# Quick Guide of ArcNLET-Py Preprocessing Module



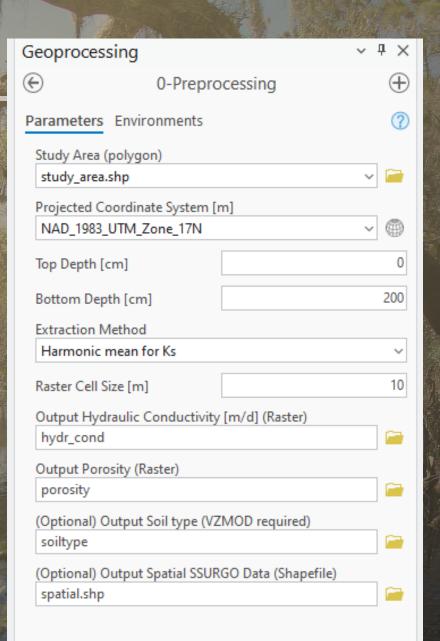
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- In old versions of ArcNLET (VB version integrated with ArcMap), users had to manually prepare the input data, making the process time-consuming. To simplify this, we developed this module to streamline input data preparation.
- This module can extract regional-scale saturated hydraulic conductivity, porosity, and soil types from online SSURGO database.
- Before using this module, please ensure that the network connection is usable and stable.

- Input
  - A shapefile, containing one polygon
- Outputs
  - Saturated hydraulic conductivity
  - Porosity
  - Soil type (Optional)
  - Spatial SSURGO Data (Optional)



- Parameters
  - Projected Coordinate System [m]
    - Suitable projected coordinate system for the study area.
  - Top depth and bottom depth [cm]
    - The depth range of the data to be extracted from the SSURGO database, measured from the land surface. For example, if the top depth is 0 cm and the bottom depth is 200 cm, the extracted soil data will cover the range from 0 to 200 cm.
  - Raster Cell Size [m]
    - The output files are generated as raster files. This parameter defines the pixel size of the resulting raster files.

- **Extraction Method** 
  - Harmonic mean for Ks

Weighted average

$$K = \frac{d_1 + d_2}{\frac{d_1}{K_1} + \frac{d_2}{K_2}}$$

$$K = \frac{d_1}{d_1 + d_2} K_1 + \frac{d_2}{d_1 + d_2} K_1$$

• Dominant Component (Numeric)

$$K = K_2$$

$$K = \max\left(K_1, K_2\right)$$

$$K = \min(K_1, K_2)$$

