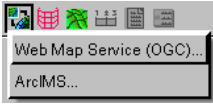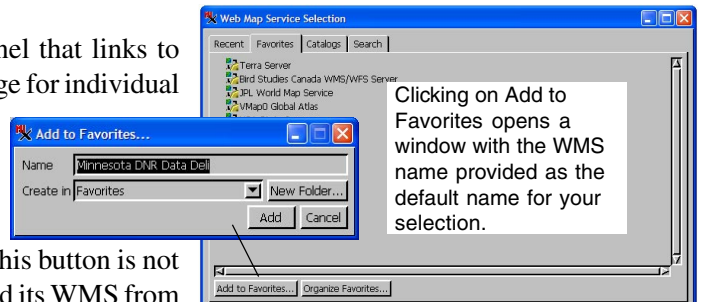## Spatial Display

Locating and Using WMS Layers

There are two steps in the selection of Web Map Service (WMS) layers for display in the TNT products. In the first step you select the WMS. This selection uses the Web Map Service Selection window. In the second step you choose the layers you want to view from those offered by the selected WMS. This step uses the Web Map Service Layer Controls window, which lets you control WMS-specific parameters such as the layers selected and transparency. Both of these steps require communication between your computer and the WMS, which generally requires that an Internet connection be working for all parties. Private WMSs, for example proprietary geodata published by a TNTserver, may only be available over a local intranet, or private network, and require access using a password. Password protected geodata may also be published for access over the Internet by a TNTserver. Connectivity is the key to successful WMS layer display (see the Technical Guide entitled *Spatial Display: Select WMS Layers for Viewing*).
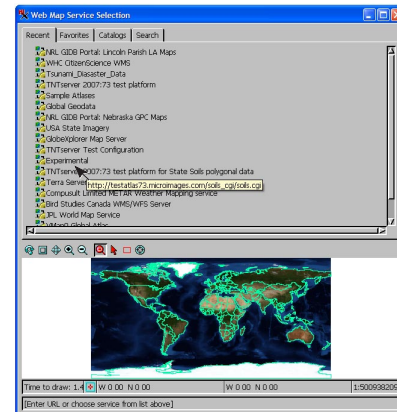
Web Map Service Selection

The Web Map Service Selection window has four tabbed panels: Recent, Favorites, Catalogs, and Search. When you add a WMS layer, the Favorites panel will be active by default.

Favorites panel. There is a default entry on the Favorites panel that links to MicroImages' extensive collection of seamless orthophoto coverage for individual US states collected by the USDA and mosaicked into a special, web-oriented, hierarchical tileset structure using TNTmips. To add other entries to the Favorites panel for indefinite retention, select an entry on the Catalogs, Recent, or Search/Results panel, then click on the Favorites tab and the Add to Favorites button. This button is not active until a URL is present in the field below because you selected its WMS from another panel and a response was received from that WMS. You can also enter or paste a URL in this field and press <enter> to initiate a request for its capabilities. When a response is received from the WMS, the Add to Favorites button becomes active.
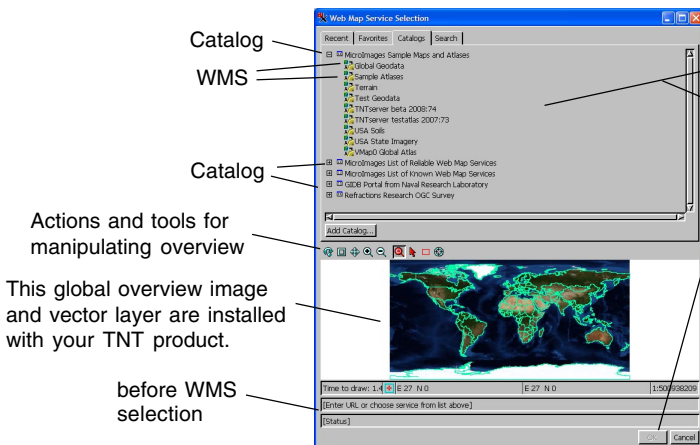
Clicking on Add to Favorites opens a window with the WMS name provided as the default name for your selection.

Recent panel. After you view a WMS layer, that WMS will be listed for easy reuse on the Recent tabbed panel, which keeps track of the last 30 WMSs selected. Clicking on an entry on this panel initiates a request for the capabilities of the selected WMS, which is the same as the second request mentioned for the Catalogs panel. Once a reply is received, the OK button becomes active so you can proceed with your WMS layer selection. The URL for each WMS is shown as the DataTip when you hover over its listing.

The Recent tabbed panel lists the WMSs you have visited most recently.

Catalogs panel. A WMS catalog is an XML file that lists the WMSs available from one or more web servers. Your TNT product provides an installed list of catalogs, including catalogs that reference layers maintained by MicroImages, to assist you in location of WMS materials for your use as reference

Catalog

WMS

Catalog

Actions and tools for manipulating overview

This global overview image and vector layer are installed with your TNT product.

before WMS selection

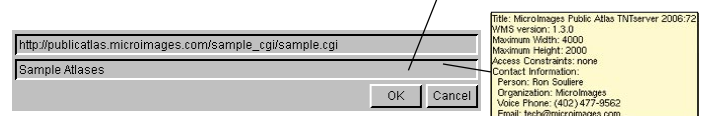http://www.microimages.com/ogc/ourservers.xml
This catalog contains samples hosted (via TNTserver) on the MicroImages website.

When you hover over a WMS entry, its URL appears in a DataTip. Additional information is provided in the DataTip shown over the WMS name at the bottom of the window after it is selected (see below).

The OK button is *not active* until a WMS has been selected and a response that contains the WMS's capabilities has been received.

After a WMS is selected, its URL is automatically entered, the status line provides the name of the WMS, and the OK button is active.

Title: MicroImages Public Atlas TNTserver 2008:72
WMS version: 1.3.0
Maximum Width: 4000
Maximum Height: 2000
Access Constraints: none
Contact Information:
  Person: Ron Souliere
  Organization: MicroImages
  Voice Phone: (402) 477-9562
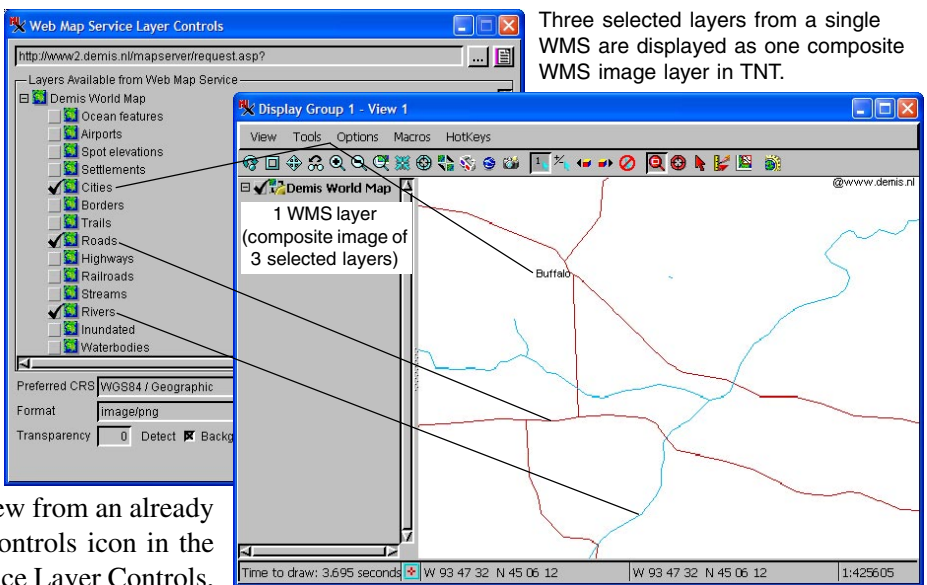 Email: tech@microimages.com

(over)

layers. For more information on MicroImages' catalogs for web services, see the TechGuide entitled *System: MicroImages' WMS and ArcIMS Catalogs*. Initially the Catalogs panel shows only a list of catalogs, which requires no communication with the WMSs listed on this panel. You can pause the cursor over any of the catalogs to view the URL pointing to its location and an abstract if available. When a catalog is expanded (by clicking on the + to its left), your TNT product requests information about the catalog contents by querying the web site that is publishing that catalog. If a response is received, the WMSs in the selected catalog located at the URL are listed. Clicking on one of these initiates a request for a variety of information from the selected WMS (for example: layers available, their geographic extents, formats, Coordinate Reference Systems supported, access permission information). If this second response is received, the URL for the WMS is filled in at the bottom of the window along with its title, and the OK button becomes active so you can open the Web Map Service Layer Controls window and select the desired layer(s) from that WMS for viewing.

Search panel. For information on the Search panel see the TechGuide entitled *Spatial Display: Searching MicroImages' Catalog of WMS Layers*.
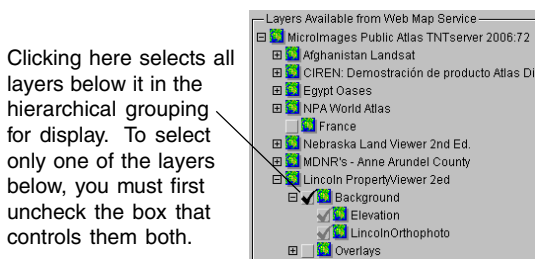
Shared fields and functions. Right-clicking on an entry on any of the first three panels lets you remove that entry from the list. The URL and Status fields at the bottom of the Selection window appear with all four tabbed panels. Thus, a WMS selected on the Catologs, Recent, or Results tab of the Search panel can be added as a favorite from the Favorites panel without having to select the WMS again. You can also enter the URL for a catalog to add to your list or enter the URL for a WMS directly at the bottom of the window. Regardless of which of the panels you use to choose a WMS, the procedure is the same once you click on the OK button, which opens the Web Map Service Layer Controls.

Web Map Service Layer Controls

Clicking on the OK button in the Web Map Service Selection window opens the Web Map Service Layer Controls window listing the layers available from the selected WMS along with various display options. Layers in the Web Map Service Layer Controls window may or may not be grouped and expandable (by clicking on the + to its left) depending on how the layers are published by that WMS. To select a specific layer for display, it must be available and, thus, have a check box in front of it. For expandable groups, checking the box will select for display all of the layers that appear by expanding the entry. You

Three selected layers from a single WMS are displayed as one composite WMS image layer in TNT.

can add to or change the layers added to a view from an already specified WMS by clicking on the Layer Controls icon in the Display Manager to open the Web Map Service Layer Controls, and then change the layers checked for viewing from that WMS. At this point, you have the opportunity to update the view to reflect the changes without closing the Web Map Service Layer Controls window by clicking on the Apply button.

Clicking here selects all layers below it in the hierarchical grouping for display. To select only one of the layers below, you must first uncheck the box that controls them both.

You can select as many layers as you want from the list of available layers provided. A single, new layer is added to the view that is composed of one or more layers from the selected WMS each time you click on the Add Web Layer icon and choose Web Map Service (OGC) in the Display Manager or the Editor Layer Manager. If more than one layer is chosen from the selected WMS in the Web Map Service Layer Controls window, the WMS layer displayed in the TNT products is a composite image of those layers (see illustration above). In order to turn layers from the same WMS on/off individually in the view, each must be added as a separate WMS layer using the Add Web Layer button in the Display Manager.