

Tilesets

Merge Structures

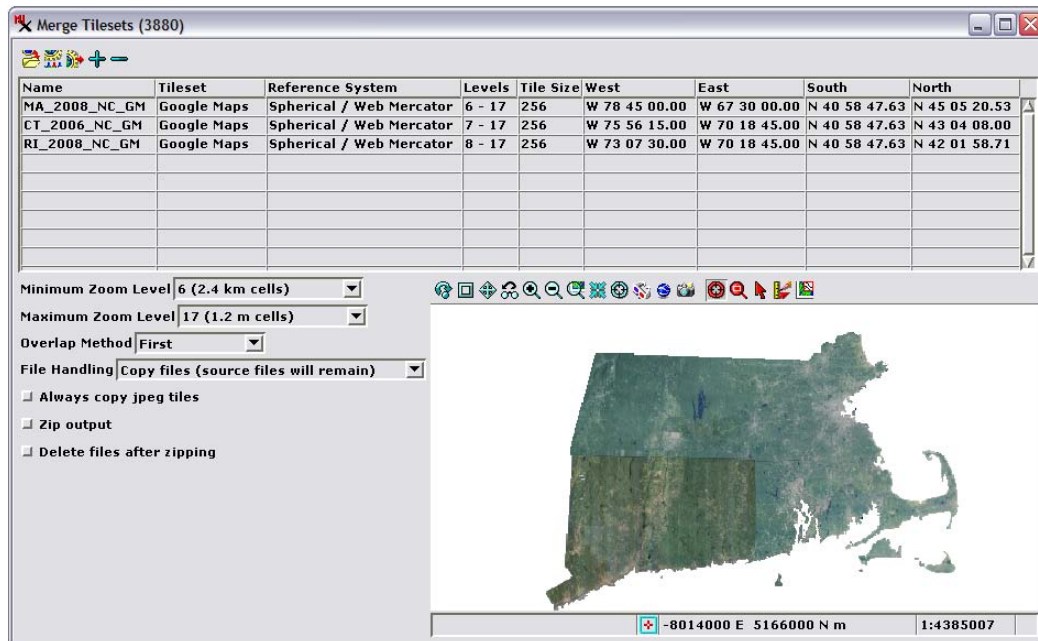
The Merge Tilesets process allows you to assemble many individual tilesets that you have prepared in the Create Tilesets process into a single larger tileset. You can merge tilesets whose structures conform to those described by Google, Microsoft, and NASA for their popular viewers. These include:

- Tile Overlays for Google Maps
- Super-Overlays for Google Earth
- Custom Tile Layers for Microsoft Bing Maps
- Tile Layers for NASA's World Wind

The Export to Tilesets and Merge Tilesets processes are designed to work together to efficiently assemble very large tilesets. You can first prepare multiple smaller tilesets in the Create Tilesets process, where TNT Job Processing allows you to run concurrent tileset operations to exploit your system's multiple processor cores. You then use the Merge Tileset process to assemble these individual tilesets into a single larger tileset. See the Technical Guide entitled *Tilesets: Assembling Very Large Tilesets*.

All of the tilesets you select for a single merge operation must be the same tileset type. Merge Tilesets copies or moves the constituent tiles, merges tiles in any overlapping areas, and recomputes tiles for lower-resolution zoom levels as needed.

To select a tileset for merging, select the Tileset Definition file (*.tsd) that accompanies the tileset. A TSD file is an XML-formatted text file created along with each tileset prepared in the Export to Tilesets, Auto Mosaic, or Merge Tilesets processes in TNTmips. The TSD file contains links to the URLs or paths of all of the layers in the tileset and provides information about its structure, tile formats, extents, reference system, and zoom levels. The Merge Tilesets window lists the name, tileset type, reference system, range of zoom levels, tile size, and bounding extents of each selected tileset.



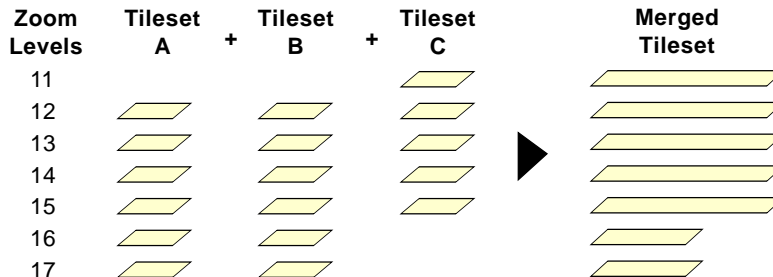
Merge Tilesets process window set to merge individual Google Maps natural-color orthoimage tilesets for three states: Massachusetts, Connecticut, and Rhode Island.

Zoom Levels

Tilesets you select for merging do not have to have the same range of zoom levels (precomputed layers with differing spatial resolution used for fast zooming; see the Technical Guide entitled *Tilesets: Setting Zoom Levels*). You can use the Minimum Zoom Level menu to choose the lowest zoom level (coarsest spatial resolution) at which the merged tileset will be displayed. The default value is the minimum among the selected tilesets. Low-resolution tiles are computed as needed to produce a consistent minimum zoom level across the entire merged tileset (see illustration to the right).

The merged tileset does not have to have the same maximum zoom level (highest spatial resolution)

(over)



Tilesets with different ranges of zoom levels can be merged as long as they are the same tileset type. In this example two tilesets (A and B) with zoom levels 12 to 17 are merged with tileset C, which has zoom levels 11 to 15. A Minimum Zoom Level setting of 11 (the minimum of the three tilesets) creates a minimum zoom level of 11 for the entire merged tileset. In contrast, the highest zoom levels (16 and 17) are only present in the merged tileset for the areas created from tilesets A and B. The area in the merged tileset created from tileset C has a maximum zoom level of 15.

throughout its extent, so differences in maximum zoom level between the input tilesets are handled automatically. Creating a maximum zoom level with higher spatial resolution than the maximum in the corresponding input tileset would inflate the size of the merged tileset and provide no visual benefit. Therefore each area of the merged tileset is created with the maximum zoom level of the input tileset for that area (see illustration on the reverse).

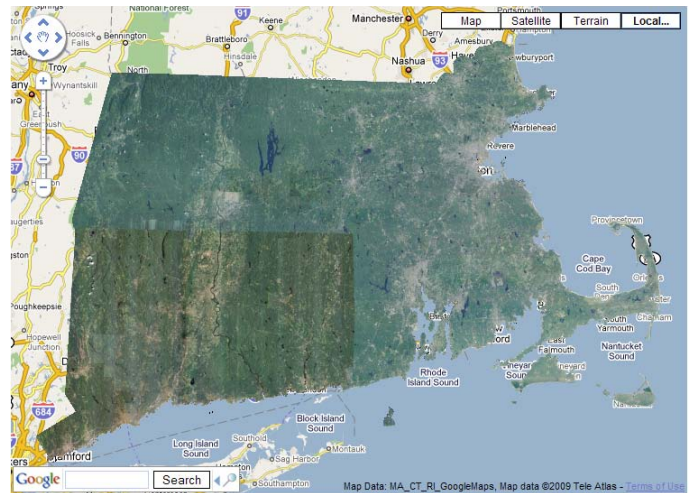
Overlap Method

The Overlap Method menu sets the method used to merge tile images in any overlapping areas. The choices are First, Last, Minimum, Maximum, and Least Extreme. The first two options use the order in which the input tilesets were selected to determine the overlap output. The latter three options perform a cell-by-cell comparison of the cell values in the overlapping tiles to determine the output for each cell, and thus may result in slower processing times compared to the first two options.

File Handling

Merging tilesets requires that all output tiles must be assembled in a single consistent directory structure. Therefore, full-resolution tiles from the input tilesets (and reduced-resolution tiles that can be reused) must be either copied or moved to the destination directory. Use the File Handling menu to choose between copying (which leaves the input tilesets in place) or moving (which deletes the input tilesets).

A tileset can consist of hundreds of thousands to millions of small individual tile files organized in a series of subdirectories. Copying a large tileset to another drive location or medium can be time-consuming because of the large number of files and directories involved. The current Windows and Mac operating systems are very slow in copying millions of files. Copying a large tileset is much faster if it has been archived to a single Zip file.



Single Google Maps orthoimage tileset for Massachusetts, Connecticut, and Rhode Island assembled in the Merge Tilesets process. Input tilesets are shown in illustration on the front side of this page.

If you plan on moving or redistributing your merged tileset, turn on the *Zip output* toggle to copy the tileset and accompanying files to a single Zip file. Turn on the *Delete files after zipping* toggle if you also want the raw tileset files to be deleted after the Zip archive is created.

Job Processing

You can run tileset merge operations as jobs under the TNTmips Job Processing System. Use the Queue Job icon to immediately queue the tileset merge job or the Save Job icon button to hold this job for later release. The TNTmips Job Manager allows you to set the number of jobs that can be run concurrently and to manually manage the job list or set up scheduling for job execution (such as overnight or weekend processing). See the TechGuide entitled *System: TNT Job Processing System* for an introduction to job processing.

