

TNTmap Builder 2006:72 Help

TNTmap Builder lets you choose layers to display from any Web Map Service (WMS) compliant site for display in TNTmap Viewer, Google Maps, Google Earth, or World Wind. TNTmap Builder and its companion TNTmap Viewer (see *TNTmap Viewer 2006:72 Help* on our web site) together comprise TNTmap, which is open source, dynamic HTML and JavaScript and is WMS compliant. TNTmap can be run from MicroImages' or any other web site as a web application, which runs on any operating system, or it can be downloaded and installed (Windows and Mac OS X). TNTserver is not required for the operation of TNTmap or to provide data for it. Your selected layers can come from any WMS. However, many layers of potential interest are available from TNTservers at MicroImages' web site and other web sites around the world. Layers selected for viewing can be retrieved as individual layers or as a composite of selected layers at the scale required for the TNTmap Viewer view canvas size.

The TNTmap Builder window in its standard form has four tabbed panels on the left and the Locator, an information bar, and viewer launching options on the right. The panels are Layers, Main View, Overview, and Favorites. All of these features can be viewed simultaneously if you view the quadrant version of TNTmap Builder (see the color plate entitled *TNTmap Builder 2006:72: Three Forms to Fit User Preference and Device*). Functional consideration of TNTmap Builder, however, breaks down to three operations: how do you get layers to choose from, how do you select from those layers for viewing, and how is viewing them initiated. The additional features that let you refine the basic operations are not necessary to get up and running with TNTmap Builder. See the end of this document for installation and configuration information.

Layers Panel

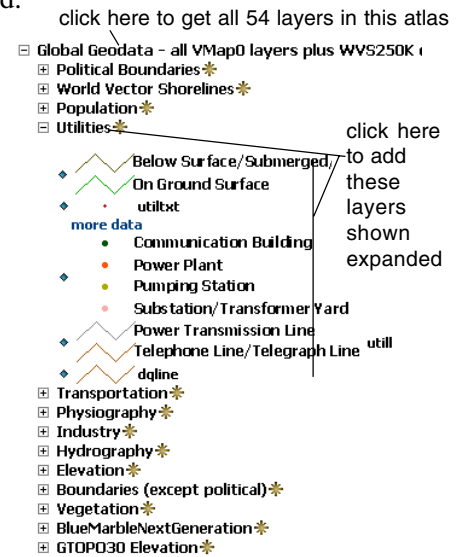
Generic WMS. The server layers list on the first tabbed panel of the TNTmap Builder window provides a list of all layers published by the WMS at the URL at the top of the window, which initially defaults to the public atlas TNTserver on MicroImages' web site. If more than one registry is available at this URL, as at the MicroImages' site shown below) you may initially get a list of registries. Information from each registry is requested individually, which provides faster response times. You can switch from one registry to another in the process of selecting the layers you want to view. When a new server is selected, its layers are added to those already on the Layers panel. You can choose another server identified by MicroImages as having useful geospatial layers from the list that comes up when you click on the Add Servers to Layers Panel button at the upper right of the Builder.



All layers provided by a WMS may be listed individually or they may have logical, hierarchical groupings such that many layers are listed under a single entry when the layer list for a WMS is initially loaded. Whether layers are listed individually or grouped depends on the WMS. The icon to the left of the layer name indicates whether there are additional layers or groupings beneath it. A diamond (◆) to the left of a layer name indicates that layer has no layers beneath it. A plus symbol (⊕) to the left of a name indicates there are additional layers beneath and clicking on the plus will expand the list. There is no limit to the number of hierarchy levels for a WMS, however, many have no layer hierarchy at all.

When a WMS presents its layers as part of a hierarchy, you can choose to add from any level of the hierarchy by clicking on a that level's entry in the hierarchy. When you click on an individual layer (◆ in front), just that layer is added. When you click on a level that has layers under it (⊕ in front), all the layers under it are added to the currently active selected layers panel (either Main View or Overview panel). The Main View panel is initially active for reception of layers selected on the Layers panel. You can click on levels as far up the hierarchy as desired, and all the levels and layers below will also be added.

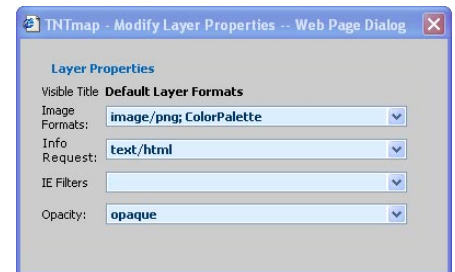
TNTserver WMS. When a WMS is being hosted by a TNTserver, you will find some atlases posted as hierarchical groups of layers. In the terminology of the TNT products, a WMS level with a number of layers under it that do not have layers under them is called a group. Groups are further organized into layouts. An atlas may consist of one or more layouts. The screen capture at the right of a Layers panel list from a TNTserver shows a single-layout atlas comprised of 54 geodata layers organized into 12 groups, each with two or more layers. One of these groups (Utilities) is shown expanded, which reveals the five geodata layers it contains. Clicking on one of these five layers will add just that layer to the Main View panel. Clicking on Utilities (or any other group name) will add the layers in that group to the Main View panel. Clicking on the atlas name (in the illustration, Global Geodata - all VMap0 layers plus WVS250K) will add all the layers from all 12 groups to the Main View list (provided it is the active list). TNTmap Builder automatically switches to the active list panel when layers are selected.



✱ **Render As Group.** As mentioned previously, layers selected for viewing can be retrieved as individual layers or as a composite of selected layers. Compositing is done on a group by group basis by the TNTserver. Retrieval as individual layers is described above, simply click on the layer name. Multiple layers are retrieved as a composite layer if you click on the Render as Group icon. When you click on this icon next to the group name, a single entry with the group name is added to the selected layers at the right. A composite image is generated by TNTserver from all the layers in the group at the appropriate scale for the current image request. When layers are acquired as a composite image, you cannot turn on/off the individual layers that make up the composite in TNTmap Viewer as you can when each is added as a separate layer. You can, of course, turn the composite layer on/off. For better rendering in Google Earth and World Wind, all selected layers are rendered as a single image regardless of whether this option was used.

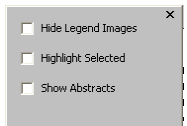


Set Default Image Properties for this Server. Clicking on this icon opens the Modify Layer Properties window, which lets you specify the format for image retrieval (jpeg, jp2, png, png;Color Palette, png;True Color, png;Color Palette+Interlaced, png;True Color+Interlaced, vnd.google-earth.kml+xml, and svg + xml), the format for Info requests (html), an Internet Explorer filter to use (none, remove white, remove black, enable 24 bit PNGs, and engrave(relief), and the percent opacity for layers from the selected server.



Display Choices. Clicking on this icon pops in a panel that lets you specify how layers appear in the selected server list. You can turn legends on/off (illustrations on page 1 and this page have legends on), choose

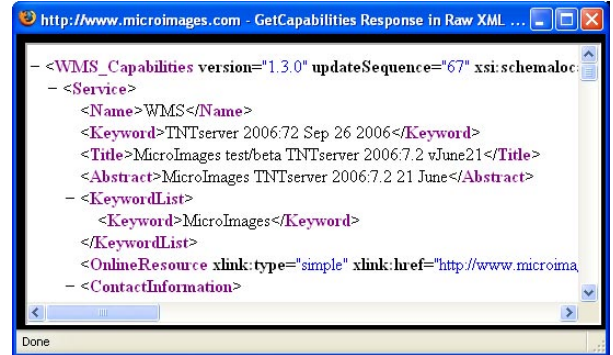
whether layers selected for viewing remain identified by highlight, and turn on/off viewing abstracts if they are available.



Clear Layer List. When you switch from one WMS to another, the layers from the new WMS are added to those available from the previously selected WMS(s). This button lets you clear the list and start over.



View servers capabilities source XML. Opens a window with the response to a GetCapabilities request from the selected server in XML. This information can be useful when troubleshooting WMS performance from various sites.



Main View Panel

The Main View panel shows the layers you have selected for viewing in TNTmap Viewer or other WMS client. It is active (will receive initially selected layers) and blank when TNTmap Builder opens. As you select layers from various WMSs they are added to the Main View list if it is the active list. You switch between and add layers to the Main View list and the Overview list by clicking on the tab with the same name, which makes a panel the active panel when you return to the Layers panel and select more layers. Layers can be moved up or down or removed in either list. The list is shown in the order the layers will be displayed, which means the layer at the bottom of the list (added first) will be the bottom layer in TNTmap Viewer. The top and bottom layers are identified in the list to avoid confusion. Once you have the desired layers selected, click on the button for the desired client (Google Maps, Google Earth, World Wind, and TNTmap Viewer) at the lower right of the window to view these layers. If you already have TNTmap Viewer open, you can choose to update that display using the Update in existing window button (icon with blue rectangular background) instead of opening a new view after making desired changes, such as reordering or adding/deleting layers or choosing a new layer to zoom to.



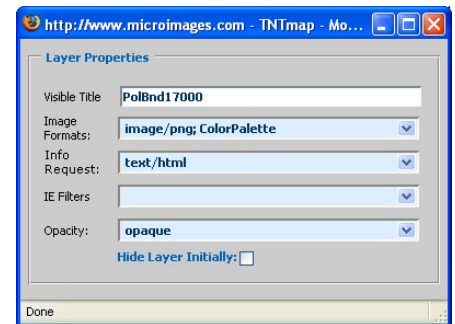
Set extents and Coordinate Reference System from this layer. Sets the area for the initial or updated display to match the area of the highlighted layer. You could, for example, select several global layers and a layer covering a single state or province. If you do not choose to use a particular layer to determine the extents to be viewed or if you select a global layer and click on this icon, your initial view in TNTmap Viewer will be scaled to fit all the data (which means a global view). If you highlight a state or province layer and click on the globe, you will be zoomed in to that boundary, with a little margin, when when you open TNTmap Viewer. The Coordinate Reference System (CRS) that is used to determine this area is derived from the layer and WMS.



Derive view extents from Locator at the right. Uses the current extents of the Locator view (upper right of TNTmap Builder window) to determine the area shown initially in TNTmap Viewer. Use of the Locator is described later.




Layer Properties. A window opens to let you change the name used for the layer in TNTmap Viewer from what appears in the Main View Layers list (name does not change in Main View Layers list), choose between image formats (jpg, jp2, png, png Color Palette, png True Color, svg+xml), set the format for information requests (text/html is the only option currently), set IE filters [remove white, remove black, enable 24-bit PNGs, and engrave (relief)], and set percent opacity (from 10% to opaque). You can also elect to hide the layer initially and toggle it on later in TNTmap Viewer so that it does not initially obscure other layers.





Move Layer Up. Moves the highlighted, or active, layer up on on the list, thus changing its order in TNTmap Viewer.

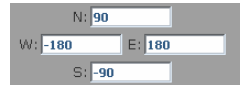


Remove Active Layer. The blue X icon removes just the active, or highlighted, layer. The red X icon removes all layers from the list.

 **Move Layer Down.** Moves the highlighted layer down in the list.

 **Clear all layers.** The red X icon removes all layers from the list. The blue X icon removes just the active, or highlighted, layer.

 **Show/Hide Manual Extents Tool.** Pops in a tool so you can enter the extents in the CRS shown at the bottom of the Main View panel. A blue box over the Locator image indicates the entered extents. The red box in the Locator reflects the highlighted layer's extents. You can change this CRS but be aware the CRS selected here is the one TNTserver will use to generate the images sent to the viewing client.





Active Coordinate Reference System (CRS). Clicking on the specified CRS at the bottom of this panel opens a window so you can pick from other CRSs advertised by the selected server. Some servers do not advertise all CRSs supported so a Custom CRS field is provided so you can enter the parameters for CRSs not on the list. The last field changed before you click on OK determines whether the server defined or custom CRS is used.





Viewing and Saving Layers on the Main View Panel


To view the layers you have selected, click on the Launch button for the desired viewer at the bottom right of the TNTmap Builder window (or Update in existing window button if you already have TNTmap Viewer open and want to change the layers displayed in that view). There is no guarantee you will see the layers you have selected from any WMS. Many of them simply do not work or work sporadically. If there is a problem loading a layer, the layer name will be shown in red in the TNTmap Viewer legend. If you want to check whether the problem is with TNTmap or the selected WMS site, try one of the other clients available for viewing WMS layers (see the list of other available clients at www.microimages.com/tntmap/wmsclients).






 **Launch in Google Maps.** Clicking on this icon opens the layer(s) on the Main View panel using the Google Maps API together with extensions provided by TNTmap. See the color plate entitled *TNTmap 2006:72: Use Google Maps to View WMS Layers*.

 **Launch in Google Earth.** Launches Google Earth if installed on your machine and zooms to the approximate extents of the layers on the Main View panel. The layers appear under the My Favorites heading at the left of the Google Earth window. If Google Earth is already running, the layers will be added to the open view. See the color plate entitled *TNTmap 2006:72: Use Google Earth to View WMS Layers*.

 **Launch in World Wind.** Prompts for a name of the layer set to provide the name for the saved xml file. This file is saved in your World Wind Config/Earth directory. World Wind is only automatically launched if you are running the installed version of TNTmap Builder. If you are running the web application version, you need to move the files saved by your browser to the World Wind Config/Earth directory and launch World Wind yourself. The World Wind application is not currently available for Mac OS X. See the color plate entitled *TNTmap 2006:72: Use World Wind to View WMS Layers*.

 **Update in existing TNTmap Viewer window.** Places layers currently on the Main View list in an open TNTmap Viewer window. See the color plates entitled *TNTmap 2006:72: Use TNTmap Viewer to View WMS Layers* and *TNTmap Viewer 2006:72: Viewing WMS Layers*.

 **Launch in TNTmap Viewer.** Clicking on this icon displays the layers on the Main View panel in TNTmap Viewer using the extents defined in TNTmap Builder or the full extents of all the layers if not specified. See the color plates entitled *TNTmap 2006:72: Use TNTmap Viewer to View WMS Layers* and *TNTmap Viewer 2006:72: Viewing WMS Layers*.

 **Save As TNTmap/Google Earth/World Wind.** Opens a dialog that lets you set a number of parameters for the layer set, including tilt and heading if saving to Google Earth, and lets you pick the format to save to. Your choices are: Google Maps  (*.htm), Google Earth  (*.kml), NASA World Wind  (*.xml), and TNTmap  (as *.htm or an OGC context file *.cml). You can also click on Save Settings Only at the bottom left of the panel to save changes to parameters for use with subsequently opened views in the current session without

saving any layer information. The backs of the three plates listed for other viewers and the first plate listed for TNTmap Viewer explain the parameters on each of the tabs of this Settings panel. You switch from one format to another by clicking on the corresponding icon at the top of the panel. The icon for the current panel is shown at the upper left.

Overview Panel

Make the Overview panel active by clicking on the Overview tab. This panel is used to list and manage the layer(s) selected for the overview image that will be shown for general area reference in the lower left corner of TNTmap Viewer. The Overview is not used in other viewers. TNTserver automatically places a layer in this list. This layer is the Blue Marble global image with a vector overlay of national boundaries plus states/provinces where available. You can delete this layer using the Remove Layer or Clear all layers icon (blue or red X at right edge of panel). You can then add any layer(s) you wish from any WMS to provide the contents of the Overview in TNTmap Viewer. For example, use a map of the general area covered by the layers in the Main View Layers list. Layers are added and managed in this list just as for the Main View list outlined above with the exception of the top two icons.

Note that the Overview image is shown in TNTmap Viewer by default. An “Overview On/Off” icon in TNTmap Viewer can be used to toggle the Overview on and off. Also, if you have limited the area to be viewed using the globe icon or entered extents, the Overview image will be zoomed to those extents.








Load Default Overview. Adds the default global Overview layer described above. This button replaces the *Use this layer's extents* button that is present when the Main View panel is active.




Match Main View. Adds all the layers in the Main View Layers list to the Overview Layers list. This button replaces the *Derive view extents from Locator above* button that is present when the Main View panel is active.

Layer Locator View and Controls

The upper right corner of the Builder provides a Locator image to show you the geographic extents of any layer offered by any WMS. These extents are included in the XML metadata of the layers returned in response to your current selection of the WMS shown on the Layers panel. The image used in this Locator is installed with TNTserver and retrieved with a GetMapRequest from TNTmap Builder. The default content is a global view of the Blue Marble global image with a vector overlay of national boundaries plus states/provinces for Canada, the United States, and Brazil.

 If you pause the cursor over any layer name in the Layers, Main View, or Overview lists, a red outline on the locator image shows you the geographic extents of that layer. You may also see a blue outline if the Manual Extents tool () has been used. Use the plus icon () above the image or pull out an elastic box on it with the cursor to zoom in to use this red outline box to review the coverage of layers with local extents. The field above the image is for entry of place names to zoom to provided by the Google Maps API. The *Zoom to global extents* icon () returns the locator to its original view. You can zoom out with the minus icon (.

The Locator can also be used to define the geographic area that TNTmap Viewer will automatically zoom in to when first opened. The *Derive view extents from Locator window above* icon () at the right of the Main View and Overview panels sets up the extents of the initial view to match what is currently shown in the Locator.

Favorites Panel


Both installed and web application versions of TNTmap Builder have a Favorites tabbed panel. Only the installed versions (Windows and Mac OS X) have the Web URLs and Local Contexts headings. The context files listed on the Favorites panel in the web map application and under the Web URLs heading in the installed versions are context files generated by MicroImages for geospatial data and atlases of potential interest located on MicroImages' web site. These context files specify the viewer in which they will be launched. The designated viewer is indicated by an icon in the list. Click on this icon or the text to launch the desired context in the designated viewer.

The list available by clicking on the Local Contexts heading in installed versions of





TNTmap Builder contains context files you have saved using TNTmap Builder, TNTmap Viewer (Mac OS X only), or some other WMS viewer if the files have been copied to the appropriate place (the Maps folder in your home directory). You switch between the list provided by MicroImages (Web URLs) and your personal favorites (Saved Views) by clicking on the desired heading. You can manage what appears on your personal favorites list by removing unwanted context files from the \Program Files\MicroImages\TNTmap\contexts folder on Windows systems and from the Maps folder in your home directory using the TNTmap Builder widget with Mac OS X.

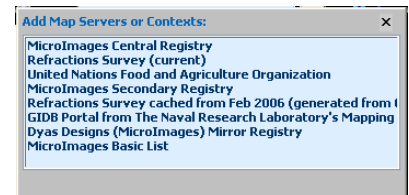
Other Window Components


 **Reload capabilities from server.** This button forces a new GetCapabilities request from the server, which is generally not necessary but can be used if you have stopped a GetCapabilities request, changed networks, or want to override cached capabilities in case there has been a change. A GetCapabilities request can be stopped by clicking on the Cancel button in the small status window that pops in.


URL. This URL is for the server that provides the WMS. The default server to use when TNTmap Builder starts is set in your TNTmap Configuration (see following section). You can enter the URL for any server that provides a WMS and click on the Use Capabilities from this URL to see the WMS layers available or the list of servers, if available and your TNTmap is configured to show you this list, from the WMS at the URL entered. You can also enter a URL for a context or context collection file. If you use the Browse button, this field will contain the file path to the selected context or context collection file.


 **Use Capabilities from this URL.** Sends a WMS capabilities request to a server URL you have entered manually. A request is automatically sent when you choose a server from the registry list that opens when you click on the Add Servers to Layers Panel icon. A list of layers available from the designated server is returned. It is important to understand why accessing and building up a new registry in TNTmap may be quite slow. A registry is not a simple list of URLs pointing to WMSs. Each registry contains *extensive* XML metadata, legend images, and other information about each layer offered by every web site it lists. Appending a new registry to the default registry list loaded into TNTmap Builder requires that all this data about every WMS site listed by the new registry be downloaded and parsed into a useful structure. This must be done each time you choose to use it since a registry's content changes and most end-users of the web application version of TNTmap will set their browser to block saving anything on their local machine. Furthermore, at present there is no widely accepted hierarchical structure for a registry to permit access by topic or geographic area of interest. As a result, some registries have grown to be very large. The U.S. Naval Research Laboratory's Geospatial Information Database (GIDB, see dmap.nrlssc.navy.mil/dmap) registry lists many, many WMSs and many thousands of layers and takes a substantial time to add to the TNTmap default list. What you may think of as a single TNTatlas published by a TNTserver can represent literally hundreds or more independent layers if the same kind of content is published by some other WMS.


 **Add Servers to Layers Panel.** Opens the Add Map Servers or Contexts dialog, which lets you choose from the registry files identified by MicroImages. After selecting a registry from the list, the contents of that registry are automatically appended to the list of servers that can be selected for use in the main TNTmap Builder window. You can add more than one registry if desired and all entries will be appended to the end of the list available from the Select Server option menu.



 **Open.** Opens a window so you can select saved context files on your machine or on a private network for use. Selectable file types are context files (*.cml), context collections (*.ccml), and capabilities documents (*.xml). Selecting one of the first two types adds the layers described to the Main View panel. The layers described in a capabilities document are added to the Layers panel.

 **Save to Favorites.** Opens a Prompt window so you can name the url at the left of the button as you want it saved on your Select Server or Map Context list. The web application version of TNTmap saves nothing on your drive when you exit it. Thus, this feature is only available when running the executable TNTmap Builder installed and run from your local machine.

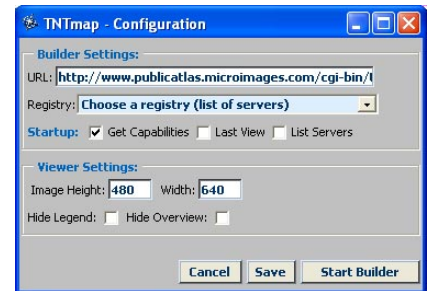
 **Help from www.microimages.com.** Takes you to a page where you can access help for TNTmap Builder and Viewer.

 **Switch Locator Zooming Mode.** There are two modes for zooming to a specified location in the Locator window: using predefined areas (selected from list) or user-defined areas (mouse selected in Locator) and searching for a geographic name you have entered using the geonames.org geographical database. You switch between these modes by clicking on this icon. If using the former mode, the entry in the field to the right will be Global Extents if you have not zoomed in the Locator and User Defined if you have used the mouse to draw out a box around the area you want to zoom to the Locator dimensions. If you pick from the list, the area selected will show here. When using the latter method, you type in the name of the place you want to zoom to and the Locator recenters on the first result from the geonames.org search with a zoom that encompasses the first 20 results. If you want to use the extents you have zoomed to to define the extents of your initial view, click on the *Derive view extents from Locator to the right* button on the Main View panel.

Installation and Configuration

Installation and configuration of TNTmap for Windows and Mac OS X differ somewhat. Installation on Mac OS X 10.4 or newer is handled by the operating system and is the same as other widget installation. The configuration panel is on the back side of the control panel widget (see the color plate entitled *TNTmap 2006:72: Widget Viewing of WMS Content for Mac OS X*).

Installation on Windows platforms uses a wizard that provides a default location for installation that can be changed and provides options to create a quick-launch icon and to register TNTmap Viewer to open OGC Web Map Context Documents (*.cml) and context collections (*.ccml). When installation is complete, you have the option to open the Configuration window (right). You can change the configuration later from the Start menu



(Start/MicroImages/TNTmap/Configure assuming you installed in the default location). The Configuration window may sometimes open behind another application, so be sure to check your system tray if it does not appear.

The URL at the top of the window is for the WMS server that will be contacted when the Builder is launched. The URL for MicroImages' public atlas site is <http://publicatlas.microimages.com/cgi-bin/tntgateway.cgi?>. The URL shown when you open the Configuration window is the last server to which you were connected for a Get Capabilities request. You can append the list of layers available from that server by also choosing a registry. The three Startup options are not mutually exclusive. If the Get Capabilities option is checked, the information about all layers by all servers at that site is requested when the Builder is launched. If many layers are provided, this may take some time. If the List Servers option is also checked, the Get Capabilities request is made only for the last server in the list if multiple servers are available from that site. If Last View is checked, the layers selected the last time you launched TNTmap Viewer are automatically added to the Main View and Overview panels. If this is the only option checked, the Layers panel will be blank. When the List Servers option is on, TNTserver looks for an xml file that lists servers for the site. No Get Capabilities request is sent unless that option is also on as described above. A Get Capabilities request is also sent if a list is not located. The information about the layers from an individual server are requested when you click on that server. Thus, you do not waste time waiting to receive this information from servers you are not interested in.

The TNTmap Viewer Settings let you choose an approximate window size, which is modified to fit the dimensions of the set of layers selected for viewing. You can also set whether to show/hide the legend and the overview when TNTmap Viewer launches.

