E+00	-0.13393	0.154673	0.204625	1.480332453	SC
10	25-09-25 8:00	-48.1337	-27.038	0.00E+00	-0.10777	7.95E-02	0.133928	1.420331692	SC
11	25-09-25 9:00	-48.1337	-27.038	0.00E+00	-7.28E-02	7.59E-02	0.105205	1.089388299	SC
12	25-09-25 10:00	-48.1337	-27.038	0.00E+00	-5.76E-02	5.21E-02	7.77E-02	1.028948601	SC
13	25-09-25 11:00	-48.1337	-27.038	0.00E+00	-7.49E-02	6.36E-02	9.83E-02	0.784145767	SC
14	25-09-25 12:00	-48.1337	-27.038	0.00E+00	-8.27E-02	0.12597	0.150718	0.705704947	SC
15	25-09-25 13:00	-48.1337	-27.038	0.00E+00	-0.12581	0.196949	0.23371	0.769000617	SC
16	25-09-25 14:00	-48.1337	-27.038	0.00E+00	-0.13095	0.203254	0.2418	0.928691472	SC
17	25-09-25 15:00	-48.1337	-27.038	0.00E+00	-6.89E-02	0.185711	0.198076	1.047052943	SC
18	25-09-25 16:00	-48.1337	-27.038	0.00E+00	-4.38E-02	0.179528	0.184815	1.083465172	SC
19	25-09-25 17:00	-48.1337	-27.038	0.00E+00	-3.26E-02	0.169255	0.172378	1.16240922	SC
20	25-09-25 18:00	-48.1337	-27.038	0.00E+00	-1.33E-02	0.178578	0.179072	1.268084841	SC

SC

Ready Accessibility: Unavailable 100%

ENG PTB2 3:57 PM 10-Nov-25

MOHID_Postpr... - JupyterLab

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#1.-Import-required-libraries

File Edit View Run Kernel Tabs Settings Help

MOHID_Postprocessing.ipynl

Code

Notebook

Python 3 (ipykernel)

/

Name	Mo...	Size
out	now	
res	now	
work	6d ago	
MOHID_...	now	97.2 KB
stations....	now	52 B

2.3 Load csv files

[15]:
```
csv_file_1 = os.path.join(os.getcwd(),'out','PR.csv')
#csv_file_1 = os.path.join(os.getcwd(),'out','FPOLIS.csv')
#csv_file_1 = os.path.join(os.getcwd(),'res','res.csv')
#csv_file_1 = os.path.join(os.getcwd(),'res','nivel_itapema.csv')

df_1 = pd.read_csv(csv_file_1)

csv_file_2 = csv_file_1
df_1.head()
```

[15]:

	Datetime	X	Y	Z	velocity_U	velocity_V	velocity_modulus	water_level	StationName
0	2025-09-25 00:00:00	-48.133659	-25.659748	0.0	0.015336	0.018135	0.023932	0.318489	PR
1	2025-09-25 01:00:00	-48.133659	-25.659748	0.0	-0.089324	0.082233	0.121427	0.581745	PR
2	2025-09-25 02:00:00	-48.133659	-25.659748	0.0	-0.127790	0.136481	0.186980	0.925936	PR
3	2025-09-25 03:00:00	-48.133659	-25.659748	0.0	-0.051168	0.119563	0.130432	1.090318	PR
4	2025-09-25 04:00:00	-48.133659	-25.659748	0.0	-0.082630	0.105150	0.133820	1.219268	PR

[ ]:
```
#Optional - load a second dataframe if you want a plot with time series from different csv files or compare with measurements
csv_file_2 = os.path.join(os.getcwd(),'res','obs.csv')
df_2 = pd.read_csv(csv_file_2)
df_2.head()
```

Simple 1 38 Python 3 (ipykernel) | Idle Mode: Command Ln 1, Col 1 MOHID_Postprocessing.ipynb 1

ENG PTB2 4:02 PM 10-Nov-25

MOHID_Postpr... - JupyterLab

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#1.-Import-required-libraries

File Edit View Run Kernel Tabs Settings Help

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Name	Mo...	Size
out	now	
res	now	
work	6d ago	
MOHID_...	now	93.7 KB
stations....	now	52 B

MOHID_Postprocessing.ipynl

Markdown

Notebook

Python 3 (ipykernel)

2.4 Statistics

[14]:
```
df = df_1

out_dir = "out"
os.makedirs(out_dir, exist_ok=True)

csv_path = os.path.join(os.getcwd(),out_dir, "statistics.csv")

def column_stats_to_csv_exclude(
    df: pd.DataFrame,
    out_csv: str,
    exclude: Optional[Iterable[str]] = None,
    columns: Optional[Iterable[str]] = None,
    decimals: Optional[int] = None
) -> pd.DataFrame:
    """
    Compute stats (max, p99, p95, p90, median, mean, min) for numeric columns,
    excluding columns in `exclude`. Save result to CSV and return DataFrame.

    Parameters
    - df: input pandas DataFrame
    - out_csv: path to output CSV file
    - exclude: columns to exclude (e.g., ['x','y','z'])
    - columns: optional list of columns to restrict to before exclusion
    - decimals: optional integer to round results; None means no rounding
    """
```

Simple 1 38 Python 3 (ipykernel) | Idle Mode: Command Ln 1, Col 1 MOHID_Postprocessing.ipynb 1

ENG PTB2 4:00 PM 10-Nov-25

MOHID_Postpr... - JupyterLab

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#1.-Import-required-libraries

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MOHID_Postprocessing.ipynl

Markdown

Notebook

Python 3 (ipykernel)

```
    }

    result = pd.DataFrame(stats, index=cols)
    result = result[["max", "p99", "p95", "p90", "median", "mean", "min"]]
    if decimals is not None:
        result = result.round(decimals)

    result.index.name = "column"
    result.to_csv(out_csv)

    return result

stats_df = column_stats_to_csv_exclude(df, csv_path, exclude=["X","Y","Z"], decimals=2)

print(f"Saved:\n{csv_path}")
stats_df.head()
```

```
Saved:
C:\Users\aquaf\OneDrive\Projetos\Aquaflow\Maretec\Jupyter Notebooks\MOHID_Postprocessing\out\statistics.csv
```

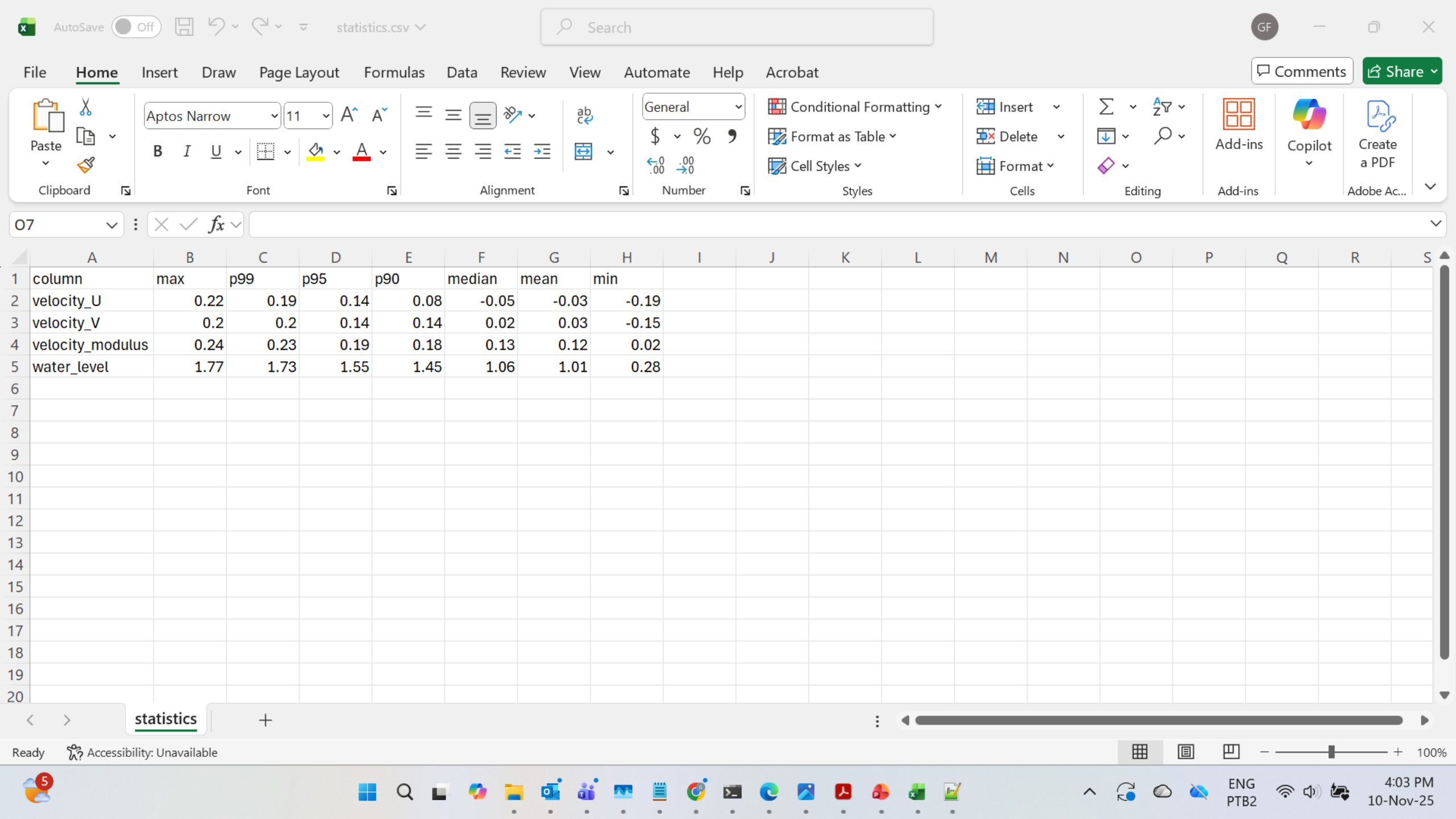
[16]:

column	max	p99	p95	p90	median	mean	min
velocity_U	0.22	0.19	0.14	0.08	-0.05	-0.03	-0.19
velocity_V	0.20	0.20	0.14	0.14	0.02	0.03	-0.15
velocity_modulus	0.24	0.23	0.19	0.18	0.13	0.12	0.02
water_level	1.77	1.73	1.55	1.45	1.06	1.01	0.28

Name	Mo...	Size
out	now	
res	now	
work	6d ago	
MOHID_...	now	97.2 KB
stations....	now	52 B

Simple 1 38 Python 3 (ipykernel) | Idle Mode: Command Ln 1, Col 1 MOHID_Postprocessing.ipynb 1

ENG PTB2 4:03 PM 10-Nov-25


AutoSave Off
statistics.csv
Search
GF
File Home Insert Draw Page Layout Formulas Data Review View Automate Help Acrobat
Comments Share
Paste
Clipboard
Aptos Narrow 11
Font
Alignment
General
Number
Conditional Formatting
Format as Table
Cell Styles
Styles
Insert
Delete
Format
Cells
Editing
Add-ins
Copilot
Create a PDF
Adobe Ac...
O7
column max p99 p95 p90 median mean min
velocity_U 0.22 0.19 0.14 0.08 -0.05 -0.03 -0.19
velocity_V 0.2 0.2 0.14 0.14 0.02 0.03 -0.15
velocity_modulus 0.24 0.23 0.19 0.18 0.13 0.12 0.02
water_level 1.77 1.73 1.55 1.45 1.06 1.01 0.28
statistics
Ready
Accessibility: Unavailable
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ENG PTB2
4:03 PM 10-Nov-25

MOHID_Postpr... - JupyterLab

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#1.-Import-required-libraries

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MOHID_Postprocessing.ipynl

Code Notebook Python 3 (ipykernel)

/

Name	Mo...	Size
out	1s ago	
res	now	
work	6d ago	
MOHID_...	now	99.4 KB
stations....	now	52 B

2.3 Load csv files

[21]:
```
#csv_file_1 = os.path.join(os.getcwd(),'out','PR.csv')
csv_file_1 = os.path.join(os.getcwd(),'out','FPOLIS.csv')
#csv_file_1 = os.path.join(os.getcwd(),'res','res.csv')
#csv_file_1 = os.path.join(os.getcwd(),'res','nivel_itapema.csv')

df_1 = pd.read_csv(csv_file_1)

csv_file_2 = csv_file_1
df_1.head()
```

[21]:

	timestamp	velocity_U	velocity_V	velocity_W	velocity_modulus	velocity_direction	water_level	OpenPoint
0	2025-09-25 00:00:00	0.0	0.0	0.0	0.0	0.0	0.784794	0.0
1	2025-09-25 00:05:00	0.0	0.0	0.0	0.0	0.0	0.786631	0.0
2	2025-09-25 00:10:00	0.0	0.0	0.0	0.0	0.0	0.788103	0.0
3	2025-09-25 00:15:00	0.0	0.0	0.0	0.0	0.0	0.791314	0.0
4	2025-09-25 00:20:00	0.0	0.0	0.0	0.0	0.0	0.796296	0.0

[19]:
```
#Optional - load a second dataframe if you want a plot with time series from different csv files or compare with measurements
csv_file_2 = os.path.join(os.getcwd(),'res','obs.csv')
df_2 = pd.read_csv(csv_file_2)
df_2.head()
```

Simple 1 38 Python 3 (ipykernel) | Idle Saving completed Mode: Command Ln 3, Col 27 MOHID_Postprocessing.ipynb 1

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MOHID_Postpr... - JupyterLab

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MOHID_Postprocessing.ipynl

Code

Notebook

Python 3 (ipykernel)

2.5 Plot time series

```
[*]: output_dir = os.path.join(os.getcwd(),'out')
os.makedirs(out_dir, exist_ok=True)

output_file = "timeseries.png"

# Choose your column names (or set variable_name_2 = '' if you only want one trace)
var1 = 'water_level'
var2 = ''  # set to '' if you don't want a second trace

days_between_ticks = 1  # number of days between ticks
mode_var1 ='lines' #lines+markers, lines, markers
mode_var2 ='lines' #lines+markers, lines, markers
color_var1 = 'blue'
color_var2 = 'red'
legend_1 = 'res'
legend_2 = 'obs'

axis_labels = {
  'water_level': 'Water Level (m)',
  'velocity_modulus' : 'Velocity modulus (m/s)',
  'temperature': 'Temperature (°C)'}

date_format     = "%d-%m-%Y"
dpi = 150

script_folder = os.path.join(os.getcwd(), "work", "Plot_TimeSeries")
script_name = os.path.join(script_folder, "plot_timeseries.py")
```

Name	Mo...	Size
out	1s ago	
res	now	
work	6d ago	
MOHID_...	now	99.2 KB
stations....	now	52 B

Simple 1 38 Python 3 (ipykernel) | Busy Mode: Edit Ln 1, Col 1 MOHID_Postprocessing.ipynb 1

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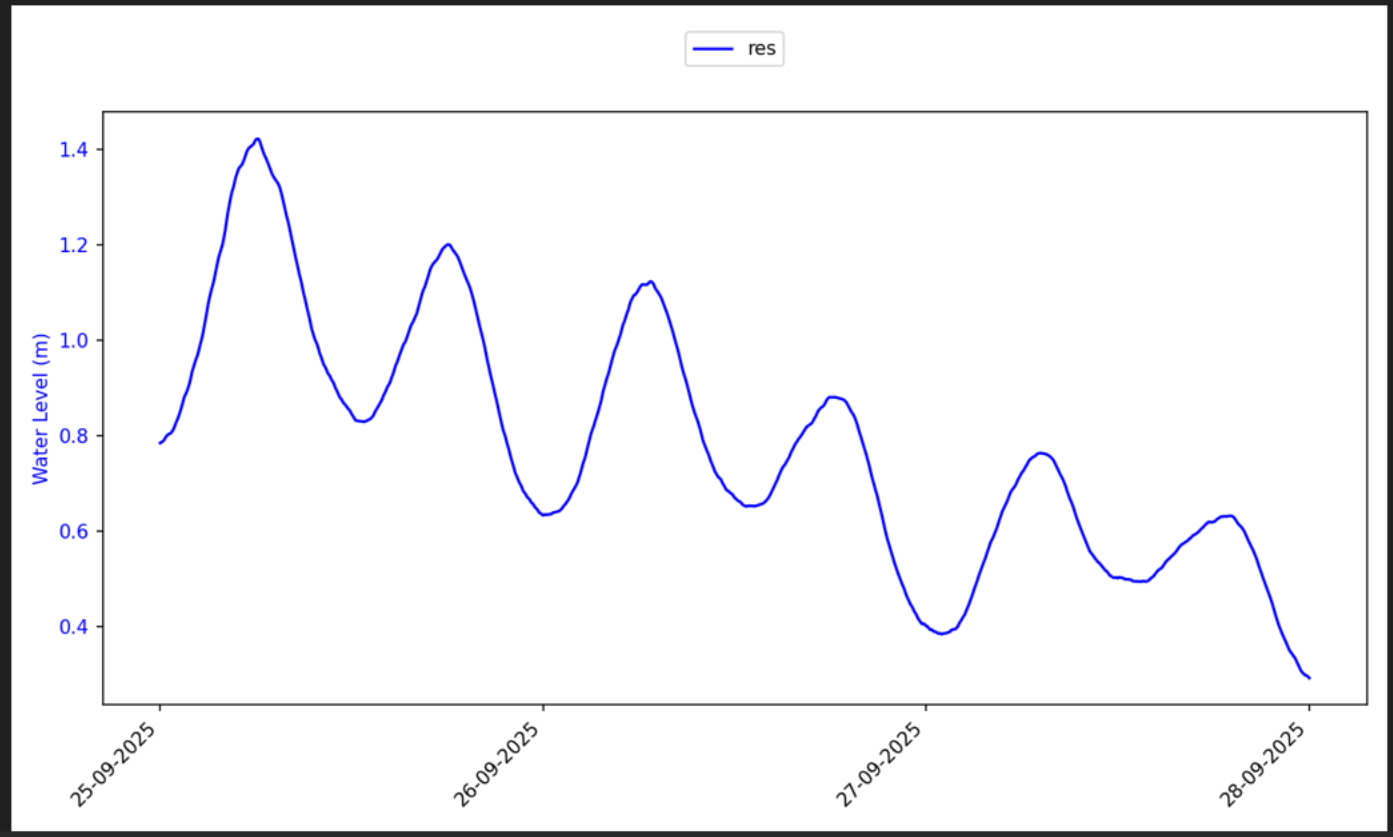
morfac1

Name	Status	Date modified	Type	Size
timeseries.png	✓	10-Nov-25 4:07 PM	PNG File	60 KB

Edit

timeseries.png



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localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#1.-Import-required-libraries

File Edit View Run Kernel Tabs Settings Help

MOHID_Postprocessing.ipynl

Code

Notebook

Python 3 (ipykernel)

/

Name	Mo...	Size
out	1s ago	
res	now	
work	6d ago	
MOHID_...	now	97.3 KB
stations....	now	52 B

2.3 Load csv files

[18]:
```
#csv_file_1 = os.path.join(os.getcwd(),'out','PR.csv')
#csv_file_1 = os.path.join(os.getcwd(),'out','FPOLIS.csv')
csv_file_1 = os.path.join(os.getcwd(),'res','res.csv')
#csv_file_1 = os.path.join(os.getcwd(),'res','nivel_itapema.csv')

df_1 = pd.read_csv(csv_file_1)

csv_file_2 = csv_file_1
df_1.head()
```

[18]:

	timestamp	water_level
0	2024-02-04 00:00:00	2.191796
1	2024-02-04 01:00:00	1.969555
2	2024-02-04 02:00:00	1.869540
3	2024-02-04 03:00:00	1.748131
4	2024-02-04 04:00:00	1.693646

[ ]:
```
#Optional - load a second dataframe if you want a plot with time series from different csv files or compare with measurements
csv_file_2 = os.path.join(os.getcwd(),'res','obs.csv')
df_2 = pd.read_csv(csv_file_2)
df_2.head()
```

Simple 1 38 Python 3 (ipykernel) | Idle Mode: Command Ln 1, Col 1 MOHID_Postprocessing.ipynb 1

ENG PTB2 4:04 PM 10-Nov-25

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Name	Mo...	Size
out	1s ago	
res	now	
work	6d ago	
MOHID_...	now	97.6 KB
stations....	now	52 B

MOHID_Postprocessing.ipynl

Markdown

Notebook

Python 3 (ipykernel)

[19]:
```
#Optional - load a second dataframe if you want a plot with time series from different csv files or compare with measurements
csv_file_2 = os.path.join(os.getcwd(),'res','obs.csv')
df_2 = pd.read_csv(csv_file_2)
df_2.head()
```

[19]:

	Datetime	water_level
0	2022-09-13 23:04:33	0.75
1	2022-09-13 23:09:33	0.76
2	2022-09-13 23:14:32	0.77
3	2022-09-13 23:19:32	0.79
4	2022-09-13 23:24:33	0.81

2.4 Statistics

+ 1 cell hidden

2.5 Plot time series

+ 1 cell hidden

2.6 Compare with measurements

Simple 1 38 Python 3 (ipykernel) | Idle Mode: Command Ln 1, Col 1 MOHID_Postprocessing.ipynb 1

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localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#1.-Import-required-libraries

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Name	Mo...	Size
out	1s ago	
res	now	
work	6d ago	
MOHID_...	now	95.5 KB
stations....	now	52 B

MOHID_Postprocessing.ipynl

Markdown

Notebook

Python 3 (ipykernel)

2.6 Compare with measurements

[25]:

```
"""
Compare observed and modelled time series by nearest-time matching (±30 min),
compute statistics, save CSV and PNG plots.
Assumes the first column in input DataFrames or CSVs is the time column.
"""
variable = "water_level"

axis_labels = {
  'water_level': 'Water Level (m)',
  'velocity_modulus' : 'Velocity modulus (m/s)',
  'temperature': 'Temperature (°C)'}

# Load modelled and observed data
df_mod = df_1
df_obs = df_2

# Settings
TOLERANCE = pd.Timedelta("30min")
out_dir = "out"
dpi = 150

csv_path = os.path.join(os.getcwd(),out_dir, f"obs_vs_mod_{variable}.csv")
fig_path = os.path.join(os.getcwd(),out_dir, f"obs_vs_mod_{variable}.png")
residuals_path = os.path.join(os.getcwd(),out_dir, f"residuals_{variable}.png")
```

Simple 1 38 Python 3 (ipykernel) | Idle Mode: Command Ln 1, Col 1 MOHID_Postprocessing.ipynb 1

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localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#1.-Import-required-libraries

File Edit View Run Kernel Tabs Settings Help

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Name	Mo...	Size
out	1s ago	
res	now	
work	6d ago	
MOHID_...	now	95.5 KB
stations....	now	52 B

MOHID_Postprocessing.ipynl

Markdown

Notebook

Python 3 (ipykernel)

```
    elif mod_series.index.tz is not None and obs_series.index.tz is None:
        obs_series = obs_series.tz_localize(mod_series.index.tz)
    paired = pair_by_nearest(obs_series, mod_series, tolerance=tolerance)
    if paired.empty:
        raise RuntimeError("No pairs found within tolerance. Check your indices and tolerance value.")
    metrics = compute_metrics(paired["obs"], paired["mod"])
    paired.to_csv(csv_path)
    save_plots(paired, out_dir=out_dir)
    print("OBS range:", obs_series.index.min(), "→", obs_series.index.max())
    print("MOD range:", mod_series.index.min(), "→", mod_series.index.max())
    print("Paired points:", len(paired))
    print("Metrics (nearest snap):", metrics)
    print(f"Saved:\n{csv_path}\n{fig_path}\n{residuals_path}")
    return metrics, paired

if __name__ == "__main__":

    metrics, paired = main(df_obs, df_mod, out_dir=out_dir, tolerance=TOLERANCE)
```

```
OBS range: 2022-09-13 23:04:33 → 2025-07-22 14:30:37
MOD range: 2024-02-04 00:00:00 → 2024-02-11 00:00:00
Paired points: 129
Metrics (nearest snap): {'bias': 0.15194894690863567, 'rmse': 0.16669078897323203, 'corr': 0.9968975411176211, 'r2': 0.9630181395881767}
Saved:
C:\Users\aquaf\OneDrive\Projetos\Aquaflow\Maretec\Jupyter Notebooks\MOHID_Postprocessing\out\obs_vs_mod_water_level.csv
C:\Users\aquaf\OneDrive\Projetos\Aquaflow\Maretec\Jupyter Notebooks\MOHID_Postprocessing\out\obs_vs_mod_water_level.png
C:\Users\aquaf\OneDrive\Projetos\Aquaflow\Maretec\Jupyter Notebooks\MOHID_Postprocessing\out\residuals_water_level.png
```

2.7 Harmonic analysis

Simple 1 38 Python 3 (ipykernel) | Idle Mode: Command Ln 1, Col 1 MOHID_Postprocessing.ipynb 1

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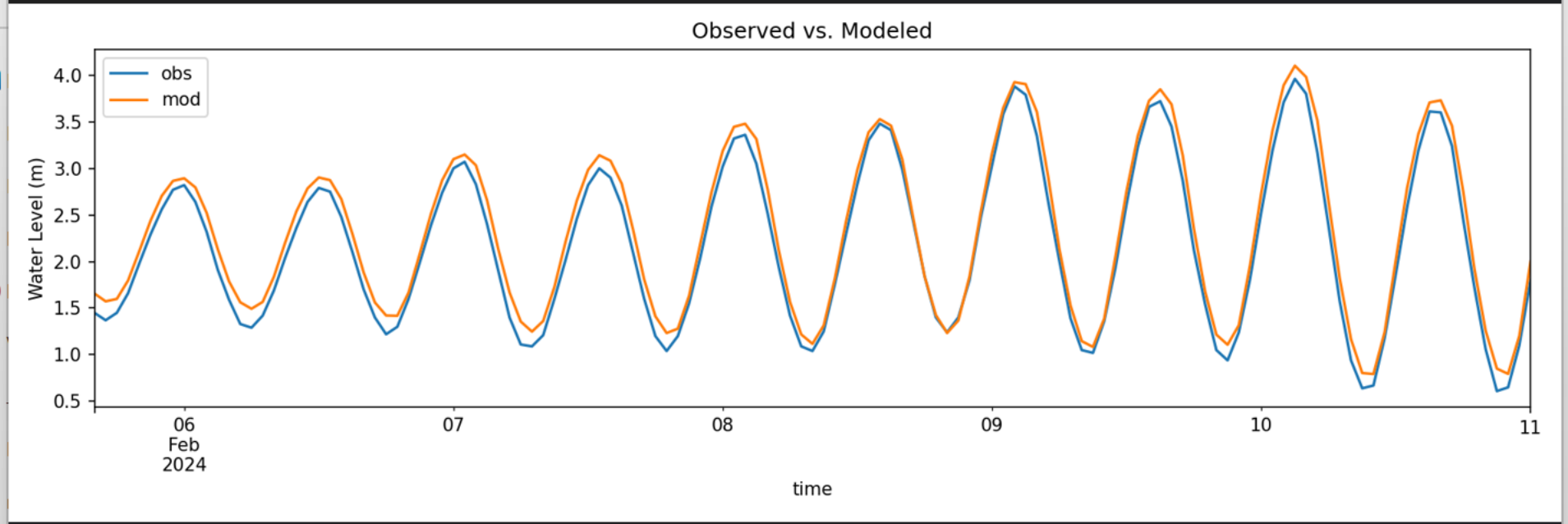
MOHID_Jupyte
MOHID-Lagrar
MyTools

Name	Status	Date modified	Type	Size
obs_vs_mod_water_level.csv	✓	10-Nov-25 4:15 PM	Microsoft Excel Com...	6 KB
obs_vs_mod_water_level.png	✓	10-Nov-25 4:15 PM	PNG File	136 KB

Edit

obs_vs_mod_water_level.png



9 items

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Name	Status	Date modified	Type	Size
obs_vs_mod_water_level.csv	✓	10-Nov-25 4:15 PM	Microsoft Excel Com...	6 KB
obs_vs_mod_water_level.png	✓	10-Nov-25 4:15 PM	PNG File	136 KB
residuals_water_level.png	✓	10-Nov-25 4:15 PM	PNG File	46 KB

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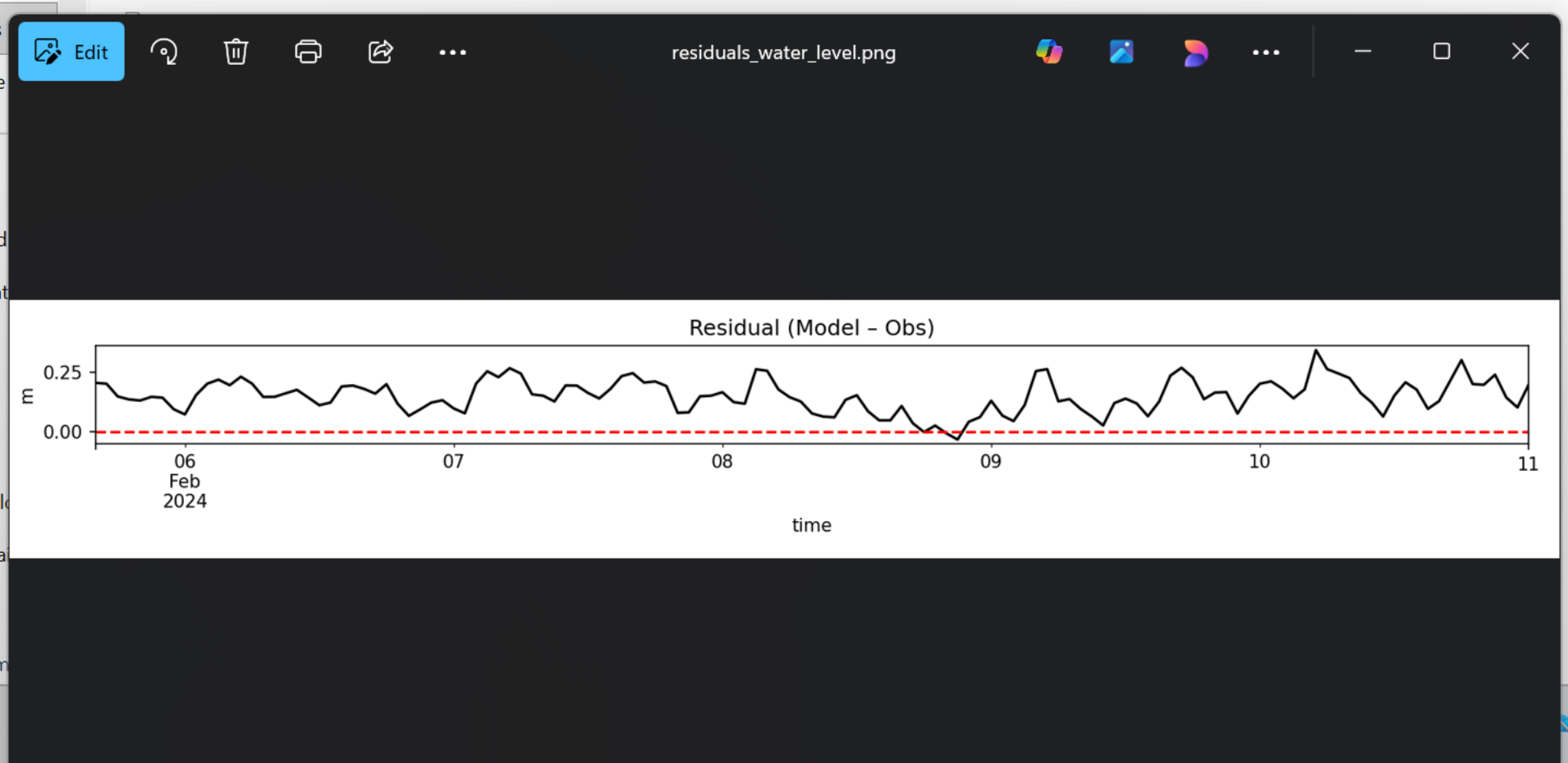
9 items | 1 item

Edit | residuals_water_level.png



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/

Name	Mo...	Size
out	1s ago	
res	now	
work	6d ago	
MOHID_...	31s ago	98.5 KB
stations....	now	52 B

MOHID_Postprocessing.ipynl

Code

Notebook

Python 3 (ipykernel)

2.3 Load csv files

[26]:
```
#csv_file_1 = os.path.join(os.getcwd(),'out','PR.csv')
#csv_file_1 = os.path.join(os.getcwd(),'out','FPOLIS.csv')
#csv_file_1 = os.path.join(os.getcwd(),'res','res.csv')
csv_file_1 = os.path.join(os.getcwd(),'res','nivel_itapema.csv')

df_1 = pd.read_csv(csv_file_1)

csv_file_2 = csv_file_1
df_1.head()
```

[26]:

	Datetime	water_level
0	2022-05-09 12:30:00	0.25
1	2022-05-09 13:00:00	0.24
2	2022-05-09 13:30:00	0.20
3	2022-05-09 14:00:00	0.15
4	2022-05-09 14:30:00	0.11

[24]:
```
#Optional - load a second dataframe if you want a plot with time series from different csv files or compare with measurements
csv_file_2 = os.path.join(os.getcwd(),'res','obs.csv')
df_2 = pd.read_csv(csv_file_2)
df_2.head()
```

[24]:

	Datetime	water_level

Simple 1 38 Python 3 (ipykernel) | Idle Mode: Command Ln 4, Col 12 MOHID_Postprocessing.ipynb 1

ENG PTB2 4:20 PM 10-Nov-25

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localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#2.7.1-Calculate-the-anomaly

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Markdown | Notebook | Python 3 (ipykernel)

/

Name	Mo...	Size
out	7s ago	
res	now	
work	6d ago	
MOHID_...	now	86.8 KB
stations....	now	52 B

2.7 Harmonic analysis

#Based on a Python distribution of the MatLab package UTide (https://github.com/wesleybowman/UTide)

2.7.1 Calculate the anomaly

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2.7.2 Solve to obtain the coefficients

+ 1 cell hidden

2.7.3 Save the amplitudes and phases

+ 2 cells hidden

2.7.4 Plot and save

+ 1 cell hidden

3. Maps

Simple 1 38 Python 3 (ipykernel) | Idle Mode: Command Ln 1, Col 1 MOHID_Postprocessing.ipynb 1

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localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#2.7.1-Calculate-the-anomaly

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Launcher | MOHID_Postprocessing.ipynl

Markdown | Notebook | Python 3 (ipykernel)

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Name	Mo...	Size
out	7s ago	
res	now	
work	6d ago	
MOHID_...	now	86.8 KB
stations....	now	52 B

2.7.1 Calculate the anomaly

[5]:
```
'''
calculate the deviations of the elevations from their mean (stored in a new column called "anomaly"),
and then interpolate to fill in the nan values in the anomaly.
'''
obs = df_1
variable = "water_level"

bad = obs[variable] == -99

obs.loc[bad, variable] = np.nan
obs["anomaly"] = obs[variable] - obs[variable].mean()
obs["anomaly"] = obs["anomaly"].interpolate()
print(f"{bad.sum()} points were flagged 'bad' and interpolated")

obs["Datetime"] = pd.to_datetime(obs["Datetime"])
obs = obs.set_index("Datetime")

obs.head()
```

```
0 points were flagged 'bad' and interpolated
```

[5]:

Datetime	water_level	anomaly
2022-05-09 12:30:00	0.25	-0.280062
2022-05-09 13:00:00	0.24	-0.290062

Simple | 1 | 38 | Python 3 (ipykernel) | Idle | Mode: Command | Ln 1, Col 1 | MOHID_Postprocessing.ipynb | 1

ENG PTB2 4:36 PM 10-Nov-25

MOHID_Postpr... - JupyterLab

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#2.7.4-Generate-the-astronomical-tide

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Name	Mo...	Size
out	7s ago	
res	now	
work	6d ago	
MOHID_...	now	91.4 KB
stations....	now	52 B

Launcher | MOHID_Postprocessing.ipynl

Markdown | Notebook | Python 3 (ipykernel)

2.7.2 Solve to obtain the coefficients

[6]:
```
lat = -27 #define the correct latitude of your data

coef = utide.solve(
    obs.index,
    obs["anomaly"],
    lat=lat,
    method="ols",
    conf_int="MC",
    verbose=True,
)
```

```
solve: matrix prep ... solution ... done.
```

2.7.3 Save the amplitudes and phases

+ 1 cell hidden

2.7.4 Generate the astronomical tide

+ 1 cell hidden

2.7.5 Plot and save

+ 1 cell hidden

Simple 1 38 Python 3 (ipykernel) | Idle Mode: Command Ln 1, Col 1 MOHID_Postprocessing.ipynb 1

ENG PTB2 4:40 PM 10-Nov-25

MOHID_Postpr... - JupyterLab

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File Edit View Run Kernel Tabs Settings Help

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Name	Mo...	Size
out	7s ago	
res	now	
work	6d ago	
MOHID_...	now	91.4 KB
stations....	now	52 B

Launcher | MOHID_Postprocessing.ipynl

Markdown | Notebook | Python 3 (ipykernel)

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2.7.3 Save the amplitudes and phases

[7]:
```
#Save the amplitudes and phases of tidal constituents to a csv file

out_dir = "out"
os.makedirs(out_dir, exist_ok=True)
csv_path = os.path.join(os.getcwd(),out_dir, "tidal_constituents.csv")

names = coef['name']            # array of constituent names
amplitudes = coef['A']          # amplitude (same units as input)
phases_deg = coef['g']          # phase in degrees (astronomical convention)

for nm, A, g in zip(names, amplitudes, phases_deg):
    print(f"{nm:6s}  amplitude = {A:.4f} m  phase = {g:.2f} deg")

df = pd.DataFrame({
    'name': coef['name'],
    'amplitude': pd.Series(coef['A']).round(4),
    'phase_deg': pd.Series(coef['g']).round(2)
})
df.to_csv(csv_path, index=False, encoding='utf-8')

print(f"Saved:\n{csv_path}")
```

```
M2      amplitude = 0.2431 m  phase = 63.97 deg
MSF     amplitude = 0.1398 m  phase = 30.34 deg
S2      amplitude = 0.1329 m  phase = 42.28 deg
O1      amplitude = 0.1062 m  phase = 71.98 deg
```

Simple 1 38 Python 3 (ipykernel) | Idle Mode: Command Ln 1, Col 1 MOHID_Postprocessing.ipynb 1

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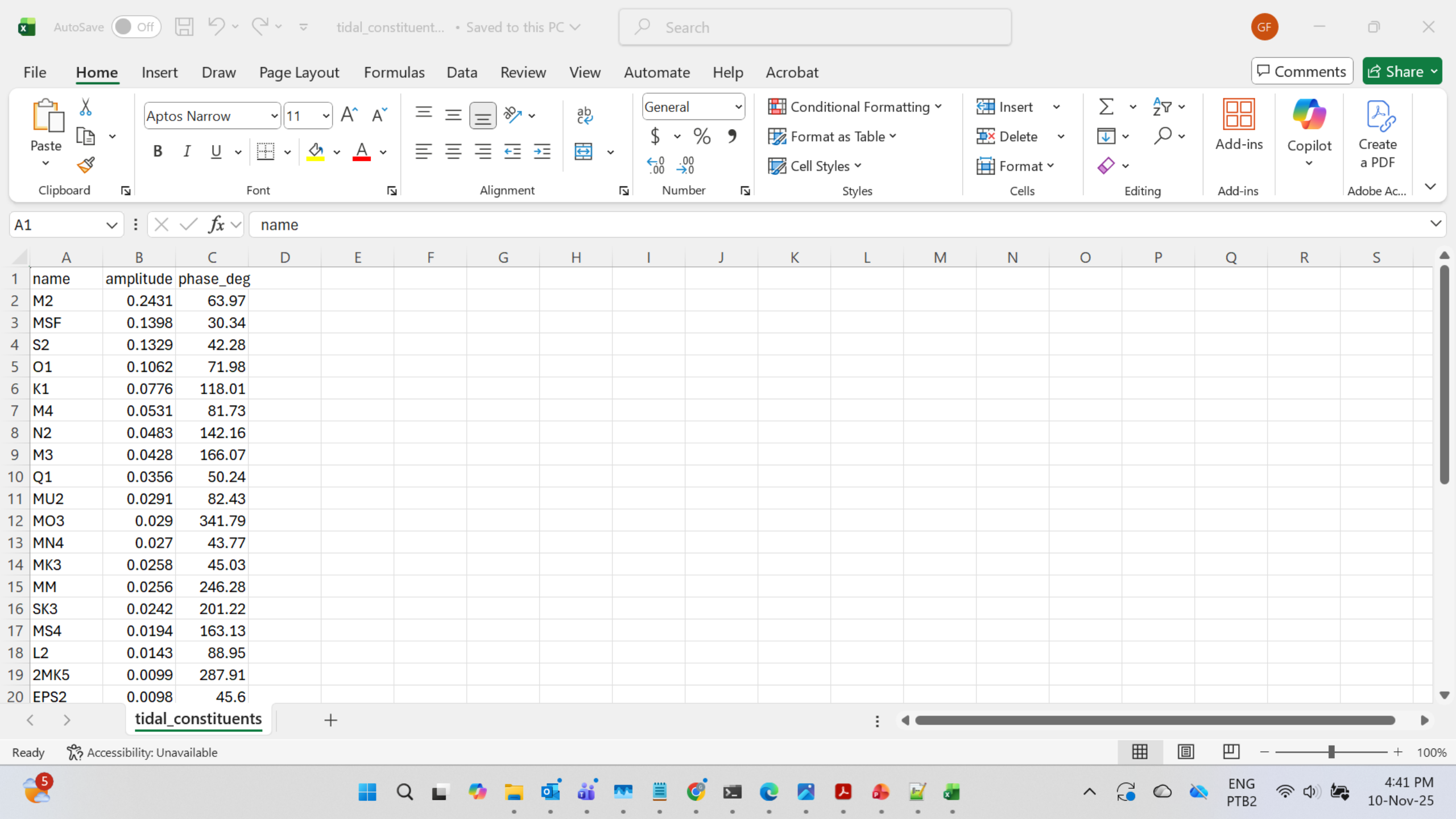

name	amplitude	phase_deg
M2	0.2431	63.97
MSF	0.1398	30.34
S2	0.1329	42.28
O1	0.1062	71.98
K1	0.0776	118.01
M4	0.0531	81.73
N2	0.0483	142.16
M3	0.0428	166.07
Q1	0.0356	50.24
MU2	0.0291	82.43
MO3	0.029	341.79
MN4	0.027	43.77
MK3	0.0258	45.03
MM	0.0256	246.28
SK3	0.0242	201.22
MS4	0.0194	163.13
L2	0.0143	88.95
2MK5	0.0099	287.91
EPS2	0.0098	45.6

MOHID_Postpr... - JupyterLab

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#2.7.4-Generate-the-astronomical-tide

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Name	Mo...	Size
out	7s ago	
res	now	
work	6d ago	
MOHID_...	10s ago	107 KB
stations....	now	52 B

Launcher | MOHID_Postprocessing.ipynl

Markdown | Notebook | Python 3 (ipykernel)

2.7.4 Generate the astronomical tide

[8]:
```
'''The amplitudes and phases from the fit are now in the coef data structure,
which can be used directly in the reconstruct function to generate the tides.
'''

tide = utide.reconstruct(obs.index, coef, verbose=True)
```

```
prep/calcs ... done.
```

2.7.5 Plot and save

+ 1 cell hidden

3. Maps

3.1 Plot maps

[ ]:
```
# ============================
# SET-UP: Define paths and file names
# ============================

backup_root       = os.path.join(os.getcwd(),'res')
hdf5_file         =r'Hydrodynamic_2_Surface.hdf5'
hdf5_file_vectors =r'Hydrodynamic_2_Surface.hdf5'
```

Simple | 1 | 38 | Python 3 (ipykernel) | Idle | Mode: Command | Ln 1, Col 1 | MOHID_Postprocessing.ipynb | 1

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Launcher | MOHID_Postprocessing.ipynl

Markdown | Notebook | Python 3 (ipykernel)

/

Name	Mo...	Size
out	7s ago	
res	now	
work	6d ago	
MOHID_...	10s ago	107 KB
stations....	now	52 B

2.7.5 Plot and save

[9]:
```
#Plot and save anomaly, astronomical tide, and residual

out_dir = "out"
os.makedirs(out_dir, exist_ok=True)

fig_path = os.path.join(os.getcwd(),out_dir, "tidal_analysis.png")
csv_path = os.path.join(os.getcwd(),out_dir, "tidal_analysis.csv")

dpi = 150

t = obs.index.to_pydatetime()

fig, (ax0, ax1) = plt.subplots(figsize=(17, 5), nrows=2, sharey=True, sharex=True)

ax0.plot(t, obs.anomaly, label="Data", color="C0")
ax0.plot(t, tide.h, label="Astronomical tide", color="C1")
ax0.set_ylabel("Water level (m)")

residual = obs.anomaly - tide.h
ax1.plot(t, residual, label="Residual", color="C2")
ax1.grid(which="major", axis="y", linestyle="--", color="0.8", linewidth=0.8)

ax1.set_ylabel("Data - Astronomical tide (m)")

fig.legend(ncol=3, loc="upper center");
```

Simple | 1 | 38 | Python 3 (ipykernel) | Idle | Mode: Command | Ln 1, Col 1 | MOHID_Postprocessing.ipynb | 1

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localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#2.7.4-Generate-the-astronomical-tide

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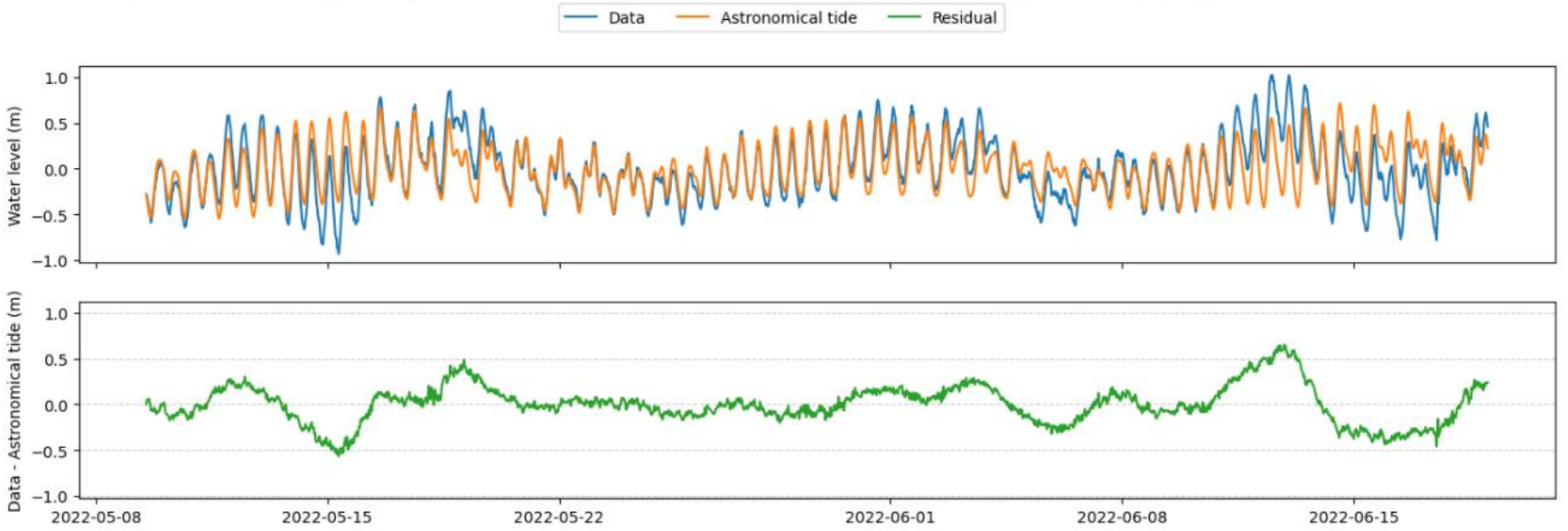
Launcher | MOHID_Postprocessing.ipynl

Markdown | Notebook | Python 3 (ipykernel)

```
    'Anomaly': obs.anomaly.round(2),
    'Astronomical_tide': tide.h.round(2),
    'Rsidual': residual.round(2)
})
df.to_csv(csv_path, index=False, encoding='utf-8')

print(f"Saved:\n{fig_path}\n{csv_path}")
```

```
Saved:
C:\Users\aquaf\OneDrive\Projetos\Aquaflow\Maretec\Jupyter Notebooks\MOHID_Postprocessing\out\tidal_analysis.png
C:\Users\aquaf\OneDrive\Projetos\Aquaflow\Maretec\Jupyter Notebooks\MOHID_Postprocessing\out\tidal_analysis.csv
```



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Name	Mo...	Size
out	7s ago	
res	now	
work	6d ago	
MOHID_...	10s ago	107 KB
stations....	now	52 B

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File Edit View Run Kernel Tabs Settings Help

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Name	Mo...	Size
out	5s ago	
res	now	
work	6d ago	
MOHID_...	now	300.6 KB
stations....	now	52 B

Launcher | MOHID_Postprocessing.ipynl

Markdown | Notebook | Python 3 (ipykernel)

3. Maps ¶

3.1 Plot maps

[*]:
```
# ============================
# SET-UP: Define paths and file names
# ============================

backup_root       = os.path.join(os.getcwd(),'res')
hdf5_file         =r'Hydrodynamic_2_Surface.hdf5'
hdf5_file_vectors =r'Hydrodynamic_2_Surface.hdf5'
start_date_str    = '2025-9-25'
end_date_str      = '2025-9-27'

variable = "velocity modulus"  # Change as needed

out_dir   = os.path.join(os.getcwd(),'out', "maps")
os.makedirs(out_dir, exist_ok=True)

# ============================
# DEFINE VARIABLE-LABEL DICTIONARY
# ============================
variable_label_dict = {
    "velocity modulus": "Velocity Modulus(m/s)",
    "salinity": "Salinity(psu)",
```

Simple 1 38 Python 3 (ipykernel) | Busy Mode: Command Ln 1, Col 1 MOHID_Postprocessing.ipynb 1

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velocity modulus | MOHID_Jupyter-Notebooks

OneDrive > ... > out > maps > 20250925_20250927 > velocity modulus

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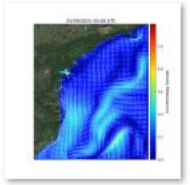
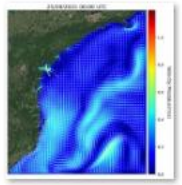
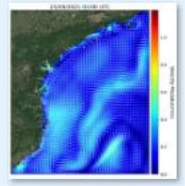
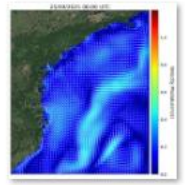
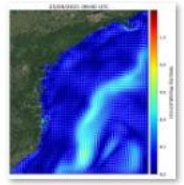
- morfac1

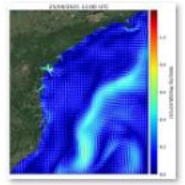

velocity modulus.mp4

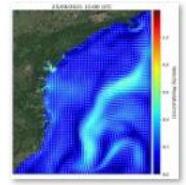

velocity modulus_000.png

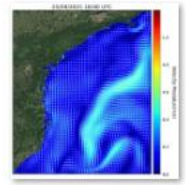

velocity modulus_001.png

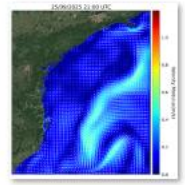

velocity modulus_002.png

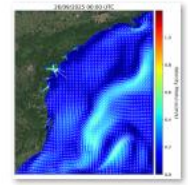

velocity modulus_003.png

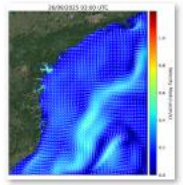

velocity modulus_004.png

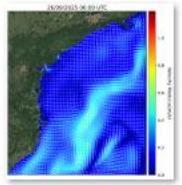

velocity modulus_005.png

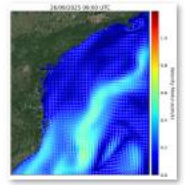

velocity modulus_006.png

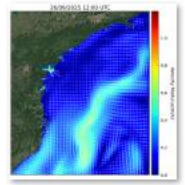

velocity modulus_007.png

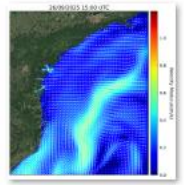

velocity modulus_008.png

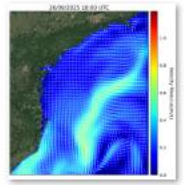

velocity modulus_009.png

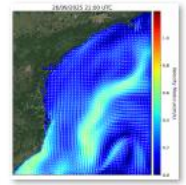

velocity modulus_010.png

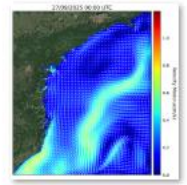

velocity modulus_011.png


velocity modulus_012.png


velocity modulus_013.png


velocity modulus_014.png


velocity modulus_015.png


velocity modulus_016.png

18 items

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velocity modulus | MOHID_Jupyter-Notebooks

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Search velocity modulus

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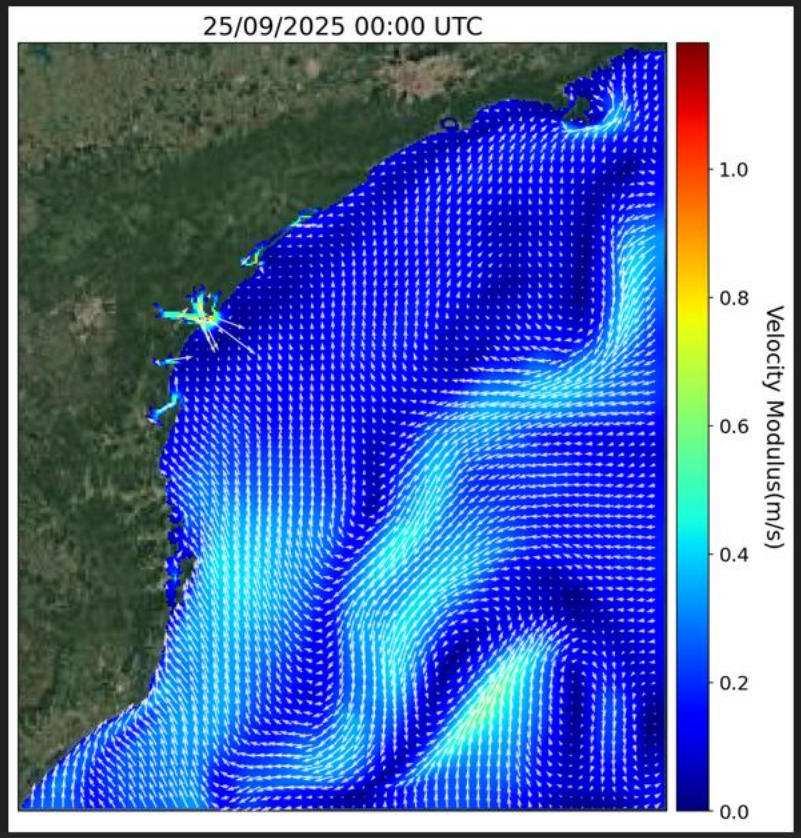
Edit | velocity modulus_000.png



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velocity modulus_008.png

18 items | 1 item selected 0.

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Name	Mo...	Size
out	7s ago	
res	now	
work	6d ago	
MOHID_...	53s ago	301.2 KB
stations....	now	52 B

+ 1 cell hidden

3.2 Plot statistics ¶

[11]:

```
# ============================
# SET-UP: Define paths and file names
# ============================
backup_root       = os.path.join(os.getcwd(),'res')
hdf5_file         =r'Hydrodynamic_2_Surface.hdf5'
hdf5_file_vectors =r'Hydrodynamic_2_Surface.hdf5'
start_date_str    = '2025-9-25'
end_date_str      = '2025-9-27'

variable = "velocity modulus"  # Change as needed
variable_vector = ["velocity U","velocity V"]

out_dir   = os.path.join(os.getcwd(),'out', "statistics")
os.makedirs(out_dir, exist_ok=True)

percentil = 50 #max = 100, min = 0, median = 50
countour_levels   = '[]' #'[0.1, 0.2]'
vmin = 0.
vmax = 1.0

#if 3D
percentil_map = "surface" #max_value, surface, layer

#if percentil_map = layer
nlayer = 1
```

Simple | 1 | 38 | Python 3 (ipykernel) | Idle | Mode: Command | Ln 1, Col 1 | MOHID_Postprocessing.ipynb | 1

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statistics | MOHID_Jupyter-Notebooks

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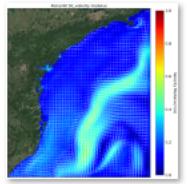
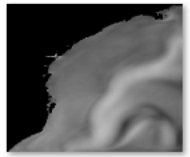


velocity modulus_percentil_50.png



velocity modulus_percentil_50.tif

2 items

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statistics | MOHID_Jupyter-Notebooks

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Search statistics

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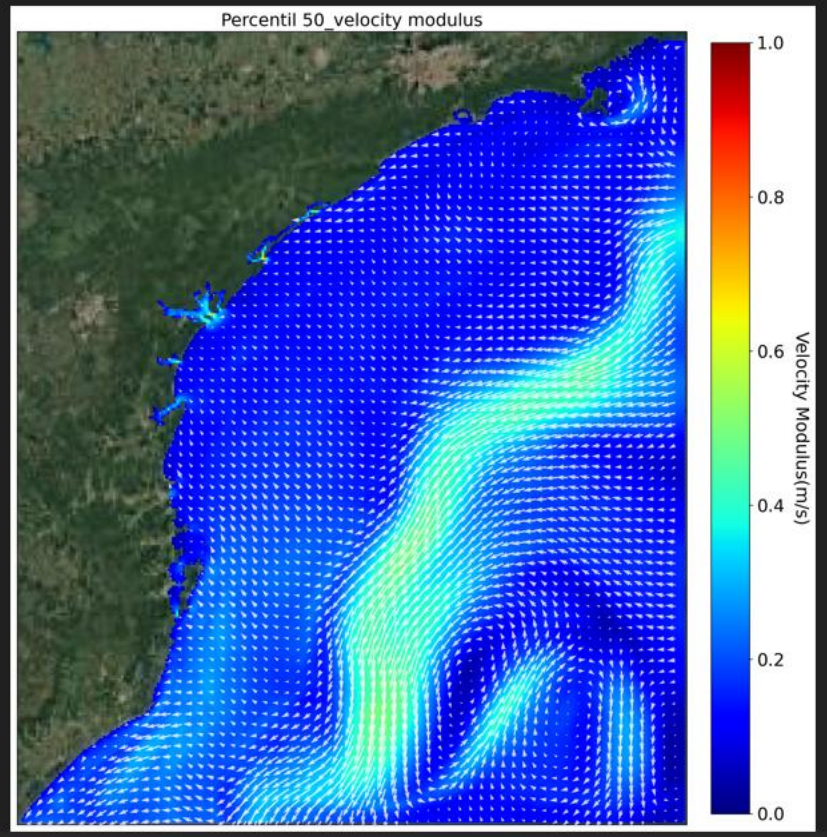
Edit | velocity modulus_percentil_50.png



1720 x 1763 | 1.3 MB | 35%

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Name	Mo...	Size
out	3s ago	
res	now	
work	6d ago	
MOHID_...	42s ago	301.3 KB
stations....	now	52 B

3.3 Plot vertical cut

3.3.1 Define paths and file names

[12]:

```
#backup_root       = os.path.join(os.getcwd(),'res')
backup_root       = r'C:\Users\aquaf\OneDrive\Projetos\Aquaflow\Hidromod\2025\Proj_575_Consulgal_Soyo\Aplica\MOHID_Water\run_cases\Soy
hdf5_file         =r'WaterProperties_2.hdf5'
hdf5_file_vectors =r'Hydrodynamic_2.hdf5'
start_date_str    = '2025-1-6'
end_date_str      = '2025-1-7'

variable = "salinity"  # Change as needed
variable_vector = ["velocity U","velocity V"]

out_dir   = os.path.join(os.getcwd(),'out', "vertical_cut")
os.makedirs(out_dir, exist_ok=True)


# ----------------------------------------
def collect_hdf5_paths(root, h5file, sd, ed):
    paths = []
    for entry in os.scandir(root):
        if not entry.is_dir():
            continue
        try:
            day = datetime.strptime(entry.name.split('_')[0], "%Y%m%d").date()
        except Exception:
```

Simple | 1 | 38 | Python 3 (ipykernel) | Idle | Mode: Command | Ln 1, Col 1 | MOHID_Postprocessing.ipynb | 1

ENG PTB2 4:48 PM 10-Nov-25

MOHID_Postpr... - JupyterLab

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#2.7.4-Generate-the-astronomical-tide

File Edit View Run Kernel Tabs Settings Help

Launcher | MOHID_Postprocessing.ipynl

Markdown | Notebook | Python 3 (ipykernel)

/

Name	Mo...	Size
out	3s ago	
res	now	
work	6d ago	
MOHID_...	now	306.2 KB
stations....	now	52 B
Vertical...	now	0 B

3.3.2 Load or create a new file with a polyline

[20]:
```
polyline_file = os.path.join(os.getcwd(),"VerticalCutPath.csv")

# Load existing stations (format: lon lat)
if os.path.exists(polyline_file):
    stations_df = pd.read_csv(
        polyline_file,
        sep=',',
        header=None,
        names=['lon', 'lat'],
        engine='python'
    )
    print(f"Loaded {len(polyline_file)} stations from {polyline_file}")
else:
    stations_df = pd.DataFrame(columns=['lon', 'lat'])
    with open(polyline_file, mode='w', newline='') as file:
        writer = csv.writer(file)
    print("Starting with zero stations.")
```

```
Starting with zero stations.
```

3.3.3 Visualise or define a new polyline on the map

+ 1 cell hidden

3.3.4 Run script

Simple | 1 | 43 | Python 3 (ipykernel) | Idle | Mode: Command | Ln 1, Col 1 | MOHID_Postprocessing.ipynb | 1

ENG PTB2 5:27 PM 10-Nov-25

MOHID_Postpr... - JupyterLab

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#2.7.4-Generate-the-astronomical-tide

File Edit View Run Kernel Tabs Settings Help

/

Name	Mo...	Size
out	3s ago	
res	now	
work	6d ago	
MOHID_...	now	303 KB
stations....	now	52 B

Launcher | MOHID_Postprocessing.ipynl

Markdown | Notebook | Python 3 (ipykernel)

3.3.3 Visualise or define a new polyline on the map

[15]:

```
# ------------------------------
# Start timing
# ------------------------------
start_time = time.time()

# ------------------------------
# Assume Xr, Yr, zi defined elsewhere
# ------------------------------
LonGrid = np.array(Xr)
LatGrid = np.array(Yr)

# ------------------------------
# Build discrete colormap
# ------------------------------
_nbins = 10
_bins = None
_discrete_colors = None

def map_value_to_color(value):
    if value == -99:
        return "#ffffff00"
    idx = np.digitize(value, _bins) - 1
    idx = int(np.clip(idx, 0, _nbins - 1))
    return _discrete_colors[idx]

def precompute_color_grid(zi, nbins=10):
```

Simple 1 38 Python 3 (ipykernel) | Idle Mode: Command Ln 1, Col 1 MOHID_Postprocessing.ipynb 1

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MOHID_Postpr... - JupyterLab

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#2.7.4-Generate-the-astronomical-tide

File Edit View Run Kernel Tabs Settings Help

/

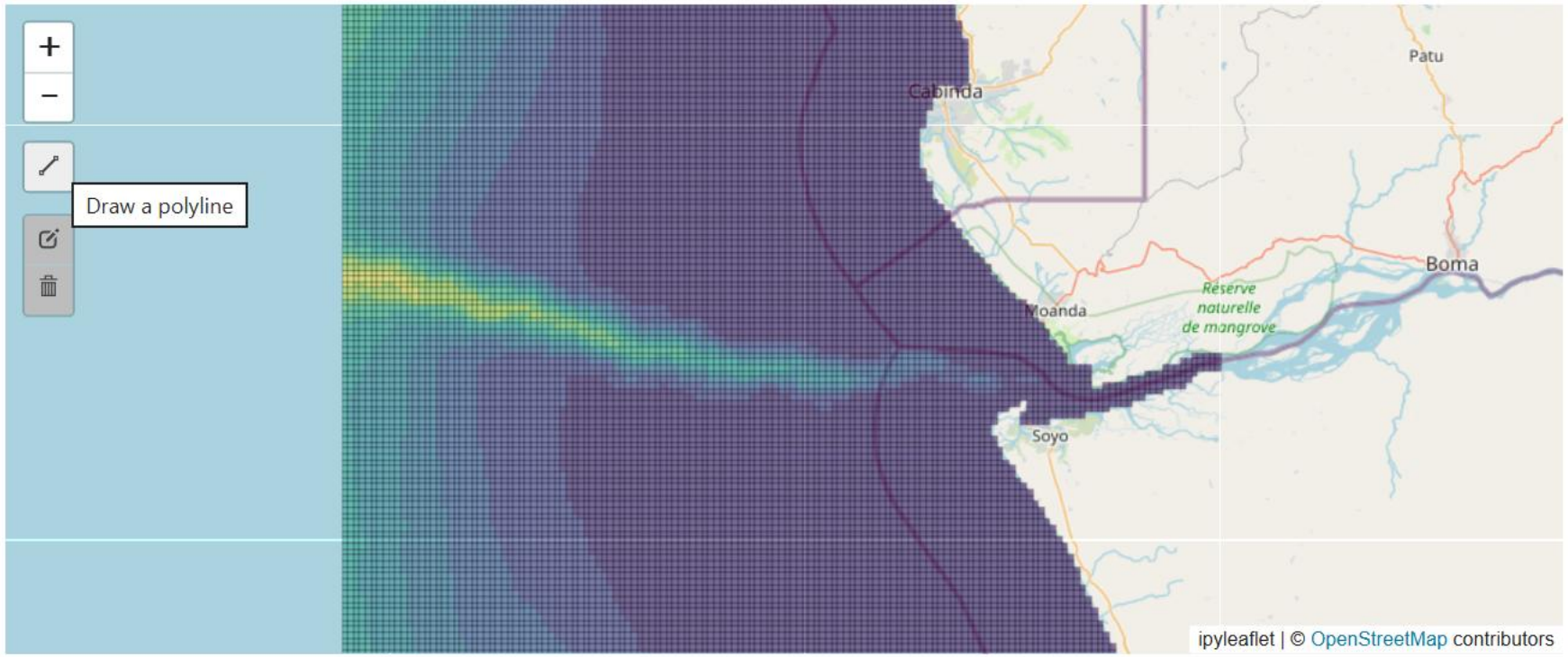
Name	Mo...	Size
out	3s ago	
res	now	
work	6d ago	
MOHID_...	now	303 KB
stations....	now	52 B

Launcher | MOHID_Postprocessing.ipynl

Code | Notebook | Python 3 (ipykernel)

Save polyline

```
Raster layering time: 2.63 sec
```



3.3.4 Run script

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb# ...el) | Idle

Mode: Command | Ln 1, Col 1 | MOHID_Postprocessing.ipynb | 1

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MOHID_Postpr... - JupyterLab

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#2.7.4-Generate-the-astronomical-tide

File Edit View Run Kernel Tabs Settings Help

/

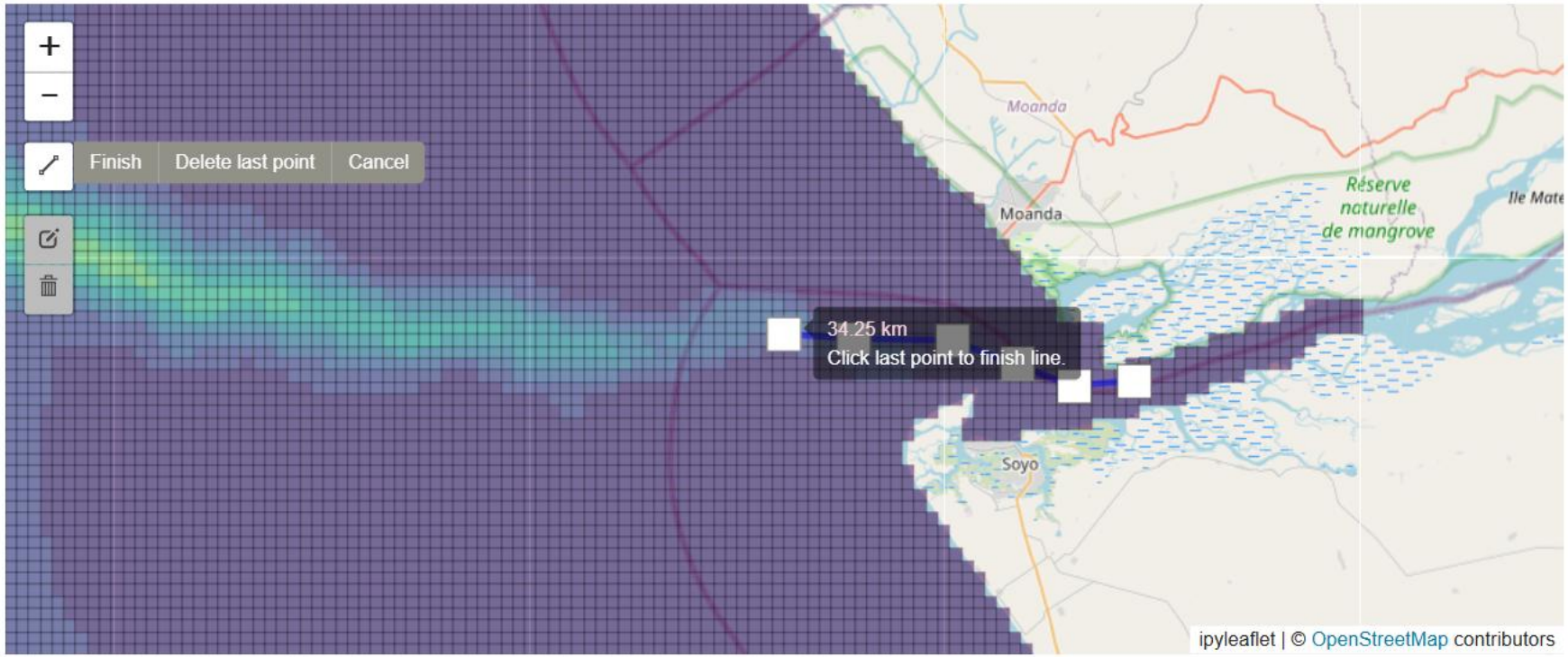
Name	Mo...	Size
out	3s ago	
res	now	
work	6d ago	
MOHID_...	now	306.2 KB
stations....	now	52 B

Launcher | MOHID_Postprocessing.ipynl

Code | Notebook | Python 3 (ipykernel)

Save polyline

Raster layering time: 2.87 sec



3.3.4 Run script

+ 3 cells hidden

Simple 1 40 Python 3 (ipykernel) | Idle Mode: Command Ln 9, Col 6 MOHID_Postprocessing.ipynb 1

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MOHID_Postpr... - JupyterLab

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb#2.7.4-Generate-the-astronomical-tide

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Launcher | MOHID_Postprocessing.ipynl

Code | Notebook | Python 3 (ipykernel)

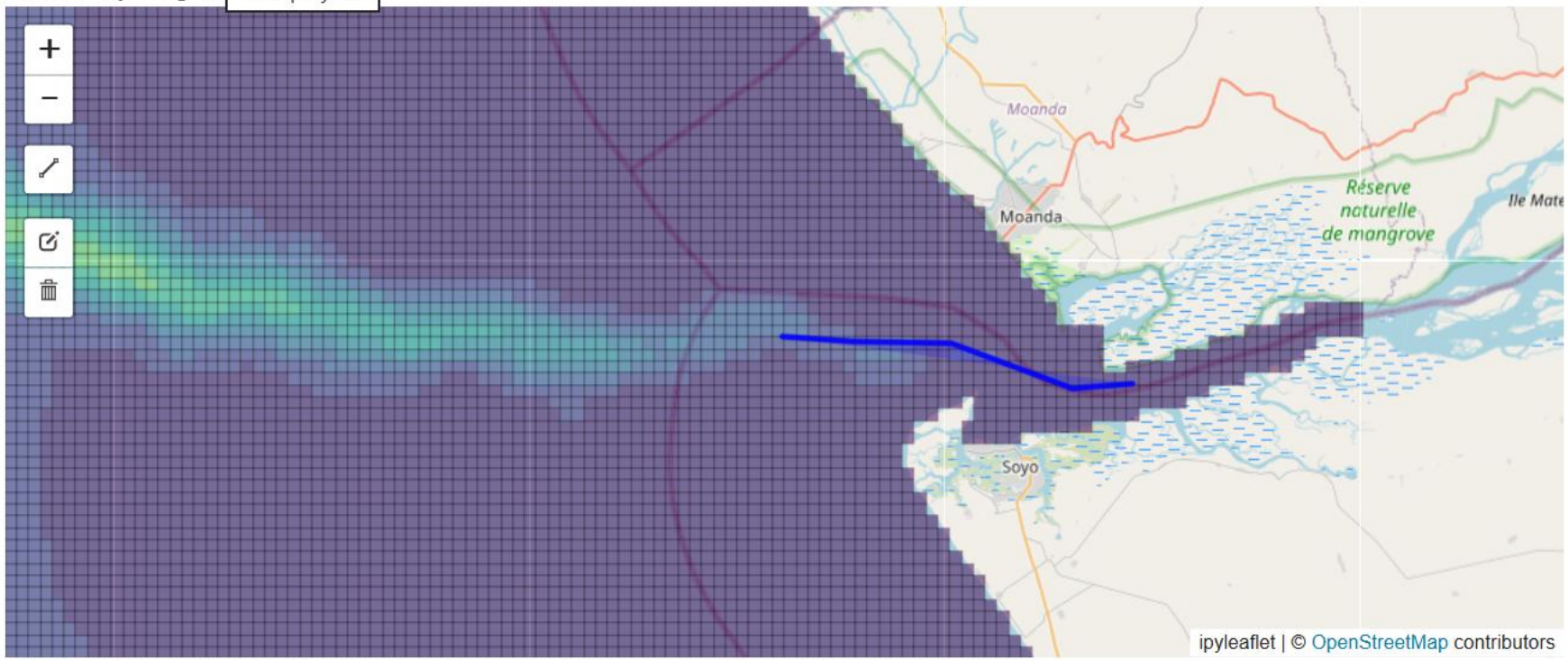
/

Name	Mo...	Size
out	3s ago	
res	now	
work	6d ago	
MOHID_...	now	306.2 KB
stations....	now	52 B

Save polyline

Raster layering ti

Save polyline



3.3.4 Run script

+ 3 cells hidden

Simple 1 41 Python 3 (ipykernel) | Idle Mode: Command Ln 9, Col 6 MOHID_Postprocessing.ipynb 1

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MOHID_Postpr... - JupyterLab

localhost:8888/lab/tree/MOHID_Postprocessing.ipynb

File Edit View Run Kernel Tabs Settings Help

Launcher | MOHID_Postprocessing.ipynl

Code | Notebook | Python 3 (ipykernel)

/

Name	Mo...	Size
out	2s ago	
res	23d ago	
work	last mo.	
MOHID_...	now	88.7 KB
stations.c...	23d ago	52 B
VerticalC...	16d ago	126 B

3.3.4 Run script

[7]:

```
# User-specified parameters
contour_levels   = '[]' #'[0.1, 0.2]'
vmin = None # Define None for global color limits
vmax = 20 # Define None for global color limits

dpi = 150               #specify the DPI
cmap = "jet"       # colour scale (jet, viridis,...)
save_frames = True       # Set to False to disable saving individual image frames
skip_time = 1

# Set to True to show velocity vectors, False to hide them.
show_vectors = True

# Quiver visual tuning (adjust interactively if needed)
scale_quiver = 2.0  # larger -> arrows shorter; tune for your units
quiver_width = 0.003
quiver_color = "white"
max_arrows_across = 40
max_arrows_vertical = 20
min_vector_mag = 1e-4  # mask vectors below this magnitude

# ============================
# DEFINE VARIABLE-LABEL DICTIONARY
# ============================
variable_label_dict = {
    "velocity_modulus": "Velocity_Modulus(m/s)"
```

Simple | 1 | Python 3 (ipykernel) | Idle | Mode: Edit | Ln 4, Col 48 | MOHID_Postprocessing.ipynb | 1

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salinity | UserGuides | MOHID_Postprocessing

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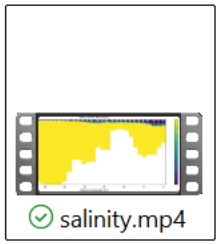
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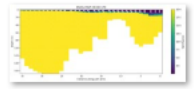
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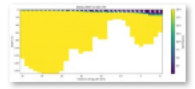
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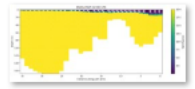
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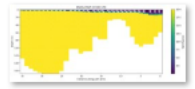
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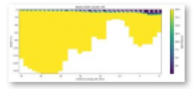
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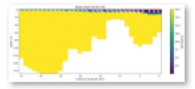
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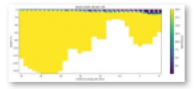
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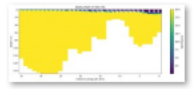
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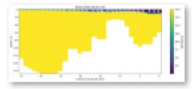
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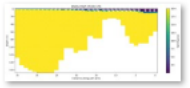
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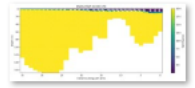
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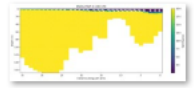
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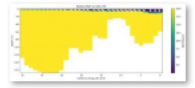
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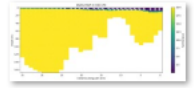
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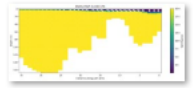
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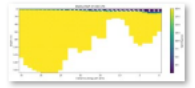
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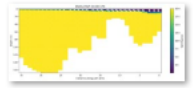
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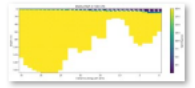
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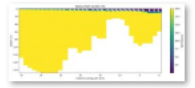
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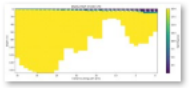
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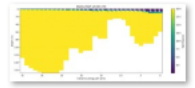
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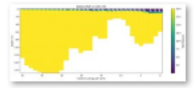
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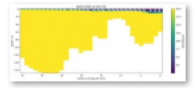
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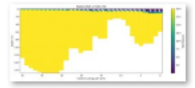
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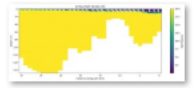
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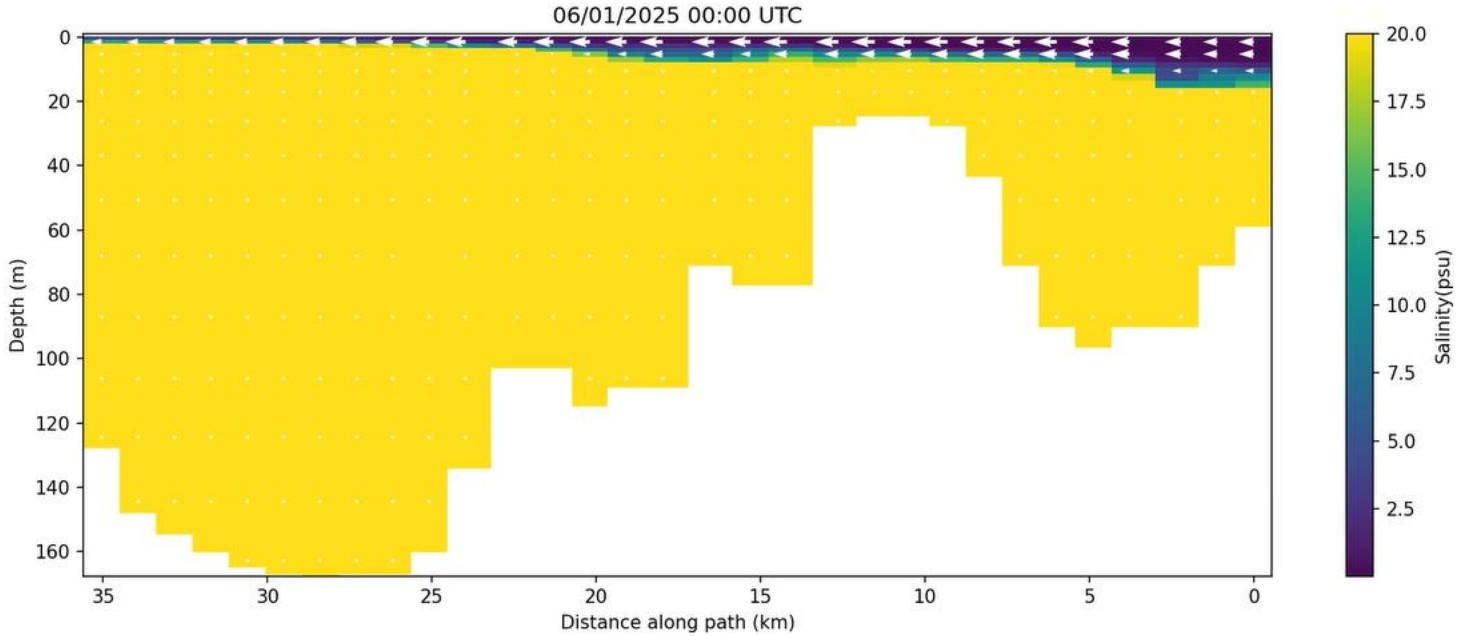

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