

Soil AWC Download Workaround [June 2019]

Changes on the Web Soil Survey server have apparently resulted in errors in the soil AWC grid downloaded by the Water Balance Tool (soils_awc.tif having only "0" values, and soils.tif having astronomically large Low/High values). Users can follow these steps to create the necessary soils AWC grid to run the Water Balance Tool.

1. If your Data Frame is not in the final grid-based coordinate system for your study area, do the following:
 - Insert a new Data Frame
 - Add your study area shapefile, which is in the final grid-based coordinate system.
2. Perform these steps in Water Balance Tool: Data Fetching. (Output names are not important for these intermediary steps.)
 - A. Download: Soil GML
 - B. Process: Convert Soil GML to SHP
 - C. Download: Soil AWC
3. In ArcGIS, join the shapefile created in Step 2B with the csv file created in step 2C, using the field "mukey."
 - In some cases, the mukey field may be interpreted in ArcGIS as text (left-justified) in the shapefile attribute table, and as a number (right-justified) in the csv file, precluding a join. The shapefile attribute can be converted from string to numeric (<https://support.esri.com/en/technical-article/000002287>), but it may be easier to open the csv file in Excel, set the mukey format to Text, and save the file in Excel (*.xlsx) format. This table can then be joined to the shapefile.
4. Open the attribute table after the join, and Add Field "awc_mm," Type "Float."
5. Use Field Calculator on the awc_mm Field to convert cm to mm values: $aws*10$.
 - Note: water features will have a <Null> aws value, and will result in a 0 value for awc_mm.
6. Save the joined shapefile and convert it to the final grid-based coordinate system:
 - Right-click on its name in the Table of Contents, and select Data – Export Data
 - Select "the data frame" for "Use the same coordinate system as:"
 - Save as "soil_polygon"
7. Convert the soil_polygon shapefile to a grid:
 - ArcToolbox – *Conversion Tools – To Raster – Polygon to Raster:*
 - Input Features = the soils shapefile
 - Value field = awc_mm
 - Output Raster Dataset = soil_AWC_mm.tif
 - Cell Assignment Type = MAXIMUM_COMBINED_AREA
 - Cellsize = same cellsize as the DEM you will use for the water balance analysis (you can browse to the DEM and select it)

8. If the soil_AWC_mm.tif has any pixels with value = 0 (see Step 5), reclass the grid as follows. Otherwise proceed to Step 9.

- ArcToolbox – *Spatial Analyst Tools – Conditional – Set Null*
- Input conditional raster: soil_AWC_mm.tif
- Expression: VALUE=0
- Input false raster: soil_AWC_mm.tif
- Output raster – soil_AWC_mm_null.tif

9. Align soil grid to DEM:

- Water Balance Tool: Misc - Snap Raster
- Input raster: soil_AWC_mm.tif (or soil_AWC_mm_null.tif from Step 6)
- Reference raster: dem_ex.tif or grid.tif
- Output raster: soils.tif