

Mosaic to Google Maps Tile Overlay

The TNTmips Auto Mosaic process can convert a large set of your maps and images into a tileset with the native Google Maps Tile Overlay structure. This tile overlay can be viewed by anyone from your web site in a web browser or locally from a DVD or other media. In addition to creating the strictly-defined Google Maps Tile Overlay structure, the process creates a sample HTML file that references your tileset and allows you to display it in a browser with various combinations of the native Google Maps tile layers and labels (i.e., Google Maps mashups). You can use this HTML file directly as a web page or copy and paste the relevant portions to embed the Google Maps mashup in an existing web page. Posting a mashup that references native Google Maps layers requires that you obtain a Google Maps API key authorizing this use. You can use controls on the Mosaic window to obtain and enter your API key so that it is written to the sample HTML file created by the process.

The numbered paragraphs below (keyed to numbers on the illustration) explain the various settings and options for creating a Google Maps tileset.

1 Reference System

Choosing *Google Maps* as the mosaic target on the Output tabbed panel automatically sets the Reference System option on the Extents tabbed panel to the Spherical / Web Mercator coordinate reference system required by Google Maps.

2 Image Format

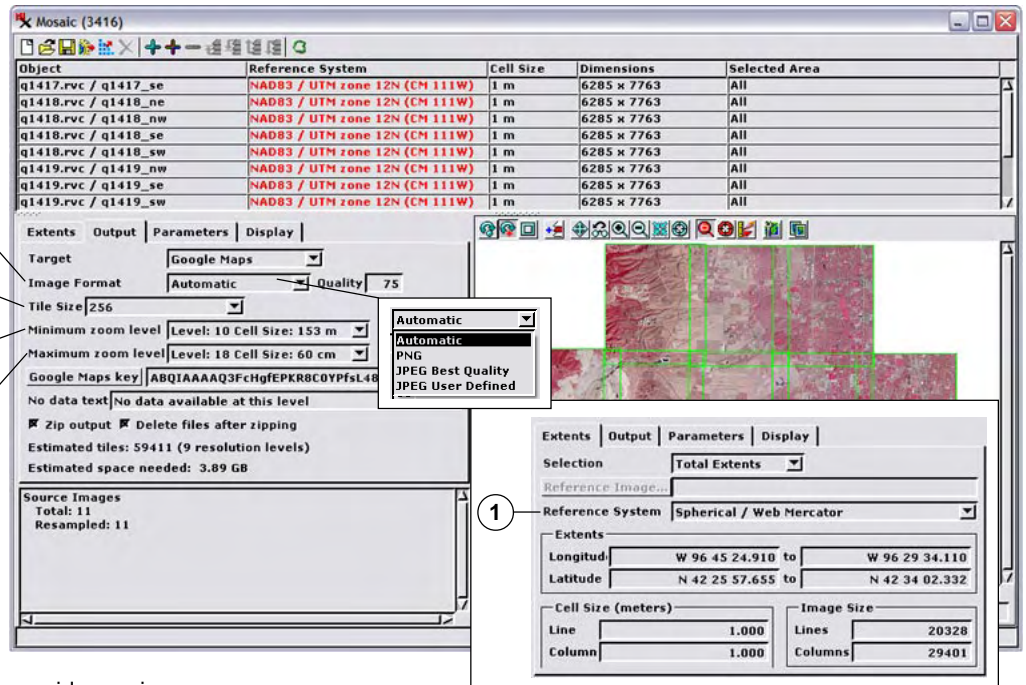
A Google Maps tile overlay can include tiles in JPEG and / or PNG format. The default Automatic format option automatically uses PNG format for any tile that crosses the border of the valid image area (to provide transparency for null areas) and JPEG User Defined format for all other tiles (to provide maximum compression). More information about choosing tile formats can be found in the Technical Guide entitled *Mosaic: Tile Formats for Google Maps and Google Earth*.

3 Tile Size

All tiles in a standard Google Maps tile overlay are 256 by 256 pixels in size. This tile size is automatically set when you select Google Maps as the mosaic target. An option for a 128 pixel tile size is also provided to create a tile overlay for display on a cell phone.

Google Maps Zoom Levels

A Google Maps tile overlay includes a set of precomputed reduced-resolution tilesets for viewing at different **fixed** zoom levels. Zoom levels are numbered beginning with level 0, which represents the entire globe with a single tile centered at 0 degrees longitude and 0 degrees latitude. Each integer increase in zoom level doubles the number of tiles in both the x and y directions. Level 1 covers the globe with a 2 x 2 grid of tiles, level 2 with a 4 x 4 grid, and so forth. This structure also means that each tile row and column number corresponds to a **specific geographic location** on the Earth. Because the tile size is fixed, each increase in zoom level also increases the spatial resolution (reduces the pixel size in map coordinates) of the tiles at that level. Nominal pixel sizes (at the equator) are shown in



the table to the right for the higher zoom levels.

4 Maximum Zoom Level

The Mosaic process automatically sets a default value for the *Maximum zoom level* setting so that the highest-resolution level in the Google Maps tile overlay has a pixel size equal to or smaller than the input raster with the highest resolution. For example, in the mosaic layout in the illustration above, all input rasters have a cell size of 1 meter, so the *Maximum zoom level* value has defaulted to Level 18, or 0.6 meter pixel size.

5 Minimum Zoom Level

The *Minimum zoom level* setting defaults to the lowest level at which the image area in your tile overlay is no more than 256 by 256 pixels. The geographic extents of your image may cause it to cross the fixed Google Maps tile grid boundaries, resulting in up to 4 tiles in this level. You can change either the minimum or maximum zoom level values to reduce the number of zoom levels created in your Google Maps tileset.

Fixed Google Maps Zoom Level	Nominal Pixel Size at Equator
12	39 m
13	19 m
14	10 m
15	5 m
16	2.4 m
17	1.2 m
18	60 cm
19	30 cm
20	15 cm
21	8 cm

(over)

6 Google Maps Key

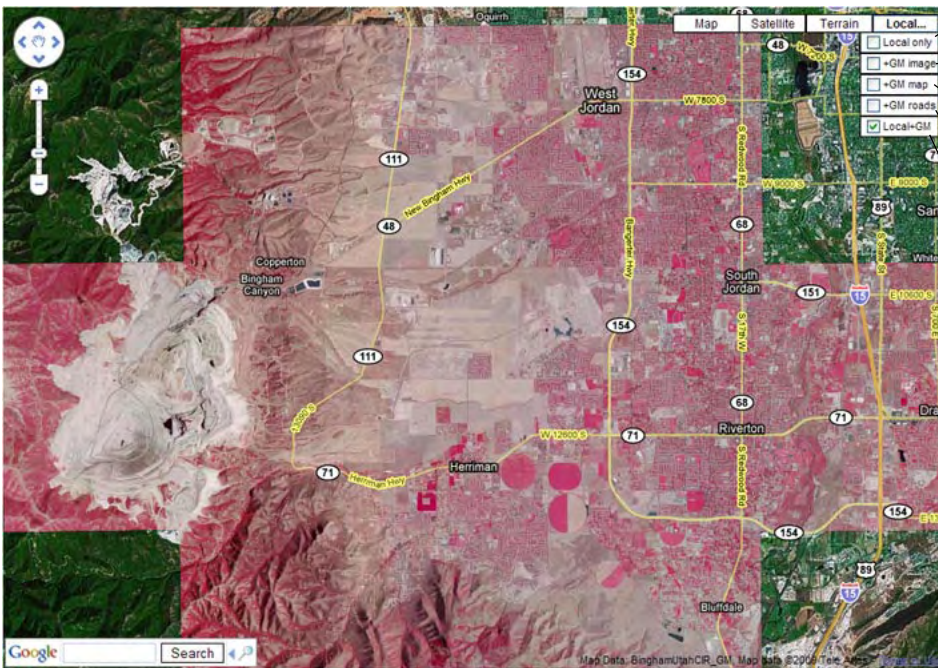
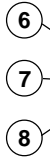
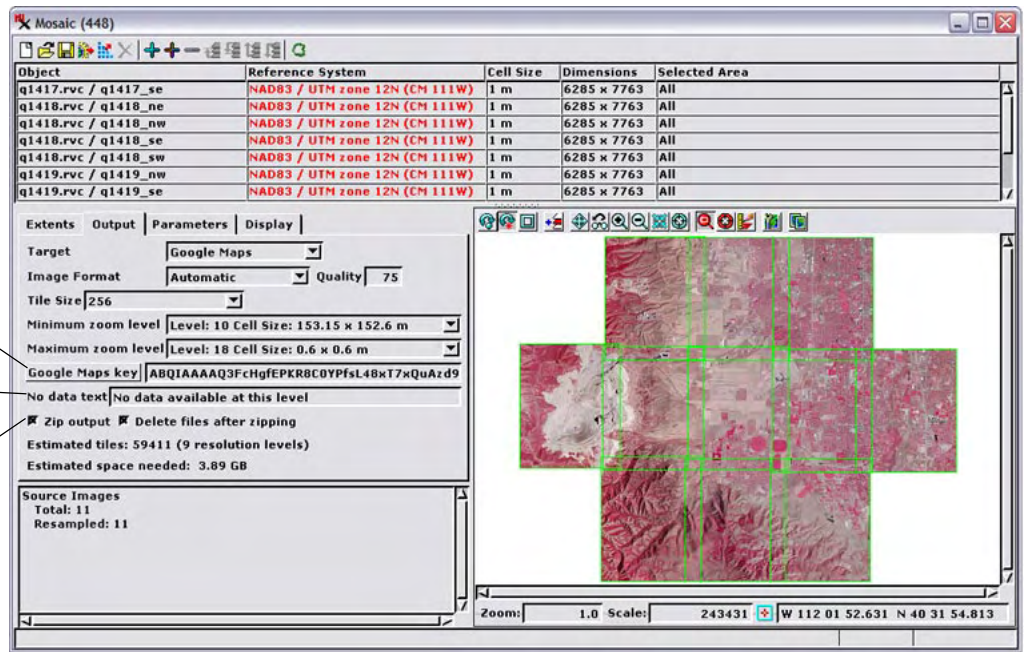
If you have already obtained a Google Maps API key, enter your key value in the field. If you don't yet have an API key, press the *Google Maps Key* pushbutton. Your web browser then opens and shows the web page where you can sign up for the Google Maps API and obtain a key.

7 No data text

If you pan beyond the extents or zoom beyond the available zoom levels for your Google Maps tile overlay (and no Google tiles are available), a special transparent PNG tile showing a "no data" message is automatically shown in your browser for all blank areas. You can edit the *No data text* field to change the text to be shown in these no data areas.

8 Zip output

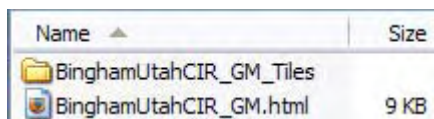
A Google Maps tile overlay can consist of hundreds of thousands of small individual tile files organized in a series of subdirectories. Copying the raw tileset to another drive location or medium can be time-consuming because of the large number of directories and files involved. Copying the tileset is much faster if it has been archived in a single Zip file. If you plan on moving or redistributing your Google Maps tile overlay, turn on the *Zip output* toggle to copy the tile overlay and the sample HTML file that references it to a single Zip file. Turn on the accompanying toggle if you want the raw tile overlay files to be deleted after the Zip file is created.



- Local Tile Overlay alone (no Google layers)
- Local Tile Overlay over Google satellite image layer
- Local Tile Overlay over Google maps layer (default display)
- Local Tile Overlay with superimposed Google roads and labels
- Local Tile Overlay with superimposed Google roads and labels, over Google satellite image layer

The sample HTML file that references your Google Maps Tile Overlay provides floating buttons along the top of the browser view that enable the viewer to switch the view to the available standard native Google Maps displays (Map, Satellite, and Terrain) and a Local button that provides a dropdown menu from which you can select a mashup of your Tile Overlay with various native Google Maps layers. The view at left shows the

Windows directory listing for the sample Google Maps



tile overlay created from the mosaic layout in the illustration above. The *filename* you provide when you start the Auto Mosaic process is used to name a *filename_Tiles* directory that contains all of the tile files and the sample *filename.html* file that references the tileset.

Google Maps Tile Overlay produced by the mosaic layout shown on this page displayed in a browser. The *Local+GM* mashup selection places the local tile overlay (color infrared image) over the Google Maps satellite layer and then overlays the Google Maps layer showing labels and roads.

The sample HTML file also provides the Google toolbar for address searches, restricts the selection of Google Maps zoom levels to the range of levels in your Tile Overlay, and restricts panning the view center beyond the bounds of the Tile Overlay.