MIrAD Product Development – Operational Notes 9/19/14

Inputs/Pre-Processing:

1. Agriculture mask developed from NLCD (or other land cover classification data) values 81 (Pasture/Hay) and 82 (Cultivated Crops).
   1. Resampled from 30-m resolution to 250-m resolution using the r.resamp.stats tool of the GRASS 6.4.3 toolset available in Quantum GIS (QGIS) 2.2.  The tool executed a 30-m-to-250-m resample using a mode or majority aggregation method.
   2. Develop agriculture mask from the 250-m NLCD using the ESRI ArcGIS tool called, “Reclassify,” where NLCD values 81 and 82 are reclassified to 1 and all other values are removed (set to NoData).
2. Annual Peak NDVI
   1. Derived by identifying and extracting the maximum NDVI from weekly eMODIS NDVI composites for the applicable year. This was done by using the ESRI ArcGIS tool called, “Cell Statistics.”
   2. Mask by (1b) using the ESRI ArcGIS tool called, “Extract by Mask.”
   3. **Input to CntyTH\_PY**
3. County Grid data with each county defined by a unique Federal Information Processing Standards (FIPS) code.
   1. Typical creation: Convert a county shapefile into a Grid by using the ESRI ArcGIS tool called, “Polygon to Raster,” with the value field set to the FIPS.
4. USDA Census of Agriculture Irrigation Data.
   1. Downloaded from using the USDA Quick Stats tool, <http://quickstats.nass.usda.gov/?source_desc=CENSUS>.
   2. CENSUS>ECONOMICS>FARMS & LAND & ASSETS>AG LAND>AREA>AG LAND, IRRIGATED – ACRES.
5. Link (4) to (3) by County FIPS by using the ESRI ArcGIS tool called, “Join Field.”
   1. **Input to CntyTH\_PY**

County Threshold Processing: Modify and run DynamicThresholdIdentification.py (See CntyTH\_PY.docx) - **Output Grid: cntyfips.**

Post Processing: Modify and run PostProcessing.py (See internal script documentation) - **Output: MIrAD.**

Overview of Post Processing Steps:

Step 1. ESRI ArcGIS tool, “Single Output Map Algebra.” Check peak NDVI for relation to threshold. If peak NDVI is greater than or equal to the threshold, set grid to 1. If peak NDVI is less than threshold, set grid to 0

Step 2. ESRI ArcGIS tool, “Focal Statistics.” Setup Grid for identifying single irrigated pixels.

Step 3. ESRI ArcGIS tool, “Single Output Map Algebra.” Remove single irrigated pixels.

Step 4. ESRI ArcGIS tool, Reclassify.” Set irrigated pixels to value 1 and non-irrigated pixels to value 0.

1-km version: A resample of the 250-m MIrAD to 1-km

The 1 kilometer (km) spatial resolution version of the 2012 MIrAD-US was developed using the r.resamp.stats tool of the GRASS 6.4.3 toolset available in Quantum GIS (QGIS) 2.2. The tool executed a 250 meter-to-1 km resample using a mode or majority aggregation method.