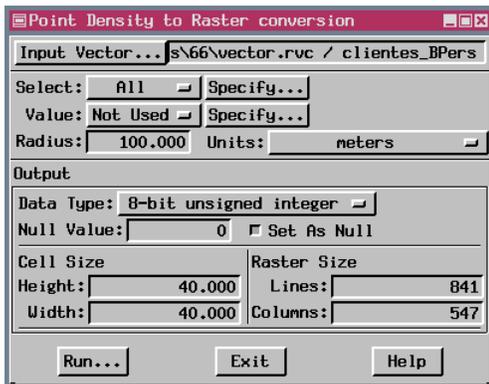


# Point Density Rasters



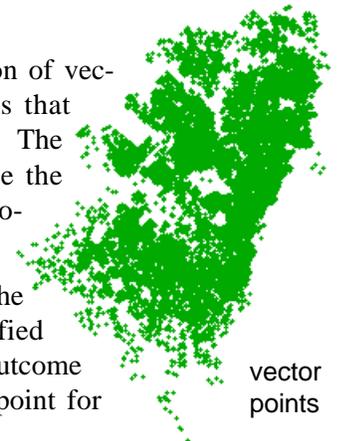
A point density raster provides a reflection of the distribution of points within a vector object. You may look at point data that covers a wide area and see nearly continuous point coverage. However, if these points represent some naturally occurring feature or phenomenon, rather than a regular sampling, there will be areas where the points are denser than others.

A point density raster is created from a collection of vector points by determining the number of points that fall within a specified radius of each raster cell. The points may either simply be counted to produce the cell value or an attribute can be specified to provide the value for each point. You select a table and field to supply the attribute value.

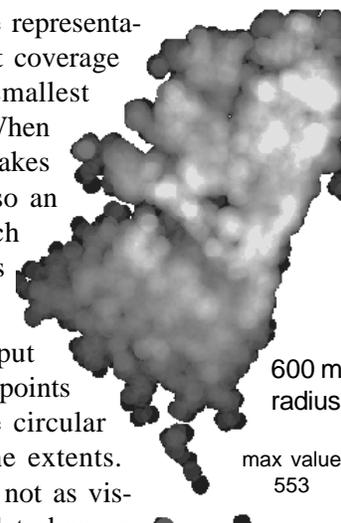
You can specify the radius used to look for points that determine the cell value by using the radius tool to draw a circle that encloses a number of points, or the radius can be specified directly in meters (or other distance units). Selecting a reasonable radius is critical to the outcome of the process (Process/Convert/Points to Raster). The ideal radius will find at least one point for each cell within the extents of the points and more than one for most cells. If the radius is too small, the raster may appear like a grayscale representation of the vector points with many holes in the area of point coverage (see 100 m radius illustration at the right). You want the smallest radius that leaves no holes within the area of point coverage. When the radius increases beyond this minimum for coverage, it makes it harder to see differences in point density. Cell size is also an issue—if the cell size is too large, there will not be as much variation in cell values as with a smaller cell size. The radius should always be larger than the cell size.

The output density raster is clipped to the extents of the input vector. If you elect to generate null values where there are no points within the specified radius, you will immediately notice the circular edge effects if points are not aligned along the edges of the extents. Edge effects occur along clipped edges as well, they are just not as visible. Densities will generally be lower at the edges of the data because you have contributions from a reduced number of directions.

You can limit the points used to generate the raster with a selection query. The raster at the near left had only about 20% of its points selected when the raster was generated. Using attribute information rather than a raw point count may or may not change how the density raster appears, but it certainly will change its cell values (compare the maximum values shown above and below at left). Be sure to keep in mind the potential values for the sum of point attributes within the designated radius when choosing your output data type. If the selected attribute has values in the millions, you will not get meaningful output with 8- or 16-bit raster types selected.

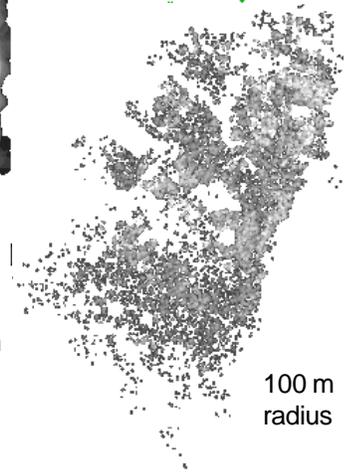


vector points

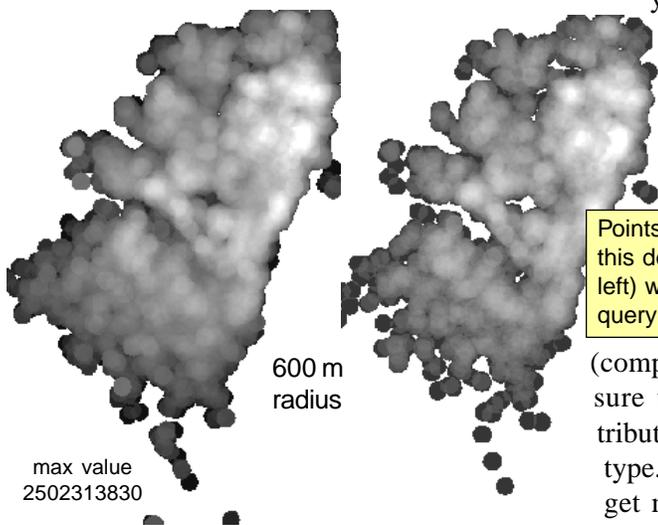


600 m radius

max value 553

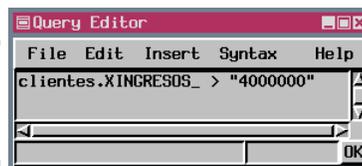


100 m radius



600 m radius

max value 2502313830



Points used to generate this density raster (near left) were selected by the query shown above.

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