Nonpoint Source Pollution and
Erosion Comparison Tool (N-SPECT)

Method to Extract K Factor and Hydrologic Soil Group from SSURGO Database

Obtain the Data

The U.S. Department of Agriculture (USDA) Natural Resource Conservation Service manages the Soil Survey Geographic (SSURGO) database, which is a compendium of county-level soil data for the country. Follow the steps below to obtain data sets from SSURGO.

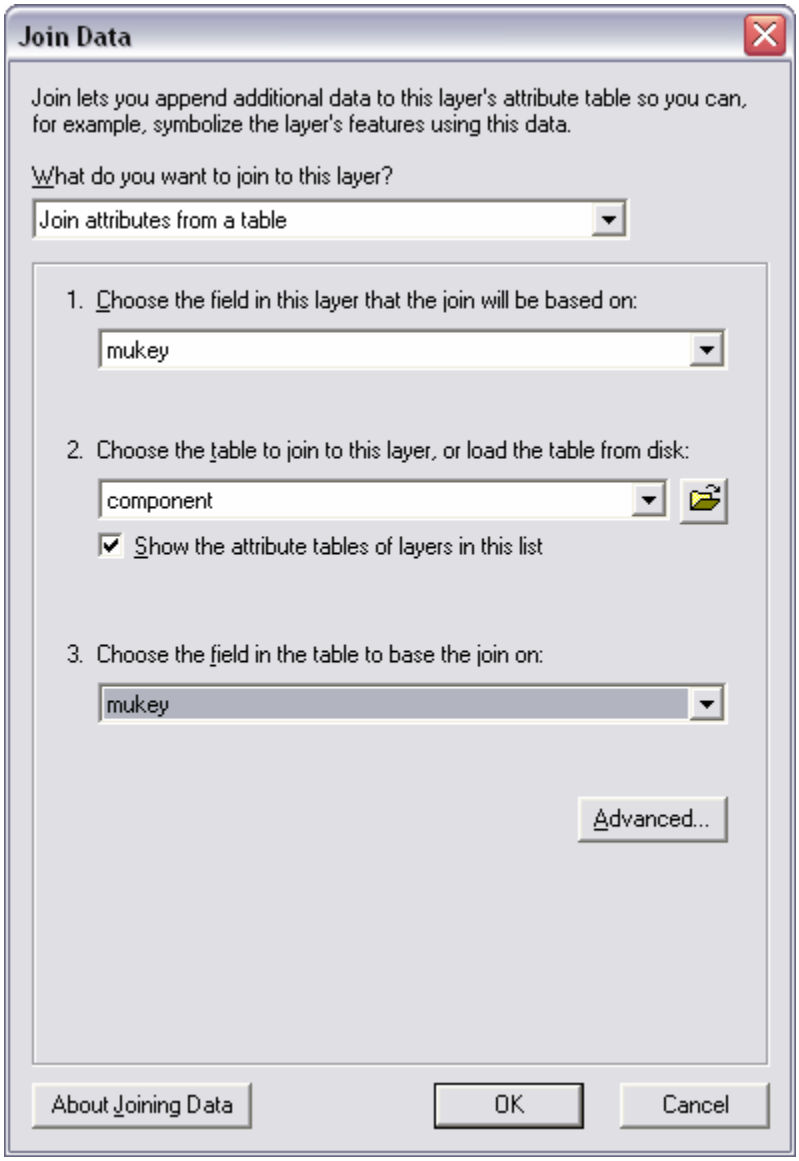
1. Navigate to the USDA Soil Data portal: *http://soildatamart.nrcs.usda.gov/*
2. Select a state.
3. Select a county.
4. Select a survey area.
5. Select the appropriate Microsoft Access version and U.S. state of interest.
    a. Select the following:
        i. Spatial format: shapefile
        ii. Coordinate system: your choice
        iii. Database template: attention to state and Microsoft Access version
    b. Enter an e-mail address to receive notice that the data are ready.
6. Obtain the .zip file from the ftp site provided in the e-mail.
7. Unzip the contents to a convenient location.
8. Unzip the database template.

Preprocess the Data

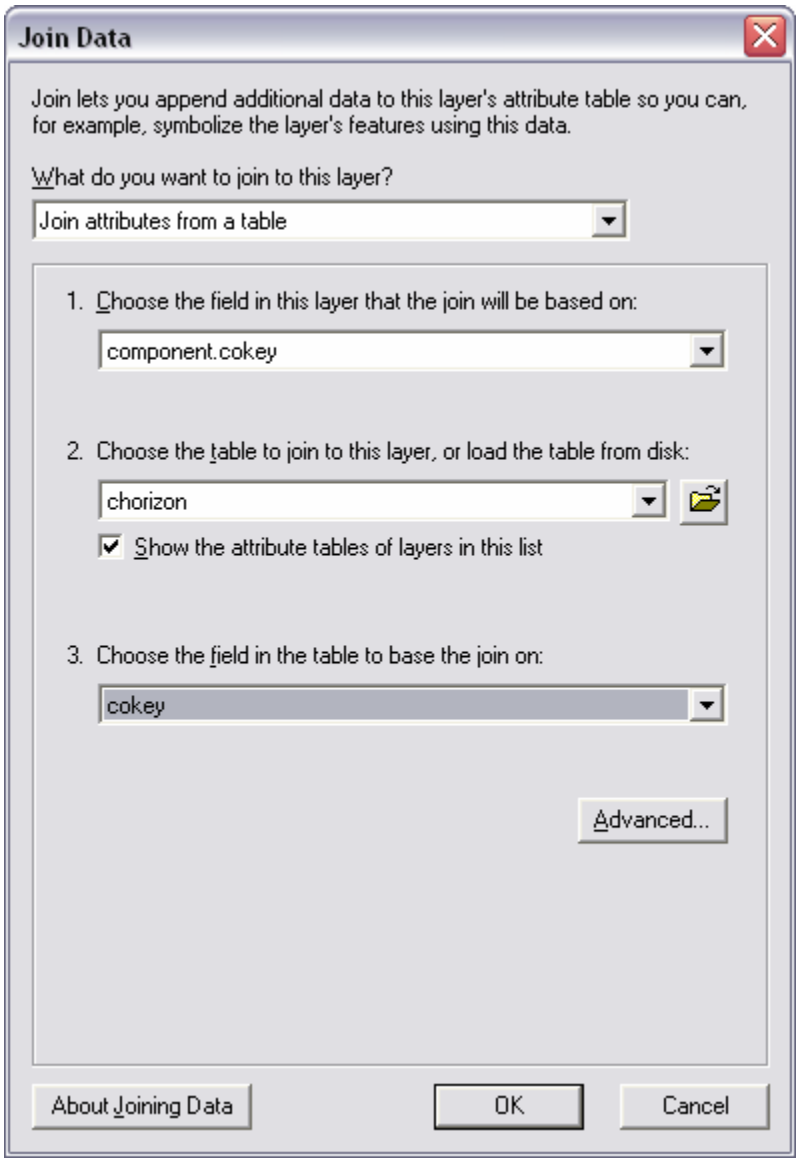
Several folders and files are saved to your target directory. The site-specific tabular soil data must be loaded into the database template.

1. Open the Microsoft Access database template.
2. The Import form should appear. Enter the path to the folder containing the tabular data.
3. Close Microsoft Access.
4. Launch ArcMap.
5. Load the **soilmu_a_xxxxx.shp** shapefile file from the **spatial** folder into ArcMap (**xxxxx** is the unique identifier for the soil file you downloaded).

6. Join the **component** table contained within the geodatabase to **soilmu_a_xxxxx.shp** using the **mukey** field.



7. Join the **chorizon** table contained within the geodatabase to **soilmu_a_xxxxx.shp** using the **component.cokey** and **cokey** fields.



8. Export the data from the **soilmu_a_xxxxx.shp** shapefile to a convenient location.

Soil Processing for N-SPECT

At this point, the soil shapefile is ready to be ingested by N-SPECT's advanced soil processing tool. Before you can do this, however, you must have already installed N-SPECT. Additionally, you must have already preprocessed the digital elevation model (DEM) that will be used to define the watershed, flow direction, and other derivatives.

1. Activate the N-SPECT toolbar.
2. Open the soil settings dialog box:
   N-SPECT→ Advanced Settings→ Soils→ Options→ New
3. Enter the necessary inputs.
   a. Name:
   b. DEM:
   c. Soils data set: (the one you just created)
   d. Hydrologic soil group attribute: hydgrp
   e. K factor attribute: kffact
   f. If the data are not from Hawaii, change the two parameters in the Modified Universal Soil Loss (MUSLE) equation to 95 and 0.56 (see below)