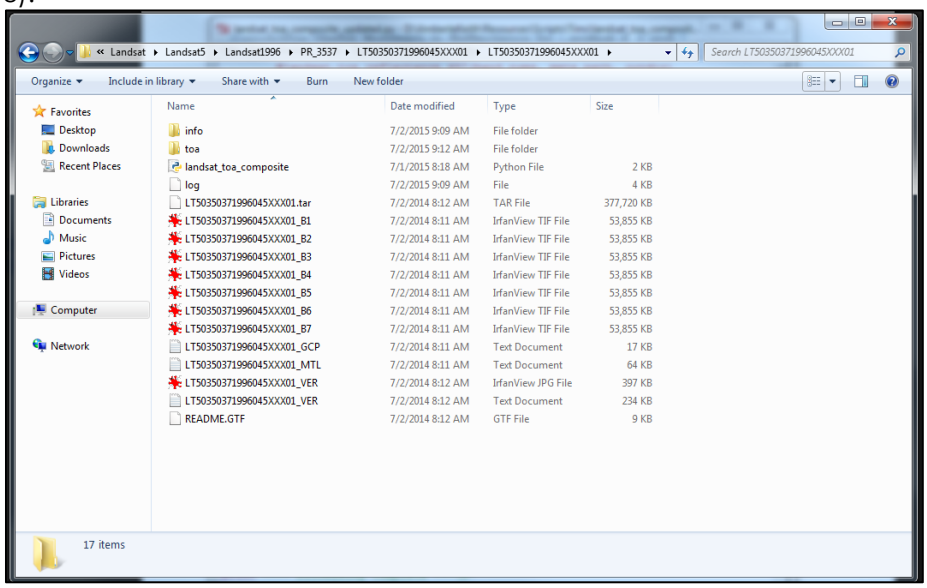
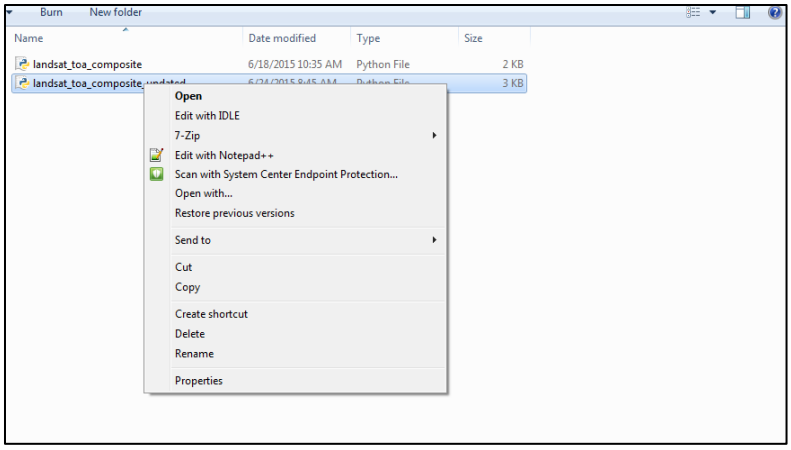
Tutorials

Processing Landsat Imagery

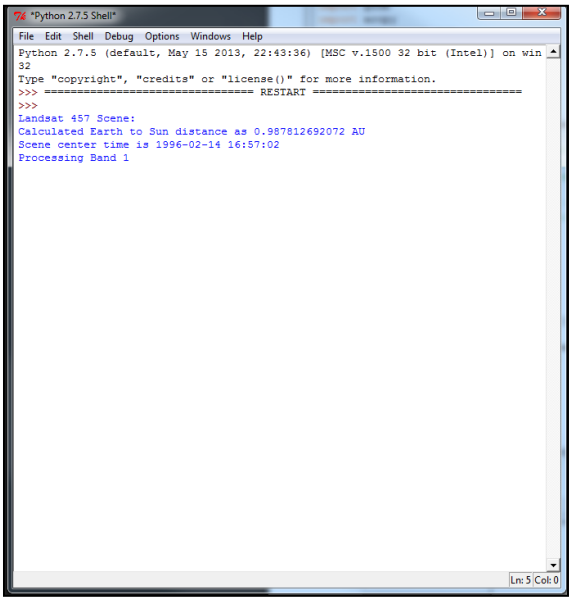
1. The script that was used for this project was part of a package called Dnppy. This was created by the DEVELOP Geoinformatics team and has a number of features to it. This can be downloaded from: https://github.com/nasa/dnppy
2. Before you begin, you must have a few extensions in order to run the script. You may need to add Numpy and Scipy, which can be found at: http://www.lfd.uci.edu/~gohlke/pythonlibs/. It should be noted that you should install the correct applications for the version of ArcGIS and python that you are using.
3. Once the Dnppy package has been downloaded, navigate to the "Setup" script and double click it.
4. The command window will appear and this will automatically run the installation process to your computer.
5. After Dnppy has been installed, a message will appear stating that it is complete.
6. Navigate the python script named "landsat_toa_composite" This is the version that will be necessary to pre-process the Landsat data.
7. This script will do a few things to the raw data. First, it will convert the data from digital number (DN) to top-of-atmosphere (TOA) reflectance. Second, it will use a Con tool (from ArcGIS) to remove any negative reflectance values. Finally, it will create a composite image of all of the bands to assist with further processing and or band combinations.
8. You will need to make a copy of the "landsat_toa_composite" script and place it with the unzipped Level 1 Landsat data.
    a. The metadata file must be stored in the same folder as script for it to run properly.
    b. The script will detect which Landsat data is being used (e.g. Landsat 5 or Landsat 8).



9. You will also need to create a new folder named "toa" in the same folder as the unzipped Level 1 data and the script. This folder is where the pre-processed data will be sent. You will need to do this for each Landsat tile.
10. Right-click the script and select "Edit with IDLE."



11. The python script will appear.
12. Navigate to the python's "Run" menu and click "Run Module"
13. A python shell appears at this time. It may take a moment, but it will write out a print statement.



14. It may take a couple of minutes to complete the pre-processing for each Landsat tile. You can run multiple instances of the script at the same time to process multiple tiles.
    a. Note that the more instances are running, the longer it will take to pre-process each tile.
15. Repeat these steps for all of the Landsat data.

Disclaimer: Installation of the python application libraries may cause complications with the functionality of some programs if the versions are different. NASA DEVELOP is not responsible for any issues that may result from the installation of python application libraries.