Installing Python with Anaconda

Please follow the following instructions to install Python 2.7. **If you encounter a problem, please look for a solution online or with your IT department.** Due to limited resources, ARSET is not able to further assist you in the Python installation process.

Download & Installing Anaconda

1. Make sure you have administrative privileges on your computer or install on a local directory to avoid any permission issues
2. Download the Anaconda installer at http://www.continuum.io/downloads/
3. For this training, we recommend you install Python 2.7

Installing Packages

4. Once you have installed Anaconda, open an Anaconda Prompt (e.g. Terminal/CMD) and enter the following command:

```
conda install pyhdf
```

5. If this does not work, try the following commands:

```
conda install -c conda-forge pyhdf
```

or

```
conda install -c cistools pyhdf
```

Anaconda will then display a description of what it intends to install before asking you to confirm installation. **Read this carefully** anytime you install a package with Anaconda. It sometimes upgrades or downgrades packages (if needed), which can cause previously installed packages to stop working.

6. Install mpl_toolkits.basemap using

```
conda install basemap
```

7. If this does not work, try the following commands:

```
conda install -c conda-forge basemap
```

- Note: you can check which packages are installed with the following:

```
conda list
```

8. List of packages required for this course are:
    - pyhdf
    - numpy
    - sys
    - mpl_toolkits.basemap
    - matplotlib
    - linearSegmentedColormap
    - h5py
    - time
    - calendar
9. If needed, you can update a package by repeating the installation command

Using Integrated Development Environments (IDEs) with Anaconda

Depending on the IDE you are trying to use, it may be possible to set up your IDE to use the Anaconda environment. This will mean using the interpreter and packages installed with Anaconda. For specific instructions on how to do this, visit: http://docs.continuum.io/anaconda/user-guide/tasks/integration/

***Note**: Anaconda comes with a minimal IDE named Spyder, which is available from the Anaconda Navigator.*

Further Anaconda Details and Capabilities

In addition to being a package management software, Anaconda is also an environment management software. This means two things:

- It stores all files (including the Python interpreter and packages) in the anaconda directory, which can lead to difficulties if you try to use the files in an external version of Python
- It can manage multiple versions of Python separately

For more details, visit: http://conda.io/docs/py2or3.html

Test Python Installation

After successful installation of Python 2.7 and packages using Anaconda, the following test can be run to check proper installation of all the packages without error.

1. Download MODIS Data and Python Codes using following link
   - **https://arset.gsfc.nasa.gov/sites/default/files/airquality/webinars/18-hires/py_test_code.zip**
2. Test python and package installations using following python test code
   - **test_python.py**
3. Open the spyder editor inside Anaconda
4. Open test_python.py
5. Make sure directory has python code and hdf file
6. Open 'ipython' console in the spyder
7. Run the code using green 'arrow' on the top
8. Output should be an image as shown on the right