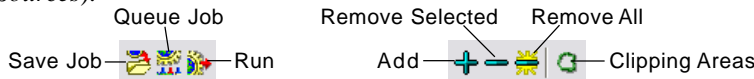


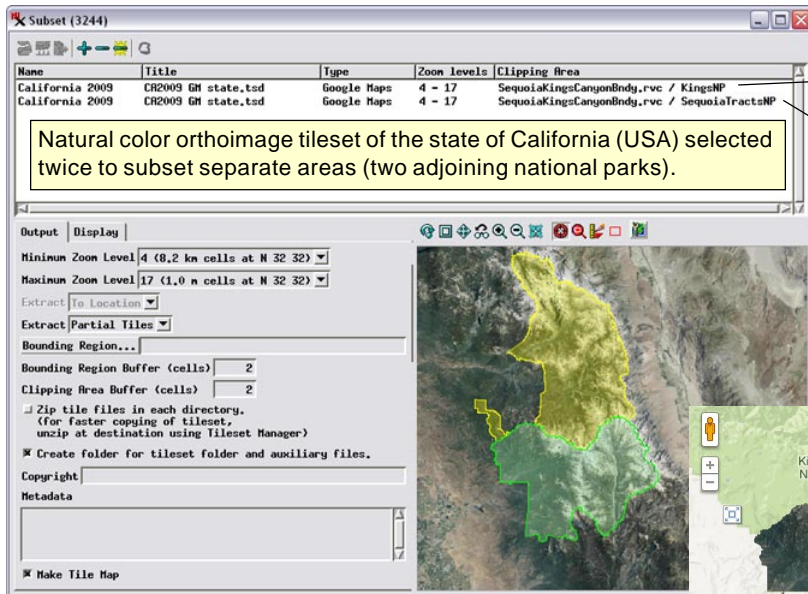
# Subset Structures

You can extract subsets by area from standard web tilesets (Google Maps, Bing Maps, Google Earth, and NASA World Wind) using the Subset Tileset process in TNTmips Pro (Tileset / Image / Subset). Each subset is a new tileset with the same form and structure as the input tileset, though you can choose the range of zoom levels to create in the subset. The input tilesets are unaltered by this process. There is no limit to the size of the area you can extract from a tileset stored on your computer or local network. You can make subsets of limited area from tilesets that are publicly accessible on the Internet, such as those hosted at microimages.com (see the Technical Guide entitled *Tilesets: Subset from Remote Sources*).

islands is used to define the clipping area, which is automatically shown in the view pane as shown in the illustration of the Subset Tileset window below. This illustration shows an example of the use of vector and shape objects to define clipping areas. You can choose clipping objects for all input tilesets or only for selected inputs.



Use the Clipping Area button's menu to define a clipping area for one or more of the input web tilesets. Use the *Choose Clipping Areas* option to select a previously-created geospatial object to define the clipping area. Choose *Extract from current view* to extract the rectangular area currently shown in the Subset Tileset window's view pane.



Clipping Area Example

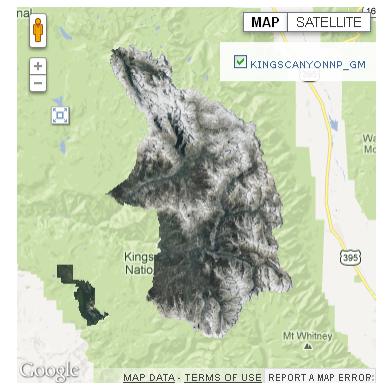
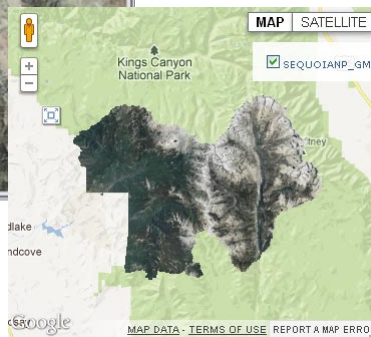


Sample Clipping Area Objects



Shape object with park boundary (2 disjunct polygons).

Vector object with park boundary and subarea polygons. Tileset Subset automatically determines the outer boundary of the contiguous polygons to define the clipping area.



Orthoimage tileset subsets for Sequoia National Park (above left) and Kings Canyon National Park (above right) shown in Google Maps.

The Subset Tileset process allows you to select one or more input tilesets to subset; the selected tilesets can be overlapping, adjoining, or spatially separated. For local tilesets you can designate a *clipping area* individually for each input tileset to define the portion to extract and/or select a *Bounding Region* to apply to all of the output tileset extracts. You can set buffer distances for both clipping areas and the bounding region to automatically enlarge the designated area(s) to provide additional image context. When you subset from remote web tilesets, a special drawing tool is activated to allow you designate the limited-size rectangle bounding your desired subset (see the TechGuide entitled *Tilesets: Subset from Remote Sources*).

## Clipping Areas

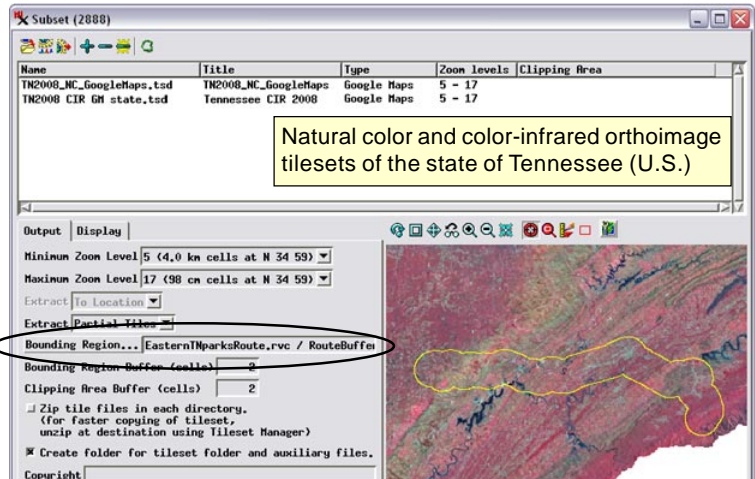
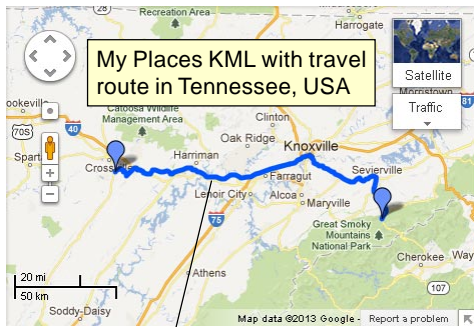
The Choose Clipping Areas option on the Clipping Area icon button menu lets you select previously-created geospatial objects to individually define the portion to extract from each of the selected tilesets. The object you choose to define a clipping area can be a region, vector, or shape object in any coordinate reference system. If you choose a vector or shape object with multiple contiguous or nested polygons, the outer boundary of these polygons excluding

You can also use standard drawing tools in the GeoToolbox to manually draw polygons in the view pane, save them as region objects, and select these regions to define clipping areas (see the TechGuide entitled *Tilesets: Clipping Input Images* for illustration of this procedure in the Mosaic process). The Clipping Area Buffer field lets you set a buffer distance (in cells) to create an outer buffer around each of the defined clipping areas to use in performing the extraction.

The *Extract from current view* option on the Clipping Area menu lets you set the current rectangular area of the view pane in the Subset Tileset window as the clipping area. This selection is applied to all of the selected tilesets.

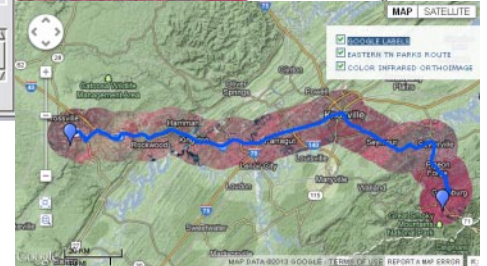
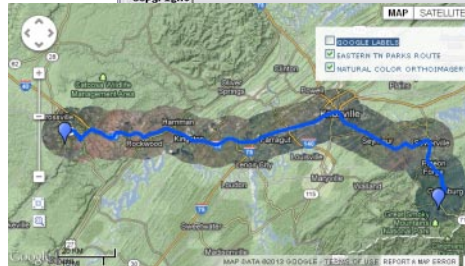
(over)

## Bounding Region Example



5-mile buffer zone region (orange) created in TNTmips Display from route line (green) imported from KML. Buffer region is selected as the Bounding Region to be applied to all input tilesets.

Natural color and color-infrared orthoimage tileset extracts covering the selected buffer region, shown in Google Maps with the My Places KML overlay of the route.



## Bounding Region

In addition to (or instead of) setting clipping areas for individual input tilesets, you can use the Bounding Region pushbutton to select a geometric object (region, vector, or shape) in any coordinate reference system to define a project boundary that is applied automatically to all of the input tilesets (after any clipping area). Contiguous and island polygons in the selected object are merged, as for clipping areas. The Bounding Region Buffer field lets you set the width (in cells) of an outer buffer zone around the selected object to define the actual extracted area. The illustration above shows an example use of a bounding region to extract the same area from natural color and color-infrared orthoimage tilesets of a U.S. state.

## Zoom Levels

Each input tileset has a specific range of zoom levels (precomputed layers with different spatial resolution used for fast zooming; see the TechGuide entitled *Tilesets: Setting Zoom Levels*) that is shown in the input list. By default, the Minimum Zoom Level and Maximum Zoom Level menus default to the global minimum and maximum zoom levels among the input tilesets, so the full set of zoom levels is extracted from each input tileset. (Requested zoom levels outside the actual range of an input tileset are ignored.) You can restrict the extraction to a smaller range by making your own choices from the Minimum Zoom Level and Maximum Zoom Level menus. For example, you could extract Google Maps zoom levels 6 through 16 from tilesets with zoom level ranges 5 through 17 and 6 through 18.

## Extract Whole or Partial Tiles

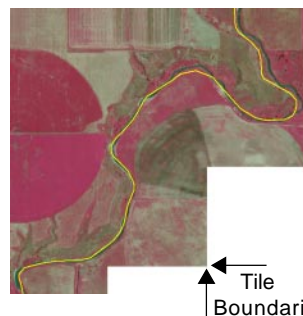
The Extract menu setting determines how edge tiles in the subset tileset are created. The Whole Tiles option copies, without modification, the tiles that are wholly or partially enclosed by the extraction area at every zoom level. With this option the image content in the subset can extend beyond the buffered extraction boundary, extending to the edge of the edge tiles, creating a blocky edge. The Partial Tiles option creates new edge tiles in the PNG image format

and sets the portion of each edge tile that is outside the buffered extraction area to be fully transparent. This option provides a smoother edge to the image content in the extracted tileset. The illustration below compares the results of these two options.

## Job Processing

The Subset Tileset process allows you to take advantage of the concurrent processing capabilities of your computer's multiple processor cores using the TNTmips Job Processing System. You can set up several tileset subset operations at once and use the Queue Jobs icon button to immediately queue each of the tileset conversions as a separate job. Alternatively, you can use the Save Jobs icon button to hold these jobs for later manual release or schedule them to run automatically at a more convenient time, such as overnight (see the TechGuide entitled *System: Managing the Job Queue* for more information.)

Extract with Whole Tiles



Extract with Partial Tiles



Detail of edge of extracted tilesets created using the Whole Tiles setting (left) and Partial Tiles setting (right). The yellow line in the left illustration is a portion of the clipping area boundary used (with 2-cell buffer) in the extraction. The Whole Tiles option copies tiles at every zoom level without modification, so that the edge of the image content of the subset may follow the square tile boundaries in many areas. The Partial Tiles option creates new edge tiles in the PNG image format and sets the portion of each edge tile that is outside the buffered extraction area to be fully transparent.