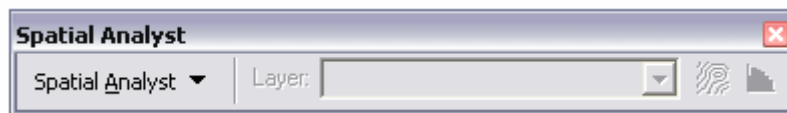


Creating Elevation Data from CCMPO LIDAR Data

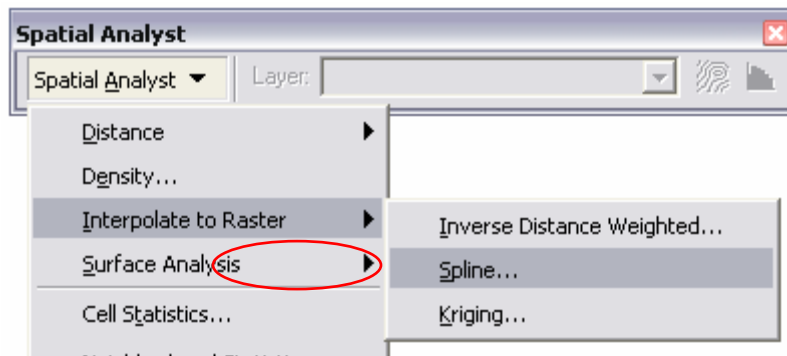
In 2004, the Chittenden County Metropolitan Planning Organization (CCMPO) coordinated the acquisition of 1:1250 digital orthophotography and LIDAR data for eleven participating towns in Chittenden County. The LIDAR data are ideal for generating high resolution elevation (digital terrain model) and its derivatives and are comprised of two datasets: bare earth (i.e. ground topography) and first return. The LIDAR data was originally provided in a CAD (.dxf point files) format but are available through the Bailey Howe Map Room as ArcView point shapefiles. With 3.2m posting (distance between mass points), these data are sufficient to generate an awesome 2-foot contour interval. The projection is Vermont State Plane Coordinate System NAD83 with meters as units. The North American Vertical Datum of 1988 (NAVD 88) was used for elevation. These data meet National Map Accuracy Standards.

Instructions for generation of raster elevation data (based on a spline interpolation) from the LIDAR point files is explained here.

1. Identify the appropriate tiles for your area of interest (AOI). A shapefile index of tile numbers is available here: <http://www.ccmppo.org/assistance/imagery.html> (Note: the download link is below the area map)
2. If there are multiple tiles covering the AOI, use the Merge tool to create one feature class that contains all of the points (**ArcToolbox > Data Management Tools > General > Merge**). *If the AOI does not cover the extent of the tiles use **Select by Location** to create a new points layer that only covers the AOI. This will reduce the number of points and the processing time.*
3. Open the Spatial Analyst Toolbar. *It may be necessary to activate it by going to **Tools > Extension** and checking the box next to **Spatial Analyst**.*

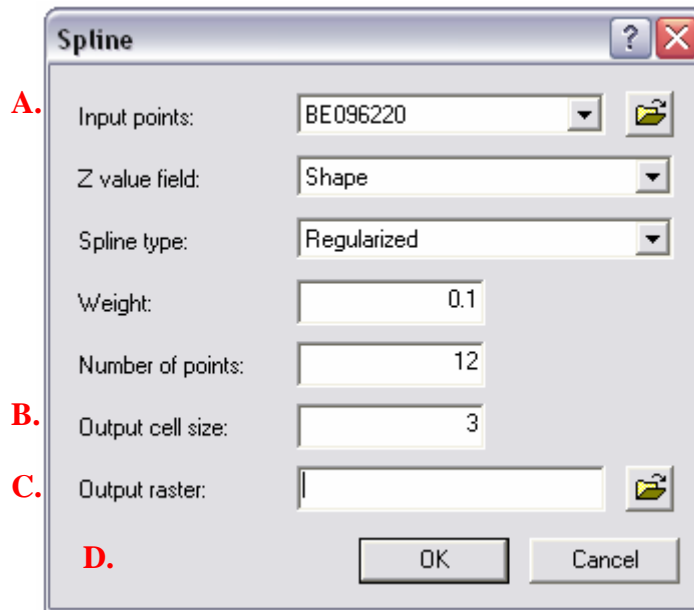


4. Choose **Interpolate to Raster > Spline** from the Spatial Analyst Toolbar.



5. Spline Settings:

- A. Select your tile or merged tile feature class as the Input Points
- B. Set the output cell size to 3
- C. Click the folder button to choose a location and name for the Output Raster
(Note: the other input variables in the figure below are default values)
- D. Click OK. A status bar will appear at the bottom of the ArcMap window to indicate the progress of the interpolation.



Note: in this example, the output cell size was set to 3 (meters), the approximate size of the LIDAR posting. However, the size of the output cell size should be determined based on the needs of the user. Small output cell sizes greatly increase processing times (i.e. hours).

6. After *several* minutes (or hours) of processing, the raster will appear as a layer in ArcMap and is ready for use in an analysis.

One final note: to calculate the height of objects (e.g. buildings, trees, etc.), you would need to generate digital terrain models (i.e. elevation) for both the bare earth and first return and then subtract the bare earth raster from the first return raster.

Compiled by Keith Pelletier, revisions by L. Morrissey (December 2006)