Homework: Using Remote Sensing for Drought Monitoring

Due by August 2nd, 2017

Case Study: Ethiopia Drought 2015-2017

For Information about the drought over Ethiopia, see:
(http://reliefweb.int/disaster/dr-2015-000109-eth)

Objective

This homework exercise will use and apply the drought monitoring skills you learned during the webinar series. Using the same approach as in all in-class exercises for California, you will analyze drought conditions over Ethiopia. Based on your analysis of drought conditions over Ethiopia, you will answer questions in the following Google Form and submit to ARSET to receive credit.

Homework Link: https://goo.gl/forms/lhzNYyuqFfb4rgn63

There are Four Parts to This Homework Exercise

- o Part 1a: Subset TMPA and Retrieve Monthly Precipitation Climatology Over Ethiopia
- o Part 1b: Download Monthly Precipitation Data for 2015 Over Ethiopia
- o Part 2: Download NDVI over Ethiopia
- o Part 3: Calculate Precipitation Anomalies using QGIS
- o Part 4: Calculate NDVI anomalies using QGIS

Use **Exercise 1a:** *Precipitation Data Access for Monitoring Drought Over California* for **Parts 1a** and **1b**

- o Replace the coordinates of California in **'Select region'** with [33.0,3.7,48.2,15.7] which correspond longitudes 33.0E to 48.2E and latitudes to 3.7N to 15.7N for Ethiopia
- o Use the same years (2001-2010) for the climatology calculation
- o Save the monthly climatology and 2015 precipitation data for Ethiopia on your computer

Use **Exercises 1b:** *Downloading MODIS NDVI* for **Part 2**

- o Use the same search phrase for the MODIS NVDI product as in exercise 1b

- o Use the same years (2001-2010) for the long-term average calculation and July 2015
- o Zoom into Ethiopia and draw a small rectangle in the northwestern corner of the country.
- o Make sure to select the MODIS swath that covers the northwestern portion of Ethiopia and the southeastern corner of the Sudan.

Use **Exercise 2:** *Identifying Drought Using Precipitation and Vegetation* for **Parts 3 and 4** to calculate precipitation and NDVI anomalies over Ethiopia using QGIS.

Optional Activity: Repeat the data download and anomaly calculations for the most recent month of data available for 2017 to monitor current drought conditions.