How to Attribute Points with NHDPlus Variables

Step 1

Snap Thermograph Points to Stream Layer

You must have administrative privileges before installing Hawth's Tools.

The current version of Hawth's tools is for ArcGIS 9.2, only.

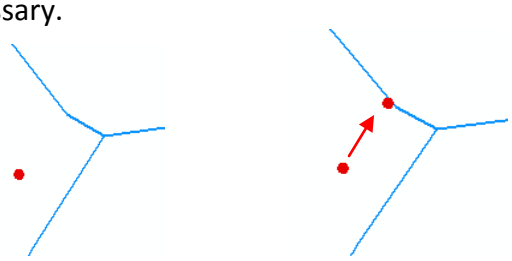
1. Go to this website to download and install Hawth's Analysis Tools:
   http://www.spatialecology.com/htools/download.php

2. Open ArcMap and install Hawth's toolbar
   (Follow the directions on the Web)

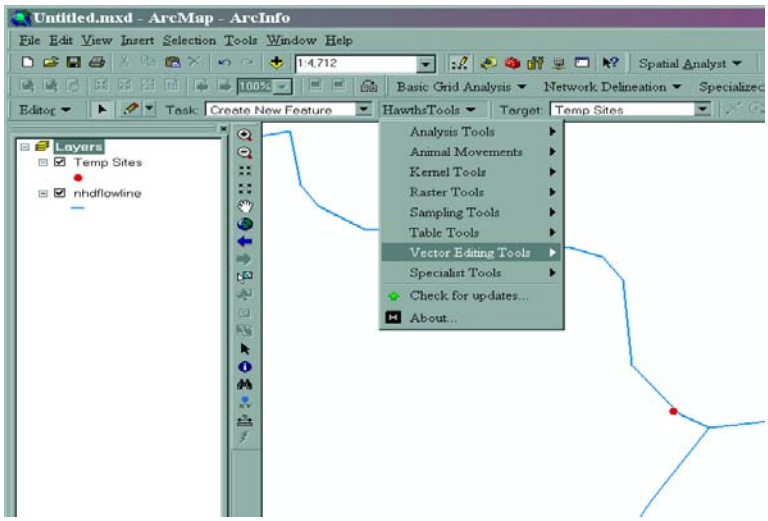
3. Add the temperature point file and NHDPlus stream layer to ArcMap. The files must be in the same projection.

4. Review all points before snapping them to be sure they will snap to the correct stream. Use the editor to move points closer to the correct stream, if necessary.

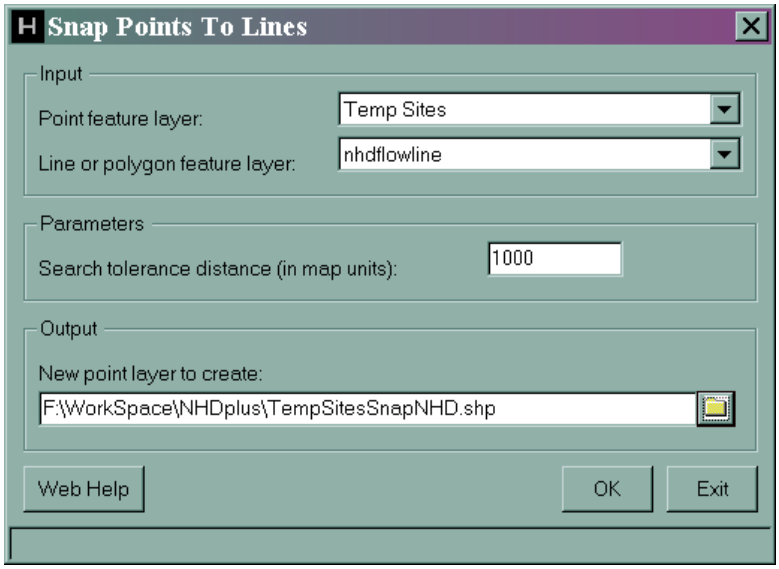
In this example, the point would have snapped to the lower stream, in error.



5. Click on HawthsTools > Vector Editing Tools > Snap Points to Lines



6. When the dialogue box opens, choose these options:
   - Input
     Point feature layer: Temp Sites
     Line layer: nhdflowline
   - Parameters[1]
     Search tolerance 1000
   - Output[2]
     New point layer:…*TempSitesSnapNHD*



7. Add the new point file to ArcMap

8. Compare the number of records in *TempSites* and *TempSitesSnapNHD* to ensure that all points were snapped.

[1]*Choose any distance, but ensure that all points are within that distance or they will not be snapped, and they will not be in the newly created point file.*

[2]***Tip**: Add "SnapNHD" to the point file name to indicate that these are snapped points.*

Step 2

Add NHDPlus Variables to Temperature Point File

This is a 2 part process:

1/ Join the stream layer to the point file to obtain NHDPlus' COMID (common identifier)

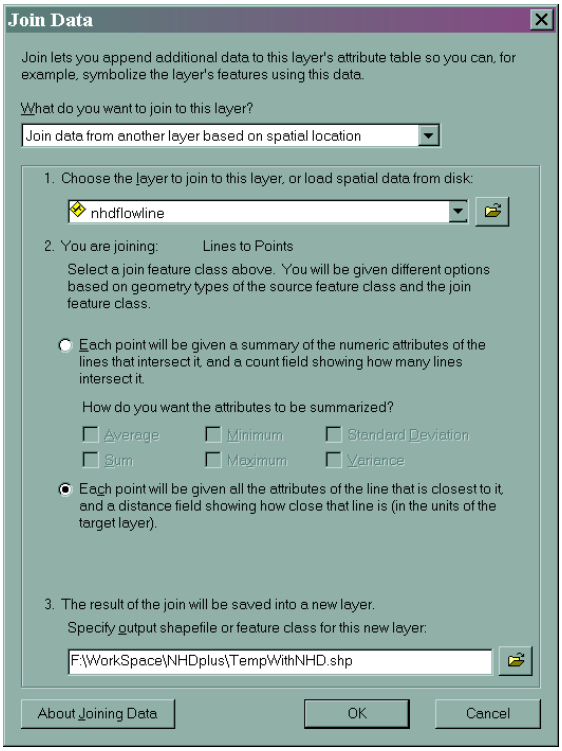
2/ Use the COMID to join various NHDPlus variables to the point file

1. Join the NHD stream layer to the temperature point file with a spatial join:

    - Right click on *TempSitesSnapNHD* > Joins and Relates > Join

2. When the dialogue box opens, choose these options:

    - Join data from another layer based on spatial location
    - Choose the correct stream layer (e.g., *nhdflowline*)
    - Choose "Each point will be given all the attributes…"
    - Specify an output file name
    - OK



3. The new point file will automatically be added to the ArcMap project and the flowline attributes are a permanent addition to the attribute table. Open the attribute table and familiarize yourself with the new variables. Refer to NHDPlus User Guide for variable definitions:
ftp://ftp.horizon-systems.com/NHDPlus/documentation/NHDPLUS_UserGuide.pdf

Step 3

Add other NHDPlus Variables to Temperature Point File

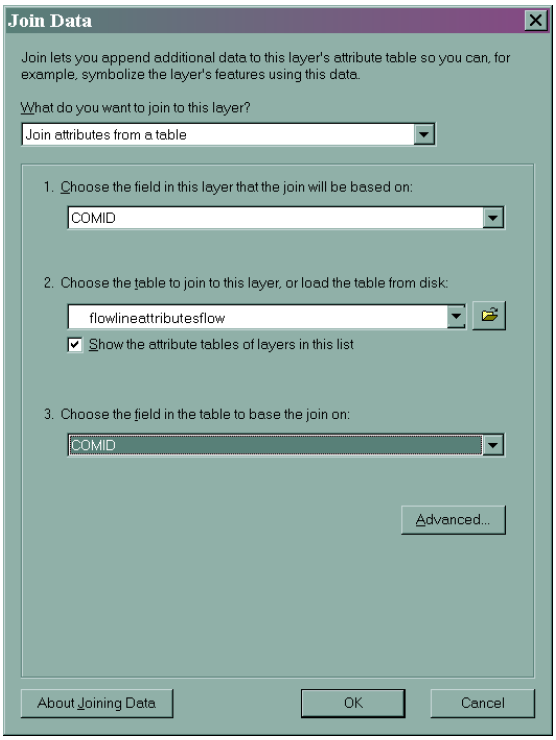
1. To join additional NHDPlus variables to the point file, you will need to know in which file they are located. In this example we will join drainage area, flow, velocity, elevation*, and slope to the point file. Download NHDPlus17V01_03_Cat_Flowline_Attr from NHDPlus website: http://www.horizon-systems.com/nhdplus/HSC-wth17.php
You will receive the following 6 dBase files:

Table Name	Attributes	Unit
catchmentattributesnlcd.dbf	Land classification	Watershed
catchmentattributestempprecip.dbf	Temperature, precipitation	Watershed
flowlineattributesflow.dbf	Drainage area, flow, velocity, elevation*, slope	Stream
flowlineattributesnlcd.dbf	Land classification	Stream
flowlineattributestempprecip.dbf	Temperature, precipitation	Stream
headwaternodearea.dbf	Drainage area	Stream

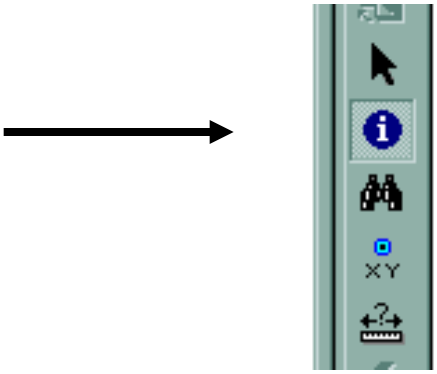
*NHDPlus does not provide mean elevation. To acquire mean elevation, create a new variable in the table ***flowlineattributesflow.dbf*** and use the Field Calculator to compute the average of MAXELEVSMO and MINELEVSMO

2. In ArcMap, use the point file *TempWithNHD* that was created in the previous step.
    - Right click on *TempWithNHD* > Joins and Relates > Join

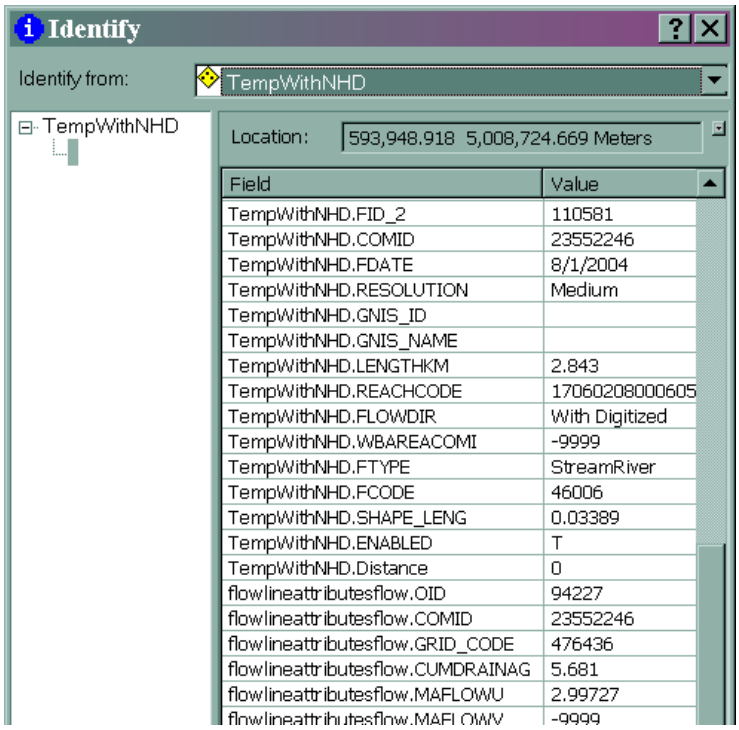
3. When the dialogue box opens, choose these options:
    - Join attributes from a table
    - Choose the field in this layer > **COMID**
    - Choose the table to join to this layer… > navigate to the directory where you have downloaded the table ***flowlineattributesflow.dbf***
    - Choose the field in the table to base the join on > **COMID**
    - OK



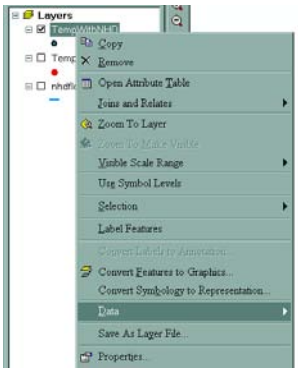
4. Select a point using the Identify button



A table of attributes will appear. Each variable in the table is preceded by the original file name.



5. To retain the attributes to the point file, create a new shapefile:
    - Right click on the point file > Data > Export Data



    - Name the shapefile > OK
    - Do you want to add the exported data to the map as a layer? > Yes