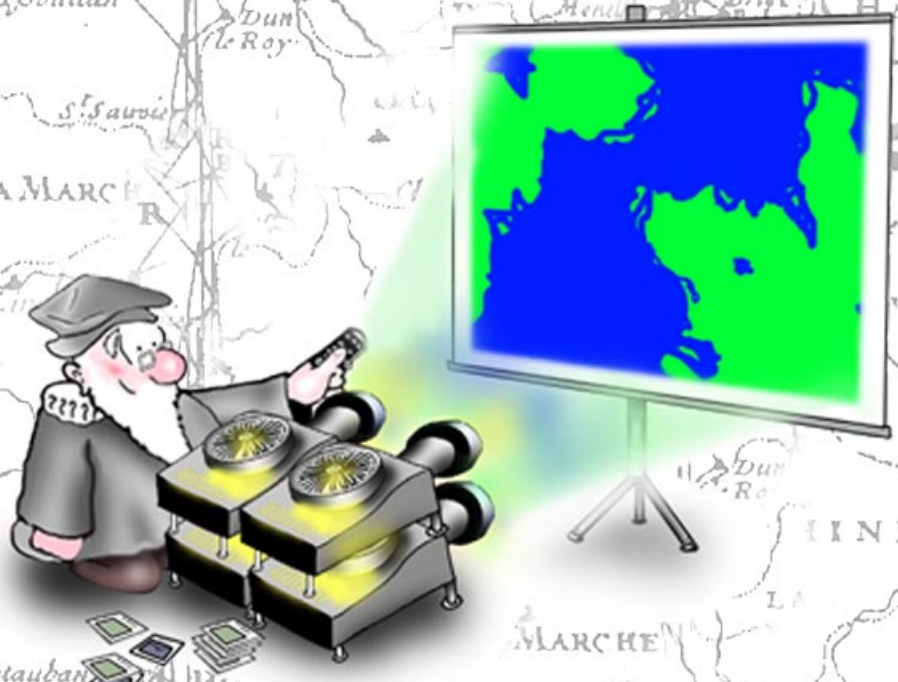
Using TNTatlas® for Windows



with

TNTatlas®

Before Getting Started

TNTatlas® is a free product available from MicroImages for viewing hierarchical atlases prepared in TNTmips® with HyperIndex® Linker or for single layout atlases. There are two versions of TNTatlas: a native Windows product called TNTatlas for Windows (TNTatlas/W for short) and a version that runs with MicroImages X Server (MI/X) called TNTatlas (TNTatlas/X when clarification is needed). Both versions make use of the same atlas data without modification.

Prerequisite Skills Completion of the exercises in this booklet has no prerequisites except some familiarity with the operation of Windows. However, if you want more information about general display processes, object types, and rvc file structure you should consult *Getting Started: Displaying Geospatial Data* and *Getting Started: Navigating*.

Sample Data The exercises in this booklet use sample data distributed with the TNT products. If you do not have access to a TNT products CD, you can download the data from MicroImages' web site. The exercises in this booklet use the Project Files in the TNTATLAS directory of LITEDATA and the TNTatlas file (.atl) also found there. A read-write copy of sample data on your hard drive is not required since atlases can be run with the data on CD-ROM. Making a copy on your hard drive will generally speed access, however. To gain more experience with atlases, visit the Online Atlases portion of MicroImages' web site. The TNTclient software used for viewing these atlases is similar to TNTatlas.

More Documentation This booklet is intended only as an introduction to the features of TNTatlas for Windows. You may also wish to consult the TNTmips reference manual for additional information, or example, for a complete description on use of the tools in the GeoToolbox.

TNTmips and TNTlite® TNTmips comes in two versions: the professional version and the free TNTlite version. If you did not purchase the professional version (which requires a software license key), TNTmips operates in TNTlite mode, which limits the size of your project materials. TNTatlas is also a free product from MicroImages, but the size of objects viewed with TNTatlas is not limited; you can view any information the atlas designer has provided for you.

Merri P. Skrdla, Ph.D., 6 December 2001

It may be difficult to identify the important points in some illustrations without a color copy of this booklet. You can print or read this booklet in color from MicroImages' web site. The web site is also your source of the newest Getting Started booklets on other topics. You can download an installation guide, sample data, and the latest version of TNTlite.

http://www.microimages.com

Welcome to TNTatlas

TNTatlas provides a means for small or widespread distribution of atlases. The recipient of an atlas on CD-ROM has everything required to view the atlas. MicroImages requires no payment for the distribution of data and software in this fashion. Once the viewing software (TNTatlas for Windows) has been installed, it can be used to view any atlas or object in TNTmips' RVC format and supported linked formats, such as shapefiles and TIFF/GeoTIFF. Although TNTmips is required to construct an atlas using HyperIndex Linker, anyone using TNTmips, TNTedit, TNTview, or TNTatlas can access the atlases created (depending on permissions). Any of these products, except TNTatlas, can be used to create a single layout atlas.

One example of widespread distribution of an atlas on CD-ROM is the street atlas of Istanbul (in Turkish) inserted in a popular magazine with a distribution of about 30,000. The atlas was so popular it was also distributed with a second issue of the same magazine. Precision agriculture consulting provides a good example of small atlas distributions in which only a single copy of an atlas may be given out to the individual farmer so that he or she may view all the imagery, vectors, and other data collected for the land they farm. In either case, the recipient of the atlas can be viewing the associated data within minutes of inserting the CD-ROM in their computer.

Four booklets address different aspects of working with atlases including assistance with atlas design (*Introduction to: Designing Electronic Atlases*), atlas assembly (*Getting Started: Constructing a HyperIndex*), the scope of projects that can be undertaken (*A Case Study: MERLIN: Enterprise-wide Geospatial Analysis*), and an introduction to the features of *TNTserver and Clients*. This booklet is intended for people using TNTatlas for Windows who were not involved in the design of the atlas and may be unfamiliar with TNTmips.

STEPS

☑ copy the files in the TNTATLAS data collection to your local drive

The exercise on page 4 discusses installing TNTatlas. The exercises on pages 5–6 describe navigating in a hierarchical atlas. Pages 7–11 present additional exercises on viewing atlas information. Exercises on pages 12–14 provide additional descriptions of the interface. The exercises on pages 15–19 introduce the features of the GeoToolbox.

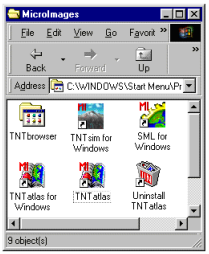
Installing and Launching TNTatlas/W

TNTatlas for Windows can be used by anyone with a computer running Windows 95/98, 2000, NT4, ME, or XP and a CD-ROM drive. You can substitute the Internet and download of the program and data for a CD-ROM drive.

If you have acquired an atlas on CD-ROM, placing the disc in your CD drive may have one of several outcomes. It may launch the installation program. It may launch TNTatlas for Windows and open the atlas on the CD (this feature is not available in TNTatlas for X Windows) or it may launch an Adobe Acrobat or html document with buttons that let you choose between installation, running the atlas (if TNTatlas is already installed), or other functions. If you are installing from a TNT products CD, TNTatlas for Windows is part of the complete installation or it can be installed separately.

Installation is a simple procedure; read the screens that come up, read and accept the license agreement, and click on the appropriate button to advance through the installation. You should not have to reboot your machine for installation to be completed, as you do with many products (some system configurations may require a reboot).

A shortcut to the installed location is created in the MicroImages folder for the Start menu.



During TNTatlas installation, an association is established between the file that specifies the atlas home page, which has a .atl extension, and the program that launches TNTatlas so that double clicking on any .atl file will open TNTatlas with the home page specified by that file. You can also launch TNTatlas by double-clicking on its icon in the installed location or choosing it from the MicroImages group on the Start menu. If launched in this manner, you need to use the File menu to open an atlas (.atl, Open) or an object in RVC or a supported external direct-use format* (Open Object).

You are instructed here to open an atlas that is provided as part of the sample data for TNTlite. You should, of course, also open the atlas that came on your CD if that is how you acquired TNTatlas.

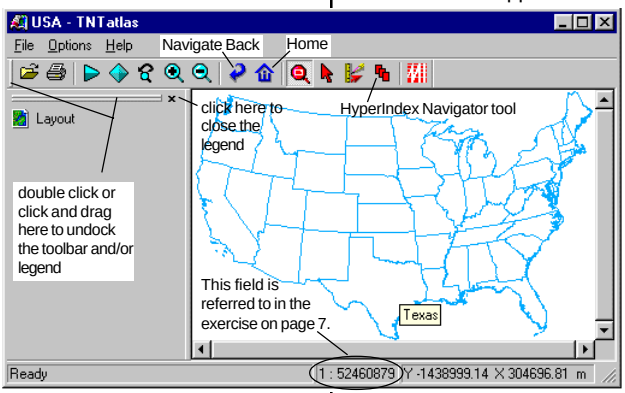
STEPS

- ☑ install TNTatlas from whatever source you acquired it
- ☑ launch TNTatlas
- ☑ choose File / Open from the TNTatlas window and select USA.ATL, which is in the TNTATLAS folder you copied

* Supported external direct-use formats include shapefiles, TIFF/GeoTIFF, MrSid, ECW, and TAB files.

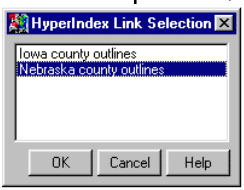
TNTatlas Components

A single window with a docked legend and toolbar opens when you launch TNTatlas from an atl file. You can undock these components to increase the view area for TNTatlas. You can also close the legend, but the legend is necessary if you want to view attributes for layers.



A **HyperIndex stack**, or **atlas**, is a collection of graphically and/or geographically related objects that uses the HyperIndex Navigator for point and click retrieval of objects from the hierarchical links established with HyperIndex Linker. An atlas can also be a single layout that uses map scale controlled visibility to reveal and hide different layers as you zoom in and out. In this latter case, you use the zoom tools, not the HyperIndex Navigator, to discover the breadth of information presented in the atlas.

The area of the parent object that contains a link to the next level in a stack is called an index area. If you click where index areas overlap, the HyperIndex Link Selection window opens to let you choose which link you want. This window also opens if there are multiple links to a single index area. The index areas for the United States vector used in this example are the bounding boxes for each state because the links were created automatically using georeference information rather than individually for each polygon. So, there are many places where index areas overlap.



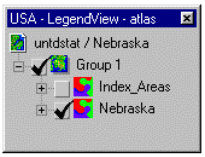
STEPS

- ☑ note that when you pause the cursor over a state, a DataTip with the state name appears
- ☑ double click on the docking bar for the Legend to undock it
- ☑ choose the HyperIndex Navigator tool, then click in the middle of Texas 
- ☑ click on the Navigate Back button 
- ☑ click on the border between Nebraska and Iowa, and choose Nebraska county outlines from the list

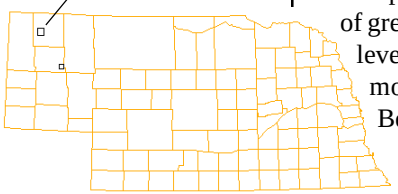
(Do the exercises through p. 10 without exiting.)

Further Navigating

STEPS

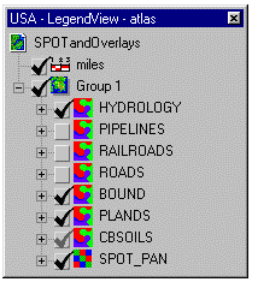


- ☑ in the Legend, click in the box to the left of the INDEX_AREAS layer, and notice the rectangles that appear in two northwestern counties
- ☑ click on the index area in Dawes County



- ☑ choose Options / Legend Control / Standard
- ☑ click on the + to the left of Group 1 in the LegendView

- ☑ notice the checks, absence of checks, and dimmed checks for the visibility of layers in Group 1



Vocabulary: The **Home Level** is the first level of a stack, which is often a graphic to introduce the purpose of the atlas. You can begin where you want in a stack with TNTatlas by choosing Open Object rather than Open, which makes the Home Level the object displayed when you begin navigating.

Many objects can be linked to the same parent object. In the atlas used for this exercise, the county maps for each of the states have been linked to the parent object (contiguous states of the USA). When you click on a state, its county map is displayed.

The atlas used for these exercises has three levels: the USA outline map (Home level), the county outline maps for each state (2nd level), and two areas of greater detail linked to the Nebraska map (3rd level). Most atlases you encounter will have more uniform data coverage at all levels. Because the links to the third level are so small, a vector overlay that indicates the location of these index areas is included with the county outlines.

Clicking on the Home button always takes you to the level of the atlas you started at. The Navigate Back button takes you one level up in the hierarchy of the atlas. In the exercise on page 5, you had navigated down only one level, so the Navigate Back and Home buttons take you to the same object. In this exercise, you navigate to the third level of the atlas, so Navigate Back takes you to the object on the second level that you used to navigate down.

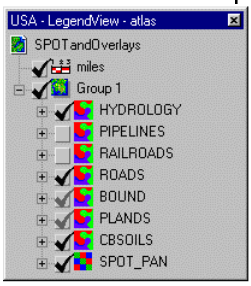
Two conditions may cause a layer to not be currently visible: the visibility box is not checked and/or the layer has map scale controlled visibility and the current scale is outside the visible range. You can see if there are any hidden layers by expanding the group so the layers are listed. The box to the left of the layer name will have a check mark if the layer is selected for viewing. If the check mark is dimmed, the layer is not visible at the current map scale.

Layer Visibility

Many atlases, particularly single layout atlases, have so many layers that showing them all at once is not practical. The atlas designer has to make the decision about which layers to make visible initially. If you are interested in any of the other layers, you can turn them on. When a layer is "unhidden," it is drawn on top of all other layers. It is drawn in its proper position in the layer order the next time the view is redrawn.

Map scale controlled visibility turns layers on and off as you zoom in and out. Low resolution images can be replaced by higher resolution images as you zoom in or satellite imagery may replace a scanned map. Vector objects can show different levels of detail. With map scale controlled visibility, a layer can always be on, it can either appear or disappear when the specified scale is reached, or it can be visible only within a designated scale range. You cannot change the map scale at which layers are visible in TNTatlas. Assigning map scale controlled visibility is up to the atlas designer.

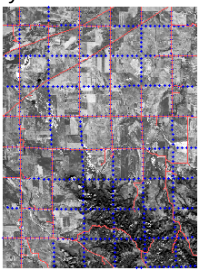
To see the soil map in this exercise, you have to zoom in to 1:42,000 or greater*. The current map scale of the view is reported at the bottom of the TNTatlas window. You can right-click on this field and elect to zoom to another map scale that you specify.



You can also just zoom in and out to observe changes in the layers displayed. The Zoom In and Zoom Out icons on the toolbar zoom around the center of the view. The plus (+) and minus (-) keys zoom around the cursor position. Thus, the plus key can be used to zoom up on a particular feature of interest.

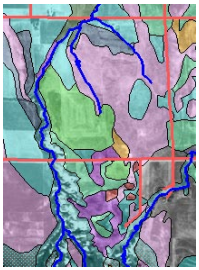
STEPS

☑ click on the visibility box for ROADS and note the presence of the new layer



☑ right-click on the map scale field and choose Zoom to Scale

☑ enter 42000 and click [OK]



☑ notice the changes in the LegendView

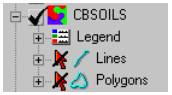
☑ repeat steps 2 and 3 except enter 55000 for the map scale

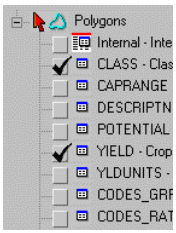
*A map scale of 1:24,000 is greater than a map scale of 1:42,000. Larger scale means that the view is closer to actual ground dimensions, so the number to the right of the colon in the map scale gets smaller as the scale gets larger.

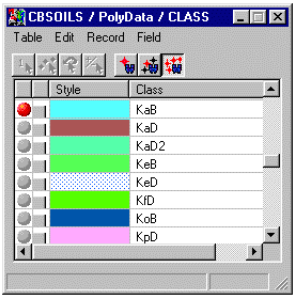
Viewing Database Information

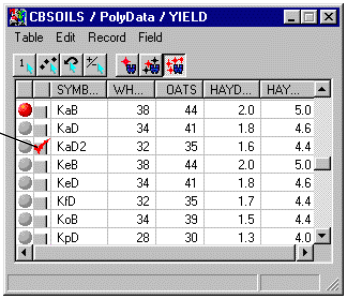
STEPS

- ☑ return to a zoom where the soil polygons are visible
- ☑ click on the + for the CBSOILS layer in LegendView, then on the + for the Polygon elements
- ☑ click in the boxes to the left of the CLASS and YIELD tables
- ☑ click on the Select icon on the TNTatlas toolbar 
- ☑ click on a number of soil polygons in the view window, noting the records selected
- ☑ click on the Redraw icon on the TNTatlas toolbar and note that transparency is restored to polygons that had been selected 
- ☑ click on a Select Record button in the YIELD table then on the Exclusive button in the YIELD table's toolbar (note the view will pan if the active element is not visible) 









TNTatlas provides the same access to database information available in TNTmips. You can view attributes of selected elements and use attributes to select elements. You can use attributes to select elements while the HyperIndex Navigator tool is active, but you must switch to the Select tool or the GeoToolbox to select elements with the mouse.

The Select tool on the view window tool bar lets you select individual elements. In addition to individual element selection, the GeoToolbox lets you draw geometric and irregular shapes for use in selection. You can make measurements using these same shapes or create a sketch layer or region from them (these features are described in a later exercise).

When you open a database table, selection for that element type is automatically turned on (note arrow in polygon row has a slash in the top, but not the next, illustration). Unless you are already familiar with the data in the atlas you are viewing, finding the information you want to see is an exploration process. You show details on groups and layers, then reveal the list of tables and decide which to open.

Polygons with transparent fills are not returned to their original state when unhighlighted; you need to redraw to restore their initial appearance. The style field in the CLASS table shows transparent colors as the corresponding solid color.

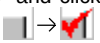
More on Database Viewing

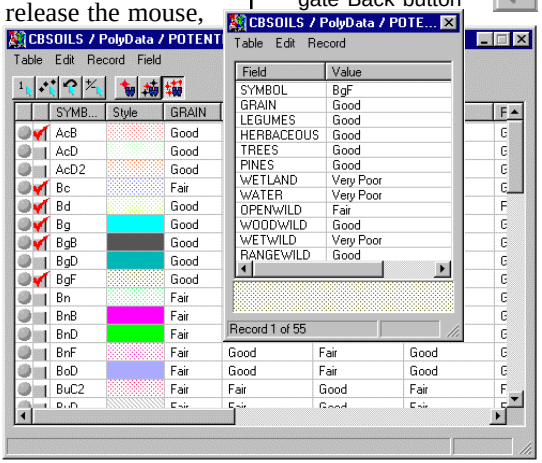
In the previous exercise, you looked at the database tables in what is referred to as *tabular view*, which means that multiple records are shown at the same time. Additional features of tabular view are that you can choose between three viewing modes (all records or only records attached to the active element or all selected elements), you can select elements attached to one or more designated records, and statistics and substatistics may be included. You can also view one record at a time, which is referred to as *single record view*. Single record view may be the preferred viewing mode for data entry or to avoid scrolling when a record has many fields.

When a vector object has its drawing style controlled by attribute, you may want to see a style sample for each attribute value. Style samples can be shown in single record or tabular view. In single record view, you set whether to show the style sample and its position from the Table menu. In tabular view, the option to show style fields is on the Field menu, and the field is placed between the Select Record check boxes and the first field in the table by default. As with other fields, you can change the position of the style field in tabular view by clicking on the field name and dragging until the field name is in the desired position. When you release the mouse, the column is repositioned.

You can designate multiple records for use in element selection by combining clicking and shift-clicking in the Select Record box. Each click lets you add (or turn off) a record to those selected. When you click and then shift-click on another record, all records in between are also selected.

STEPS

- ☑ open the POTENTIAL table from the CBSOILS polygon database
- ☑ choose Field / Show Style Sample
- ☑ click in the middle of the Style field heading and drag it to the right, releasing the mouse when the heading is to the right of the Symbol field
- ☑ place the cursor over the divider between the headings for the GRAINS and LEGUMES fields, and drag to the left, closing up the unused space
- ☑ click in the 1st and 4th Select Record boxes, then hold down <shift> and click in the 7th box, release <shift> and click in the 9th box 
- ☑ click on the Exclusive button 
- ☑ choose Table / Switch to Single Record View
- ☑ click on the Navigate Back button 

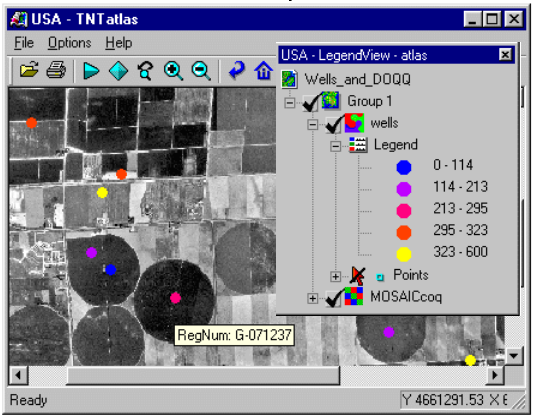


Web Links By Attribute

STEPS

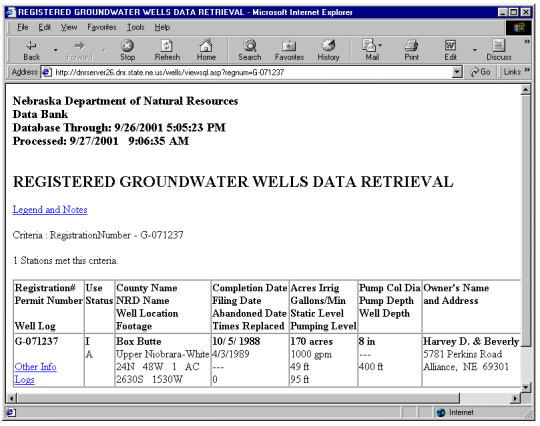
- ☑ click on the Hyper-Index Navigator tool 
- ☑ click on the index area in Box Butte County (the one not used on p. 6)
- ☑ click on the + for the WELLS vector legend

Point-and-click object retrieval in TNTatlas replaces the current view window contents with the object retrieved. Any object type, including complex layouts that include many different objects and scale bars, legends, or other enhancements, can be retrieved. When the link is to an external file type or web site, a separate window opens for that application, and the current view remains unchanged.



The layout for this exercise shows a resampled mosaic of Digital Ortho Quarter Quads (DOQQs) for part of Box Butte County as the base for a sample of registered ground water wells in the area. The well points are theme mapped by pumping capacity. Each of the points has a link to the data maintained by the Nebraska Department of Natural Resources for the well represented by the point. Not all the points in the vector object have their associated well log information, which can be obtained from the web site along with ownership and other information that is not associated with any of the points in the vector object. A computed field defines the link by combining the constant part of the URL with the registration number for the selected well.

- ☑ make sure you are configured to connect to the Internet although you need not have launched your browser
- ☑ click on one of the points (the first retrieval will be slow if your browser is not already running)
- ☑ note the DataTip matches the registration number of the well data retrieved
- ☑ click on other points

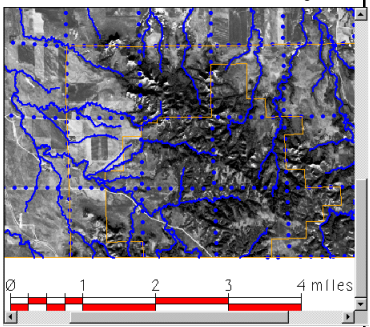


Viewing Single Layout Atlases

The HyperIndex Navigator tool has no function with single layout atlases. You reveal the depths of the atlas with the zoom and pan tools. The hot keys presented in a later exercise are also useful for zooming. Single layout atlases rarely have all the layers shown at one time.

The Zoom Box is used to select an area you want to zoom up on and is proportional to your view area. The Zoom Box remains on the original image where it was drawn, rather than zooming immediately, so that its position and size can be adjusted. Zooming is initiated when you click the right mouse button.

Most single layout atlases are far more complex than the layout used in this exercise, which you should recognize as part of the larger USA atlas. This layout, however, will serve to demonstrate approaches to use with single layout atlases. If you see a layer listed that you want to view but you don't think it is drawn, try zooming to the layer extents. If the layer has map scale controlled visibility, it is likely visible at this scale. Remember that the check mark is present in the visibility box but dimmed if the layer is not visible at the current scale. If you zoom to the layer extents and it is still dimmed, you most likely need to zoom in further. If the layer is a mosaic, for example all the TIGER data in the state, it will not likely be visible when you zoom to its extents. Finding a layer of interest may take some thought.



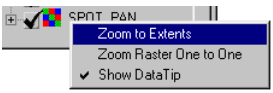
STEPS

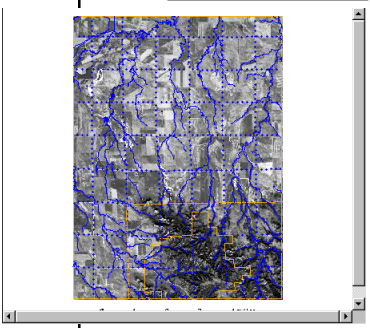
- ☑ choose File / Open Object and select SPOTAND OVERLAYS from the CB_SPOT Project File
- ☑ click on the Zoom Box tool, position the cursor at the upper left of the raster, draw out a box that encompasses about two grid squares in each direction, then right-click

- ☑ click on the Full View icon button

- ☑ right-click on the legend group and choose Zoom to Extents

- ☑ click on the + to the left of Group 1 in LegendView
- ☑ right-click on the SPOT_PAN layer and choose Zoom to Extents





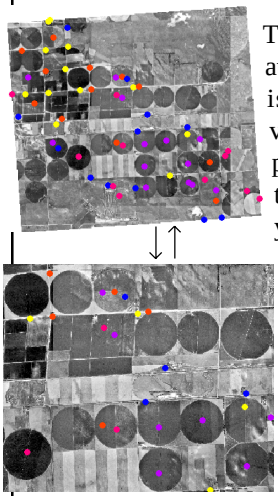
Additional Interface Details

STEPS

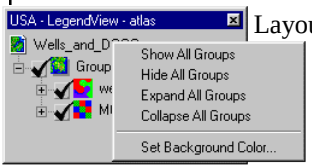
- ☑ choose File / Open Object and select WELLS_AND_DOQQ from the WELLS Project File
- ☑ zoom in, then click on Previous View 
- ☑ click on Previous View again 
- ☑ right-click on the WELLS_AND_DOQQ layout in the LegendView and note the choices
- ☑ right-click on Group 1 and try the different options
- ☑ right-click on the WELLS layer and note the additional choices available when compared to the raster layer in the previous exercise
- ☑ right-click on the MOSAICCOQ layer and note how the choices compare with those on the menu for the raster layer in the previous exercise

Vocabulary: Think of layouts, groups, and layers in a hierarchical sense. A **layer** is a raster, vector, CAD, or TIN object included for display. A **group** is made up of one or more layers. When more than one layer is in a group, they are overlaid using georeference information. A **layout** includes all the groups and layers selected for display and their relative positions. Groups can be positioned manually or using georeference information. Legends, text, and scalebars are always separate groups.

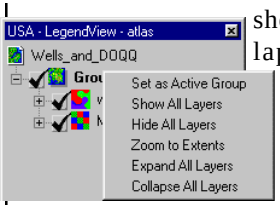
The preceding exercises have acquainted you with a number of interface components. Additional features not common to most Windows programs are described and demonstrated here.

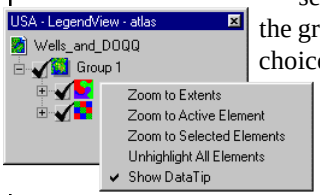


The print functions in TNTatlas print a snapshot of what is currently visible in the view that is sized to fill a page. The Previous View button takes you back to what you were viewing before your last zooming or panning action provided it is on the same level in the atlas. If your previous action was to navigate up or down, the Previous View button has no effect. Clicking the Previous View button repeatedly will toggle between the two views.



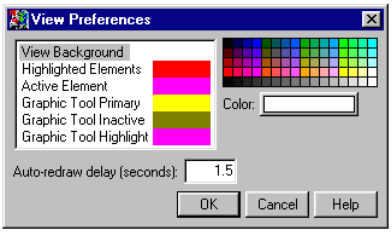
Layouts, groups, and layers all have right mouse button menus in the LegendView. The layout and group menus offer show/hide and expand/collapse choices. You can change the View background color from the layout menu. You can zoom to the group extents and set the active group from the group menu. Layer menu choices depend on the layer type and its features. For example, if DataTips aren't set up for a layer, the Show DataTip choice will not appear on the menu.





View Preferences and Other Features

View Preferences let you set the background color for your view window, the highlight colors for active and selected elements, various colors relating to tools, and the auto-redraw delay. When choosing colors, you can select directly from the palette in the View Preferences window, which provides 64 colors and 16 shades of gray, or click on the Color button, which opens the standard Windows Color window. The palette in this window provides 46 colors and two shades of gray to choose from along with a Define Custom Colors button that lets you choose your color from a color spectrum or define it numerically.



There are three colors that apply to the graphic tools, which include the Zoom Box and all tools available from the GeoToolbox. The primary color is the color in which the tool is shown while active. The inactive color is used for a multi-part tool, such as the multi-point tool, to indicate the elements that aren't currently active. The graphic tool highlight color has not been implemented. The auto-redraw delay is the length of time between when you make a change in layer visibility and when the view is automatically redrawn. Having a delay allows you to make multiple changes before the redraw occurs.

The Print option available from the File menu and toolbar is snapshot printing, which prints the contents of the View window at the resolution that results when it is sized to fit the page. Thus, the larger your view, the higher the resolution of your print. Snapshot printing is available in the other TNT products, but in other products you can also print the objects in a layout directly, rather than from the screen, to a specified map scale at the highest resolution of your printer.

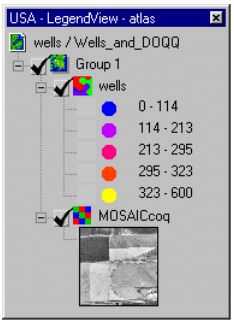
STEPS

- ☑ choose File / Open Object and select SPOTAND OVERLAYS from the CB_SPOT Project File
- ☑ choose Options / Preferences
- ☑ with View Background highlighted, choose a different color from the palette, change the auto-redraw delay to 0.5 seconds, and click [OK]
- ☑ turn on the PIPELINES, RAILROADS, and ROADS layers (note that you cannot turn them all on without an intermediate redraw)
- ☑ choose Options / Preferences, return the auto-redraw delay to 1.5, choose another background color if desired, and click [OK]
- ☑ hide the three layers you turned on in step 4, then turn them on again (you should not see the redraw progress before all are turned on if you are reasonably quick)
- ☑ choose File / Print or click on the Print icon

LegendView Modes

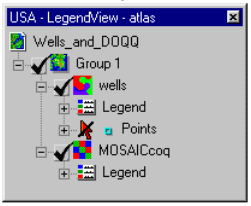
STEPS

☑ with the layout open from the previous exercise, choose Options / Legend Control / Legend Only, and note the legend elements for the two layers



☑ choose Options / Legend Control / Standard

☑ click on the + to the left of the WELLS layer and the MOSAICCOQ layer

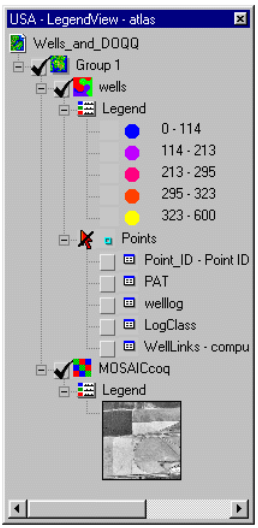


☑ click on the + to the left of each element type and legend (note there is only a legend for the raster layer because raster databases are not yet supported in TNTatlas for Windows)

There are two different LegendView display modes: Legend Only and Standard (you can also opt to have no LegendView). The Legend Only option provides drawing styles (vector, CAD, or TIN), area samples (raster), or color scale or sample legends (raster) for each layer. The Standard option adds element selection control and access to the database tables for vector, CAD, and TIN objects to the information presented for the Legend Only option.

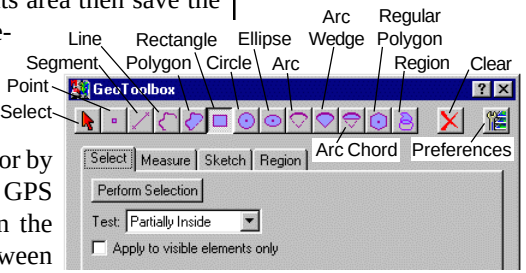
Whether groups are initially expanded to list all layers is determined by the atlas designer and how the layout was last saved. The Legend Only option defaults to showing the legend when the group is expanded. Getting at the legend and database information is a two step expansion with Standard as the LegendView choice. You have to expand the layers to see details relevant to element types and databases. This first expansion shows whether there is a legend and lists the element types drawn. The legend and each of the element types for a layer can be expanded and collapsed separately.

The atlas designer determines if a legend is available for each object in a layout. The designer may also choose to have the legend for a single layer represent all the layers in a group. Remember you have to have details shown (Details Only or Mixed) if you want to view attributes associated with elements in the atlas.



The GeoToolbox

The GeoToolbox provides an integrated set of tools that let you switch between selecting, measuring, sketching, and generating regions using the mouse or a GPS signal or log* for input. You can, for example, outline a field to find its area then save the field boundary as a sketch element and/or as a region. This outline can be created by drawing over an orthophoto or similar image on the screen or by driving around the field with a GPS device. The tabbed panels in the GeoToolbox let you switch between controls for and viewing different types of information associated with the current tool.

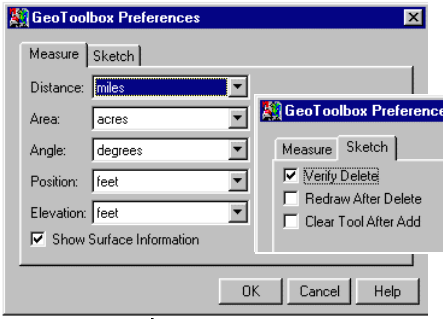


The GeoToolbox provides freeform drawing and geometric shape tools. Most of the tools have associated context sensitive cursors, which means the cursor changes shape as its function with the tool changes. For example with the rectangle, the cursor is the left arrow when clicking and dragging will start a new rectangle, double arrows when the mouse will resize an already drawn rectangle, and the hand when clicking and dragging will reposition the rectangle.

The rectangle, ellipse, and regular polygon shapes can be rotated to align with features of interest. If you press <shift> when the corner resize cursor is active for a rectangle, it will pivot around the opposite corner; shift with the hand cursor pops it back upright after rotation. The circle, ellipse, and regular polygon tools have a line from the center to the right edge of the shape (heading 90°). When the cursor is the double arrow over this line, dragging will rotate the tool. You change the number of sides in the regular polygon using the Page Up and Page Down keys.

STEPS

- ☑ with the layout open from the previous exercise, click on the GeoToolbox icon 
- ☑ click on the Preferences icon 
- ☑ set the units to those with which you are most comfortable
- ☑ note the options on the Sketch tab (Preferences window), then click [OK]



* GPS support may not be completed for V6.60.

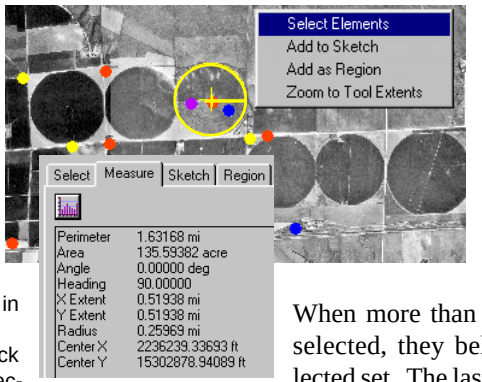
GeoToolbox: Measuring and Selecting

STEPS

- ☑ with the layout open from the previous exercise, zoom in from full view on the center pivots in the upper center
- ☑ click on the Circle tool, then click in the middle of a round field that contains points (wells), and drag the cursor to the edge of the field
- ☑ refine the size (double-arrow cursor near edge) and position (hand cursor) of the circle so it matches the field
- ☑ click on the Measure tab and note the measurements provided, also note the colors of the three points inside the circle
- ☑ open the PAT table in the WELLS points database, and click on the View All Records icon (database window)
- ☑ right click over the image and choose Select Elements; note the color of the points has changed and the database table has scrolled to show a selected record
- ☑ click on the View Active Element Records icon
- ☑ click on View Selected Element Records

The drawing tools persist after an area is measured, added to a sketch, or added as a region, even after switching tools. Thus, if you add a circle, then a rectangle, then choose to use the circle tool again, you will find the tool as you last left it if that area is still within the view. You can move and resize this circle or draw a new circle. Polygons and polylines cannot be moved in this fashion; you must use the Clear button if you want to start drawing a new one.

Measurements are always available for the active tool. You can use the selection panel instead of the right mouse button to select elements, then click on the Measure tab and view the information about the area used for selection. You can also add the element to a sketch or make it a region and then view its measurements.



When more than one element is selected, they belong to the selected set. The last element added to this set has the distinction of being designated the active element. This element is highlighted in magenta (by default, other members of the set are highlighted in red) and is the element whose associated database information is shown when in single record view. There are also database viewing and record attachment choices that make use of the distinction between active and selected elements. When you are viewing all records in tabular view, selecting elements will scroll the tabular view so that at least one record attached to one of the elements in the selected set is visible

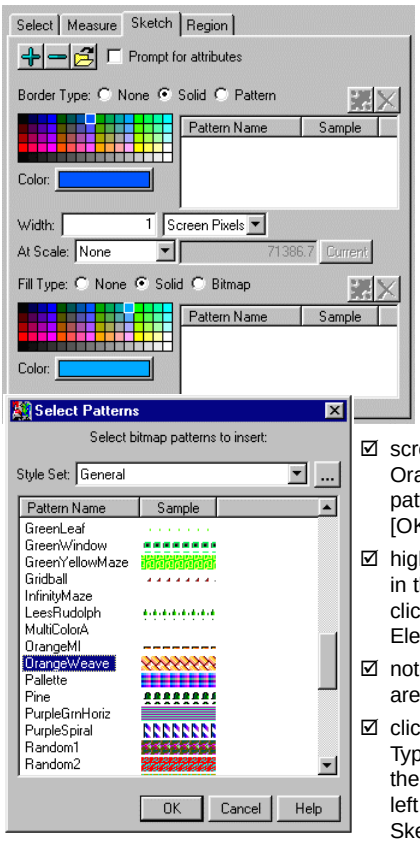
GeoToolbox: Sketching

A sketch is a CAD object that is georeferenced to the active group. If there is more than one group in the layout, you need to make sure the group you're drawing over is the active group (shown in bold, set by right mouse button menu on group name).

When you start sketching for the first time in a TNTatlas session, you are asked to select a sketch object. You can choose to open an existing sketch object or create a new one. All sketch elements are added to this sketch until another is chosen.

The appearance of the sketch panel depends on the tool selected, which determines whether the drawing style is being assigned for points, lines, or polygons. In addition to solid color or outline rendering of sketch elements, you can choose from symbols, line patterns, and bitmap fill patterns.

If you add an element to a sketch and then decide you don't want that element, you can remove the last element added (full element editing capability is not available in TNTatlas as it is in TNTedit and TNTmips). You can continue removing the last added element remaining.



STEPS

- ☑ click on the Sketch tab
- ☑ in response to the prompt *Select sketch (CAD) object to create or open*, navigate to the folder that contains your sample data, click on New File in the list, and type in the file name, SKETCHING
- ☑ double click on the SKETCHING file, click on New Object, type in the name SKETCH, press <enter>, then click OK
- ☑ select a border and a fill color making sure that the type is set to solid for both
- ☑ click on the Add Sketch Element icon 
- ☑ move the circle to the center pivot to the left
- ☑ choose Bitmap for the Fill Type, then click on the Insert Patterns icon 
- ☑ scroll down and select OrangeWeave from the patterns listed, then click [OK]
- ☑ highlight OrangeWeave in the pattern list, then click on Add Sketch Element 
- ☑ note the transparent areas of the pattern
- ☑ click on Solid for the Fill Type, move the circle to the center pivot to the left, click on Add Sketch Element 

GeoToolbox: Sketching with Attributes

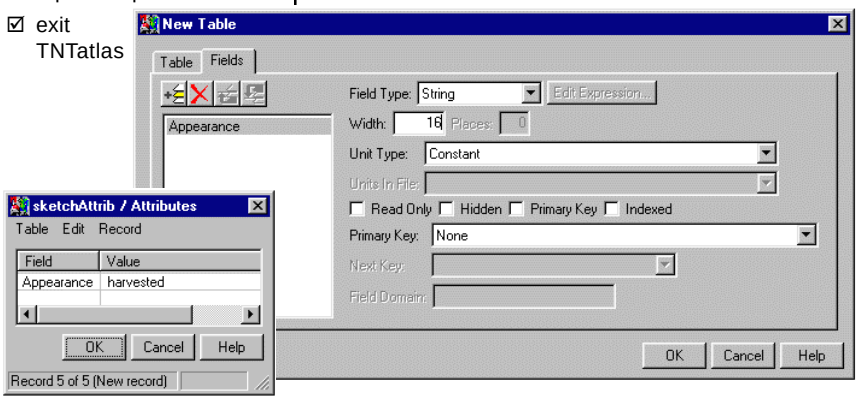
STEPS

- ☑ click on the Open Sketch icon 
- ☑ select New Object and type in a name
- ☑ click on the *Prompt for attributes* check box
- ☑ in the New Table window that opens, name the table ATTRIBUTES and type in a description
- ☑ click on the Fields tab, then on the Add Field button 
- ☑ double-click on the Field entry in the list below the toolbar, and change the text to APPEARANCE
- ☑ leave the field type as String, change the width to 16, and click OK
- ☑ use the circle, rectangle, arc wedge, or polygon tool to draw the boundary of a field, right-click and choose add to sketch
- ☑ double-click in the value field, and enter some relevant characteristic, then click OK
- ☑ repeat steps 8 and 9
- ☑ exit TNTatlas

Sketch elements can have assigned attributes, which lets you identify sketch elements as you add them. Thus, you can take this free product to the field and make ground truth determinations or other interpretations directly over base imagery. This information can then be used in the professional TNT products.

Before assigning attributes to elements in a new sketch object, you need to create a database table. This process is straightforward because the New Table window opens when you turn on the *Prompt for attributes* toggle. Simply type in the name and description, then click on the Fields tab (the attachment type selected by default is recommended for sketches). When you click on the Add Field icon, an entry is added to the list. Double-click on this entry to get the text cursor so you can change the name from the default.

Often when sketching, you are identifying only one parameter of an element, but you can add as many fields as needed. You need to specify the type and width for each field. Field type choices are string, Unicode string, integer, floating point, logical, date, memo, and computed and string expression fields. You can also set unit information and designate primary key information if applicable.



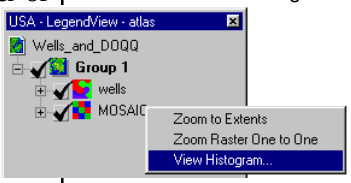
GeoToolbox: Updating Histograms

TNTatlas can show the histogram (a graphic representation of the distribution of cell values) and statistics for any raster viewed. These statistics include the minimum and maximum values, the mean, median, mode and number of cells with that value, standard deviation, and cell count. The bin interval is also reported. (The bin interval is the number of cell values grouped together for counting purposes in the histogram. For rasters with a cell value range less than 4096, this value will be 1.)

You may often be interested in the histogram of a smaller, defined local area of the raster in addition to the histogram of the raster as a whole. The GeoToolbox provides the ability to determine a local histogram for the region enclosed by any of the area tools including selected regions. You must be viewing the full histogram for a particular raster in order to use this feature because the updated histogram results replace the initial histogram in the Raster Histogram window. The statistics are also updated to apply only to those cells within the area drawn or selected for the histogram update.

STEPS

- ☑ choose File / Open Object and select WELLS_AND_DOQQ from the WELLS Project File
- ☑ right-click on the MOSAICCOQ layer and choose View Histogram

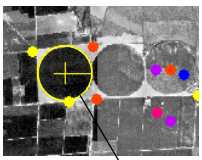


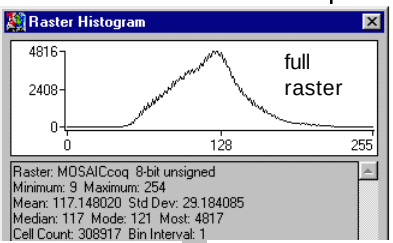
- ☑ click on the GeoToolbox icon, then on the Circle, and outline the uniformly dark center pivot in the upper left of the image

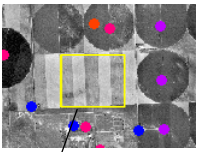
- ☑ click on the Measure tab, then on the Update Histograms icon

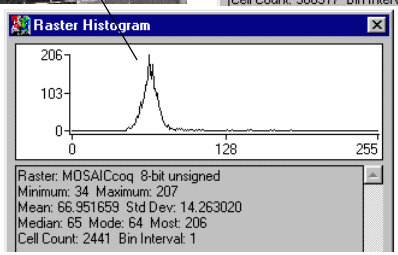
- ☑ click on the rectangle and draw around four or five of the alternating light/dark fields near the center of the image

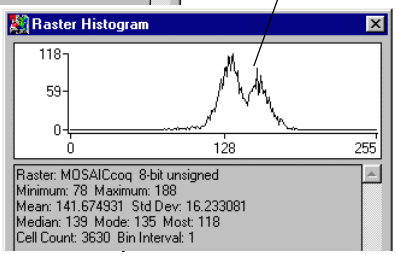
- ☑ click on Update Histogram











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Index

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