



Constructing an Electronic Atlas



with
TNTmips®

Before Getting Started

The HyperIndex® Linker tool is included with all current TNTmips® systems to provide all the functions you need to create electronic atlases, or HyperIndex stacks, for use with TNTmips, TNTedit™, TNTview®, TNTatlas®, and TNTserver™. You can publish and distribute the stacks you create for use with TNTatlas on any computer that has a CD-ROM drive. Or you can provide access to the HyperIndex stacks over an intranet or the Internet using TNTserver.

Prerequisite Skills This booklet assumes you have completed the exercises in the *Displaying Geospatial Data* and *Getting Navigating* tutorials. Those exercises introduce essential skills and basic techniques that are not covered again here. Please consult these booklets for any review you need.

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 first exercises in this booklet use the HELLO and INDEX Project Files in the HYPER directory of LITEDATA. The objects in the UNTDSTAT Project File as well as the METADATA.TXT file in the HYPER directory are also used. The CB_DLG Project File in the CB_DATA data collection of the LITEDATA directory and the CB_SOILS and CB_SPOT Project Files in the CB_DATA data collection of the PRODATA directory are also used. Make a read-write copy of this sample data on your hard drive so HyperIndex links can be saved with these objects.

More Documentation This booklet is intended only as an introduction to techniques for constructing a HyperIndex in TNTmips. You may also wish to consult the TNTmips reference manual for additional information.

TNTmips and TNTlite® TNTmips comes in two versions: the professional version and the free TNTlite version. HyperIndex Linker is available only to customers using the professional version of TNTmips. 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. You can use the HyperIndex Navigator in TNTlite to move through a previously constructed stack if the objects are lite size, but you cannot use the HyperIndex Linker tool to create a new stack or edit an existing stack. Many of the objects used in this booklet are not lite sized.

Merri P. Skrdla, Ph.D., 28 December 2001

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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 Constructing Atlases

HyperIndex Linker is an authoring tool used in conjunction with TNTmips to organize related geospatial data into a HyperIndex stack. HyperIndex Navigator, which is included with all TNT products, uses point and click navigation to move you through the stacks created with HyperIndex Linker. Although TNTmips is required for the exercises in which HyperIndex Linker is used, the exercises that use the HyperIndex Navigator to access pieces from previously created atlases, can be done by anyone using TNTmips, TNTedit, TNTview, or TNTatlas.

The terms *atlas* and *stack* are used interchangeably throughout this booklet to refer to the products created with HyperIndex Linker. Neither term is entirely adequate because the connotation of atlas is geographic and omits other applications, such as electronic museums or parts catalogs. The term stack is inadequate because it has a linear connotation and, as you will see, stacks are not limited to simple linear or treelike structures, and can even be a single, complex layout. The content and structure of a HyperIndex stack can be whatever is necessary to deliver the information you want using whatever associations you think will make the information most accessible for the intended audience.

HyperIndex stacks can be created and used on your own computer or they can be organized for publishing on CD-ROM. You can also design your stack for use over an intranet or the Internet using TNTserver and its associated Java and HTML clients to provide access to the materials.

Five companion booklets assist with atlas design (*Introduction to: Designing Electronic Atlases*), acquaint you with the scope of projects that can be undertaken (*A Case Study: MERLIN: Enterprise-wide Geospatial Analysis*), introduce you to the features of *TNTserver and Clients*, and provide instructions for TNTatlas (*Using TNTatlas for X Windows* and *Using TNTatlas for Windows*).



STEPS

- launch TNT
- copy the files in the HYPER data collection and the other files referenced on page 2 to your local drive

The exercises on pages 4–6 provide material to consider before authoring a stack. The exercises on pages 7 and 8 familiarize you with the graphic tools used to define areas active for point-and-click navigation. The exercises on pages 9–15 concern cosmetic issues as well as other specific linking methods including automated linking and linking to vector elements, and layouts. Pages 16–20 discuss hidden layers, editing links, single layout atlases, metadata, and linking issues. Pages 21–24 describe linking to external files and URLs by element or by attribute and previously indexed objects in a stack. Pages 25–28 introduce the TNTatlas Assembly Wizard. The remaining exercises concern updating stacks and using GPS with TNT-atlas.

Before Construction Begins

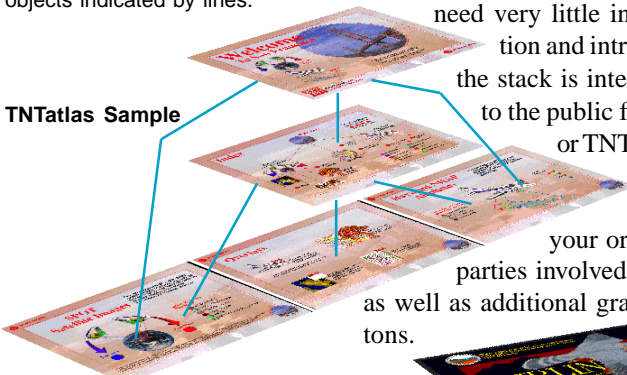
Vocabulary: A **HyperIndex stack** is a collection of graphically and geographically related objects that use the HyperIndex Navigator (in TNTmips, TNTview, TNTAtlas, and TNTedit) or Navigation tool (in TNTclient, TNTbrowser, and TNTAtlas for Windows) for point and click retrieval of objects using the links established with HyperIndex Linker.

The upper levels of two different stacks are illustrated here with the links between objects indicated by lines.

You don't need to have your entire atlas planned out, but you should have a good idea of what you will include and how it will be organized before you begin. You can, of course, make changes after an atlas is started, but if you haven't planned well, you may find artwork being redone or various other complications that increase the time and cost required for what could have been a very simple project.

The nature of the information you want to convey, your target audience, and whether the stack is intended for use in TNTmips and TNTview or for use with TNTAtlas or TNTserver should also be considered in the design phase. If you are creating a stack comprised mostly of georeferenced imagery for professionals running TNTmips and TNTview, you may need very little in the way of annotation and introductory material. If

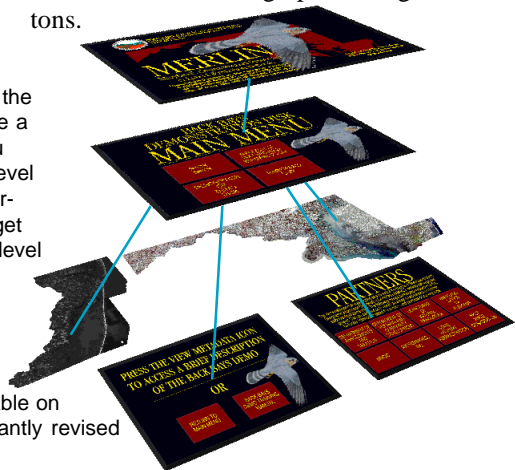
TNTAtlas Sample



the stack is intended for distribution to the public for use with TNTAtlas or TNTserver, you may want to prepare information that describes your organization and other parties involved in atlas preparation, as well as additional graphic navigation buttons.

Stack design can strictly maintain the level concept, as at the right where a click in the View window takes you down one level each time, or the level concept may be more loosely interpreted, as above where you can get to some of the objects in the third level from the first level.

The original design of **Maryland's Coastal Bays atlas**, initially available on CD-ROM, has since been significantly revised (see www.mdmerlin.net).



Consider LegendView and DataTips

You have full control over how information is presented to the viewer of your atlas, but you may overlook some of the control features available because you don't routinely use them. Someone viewing an atlas can turn on LegendView whether or not you had this feature turned on when creating a stack (and it is the default display with TNT-atlas and TNTserver). The Display process makes a "best guess" for legend samples based on the object type and drawing style, but some other option may produce a more appealing result. A raster area sample, for example, should be either representative or identifiable. If you can't find such an area, set the legend option to none. You should be sure to turn LegendView on and navigate through your atlas to see what comes up, and decide if you can improve it by using some other option.

Your DataTip setup is another feature that's easy to overlook but also important in helping the viewer get the most out of your atlas. (When using TNTserver this same information appears in the InfoTips panel.) You can select any field to provide the DataTip. You can also adjust units.

The standard attributes table is the default choice for DataTips. Consider whether other information present in the database may be of more use to the viewer. You



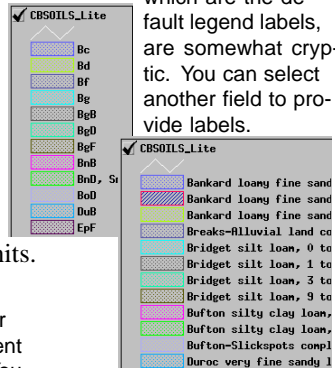
may also need to adjust units; square kilometers or square miles would be a better choice than square meters for state area.



The lower left area sample is a better legend choice than a center sample for this raster graphic.



Sometimes the attribute values used for styling, which are the default legend labels, are somewhat cryptic. You can select another field to provide labels.



Providing a Welcome and an Index

Note: if you make an atlas for distribution or if your atlas will reside on a computer with other atlases, it is important that all associated files be contained in a single folder, which can have an internal, nested folder structure. The folder and main level file **names should suggest the atlas content.** Having a number of atlases in multiple unnested folders that all have files called StartHere is a problem.

Vocabulary: The Home Level is the first level of a stack. In a published atlas using TNTAtlas or TNT-server, the Home Level is the Welcome screen. You can begin where you want when viewing a stack in TNTmips or TNTAtlas, which makes the Home Level the object displayed when you begin navigating. In TNT-client and TNTAtlas for Windows, the Home icon is on the toolbar rather than in a separate navigator window.

The complexity of your HyperIndex stack and its intended audience will determine whether you need both welcome and index graphics, whether these can be combined, or whether they're needed at all. The sophistication of your audience and the structure of your stack determine if you should provide a graphic means back to these or other pages from subsequent levels of the stack (you can always get back to the Home level using the Home button).

Take the example of a digital museum in which the Home level is an exterior photograph of the museum with annotations that provide its name and location and identify the organization that designed the stack. The next level is a floor plan of the museum that shows the various wings. A click here takes you to an enlarged view of the selected wing annotated with finer detail. There might be one more organizational level before getting to photographs of individual pieces in the collection. Many steps may be required to get from pieces in one collection to those in another if you rely only on the buttons in the Navigator window. You can incorporate a single graphic in multiple layouts that provides direct links to some other level of the stack, such as the index.



These are the Home (welcome) and index levels for the TNTAtlas sample shown on page 4. One of the layouts from the third level of the stack is shown at the far right.

This graphic provides a direct link to the Index page. It appears on all the graphical levels below the level of the Index in this atlas.

Clicking on the Home Level button in the Navigator window always takes you to the level you started at.

Either the graphic indicated (above, right) or the Home Level button in the Navigator window will get you back to the Home Level in this stack.

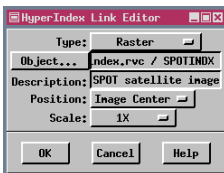
Beginning Construction

Point-and-click object retrieval 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. Because saved layouts can be a part of a HyperIndex stack, you need to be in display or hardcopy layout mode both to construct and to navigate through a stack. Display layout mode is the only display mode in TNTAtlas.

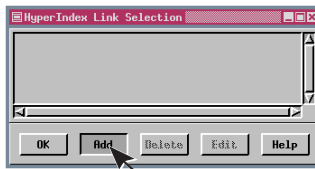
The Home level of the stack is best designed without overlapping index areas. (An **index area** is the area linked to the next level of the stack, which is defined by an elastic box in this exercise.) If you click where index areas overlap when navigating through the stack, a list is presented so you can choose which object to view next. It is desirable to get the user further into a stack before you start giving them choices so they are not initially confused.

* When the link is to an external file type or a web site, a separate window for that application opens.





This list is blank when you create a new index area. This same window opens when you choose to edit an existing link, and all objects linked to the index area are listed.



In addition to letting you specify all options for a new link, this window opens when you click on [Edit] in the HyperIndex Link Selection window, so you can change existing link parameters.



STEPS

- choose Spatial Data from the Display menu
- click on the New Display Layout icon on the Display Spatial Data toolbar 
- click on the Add Raster icon in the Layout Controls window, and choose Quick-Add Single 
- select the WELCOME object from the HELLO Project File
- click on the Hyper-Index Linker icon then on the Box icon in the HyperIndex Linker window that opens  
- pull out an elastic box that contains the SPOT View graphic and text as shown, then click the right mouse button
- click on [Add] in the HyperIndex Link Selection window
- click on [Object] in the HyperIndex Link Editor window that opens and select the SPOTINDEX object from the INDEX Project File
- set the Position option menu to Image Center and click [OK] in the HyperIndex Link Editor and the HyperIndex Link Selection windows
- repeat steps 6–9 except draw the box around the airplane graphic and Aerial View label, and select the AIRPHOTO object in the INDEX Project File

Finishing Home Level Links

STEPS

- ☑ repeat steps 6–9 from the previous exercise except draw the box around the Microlmages logo and text at the lower left and select the PRODUCTS object
- ☑ repeat steps 6–9 from the previous exercise except draw the box around the home index graphic and text at the lower right and select the INDEX object
- ☑ click on the Circle tool, position the cursor at about the middle of the circular image of the Golden Gate Bridge and draw out a circle that roughly corresponds to the circular outline, then click the right mouse button
- ☑ repeat steps 7–9 from the previous exercise except select the INDEX object (same object as in step 2 on this page)



When you finish this exercise, you will have a Home Level with five index areas linked to four different objects. Each index area is linked to only one object so there are no choices involved; when you click, the next level is automatically and immediately displayed. This is about the right amount of complexity for a Home Level. It could be simpler, for example just one index area that inscribed the full initial graphic, or more complex, but the purpose of the Home Level is to provide the users with some information about the nature of the stack and to draw them further in. When further into the stack, you can begin offering choices for individual index areas that will seem logical because of information already gleaned from the stack.

One important feature of the Home Level that hasn't been addressed is appearance. You want this graphic to be professional and pleasing. You might consider hiring a graphic artist if layout and design are not your strong points. However, unlike graphic design for high resolution printed materials, more is not better for Home Level graphic design. You want the full graphic to fit in a window at 1X zoom. You may be running at 1280 x 1024 in 24-bit mode, but what are the odds the user of the stack will be?

Make sure any graphics designed in 24-bit color also look good when displayed in 8-bit mode. All of the graphics used for the first levels of the stacks illustrated on page 4 are under 800 x 600. The geographic layers that follow can be as large as necessary because all of the zooming and locator features are available, but you don't want the user to have to zoom or pan around to see your initial graphics.



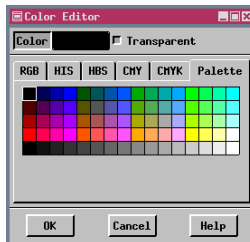
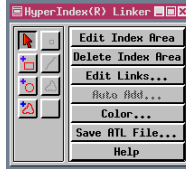
Home level with index areas shown.

Making Index Areas Transparent




Index areas often detract from the appearance of your graphics or may even be confusing when there are many that overlap. There are two methods to control whether index areas are visible: the Show Index Areas toggle and assignment of transparency. Index areas are always drawn when using the HyperIndex Linker tool (transparent index areas are outlined in medium gray); these options apply when using HyperIndex Navigator.

If you don't want any index areas to show, turn the Show Index Areas option off. If you want the index areas to show on some layouts but not on others, turn the Show Index Areas option on and assign Transparent as the index area color for those you don't want to show. The user can always choose to reveal the index areas by turning on the Show Index Areas toggle* while running the atlas even if you've made them transparent (turn on Show Hidden Index Areas). In order for transparent index areas to be shown, both the Show Index Areas and Show Hidden Index Areas toggles must be on.

The last choice on the Options / HyperIndex menu turns on a selection prompt even when only one link to an index area exists so you can cancel if you decide you don't want to look at that object after all. The selection prompt always appears if there is more than one link to the index area. (TNTserver prompts only when there is a choice of links.)





STEPS

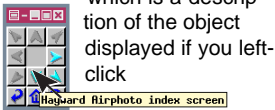
- click on the Existing icon in the HyperIndex Linker window 
- select any of the index areas you added by clicking inside it
- click on [Color] in the HyperIndex Linker window and turn on the Transparent button at the top of the Color Editor window, then click [OK]
- repeat steps 2 and 3 for three of the other four index areas
- in the Layout View window, choose Options / HyperIndex and turn on the Show Index Areas toggle (if not on)
- click on the HyperIndex Navigator tool and note that all but one index area disappears 
- turn on the Show Hidden Index Areas toggle on the Options / HyperIndex menu and note the appearance of the four additional index areas
- turn off the Show Hidden Index Areas toggle
- click on the HyperIndex Linker icon and repeat steps 2 and 3 for the one index area that isn't transparent 


* This option is not currently available in TNT-atlas for Windows.

Lateral Links and the Navigator

STEPS

- ☑ click on the HyperIndex Navigator icon 
- ☑ note that the HyperIndex Navigator window has all of its directional buttons dimmed 
- ☑ click in the index area surrounding the earth and SPOT satellite image
- ☑ note that some of the directional buttons are no longer dimmed, and pause the cursor over each to see the ToolTip, which is a description of the object displayed if you left-click



- ☑ right-click on the down button and note there are two choices in that direction 



- ☑ release the mouse button without making a selection and left-click on the arrow that points right
- ☑ click on the Bay Area SPOT satellite on this index screen and note that the object displayed is the same as that after step 3, but the active buttons in the navigator window are different, why?*

When you get to the SPOT index from the Welcome screen, you can display the objects linked to the four other index areas using the Navigator window.

*The lateral links are to the index areas for a different parent object.

Lateral links make it possible to use the directional buttons in the HyperIndex Navigator window to move between all other objects linked to index areas in the object on the previous (higher) level. This feature is more easily described if you take the simplistic view of a stack in which a click on a parent object causes one of its daughter objects to be displayed. In such terms, lateral links would move you between any of the daughter objects of a single parent. This explanation is too simplistic because links can have a more complex organization than a simple branching diagram.

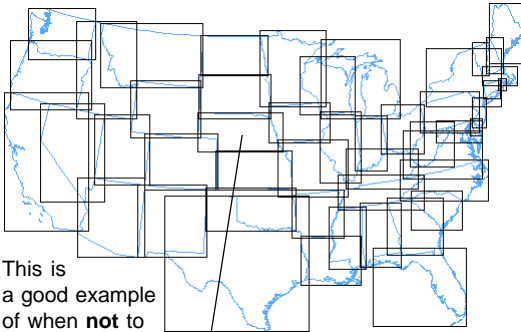
Lateral links are created automatically for you. The process looks at the previous object displayed and arranges access to all the objects linked to it by the relative position of index areas. Thus, objects linked to index areas above the last one you clicked in are accessed from the directional button that points up in the Navigator window.

There may be more than one lateral link in any of the eight directions. Right-clicking on a directional button lists the description of all links in that direction so you can choose which to display. Left-clicking on a directional button displays the nearest link. When using TNTserver, you automatically get the closest lateral link, if there is one, when you scroll beyond the boundaries of the current object. Use of lateral links has not been developed in TNTAtlas for Windows.

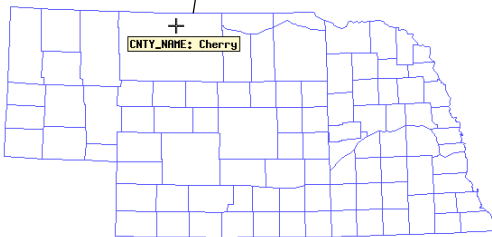
Automatic Linking

The Auto-Add feature lets you select any number of objects that are then automatically linked to the currently displayed object. The geographic extents of each selected object are used to generate its index area. It takes about two minutes of your time to set up a TNTlite-sized stack that provides access to county outline maps for each state with DataTips that provide county names (the DataTips at the state outline level provide polygon areas).







You can make a more elegant stack for the same purpose by using the polygons themselves as index areas, which is the topic of a later exercise. However, that technique is more time consuming. Linking to individual elements eliminates the areas of overlap inherent in using the geographic extents of contiguous, irregular shapes to define index areas. Clicking in the middle of most states will get you to the county level without having to specify which link you want even in this case; you will have to choose nearly every time if you click near a border.



This is a good example of when **not** to show index areas.



STEPS

- open a new display layout 
- click on the Add Vector icon, choose Quick-Add Vector and select the STATES object in the UNTDSTAT Project File (HYPER directory) 
- turn off the Options / HyperIndex / Show Index Areas toggle in the View window
- click on the Hyper-Index Linker icon, then on [Auto Add] in the HyperIndex Linker window 
- click on the Add All icon in the UNTDSTAT Project File then select the STATES object in the righthand list and click the Remove icon 

- click [OK] and watch the progress of the auto-add as index areas appear in geographic position in the order selected
- click on the Hyper-Index Navigator icon, then click in the middle of Nebraska 
- pause the cursor over different counties and note the DataTip






You can use the Navigator window to get to the county level of any other state.

Missouri county outlines
Arkansas county outlines
Mississippi county outlines
Tennessee county outlines
Louisiana county outlines
Alabama county outlines
Georgia county outlines
Florida county outlines

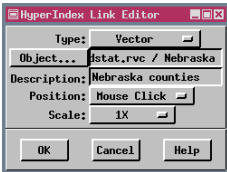
Link Selection and Descriptions

STEPS

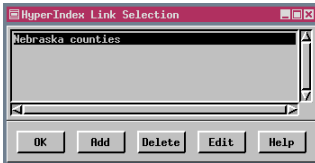
- with the HyperIndex Navigator tool still active and one of the county outline maps displayed from the previous exercise, click on the Home Level icon in the Navigator window 
- click on the HyperIndex Linker icon and then on the Existing icon if not already selected  

- click in the middle of Nebraska (or some other state), click on [Edit Links], then click on [Edit] in the Link Selection window that opens

- change the Description field to *Nebraska counties* (remember that the cursor must remain over the window when you type)



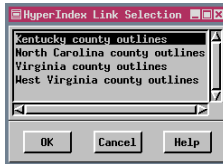
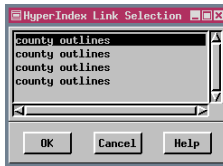
- click [OK] and note that the description in the Link Selection window is now also changed



- repeat for other states as desired*

Object descriptions are often paid little attention in TNTmips and may be omitted altogether, or you may accept a default description that is the same for all output from a process. Object descriptions are important when you start constructing HyperIndex stacks. The object description appears in the Link Selection window when you click in overlapping index areas. The object descriptions also appear as the ToolTips for directional arrows and as the right-mouse button menu entries for lateral links in the Navigator window.

You can, of course, change the description when adding or editing a link with HyperIndex Linker, but you may want to pay attention to making it



uniquely descriptive when the object is imported, created, or edited, particularly if you are going to use the Auto-Add feature described in the previous exercise. Originally, the objects used in the previous exercise were all in separate files, named for the state, but the objects in each of these files had the same name and description

(“county” “county outlines”). The Link Selection window that opens when you click on an area of overlap is shown above when the Auto Add was done before (upper) and after (lower) editing the object descriptions to include the state name. In this case the editing was done in Project File Maintenance (Support / Maintenance / Project File / [Edit]) when the data was prepared for use with this booklet.

Changing the description in the HyperIndex Link Editor, as you do in this exercise, changes only the link description, not the object description.

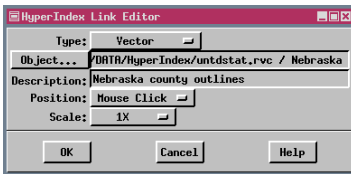
* You do not have to close the HyperIndex Link Selection window before selecting another state to edit its description.

Index Elements

You can easily avoid overlapping index areas when establishing links to a vector object if you choose vector elements rather than drawing index areas (or using Auto Add) for linking. Polygons are the most obvious index element, but you can also create links to lines and points. A line element might bring up a graphic of the kinds of fish found in a stream or highway maintenance information for the line you click on. Typical point element links include photographs of a monument or service information for the site.

A click in a polygon index element or near a line or point index element will take you to the next level of the stack, just like any index area you draw. Lateral links are also generated for objects linked to index elements. The one difference between index areas and index elements is that index elements are not displayed differently when the Show Index Areas button is toggled on.

The HyperIndex Link Selection window opens automatically when you click on an element with the polygon, line, or point button turned on in the HyperIndex Linker window. You can then add a new link or edit or delete an existing link.

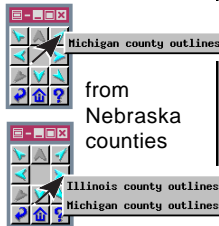
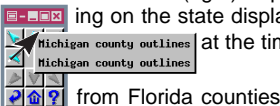


Set these options for each of the links you add in this exercise.





upper and lower Michigan



Because there are two separate polygons (upper and lower Michigan) linked to the Michigan county outlines, Michigan will appear twice in the list of lateral links. It may appear twice on one directional arrow (left) or once each on two different directional arrows (right) depending on the state displayed at the time.





STEPS

- make a fresh copy of the original STATES object in the UNTDSTAT Project File (if you used the only STATES vector object you have for the previous exercises, make a copy of the object and delete its HYPERINDEX subobject using Project File Maintenance)
- open a new display layout and add the new copy of the STATES vector object 
- click on the Hyper-Index Linker icon 
- click on the Vector Polygon icon and then click on Nebraska 
- click on [Add] in the Link Selection window
- set the Type option menu to Vector then click on [Object] and select the county outline map for the state you clicked on (UNTDSTAT Project File)
- click [OK] in the Hyper-Index Link Editor window
- select another state outline and repeat steps 5-7; keep selecting state outlines and adding links until you have about five states done (include upper and lower Michigan among them)
- click on the Hyper-Index Navigator 
- hold down the right mouse button over all active directional arrows and note your options

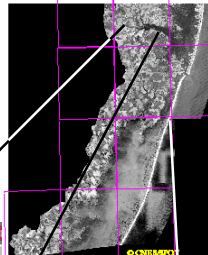
Other Link Editor Features

STEPS

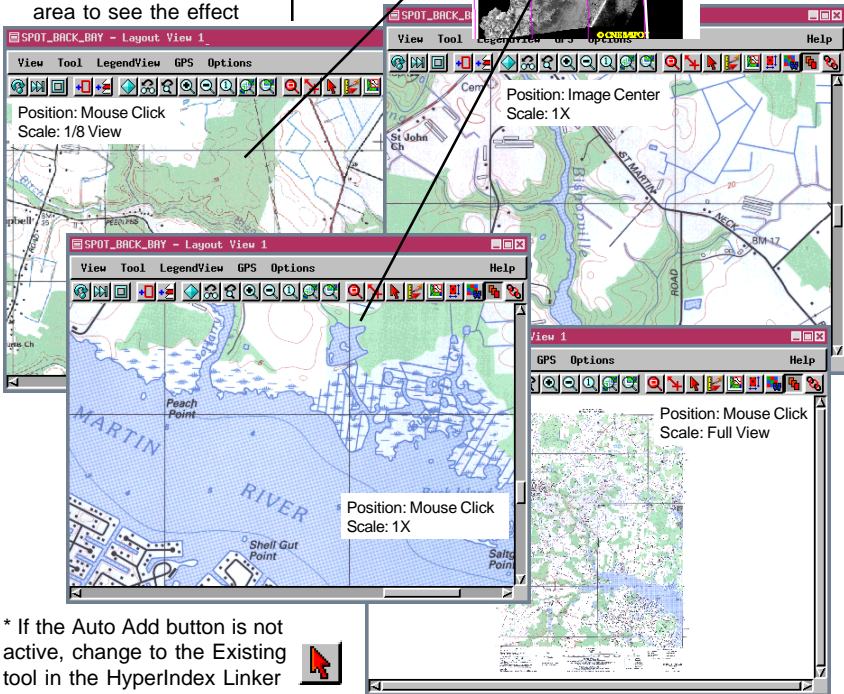
- ☑ return to the stack you made on page 11 and navigate to the Nebraska counties level 
- ☑ resize the View window to 600 x 400 pixels
- ☑ click on the HyperIndex Linker icon, then on [Auto Add]*, and select SPOT_PAN in the CB_SPOT Project File 
- ☑ try different combinations of the Position and Scale settings (step 3 on p. 12 will get you to the right window), switching between the HyperIndex Linker and Navigator tools and clicking in different parts of the index area to see the effect


The Position and Scale options apply only to rasters and layouts because vector and CAD objects are always initially displayed to fit in the window. The Position and Scale settings interact: the Position setting has no effect with Scale set to Full View. At other settings, it only matters for large rasters. Why? Because with Scale set to Full View, it doesn't matter where you click; the next level will be the image sized to fit the View window. And even with the scale at 1X, you will see the full image unless the raster or layout is larger than the area of the View window.

Each grid cell is linked to a separate map quad sheet.



All of the views below are of the same map quad sheet.



* If the Auto Add button is not active, change to the Existing tool in the HyperIndex Linker window. 

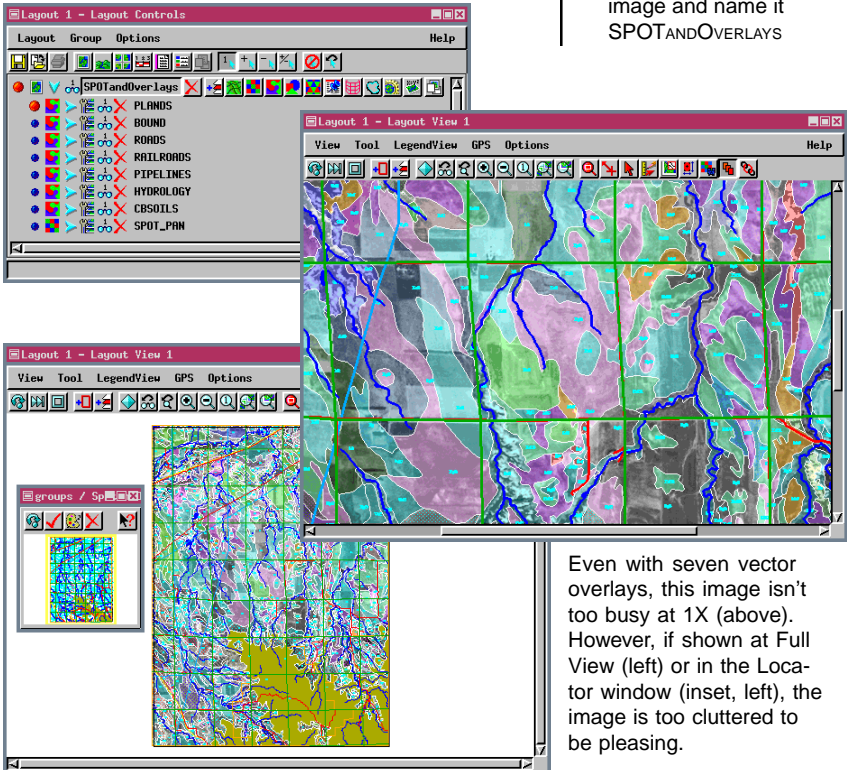
Using Layouts in an Atlas

Displaying vectors over imagery generally conveys a much richer picture than displaying vectors alone. If you want to display more than one object at a time in a HyperIndex stack, you need to have previously saved the collection of objects as a layout. You can also link to layouts with multiple groups if desired. In this exercise, you simply save the layout; you will add it as part of the atlas in a subsequent exercise.

Note as you do this exercise that even with the HyperIndex Navigator tool active you have all the features of display available, such as adding more layers and saving the layout. You also have this capability when using HyperIndex Navigator in TNTview, but not in TNTAtlas or TNTclient.

STEPS



- with the SPOT image still on the screen from the previous exercise, click on the Add Vector icon and choose Quick-Add Vector
- select CBSOILS from the CB_SOILS Project File and all six vectors from the CB_DLG Project File
- click on Full View, then choose Layout / Save in the Layout Controls window
- save the layout in the same file as the SPOT image and name it SPOTANDOVERLAYS

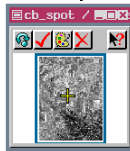


Even with seven vector overlays, this image isn't too busy at 1X (above). However, if shown at Full View (left) or in the Locator window (inset, left), the image is too cluttered to be pleasing.

Making Use of Hidden Layers

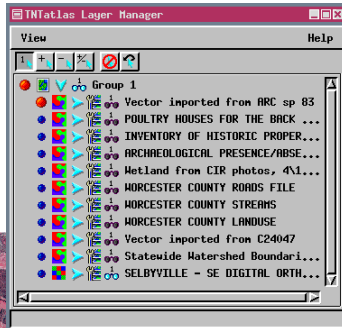
STEPS

- ☑ with the layout still open from the preceding exercise, click on the Hide / Show (View 1) icon  for all layers except the raster and the HYDROLOGY vector (this turns viewing off and the icon should appear in shades of gray)
- ☑ choose Locator from the View menu in the View window if the Locator window isn't open
- ☑ click on the Hide / Show in Locator icon  to hide all layers except the SPOT raster
- ☑ choose Layout / Save in the Layout Controls window



The amount of information you want to provide in your atlas should help determine your presentation strategy. Often for geospatial data you will have one or more base images and a number of vector overlays representing a variety of themes.

One presentation method repeats the base image in a number of different screens that include just a few vector overlays all of which are selected for viewing when the level opens. This method is probably best suited for the casual user who would then pick between overlay themes, such as transportation or hydrology, when navigating to that level. Another strategy includes the base image just once with all its overlays in a single layout, but the overlays are hidden for initial display. The user then decides which overlays are relevant to their current task and unhides them.

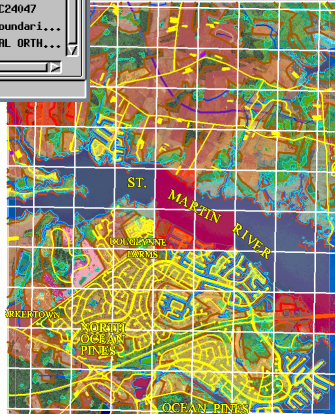


The current MERLIN atlas has many more initially hidden layers than listed here. (URL provided on p. 4)

only bottom layer drawn



all layers drawn



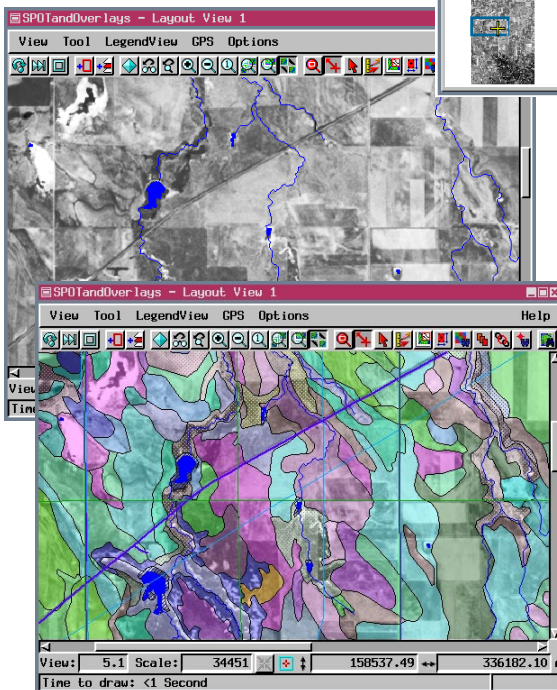
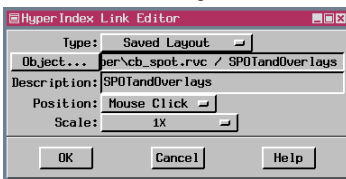
The MERLIN atlas has ortho-photo coverage of the entire state of Maryland with a number of vector overlays similar to the layout shown.

Adding and Deleting Links




Now that you have created a layout with more area information than just the SPOT image, you can replace the original image in the stack with your layout. The techniques used in this exercise are the same as used whenever an existing index area has a link added or removed.

You should also gain insight into your own preferences for hidden layers and Full View or 1X scale when using the Navigator after adding the multi-layer layout created in the previous exercises.

When you have the Position and Scale set to Mouse Click and 1X, it is a good idea to have the Locator window open so you can see what part of the object you're viewing and move around easily.



STEPS

- click on the Previous Level icon 
- click on the HyperIndex Linker icon 
- click on the index area in Dawes county (created in the exercise on p. 14)
- click on [Edit Links] in the HyperIndex Linker window, then on [Add] in the Link Selection window
- set the Type to Saved Layout, then click on [Object] and select the SPOTANDOVERLAYS layout created in the exercises on pages 15 and 16
- set the Scale to 1X and click on [OK] in the Link Editor window (note the object name is used as the description because the layout had no description)
- with the SPOT image alone highlighted in the Link Selection window, click on [Delete] and [Yes] in the Verify window
- click [OK] in the Link Selection window then click on the HyperIndex Navigator 
- click in the index area for the Crow Butte layout you created
- use the Hide / Unhide icons to see how your view is altered

The View is shown as it opens when navigated to (just the SPOT image and hydrology, upper left) and with all layers shown (left).

An Atlas with a Single Layout

STEPS

with the SPOTANDOVERLAYS layout still open, unhide all layers and turn on the Show Scale Ranges toggle on the Options menu in the Layout Controls

enter minimum and / or maximum scale values for layers as shown



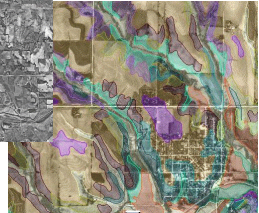
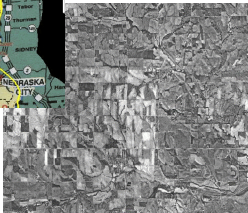
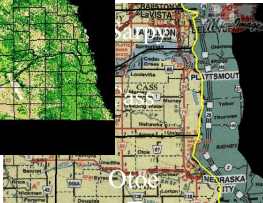
type 192000 into the scale field at the bottom of the View window and press <enter>, then click on Zoom In three times; note the difference in objects displayed each time

A single-layout atlas is available for viewing at <http://www.microimages.com/atlasserver> (then choose Nebraska Statewide from the public atlases).



The shaded relief DEM with roads

and county boundaries that starts the atlas is replaced by a scanned map, which in return is replaced by a mosaic of DEMs to which soil maps are added as you zoom in further. Be sure you zoom in incrementally rather than jumping immediately to full resolution.



An atlas can be created as a single layout with different layers hidden and revealed according to the current map scale of the display. You use the zoom tools rather than the Hyper-Index Navigator to move through such an atlas. The scope of a single layout, “visible by map scale range” atlas can be as large as you like with as many display layers as needed. This type of atlas requires a bit more initial planning to determine the appropriate map scale ranges for each of your objects.



This exercise introduces you to the mechanics of preparing such an atlas. The example is simplistic, but the method is the same for all cases. There are three possibilities when displaying by map scale range: visible from full view of the layout to the set map scale, visible within a specified scale range (and presumably not at full view or when zoomed in significantly), and visible only when zoomed in beyond the set scale.


The visible scale range can be set for an individual layer in the Object Layer Controls window, or you can turn on the Show Scale Ranges option and set the range for as many objects as desired directly in the Layout Controls window. If you want a layer to be hidden as you zoom in past some scale, enter that scale in the left field. Enter the scale in the right field if you want the object visible when zoomed in, but hidden when zoomed out beyond the entered scale.

Metadata

Metadata is text that describes the content, source, accuracy, and other characteristics and attributes of your geospatial or other objects. It can be as simple as acknowledgment of the graphic artist for your welcome screen or as detailed as you like including projection information and parameters as well as the names of associated attribute tables. TNTmips manages metadata by storing it as a subobject so that it is carried along with an object whenever it is copied or otherwise processed.

Metadata can be used to provide instructions for use of any stack you create by associating it with the welcome or index screen, although such information that does not directly describe an object may be better provided as an externally linked file. Any descriptive text you want associated with individual objects in a stack can also be provided by this method. For example if your stack concerns campgrounds in a national park, the layer that is specific to each campground might have associated metadata that contains information about the number of campsites, other facilities and services available, nearby points of interest, and so on.

STEPS

- with the SPOTand Overlays layout from the previous exercise still open, click on the Tools  icon for the SPOT layer and choose Metadata from its menu
- choose Edit / Insert File in the Metadata Editor window
- select the METADATA.TXT file you copied with the data for this booklet
- delete the default text that says there is no metadata and choose File / Save



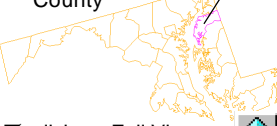


Any raster, vector, CAD, or TIN object can have associated metadata, which may be viewed when the object is displayed. Metadata is accessed from the right-mouse menu for a layer in the Layer Controls panel of the Java client and from the object type icon of the HTML client with TNT-server.



The Metadata Editor window for this object initially displays the message "No metadata is available for this object."

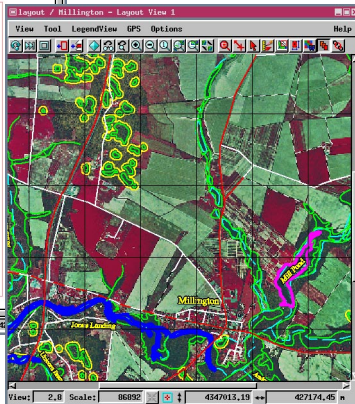
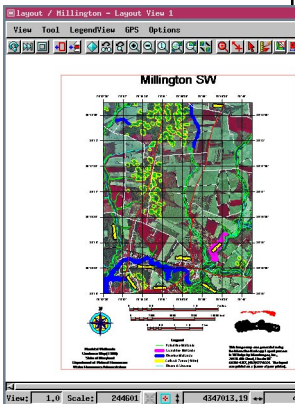
More On Position and Scale

STEPS

- click on New Display Layout and Quick-Add the MARYLAND vector from the UNTDSTAT Project File 
- click on the Hyper-Index Navigator tool 
- with your window sized to approximately 550 x 600*, click inside Kent County 
- click on Full View 
- choose Layout / Save in the Layout Controls window
- click on the Previous Level icon in the Navigator window 
- click in Kent County again
- note the difference from the initial display

All of the examples on the preceding page use scale options picked directly from the menu that require no further input. The Fractional View and Map options let you determine the scale of the linked object with a greater degree of flexibility. When you make either of these selections, a field appears to the right of the scale menu so you can enter the desired value. You can enter any value between 1.0 (Full view) and 0.0039 (1/256 view) for the Fractional View option. The number you enter for the Map option represents the scale portion of the map scale at which the linked object will be displayed. The default value of 10000 is not a good choice for the SPOT image; 48000 will show somewhat more of the object than a 1X view at the window size specified on this page.

While doing the exercise on page 14 you should have noticed that one of the scale and position settings (As Stored) was unavailable. This choice is available only if the link type is Saved Layout. The As Stored option uses the scale and position information from the layout. You do not use the Hyper-Index Link Editor to change how such a layout is displayed, but rather you reposition and scale the layout as desired and save it again. The next time the atlas is used, the layout will appear as newly saved.



* Window dimensions are shown at the upper left of the X Server when resizing.

Your initial view of the layout linked to Kent County should look like that at the immediate right. When you return to Kent County after saving the Millington layout, the results of navigating should appear as at the far right.

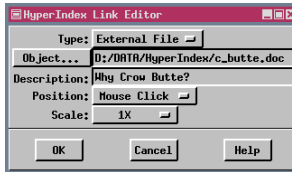
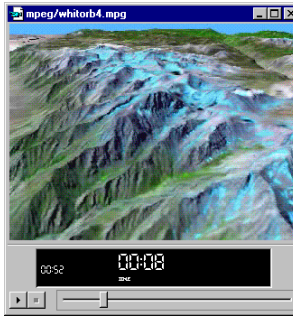
Linking to External Files and URLs

The ability to link to external files or web addresses opens up a whole world of possibilities for information to be accessed from your atlas. You could, for example, provide mpeg movies linked to various locales (for example, link Inyo and / or Tulare County in California to the 3D simulation of a Mount Whitney flyby available with TNT products).

Again, you need to keep your viewer in mind because they have to have the applications that will launch the external files you link to and, obviously, they have to have an Internet connection for any URLs included in the stack. This exercise provides equivalent text in both Microsoft Word and text file format to be certain you can use it. The Word version may have a few features not available in a straight text file, such as continuous word flow, but as a text file it is available to all atlas viewers since the TNT Text Editor if running with the X Server or your system's text editor if not is used to open linked text files.





An atlas that incorporates Project Files, external files, and web addresses can put everything you need for a number of applications at your fingertips. For example, imagine yourself as a farmer in the field monitoring your planting progress on a portable PC by GPS displayed over an airphoto while having point-and-click access to the local weather by wireless Internet.

* If you do not have an application that will open a Microsoft Word .doc file, set the type to Text File and select C_BUTTE.TXT.








<http://www.weather.com/weather/local/69339>

STEPS

- while at full view for the SPOT image you linked into your stack in the exercise on page 14, click on the HyperIndex Linker icon then on the Box tool in the HyperIndex Linker window  
- draw a box around the entire SPOT image, then click the right mouse button
- click on [Add], set the Type to External File, then click on [Object], and select C_BUTTE.DOC*
- change the Description to *Why Crow Butte?*, and click [OK] 
- click on the HyperIndex Navigator icon, then click over the SPOT image, and read the material
- click on the HyperIndex Linker icon again, then on the Existing icon, click over the SPOT image, then click on [Edit Links] and [Add] 
- set the Type to URL, click on [Object], and type the web address below into the URL window
- change the Description to *Crow Butte weather*, click [OK], change to the HyperIndex Navigator, click over the SPOT image and choose this newest link if connected to the Internet

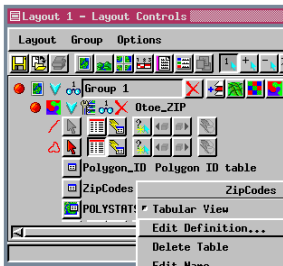
Preparation to Link By Attribute

STEPS

- open a new display layout 
- click on the Add Layer(s) icon and choose ELEVATIONS, OTOE_CITIES, and OTOE_ZIP (in that order) from URL_LINK 
- click on the Show Details icon for the OTOE_ZIP layer 
- click on the Show Tables icon for the polygons, right-click on the ZipCodes table name, and choose Edit Definition 
- click on the Add Field icon, then click on the newly added field in the list of field names and change the name from Field to URL 
- set the Field Type to String Expression and enter 60* for the Width
- click on [Edit Expression] and type in the expression below exactly as shown

The method presented in the previous exercise for linking to files and URLs would be quite tedious if you intended to link a large number of elements to unique files or URLs. The ability to create a URL or file link using element attributes takes care of the tedious entry of URLs or file paths for each element if you can create a computed field that will generate the entries for you as is done in this exercise.

The basic strategy is to create a string expression field, which generates the file name or URL, in a table already linked to the elements.



This string expression has a constant component and a value pulled from the database (such as a ZIP code or farm name), which often need to be concatenated with an additional string

that specifies the file extension. Having a constant component in the string expression requires some organization if you are linking to files, particularly if you have files for the same elements over multiple years. The constant component should contain all the path or URL information to the left of the information acquired by attribute.

```
web$ = "http://www.weather.com/weather/local/"
zip$ = NumToStr(ZipCodes.Zipcode)
url$ = web$ + zip$
return url$
```

the same for all elements

attribute value for selected element

places concatenated string in string expression field

The constant component in this example is represented by web\$. It contains the complete

- click on [OK] in the table definition window



web address to the left of the individual zip code, which is pulled from the table according to the polygon selected. To easily link to files containing farm information for two separate years, the files for the same farm in separate years should be named exactly the same and also match the name of the farm provided in the database. You can then use the same expression to link to either set of data just by changing the year in the expression.

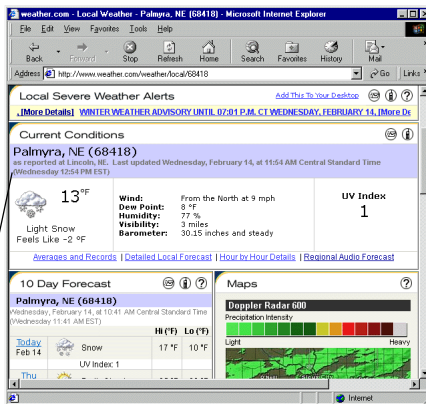
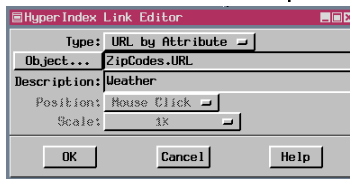
* Make sure the width entered is sufficient to contain the complete URL; 60 may not be enough for some sites.

Linking to URLs and Files By Attribute

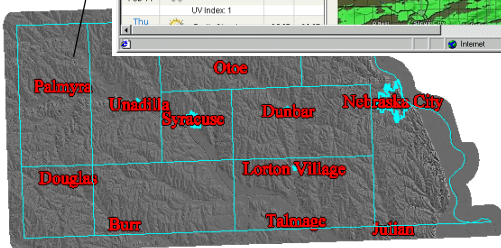
If you are preparing an atlas for use with TNTAtlas on CD-ROM and with TNTServer and that atlas has links to external files, such as PDF files, the links need to be set up differently for the two applications. Making the change is quite simple. All files accessed by TNTServer must have a web address. There are only two changes you need to make to change links that point to files on the CD-ROM to links that point to the corresponding web-based files. You need to change the link type and the file reference. If the link is from a drawn index area or an individual vector element, both changes are made in the HyperIndex Link Editor window. If the link is by attribute, you change the link type in the HyperIndex Editor window and the file reference in the string expression. If you rename the field that contains the string expression, you have to add the link again.

STEPS

- continuing from the preceding exercise, choose the HyperIndex Linker tool 
- click on the Vector Polygon icon in the HyperIndex Linker window (OTOE_ZIP must be the active layer) 
- click inside any of the ZIP code polygons*, then click on [Add] in the HyperIndex Link Selection window
 - set the Type to URL by Attribute
 - click on [Object] and select ZipCodes in the Table list then URL in the Field list
- type *Weather* in the description field and click [OK] in both the HyperIndex Link Editor and Link Selection windows
- connect to the Internet, then choose the HyperIndex Navigator tool and click in any of the ZIP code polygons (if you happen to click within a city polygon, you may get a choice of the link you made or a web site for the city)



click and
get the
weather



* When you add a link by attribute, you initially choose the vector point, line, or polygon tool and select one of the elements. If you later want to edit this link, use the Existing arrow tool to select any of the same type of element.

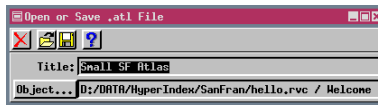
Making an ATL File for Atlas Distribution

The HyperIndex stacks you have made can be used on your computer with TNTmips, TNTview, or TNTatlas at any time. They can also be used on anyone else's computer that has these products. However, to make an atlas that can be distributed on CD-ROM so that it can be run by anyone using the free TNTAtlas product, you need to create a .atl file. This file tells TNTAtlas where to find the home page for the stack. The same .atl file can be used with TNTserver to provide access to your atlas over the Internet.





While any atlas you create will

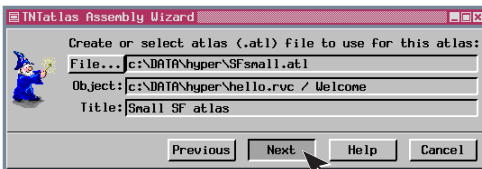
run smoothly on your machine, distributing an operational atlas may be another matter because it relies on your having found all the linked files and objects and having copied them with appropriate names to the directory used to burn your distribution CD-ROM. If you did not find all files, the atlas user will likely stumble on index areas that produce the same results you encountered for the index areas that are crossed out in the previous exercise. To assure the completeness of your atlas, TNTmips supplies an Atlas Assembly Wizard.

You can create your ATL file either in HyperIndex Linker, as you do in this exercise, or directly in the TNTAtlas Assembly Wizard. If your ATL file was created before opening the Assembly Wizard, you simply select the file. If you have not previously saved the .atl file, you click on the New File icon, name the file, then select the object for the opening screen.



STEPS

- click on the Home icon then on the HyperIndex Linker icon  
- click on [Save ATL File] in the HyperIndex Linker window
- click on [Object] in the Open or Save .atl File window
- select the WELCOME object in the HELLO Project File
- click in the Title field and enter Small SF Atlas
- click on the Save icon, navigate to the folder with the files you've used for this booklet, click on the New File icon, and enter SF_{SMALL} as the file name  
- click on the Close icon in the Open or Save .atl File window 
- leave the Display process open and choose Support / TNTAtlas Assembly Wizard from the main menu



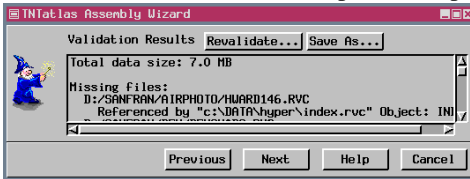
- click on [Next] in the window that opens
- click on [File] in the next window and select SF_{SMALL}.ATL
- click on [Next]

Validating Your Atlas Before Distribution


STEPS

- ☑ note atlas validation occurs automatically before the next window opens
- ☑ after the validation steps are done, click on [Save As] and name the text file

The Validate step runs through a stack to check that all the objects referenced by all the index areas can be located and used. Missing files, missing objects, and other errors found, such as the inability to read a file, are recorded and displayed in the scrolling text panel of the TNTAtlas Assembly Wizard. The referenced files that passed the validation step without problem are also listed. You can re-



view the report directly or save it as a text file for further review and reference.

- ☑ review the errors found either in the TNTAtlas Assembly Wizard window or from the text file created by using [Save As]*
- ☑ return to Display with the HyperIndex tool active and the INDEX raster displayed
- ☑ click on the NHAP airphotos index area at the upper right, then click on [Delete Index Area] in the HyperIndex Linker window, and [OK]
- ☑ repeat step 5 for each of the four index areas immediately below
- ☑ click on the Exit icon for Spatial Data Display 
- ☑ click on [Revalidate], then compare the list of missing files with that in the saved text file
- ☑ take note of the space required for your atlas data (first line of validation report)

completing atlas assembly. Any errors you don't resolve are likely to be encountered by subsequent users of the stack. To resolve errors, delete the index area if an appropriate object for linking cannot be found, or edit the link and redirect it to another suitable object or file. You do not need to reconcile the remaining problems reported for this exercise.

Windows is the only platform supported for creation of an installable atlas that can be run in the absence of any other TNT products. You can choose whether you want the setup package to install TNT-atlas for X or TNTAtlas for windows. An atlas created without the platform-specific installation components can still be run by selecting the starting screen or .atl file and using the HyperIndex tool in the Spatial Data Display process of TNTmips, TNTedit, TNTview, or with TNTAtlas on any platform that can read the CD or other media that contains the atlas. When the installation components are selected along with the atlas files and the product is installed, an icon is created so that the atlas can be launched directly from the desktop.

Components and Permissions

The Atlas Assembly Wizard copies all the atlas files and creates the files for installation in a single folder so they are ready to be transferred for CD mastering or other distribution methods. This folder should be a new

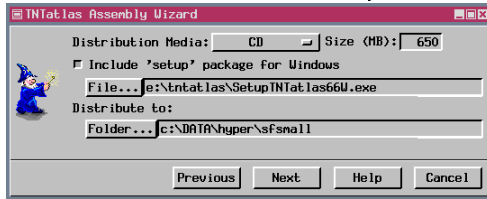
folder so that you don't inadvertently place unneeded materials with the copies of your atlas you create. You do not need to select a setup package unless you intend to distribute the atlas to people without access to other TNT products. There is an additional step in the Assembly Wizard if you elect to include the setup files. In this step you select the splash screen that comes up when the CD is inserted and the desktop icon for the CD. You can choose the files provided for you on the CD or substitute your own of similar size and file type.

You need a TNT products V6.60 or later CD-ROM to create a stand alone atlas for either Microsoft Windows or X windows. There are different setup files for these two versions of TNTAtlas. If you create a TNTAtlas on CD with the setup package included, a splash screen will come up when the CD is inserted with the choices Install, Browse, and Exit.

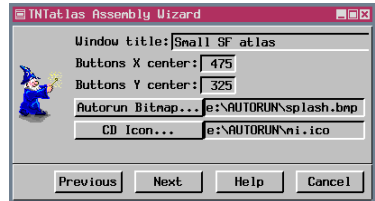
The first Wizard panel concerning permissions determines which TNT products are allowed access to the atlas you create. The default allows just TNTAtlas and TNT-server to access the atlas you create. You can still access the atlas in any of the products as long as you run on a machine with the same TNT product license key used to create the atlas.

STEPS

click on [Next], then click on [Folder], select the folder where you keep your data, click on the New Folder icon, and name the folder SFSMALL

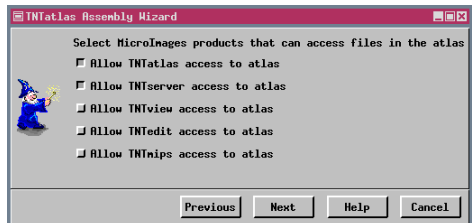


click [Next] again without selecting a setup file (or click on [File] and select setup for Windows or X from the TNTAtlas folder on your TNT products CD-ROM, then click on [Next]



if you selected a setup file, click on [Autorun Bitmap] and [CD Icon] and select the suggested files from the Autorun folder on the CD, then click [Next]

leave the default permissions toggled on in this panel; turn on additional products if desired

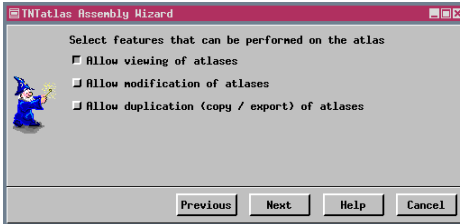


click [Next]

Assembling Your Distributable Atlas

STEPS

- leave the default choice toggled on and toggle on additional choices if desired; click on [Next]



- click on [Finish] and note the process status

A default splash screen, which appears when your stand alone atlas CD is inserted, and icon for launching your atlas after it is installed are provided. Other graphics of your choice can be substituted (for example the version number was edited out of the splash screen below).



The second permissions panel lets you set the level of usage for the data in your atlas and whether it can be changed or duplicated using the TNT products. If you turn off the first option (Allow viewing of atlases), the data will only be viewable on the machine with the TNT license key that assembled the atlas. The “Allow modification of atlases” option lets any of the TNT products that you gave access to the atlas save modifications to the data. Such modifications may be as minor as alteration of assigned drawing styles, but also include changing database entries and altering other data. Users of TNTAtlas do not have the ability to alter drawing styles, but can change DataTip setup, assigned metadata, and database entries if this option is not toggled on (provided the data has been copied from the CD).

You have to give some product other than TNT-atlas and TNTserver permission to access the data on the previous panel for the settings for the third option on this panel to matter. You cannot prevent duplication of data by using the operating system to copy the files from the CD, but the “Allow duplication (copy / export) of atlases” option prevents copying files or objects with Project File Maintenance and export of objects when toggled off. Files copied by the operating system will only be usable in the TNT products specified on the preceding panel.

The contents of the folder created by the TNTAtlas Assembly Wizard, not the folder itself, should be copied to the CD you will use for atlas distribution. Be sure you copy the files at the root level of this folder as well as the folders created within.

Serving Up an Atlas on the Internet

Any atlas you make with HyperIndex Linker (or any single layout atlas) can be accessed worldwide over the Internet from your site if you purchase TNTserver. Such an atlas is not restricted to the number of files that will fit on a CD-ROM; the data can be spread across multiple drives at your location. For example, the MERLIN atlas maintained by the Maryland Department of Natural Resources provides access to more than 180 Gb of data.

TNTserver requires a Windows NT- or 2000-based platform at your site for operation. The atlas information is delivered via an HTML or Java client, which requires that the viewer have a recent version (4.5 or later) of Internet Explorer, Netscape, or an equivalent UNIX browser and the Java 1 virtual engine that matches the browser.

In addition to navigating through the atlas data, the viewer can request metadata, make measurements, view coordinates, and retrieve database information.

STEPS

- check the folder where the TNTAtlas Assembly Wizard created your master atlas (the directory structure for your data is maintained so that, for example, you may have a DATA folder with a HYPER folder in it that contains the Project Files; your .atl file should be at the same level as the first of any folders in your directory path [DATA in the above example]); all the materials copied by the TNTAtlas Assembly Wizard should be transferred for burning to CD-R if you are making a distributable atlas
- if you have Internet access and an appropriate browser, go to <http://www.microimages.com/atlasserver> and choose an atlas from the public atlases list so you can see how TNTserver could work for you

The welcome pages for three of the sample atlases currently posted are shown here.

See the companion booklets *Introduction to: TNTserver and Clients* for more information.

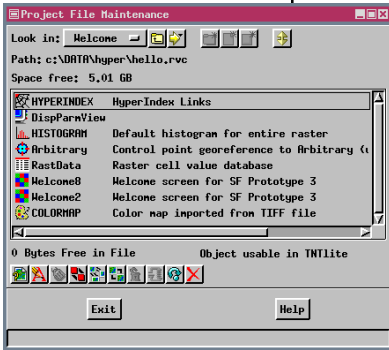
Updating Stacks

HINT

- ☑ don't make link descriptions version specific or you'll have to try to update them all for the next version (many of the link descriptions for returning to the TNTAtlas sample Welcome screen say "Welcome screen for Prototype 2" even though the objects provided came from Prototype 3)

You have already used the techniques necessary to update HyperIndex stacks. The exercises for linking up the Welcome screen follow exactly the same procedure you would use if replacing an earlier version of the graphic. The exercise on deleting and adding links was also an update exercise; you had a newer more complete object, in this case a layout, to replace an earlier object.

When updating a screen in the middle of a stack, you want to keep the Project File and object names the same so that index areas the object is linked to can still locate the object. It is not generally recommended, but in cases where a screen needs to be updated and has many index areas not generated simply by Auto Add, the HyperIndex subobject can be copied from the original object to the new object. This process requires that the original and replacement objects have the same dimensions (in object coordinates) and that all components are more or less in the same place. A legitimate use of this



All HyperIndex stack information (where the index areas are and what they're linked to) is stored in a single HyperIndex subobject. This subobject is automatically created or added to when you use HyperIndex Linker.

copying procedure would be if, after making the more than 30 index areas with manual links that are associated with the Index screen in the previous exercise, you discovered there was a typographical error in one of the labels. You might be tempted to leave the error if it meant you had to redo all the index areas and links, but copying the HyperIndex subobject provides a simple alternative for

cases such as this one.

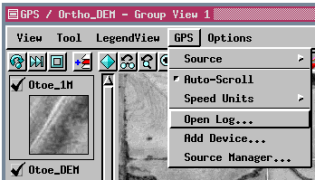


GPS "Moving Map" Measurements

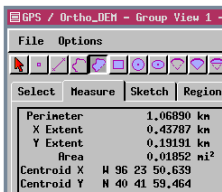
Because TNTAtlas is a free product, anyone with a GPS device can use imagery you provide as a base for their position when driving around. As you drive, the base image automatically scrolls with your GPS position. With appropriate GeoToolbox options turned on, you can also make measurements of areas driven around. Your GPS position can be displayed in real time or you can create a log file and play it back later at a speed you control. Measurements can be recorded as you drive or later when playing back the log file. When you drive around an area, such as a field, you can also save the polygon created as a region. The same GPS capabilities are provided in all TNT products.

CONCEPTS

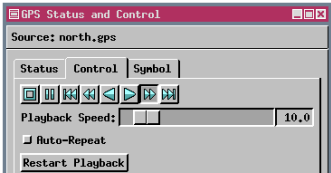
- choose your GPS input (device or log file) from the GPS menu in the View window



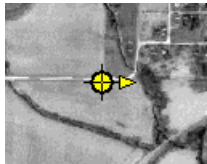
- you can view multiple GPS sources at the same time; each has its own GPS Status and Control window, and each can have a different style



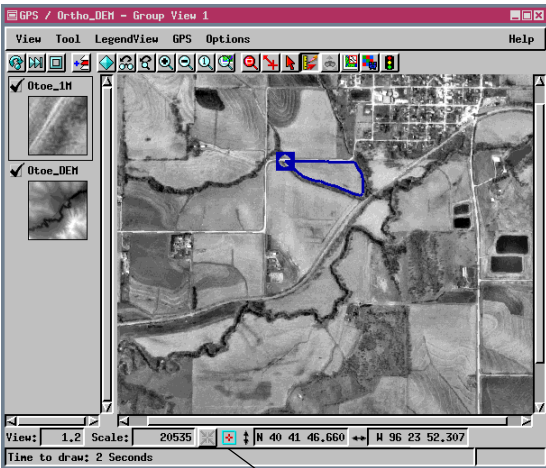
Field measurements are continuously updated as you drive around a field with a GPS source selected and tracking turned on for the polygon tool in the GeoToolbox.



- a number of symbols well suited to GPS tracking are supplied with the TNT products (select the ARROWS object in the SYMBOL folder in the STDSTYLE Project File (in the same folder as your TNTmips executables)



The speed of the unit is reported when displaying from a GPS source.



Turn off Auto Repeat when measuring.

Icon indicates source of coordinates, below GPS and above View center (log playback complete).

Advanced Software for Geospatial Analysis

MicroImages, Inc. publishes a complete line of professional software for advanced geospatial data visualization, analysis, and publishing. Contact us or visit our web site for detailed product information.

TNTmips TNTmips is a professional system for fully integrated GIS, image analysis, CAD, TIN, desktop cartography, and geospatial database management.

TNTedit TNTedit provides interactive tools to create, georeference, and edit vector, image, CAD, TIN, and relational database project materials in a wide variety of formats.

TNTview TNTview has the same powerful display features as TNTmips and is perfect for those who do not need the technical processing and preparation features of TNTmips.

TNTatlas TNTatlas lets you publish and distribute your spatial project materials on CD-ROM at low cost. TNTatlas CDs can be used on any popular computing platform.

TNTserver TNTserver lets you publish TNTAtlases on the Internet or on your intranet. Navigate through geodata atlases with your web browser and the TNTclient Java applet.

TNTlite TNTlite is a free version of TNTmips for students and professionals with small projects. You can download TNTlite from MicroImages' web site, or you can order TNTlite on CD-ROM.

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MicroImages, Inc.

11th Floor – Sharp Tower
206 South 13th Street
Lincoln, Nebraska 68508-2010 USA

Voice: (402)477-9554
FAX: (402)477-9559

email: info@microimages.com
Internet: www.microimages.com