Pre-Processing for Renewable Resource Evaluation

Complements https://github.com/EnergyModels/RenewableResourceEval

Before the tool can be used, each dataset needs to undergo the following pre-processing:

1. Merge - Each dataset needs to be merged into one raster (i.e. one raster for DEM data)
2. Clipped – Each dataset needs to be clipped to the country/state outline
3. Convert - Use the expected units
4. Projected – Each dataset needs to have the same projection

Expected data sets, units and naming convention:

Detailed table is located on the next page, here are some general notes:

- It is recommended to compile all pre-processing into one geodatabase
- It is recommended to perform each round of preprocessing in a separate map file (.mxd)
- The tool only expects the raster with the projected name, thus if merging or conversion is not necessary, skip ahead to the projection step

Finding Data and selecting a projection:

- **Selection of map projection**
  - Tool: http://projectionwizard.org/
  - Goal: Equal-area, end is to find amount of land area available for resources
- **DEM Data**
  - https://hydrosheds.cr.usgs.gov/hydro.php
  - Units: m
- **Land Cover Data**
  - https://landcover.usgs.gov/global_climatology.php
  - Original Format: WGS84
- **Wind Data**
  - DTU Global Wind Atlas – Wind speed (WS) maps
  - Average WS (m/s) 1 km at 100m height 2015
  - https://irena.masdar.ac.ae/gallery/?utm_medium=referral&utm_source=irenanewsroom.org&utm_campaign=Version2-1&utm_content=main+link#map/103
- **Solar Data**
  - VAISALA Global Solar Dataset 3km or SOLARGIS
  - Units: W/m^2/day
  - https://irena.masdar.ac.ae/gallery/?utm_medium=referral&utm_source=irenanewsroom.org&utm_campaign=Version2-1&utm_content=main+link#map/543
  - https://solargis.com/

#	Type	Expected Units	Suggested Map Name	Merged Name	Clipped Name	Convert Name	Projected Name	Format
1	Country/State Outline	N/A	Outline_pre	Outline_merge	N/A	N/A	Outline_project	Feature
2	Land Use Land Cover	Classified 0-16 (using scale below)	LULC_pre	LULC_merge	LULC_clip	LULC_convert	LULC_project	Raster
3	Digital Elevation Model (DEM)	m	DEM_pre	DEM_merge	DEM_clip	DEM_convert	DEM_project	Raster
4	Wind Speed	m/s	Wind_pre	Wind_merge	Wind_clip	Wind_convert	Wind_project	Raster
5	Solar Irradiation	W/m^2/day	Solar_pre	Solar_merge	Solar_clip	Solar_convert	Solar_project	Raster