

ASPA-UH-WRRC Integrated Modeling Framework Workshop

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June-4-2019, 9:00 AM to 4:00 PM

Agenda

- (1) Background on collaborative groundwater modeling
- (2) Software install and introduction to Python, Anaconda, GitHub, and Jupyter notebooks
- (3) Walkthrough of Tutuila Integrated Modeling Framework
- (4) Identification of ASPA priorities, future modeling directions, and personal goals
- (5) Modeling practicum with FloPy based MODFLOW tutorial

Prerequisites

Introduction to Python and Jupyter notebooks

The main application I use for modeling and data analysis (besides Excel) is Python within the Jupyter Notebook interface. If you have not been exposed to Python or Jupyter I suggest watching these only moderately boring but very short videos to get a sense of the global scope of these tools:

Intro to Python (1:30 min)

<https://www.youtube.com/watch?v=zkHaPU794fU>

Intro to Jupyter Notebooks (56 seconds)

<https://www.coursera.org/lecture/open-source-tools-for-data-science/what-are-jupyter-notebooks-GBOZX>

Also can read short article on Jupyter in science:

<https://www.nature.com/articles/d41586-018-07196-1>

Recommended exploration

We will be using a modeling approach that follows the design of the FloPy module, which is a Python package to create, run, and post-process MODFLOW-based models. FloPy can get pretty complicated, but you can get a sense of how it works by clicking around in this online repository.

<https://github.com/modflowpy/flopy>. Note that clicking on files with .ipynb extensions will show you FloPy example notebooks with code, explanations, and figures.

A good one to start with is:

https://github.com/modflowpy/flopy/blob/develop/examples/Notebooks/flopy3_mf6_A_simple-model.ipynb



Workshop Supplies

Please bring a laptop computer to the workshop on Tuesday the 4th. Mac or PC is fine, preferably the fastest computer you have access to, as it will make your experience much more enjoyable.

Required software

Please ensure you are running a web browser that Jupyter Notebook supports. These include: Chrome, Safari, Firefox. If you do not use one of these, please download from:

<https://www.mozilla.org/en-US/firefox/new/> or <https://www.google.com/chrome/>

Optional Software:

If you are feeling ambitious, you can download the latest Anaconda distribution at:

<https://www.anaconda.com/distribution/>

make sure you are installing the right one for your type of computer and install it by following the directions below. This will save you some time on the day of the workshop. Otherwise I will bring all required software and will plan in time to get the software installed on everyone's computers during the workshop.

Anaconda Navigator install directions

- 1) Download or copy over anaconda3-xxxxx. Exe
- 2) Agree to user agreement
- 3) Install for just me
- 4) Accept default installation location
- 5) Check "Register Anaconda as my default Python 3.7"
- 6) Click Install
- 7) Finish and close installer (uncheck learn more boxes if desired).

Thanks very much and we look forward to seeing you all on Tuesday!

