

# Georeferencing in the Range .5 to 10 meters

Georeferencing spatial data is a common application of TNTmips. This often requires adding control points to your maps, images, diagrams, or other project materials. It also requires that coordinates in an earth-related coordinate reference system are available for features in these materials. The source of these map coordinates can be a map, orthoimage, or other geospatial data that covers the area of your new materials at an appropriate scale and accuracy.

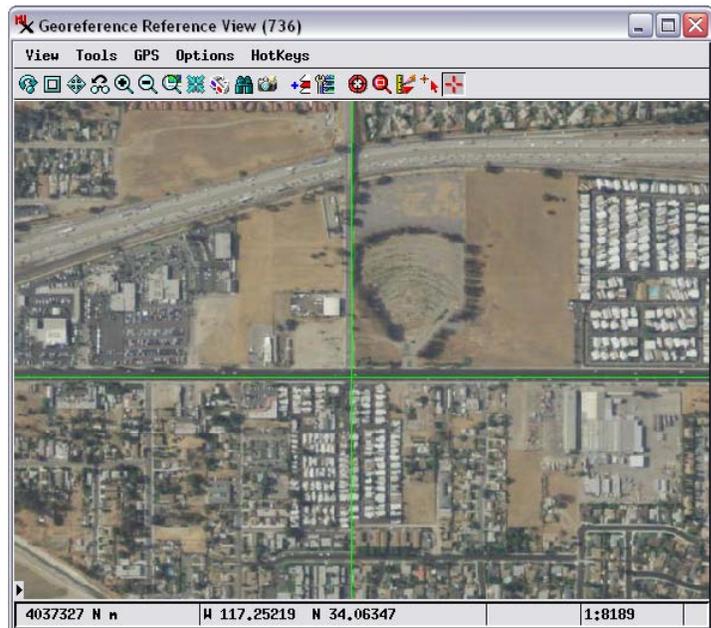
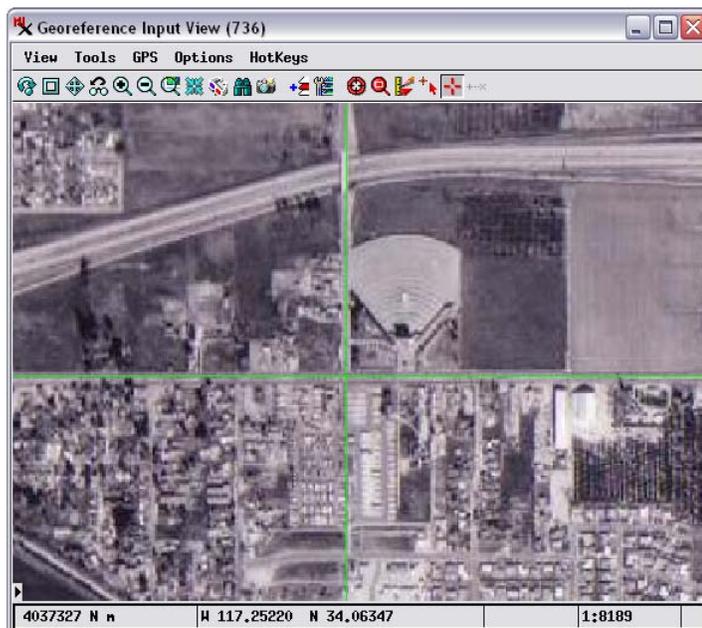
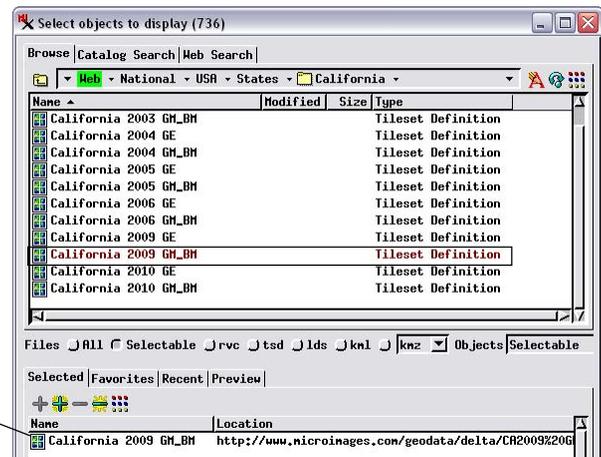
TNT mips provides free on-line access to the latest USDA / NAIP 1-meter color orthoimagery for the conterminous United States for use in georeferencing your spatial materials of 1- to 20-meter resolution. These high-resolution state tilesets can be used via the internet from microimages.com as reference images for collocating the control points to be transferred to your materials.

If your project area is not covered in this imagery, or you have access to higher-resolution imagery, you can easily assemble your own reference tilesets in TNTmips using any georeferenced maps and imagery of your city, province, or nation. These tilesets can then be used in your TNTmips via your local network or via your web site. For example, very high resolution (10 to 100 centimeter) orthoimagery is available for many US cities (see list of coverage areas at <http://seamless.usgs.gov/products/listofortho.php>). These images can be downloaded from <http://seamless.usgs.gov>, assembled into a tileset, and used in TNTmips to georeference your sub-meter resolution imagery, local maps, or engineering drawings.



Choose *Web Layer* from the Reference View's Add icon button menu...

...then select the desired state orthoimage tileset to use as a reference layer



Georeferencing a historical black-and-white aerial photograph of Loma Linda California acquired in 1967 (shown above left) using as a reference image the 2009 California natural-color 1-meter orthoimage tileset viewed directly from microimages.com (above right). In the Georeference process be sure to choose an appropriate model for computing residuals; the Plane Projective model was used here to account for distortions due to camera tilt. Add any of the MicroImages' state orthoimage tilesets to the reference view by choosing the Web Layer option on the Add icon button's menu, then choose the desired tileset from the Select Object window (top).