DataScience for Development and Social Change, 2015

Maps as Data

What's hiding in your maps

Map Helpers

❖ Terminal-line tools:

  ❖ GDAL tools http://www.gdal.org

    ❖ Mac users: use http://www.kyngchaos.com/software/archive#gdal

❖ Python libraries:

  ❖ Raster maps: gdal and fiona (fiona = pythonic gdal)

  ❖ Vector maps: shapely

Reading geotiffs in Python

```python
import gdal
import numpy as np

dataset = gdal.Open(infile, GA_ReadOnly);
cols = dataset.RasterXSize;
rows = dataset.RasterYSize;
nbands = dataset.RasterCount;
driver = dataset.GetDriver().LongName;
geotransform = dataset.GetGeoTransform();
for b in range(1,nbands+1):
    band = dataset.GetRasterBand(b);
    bandtype = gdal.GetDataTypeName(band.DataType);
    banddata = band.ReadAsArray(0,0,band.XSize, band.YSize).astype(np.float);
```

Converting Map Formats

❖ Use OGR2OGR command-line tool

❖ e.g. Filter and convert a shapefile to geojson:

"ogr2ogr f GeoJSON where "ADM0_A3 = 'YEM'" subunits.json ne_10m_admin_1_states_provinces.shp"

Ogr2ogr formats list: http://www.gdal.org/ogr_formats.html

Ogr2Ogr in Python

import ogr2ogr

ogr2ogr.main(['','f','GeoJSON','test2.json','TZwards.shp'])"

Cookie-cutting

Cookie-cutting with GDAL

You need:

❖ A shapefile with the outline in it: both the .shp and .shx files

❖ a Geotiff (or other) file that needs cookiecutting, IN THE SAME COORDINATE
SYSTEM as the shapefile.

From the command line, type

"gdalwarp cutline yourshapefile.shp yourgeotiff.tif yourresult.tif"

Gdalwarp is included in the GDAL tool install. The result will be in file yourresult.tif.

Cookie-cutting with QGIS

http://www.qgistutorials.com/en/docs/
raster_mosaicing_and_clipping.html