**Exercise 6 – Reprojecting and Mosaicing MODIS HDF Data**

Prerequisite

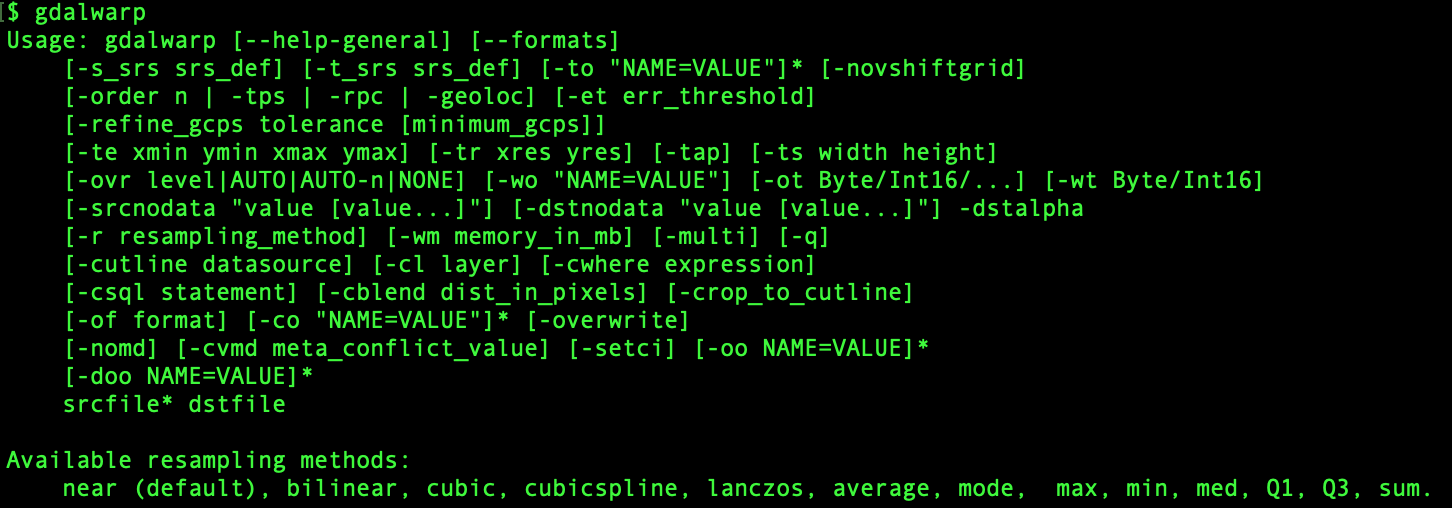
* Python: <http://www.python.org/doc/>
* GDAL: <http://www.gdal.org/>
* Geospatial Data Abstraction Library
* Raster data access
* Used by commercial software like ArcGIS
* C++ library, but Python bindings exist
* Matplotlib: <http://matplotlib.org/>

Note: Outputs (e.g., figure, statistics, meta-­‐info) might be different by input

MODIS Collection 6 products are in a sinusoidal projection. It can be reprojected to a variety of common and useful projections using the GDAL utility. This exercise assumes you have downloaded and installed GDAL correctly.

1. **Reproject MODIS HDF data**

The gdalwarp utility (https://gdal.org/programs/gdalwarp.html) is an image mosaicing, reprojection and warping utility. The program can reproject to any supported projection, and can also apply GCPs stored with the image if the image is "raw" with control information.

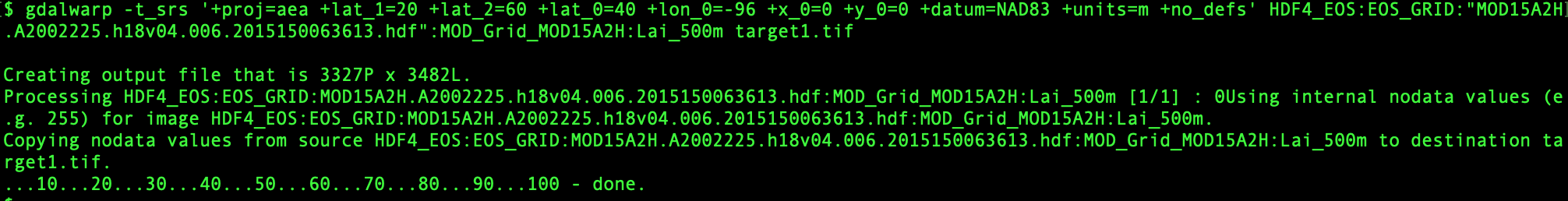


Specify the resampling type and output pixel size. Select North America Albers Equal Area Conic as the output projection type. See information here: https://epsg.io/.

We have PROJ.4 of North America Albers Equal Area Conic projection string as: '+proj=aea +lat\_1=20 +lat\_2=60 +lat\_0=40 +lon\_0=-96 +x\_0=0 +y\_0=0 +ellps=GRS80 +datum=NAD83 +units=m no\_defs'

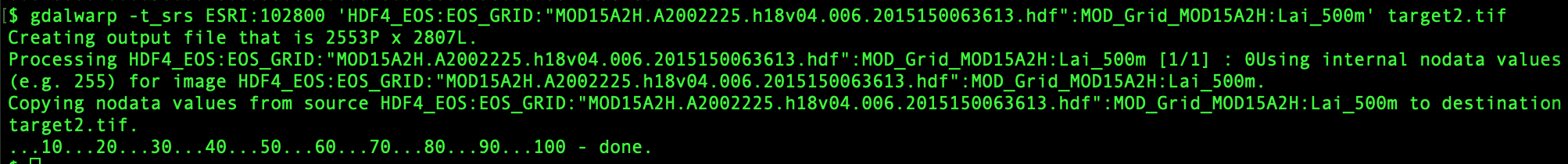
Example 1: using PROJ.4 string

gdalwarp -t\_srs '+proj=aea +lat\_1=20 +lat\_2=60 +lat\_0=40 +lon\_0=-96 +x\_0=0 +y\_0=0 +datum=NAD83 +units=m +no\_defs' HDF4\_EOS:EOS\_GRID:"MOD15A2H.A2002225.h18v04.006.2015150063613.hdf":MOD\_Grid\_MOD15A2H:Lai\_500m target1.tif



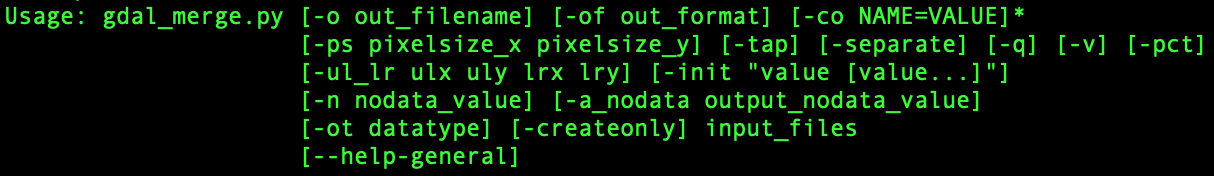
Example 2: using EPSG code. The code of Albers Equal Area projection: ESRI::102800

gdalwarp -t\_srs ESRI:102800 'HDF4\_EOS:EOS\_GRID:"MOD15A2H.A2002225.h18v04.006.2015150063613.hdf":MOD\_Grid\_MOD15A2H:Lai\_500m' target2.tif



**2. Mosaic MODIS HDF data**

Both gdalwarp and ‘gdal\_merge.py’ can be used for raster data mosaicing. ‘gdal\_mergy.py’ automatically mosaic a set of images. All the images must be in the same coordinate system and have a matching number of bands, but they may be overlapping, and at different resolutions. In areas of overlap, the last image will be copied over earlier ones.



Example:

gdal\_merge.py -o hdf\_mosaic.tif 'HDF4\_EOS:EOS\_GRID:"MOD15A2H.A2002225.h18v04.006.2015150063613.hdf":MOD\_Grid\_MOD15A2H:Lai\_500m' 'HDF4\_EOS:EOS\_GRID:"MOD15A2H.A2002225.h18v03.006.2015150063707.hdf":MOD\_Grid\_MOD15A2H:Lai\_500m'

