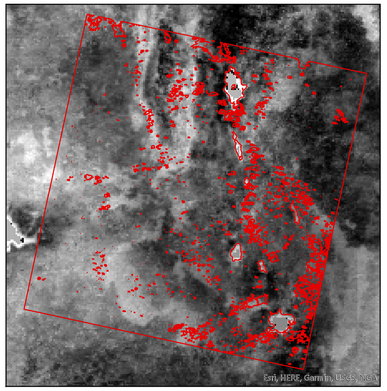
Prepared by: Andrew Yen

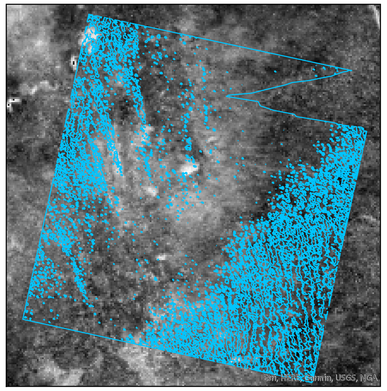
Dataset Display and Description

MODIS Evapotranspiration

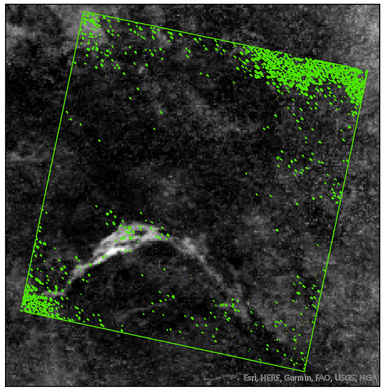
HP



ASAL



Arid

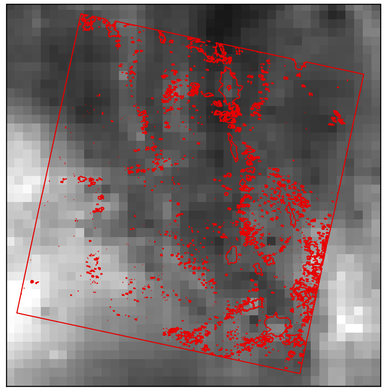


Description: USGS MODIS Simplified Surface Energy Balance model Dekadal dataset, which derives ET from thermal MODIS images.
The image is at 1/96 degree spatial resolution and was averaged over the 2018 short-rains season (OND).
https://clim-engine.appspot.com/

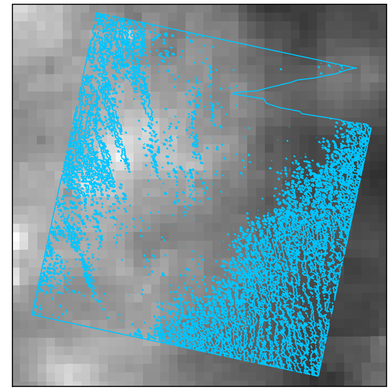
Higher ET values (lighter/whiter colors) tend occur where more moisture is available to be evaporated from the ground into the atmosphere.

CHIRPS Precipitation

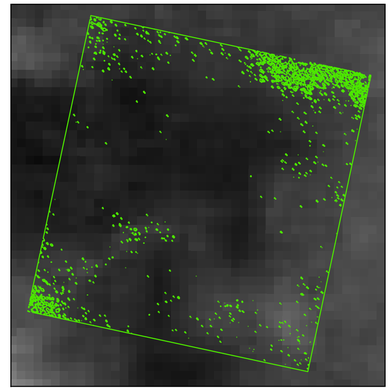
HP



ASAL



Arid

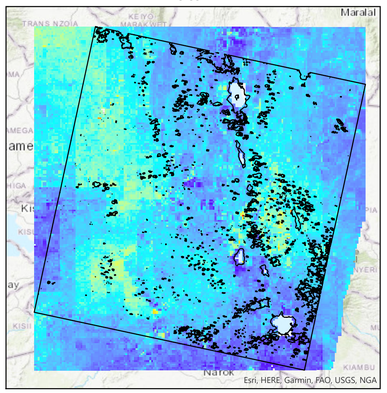


Description: This data comes from UCSB's CHIRPS program via the Climate Engine (https://clim-engine.appspot.com/). This data comes in 1/20 degree resolution and represents the total rainfall across Kenya from October 1st, 2018 to January 1st, 2019, covering the entirety of the short-rains season.

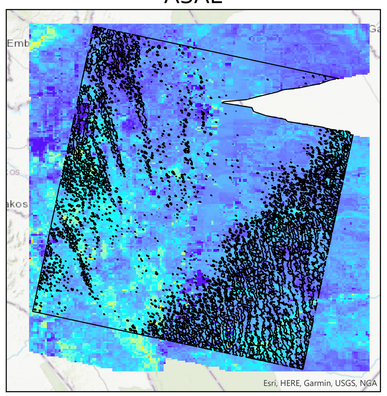
As might be expected, rainfall plays an enormously important role in crop yield predictions in food insecure countries.

SMAP Soil Moisture

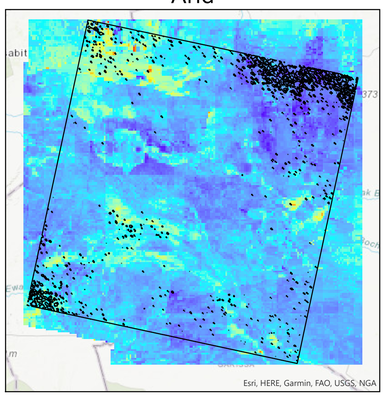
HP



ASAL



Arid

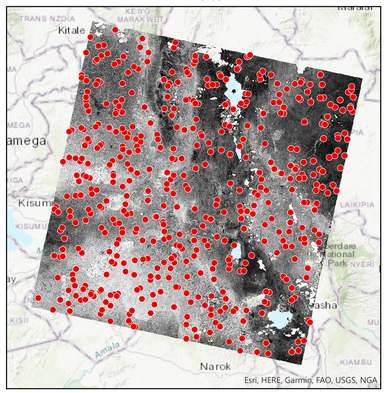


Description: this data was acquired from the National Snow and Ice Data Center data portal which serves SMAP passive radiometer data.
The "Soil_Moisture_Retrieval_Data_1km_soil_moisture_1km" subset was extracted from the Level 2 Soil Moisture HDF product, L2_SM_SP.
(Information on data source: https://nsidc.org/sites/nsidc.org/files/technical-references/SMAP%20L2_SM_SP%20PSD_20180531.pdf, page 50).

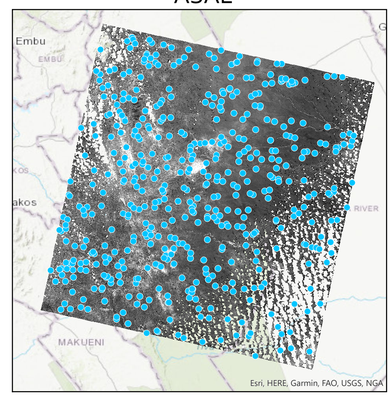
Soil moisture is an important indicator for vegetation health and is physically related to precipitation and evapotranspiration.

Random Sample Points

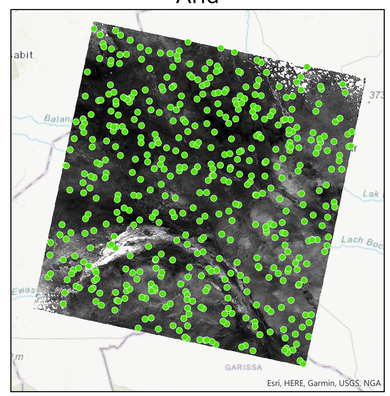
HP



ASAL



Arid



Description: The images above show the locations used to take random samples from each of the three raster datasets.
Note that the ASAL study area has a gap in the NE corner where no points are present - this is due to the lack of SMAP (soil moisture) data availability for that section of the image. Pixels that contained clouds were removed and were not sampled for the Random Forest regression analysis.