By Adel M. Abdallah, Jan 2022

Step 1: Set up a local Jupyter Notebook server on a local machine

i. Download or clone the GitHub the repository for the Jupyter Notebooks

Download it from here https://github.com/WamdamProject/WaMDaM_JupyteNotebooks to a folder on your machine. Make sure you dont have empty spaces in your folder name or path where it exits at.

For this paper, you only need to work with the files inside the folder called 2 VisualizePublish

The GitHub Desktop App is very useful in case you're not aware of it. Download it at: https://desktop.github.com/

ii. Install and set up Jupyter Notebook Server for Python 3.8

It requires some basic programing experience

Install Anaconda for Python 3.8 which already comes with the most common Python libraries are already installed. https://www.anaconda.com/download/

If you're interested in more info (not needed though), follow instructions here http://jupyter.org/install

Next, install a library called *Potly* which is used to plot the use case figures as it does not come with Anaconda:

Right click and **Run as Administrator** (Figure 2) then type

Run the Anaconda Command Prompt application, you can do so by clicking at the Windows start menu, then select Anaconda Prompt.

conda install -c conda-forge plotly

Or try

conda install -c plotly plotly

or

pip install plotly

If asked to Proceed ([y]/n)? type

У

conda install -c conda-forge hs_restclient

Next install a library called *hs_restclient* which the HydroShare client library as it does not come with Anaconda:

or

If you have issues installing it, try other commands here https://anaconda.org/conda-forge/hs_restclient

pip install hs_restclient

Anaconda: pip install gdxpds==1.0.4

Next install a library called *qdxpds* which is the GDX/Python Pandas client library for the WASH GAMS model as it does not come with

X

If you have issues installing it, try other commands here https://anaconda.org/conda-forge/hs_restclient

See the library info here https://github.com/NREL/gdx-pandas#install

Administrator: C:\WINDOWS\system32\cmd.exe

```
(C:\ProgramData\Anaconda2) C:\Users\Rosenberg>conda install plotly
etching package metadata .......
Solving package specifications: .
Package plan for installation in environment C:\ProgramData\Anaconda2:
The following NEW packages will be INSTALLED:
            3.1.1-py27h28b3542_0
   plotly:
   retrying: 1.3.3-py27_2
The following packages will be UPDATED:
   anaconda: 5.0.1-py27hdb50712_1 --> custom-py27h689e5c3_0
            4.3.30-py27he817781_0 --> 4.5.10-py27_0
2.6.0-h36134e3_1 --> 2.6.0-1
   conda-env: 2.6.0-h36134e3_1
   pycosat: 0.6.2-py27h96ae2ec_1 --> 0.6.3-py27h0c8e037_0
Proceed ([y]/n)? y
Time: 0:00:00 469.52 kB/s
anaconda-custo 100% |###########################|
                                                   Time: 0:00:00 822.92 kB/s
pycosat-0.6.3- 100% | ###########################
                                                   Time: 0:00:00 873.33 kB/s
retrying-1.3.3 100% |##########################
                                                  Time: 0:00:00 1.94 MB/s
conda-4.5.10-p 100% |########################| Time: 0:00:00                  1.95 MB/s
plotly-3.1.1-p 100% |########################## Time: 0:00:15
(C:\ProgramData\Anaconda2) C:\Users\Rosenberg>
```

Run the Anaconda Command Prompt application, you can do so by clicking at the Windows start menu, then select Anaconda Prompt.

Figure 2: Anaconda Command Prompt and installing new libraries

Navigate to the directory to the Jupyter Notebook folder you downloaded earlier (Figure 3). For example, type this command:

iii. Launch Jupyter Notebook Server on your local machine

cd C:\Users\Adel\Documents\GitHub\WamdamProject\WaMDaM_JupyteNotebooks\3_VisualizePublish Before you move on, make sure that the base directoy has changed to the above path you entered. For example:

C:\Users\Adel\Documents\GitHub\WamdamProject\WaMDaM_JupyteNotebooks\3_VisualizePublish

base) C:\Users\Rosenberg>cd C:\Users\Rosenberg\Documents\GitHub\WaMDaM_JupyteNotebooks

I 06:53:38.944 NotebookApp] Running the core application with no additional extensions or settings

base) C:\Users\Rosenberg\Documents\GitHub\WaMDaM_JupyteNotebooks>jupyter notebook

Next, type this command in the Anaconda Prompt to launch Jupyter Notebook server on your local machine

If you need to shutdown the Jupyter Notebook server, in the Anaconda Prompt, use the keyboard

I 06:53:39.174 NotebookApp] 0 active kernels

Anaconda Prompt - jupyter notebook

Or alternatively, you try this more recent Jupyter environment

Jupyter Notebook

Jupyter lab

CTRL + C

ıpyterlab

ebooks

SupyterLab v0.27.0 Known labextensions:

To start it again anytime later, follow the steps in this section iii

```
I 06:53:39.174 NotebookApp] The Jupyter Notebook is running at: http://localhost:8888/?token=1c806cf3af49524528ccf095fb
    005b55b1097b3d559ad16c
    I 06:53:39.174 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
    C 06:53:39.180 NotebookApp]
       Copy/paste this URL into your browser when you connect for the first time,
       to login with a token:
           http://localhost:8888/?token=1c806cf3af49524528ccf095fb005b55b1097b3d559ad16c
    I 06:53:39.336 NotebookApp] Accepting one-time-token-authenticated connection from ::1
    [W 07:00:32.888 NotebookApp] Notebook 1_QuerySelect/00_WaMDaM_Directions_and_Use_Cases.ipynb is not trusted
    [I 07:00:33.667 NotebookApp] Kernel started: 363558e5-5185-44a9-820c-2a3ce0b09d87
    [I 07:00:33.674 NotebookApp] 302 GET /notebooks/1_QuerySelect/play-button.png (::1) 2.00ms
    I 07:00:36.056 NotebookApp] Adapting to protocol v5.1 for kernel 363558e5-5185-44a9-820c-2a3ce0b09d87
    I 07:02:03.618 NotebookApp] Creating new notebook in /1_QuerySelect
    I 07:02:04.598 NotebookApp] Kernel started: a450c390-9f52-458e-858d-38e6a8279f7e
    I 07:02:06.339 NotebookApp] Adapting to protocol v5.1 for kernel a450c390-9f52-458e-858d-38e6a8279f7e
      07:02:34.312 NotebookApp] Saving file at /1_QuerySelect/00_WaMDaM_Directions_and_Use_Cases.ipynb
      07:04:05.289 NotebookApp]
                                Saving file at /1_QuerySelect/Untitled.ipynb
Figure 3: Using the Anaconda Command Prompt to launch Jupyter Notebook
For further details on Jupyter Notebooks (not needed), see instructions at http://jupyter-notebook-beginner-
guide.readthedocs.io/en/latest/execute.html
Your default browser will launch as in Figure 4.
In the Jupyter Notebook server landing page @ http://localhost:8888/tree? (Figure 4), click at the Notebooks one after another.
                                                                                                     ... ☑ ☆
                                                                                                                            lii\ (
                                 localhost:8888/tree#notebooks
                                                                                            110%
                🗂 jupyter
```

Logout

Upload New → C

I 06:53:38.924 NotebookApp] JupyterLab alpha preview extension loaded from C:\ProgramData\Anaconda2\lib\site-packages\

I 06:53:39.174 NotebookApp] Serving notebooks from local directory: C:\Users\Rosenberg\Documents\GitHub\WaMDaM_JupyteNo

Files Running Clusters

Select items to perform actions on them.

Files

SQL_queries

```
Ø 00_WaMDaM_Directions_and_Use_Cases.ipynb
              01_Step1_Setup_local_Jupyter.ipynb
              Ø 02_Step2_Install_WaMDaM_Wizard_Connect.ipynb
              O3_Step3_Visualize_OpenAgua.ipynb
              04_Step4_Create_New_Scenarios_Edit_OpenAgua.ipynb
               Ø 05_Step5_download_to_WaMDaM.ipynb
               Ø 06_Step6_Serve_NewScenarios_WASH.ipynb
               O7_Step7_Serve_NewScenarios_WEAP.ipynb
               Ø 08_Step8_Publish_HydroShare.ipynb
               09_Step9_Query_Analyze_HydroShare_Monterrey_Mexico.ipynb
               play-button.png
               ReadMe.md
Figure 4: Jupyter Notebook landing page and WaMDaM use case notebooks
```

Congratulations!

Next, install the WaMDaM Wizard iv. Check on the version of OpenSSL you have and update it if older than 2016

IOError: [Errno socket error] EOF occurred in violation of protocol (_ssl.c:590)

Older SSL versions may cause this error below when trying to read use case SQL script from GitHub

```
In [ ]:
        import ssl
        print (ssl.OPENSSL_VERSION)
         # Update it
         !pip install --upgrade requests[security]
```