

## **Addendum to User's Guide for MicroDEM 6.03**

There are thirty-four new functions or significant changes to MicroDEM/TBII ver 6.03 which require your awareness. Changes were made as an 'Addendum' rather than to the body of the User's Guide for MicroDEM 6.0 due to publication deadlines.

### ***NOTE: To Windows XP Users:***

XP users must have their desktop set to 'CLASSIC' mode in order to utilize the 'Variable Opacity Merge' functionality discussed in page 169 of the User's Guide.

### ***NOTE: To Users of Controlled Image Base (CIB) and Compressed Arc Digitized Raster Graphics (CADRG) Data with the 'Variable Opacity Merge' Function.***

Tiled data will sometimes not break out correctly to generate the matching underlying and overlying data layers for the 'Variable Opacity Merge'. If you encounter this problem, the quick solution is to save your tiled data as a geotif and then use the geotif in the creation of the variable opacity merge. Before you create the geotif file from your display by selecting FILE /SAVE MAP AS GEOTIF you should first zoom-in so that the image quality on screen is good.

### ***NOTE: None Responsive Controls During Processing.***

If during processing you have problems getting a reaction from a button, usually when you're trying to <CANCEL> processing, simply click on the button with the mouse and then hit the <ENTER> key.

### ***NOTE: DTSS and ERDAS Imagine Users.***

When exporting imagery, elevation and map product files as .IMG or as Geotifs, for use in MicroDEM you must first reproject the data to UTM.

***NOTE: Very Large 3D Views.***

Very large image drapes, which cover multiple UTM zones, must be performed in OpenGL rather than Oblique or Perspective Views.

***NOTE: Portable Network Graphics (.PNG) files.***

MicroDEM is now able to display and save images in the Portable Networks Graphics format. This new file format is in addition to the previously available .bmp, jpg and gif formats.

These files are for viewing and are not typically georeferenced; however, you can create a world file and georeference .png imagery. **See in Registering Imagery and Scanned Maps.**

***NOTE: Creating Movies Using Controlled Image Base (CIB) or Compressed Arc Digitized Raster Graphics (CADRG).***

When creating movies with CIB or CADRG data you should first setup and test the desired viewing parameters in a Perspective View. This will simplify setting up the same parameters for your movie.

***NOTE: Pipeline Automated Planning Aid (PAPA).***

The Pipeline Automated Planning Aid tool, starting on page 142 of the User's Guide, no longer has its own icon in the MicroDEM/TBII start group nor a 'Default set to restore' start up option. This tool is now only initiated using the <PL> button on the main menu GUI bar.

***NOTE: Blue Marble Datasets.***

Blue Marble Data, starting on page 54 of the User's Guide, is now available as easier to use 250Mb tiled, compressed files. GLOBE 1Km DEM data is also available. These may be downloaded from the [www.globe.unibuc.ro](http://www.globe.unibuc.ro) website. The two Blue Marble files when uncompressed require about 750Mb storage space.

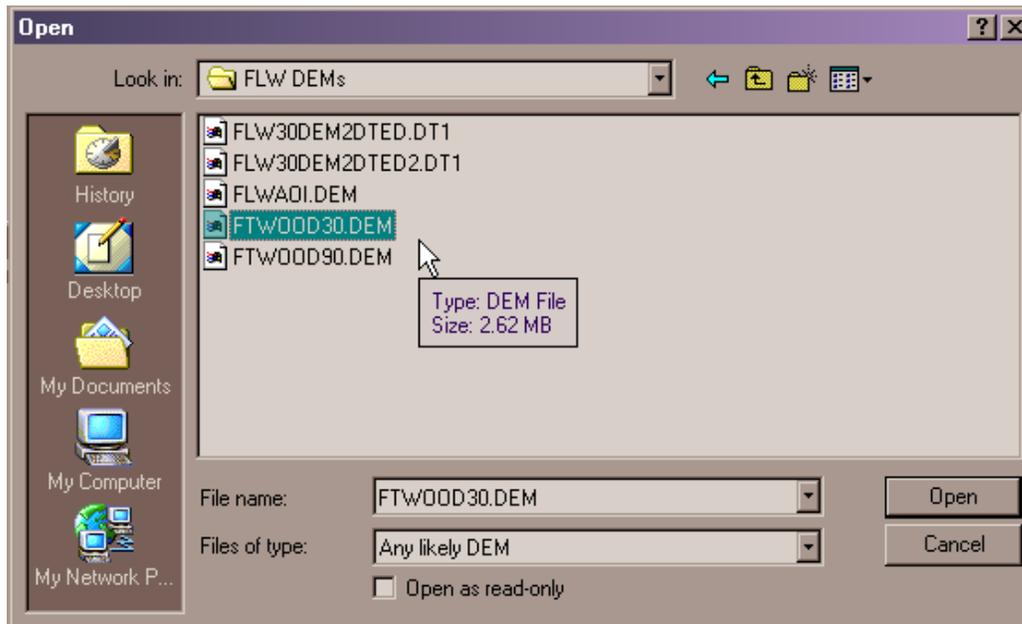
## ***Exporting Elevation Data To Padded DTED 1 or DTED 2 One Degree Cells.***

Although MicroDEM will work with DTED 1 and DTED 2 data in sizes smaller than 1 full degree; many other GIS packages such as ERDAS Imagine require that the data cover a full 1 degree cell per the MIL-SPEC.

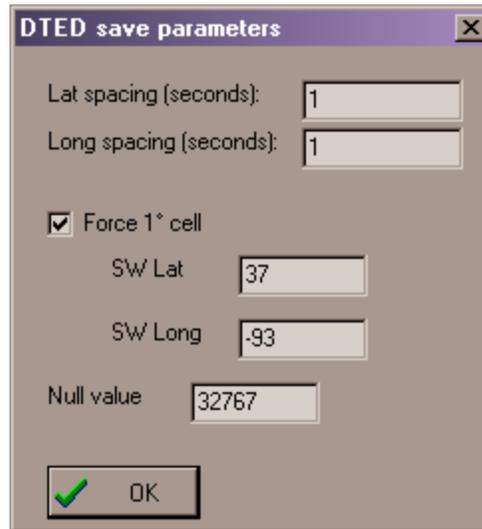
At the main menu select FILE / DATA MANIPULATION to bring up the Data Manipulation window. Next select EXPORT / DEM IN DTED FORMAT.



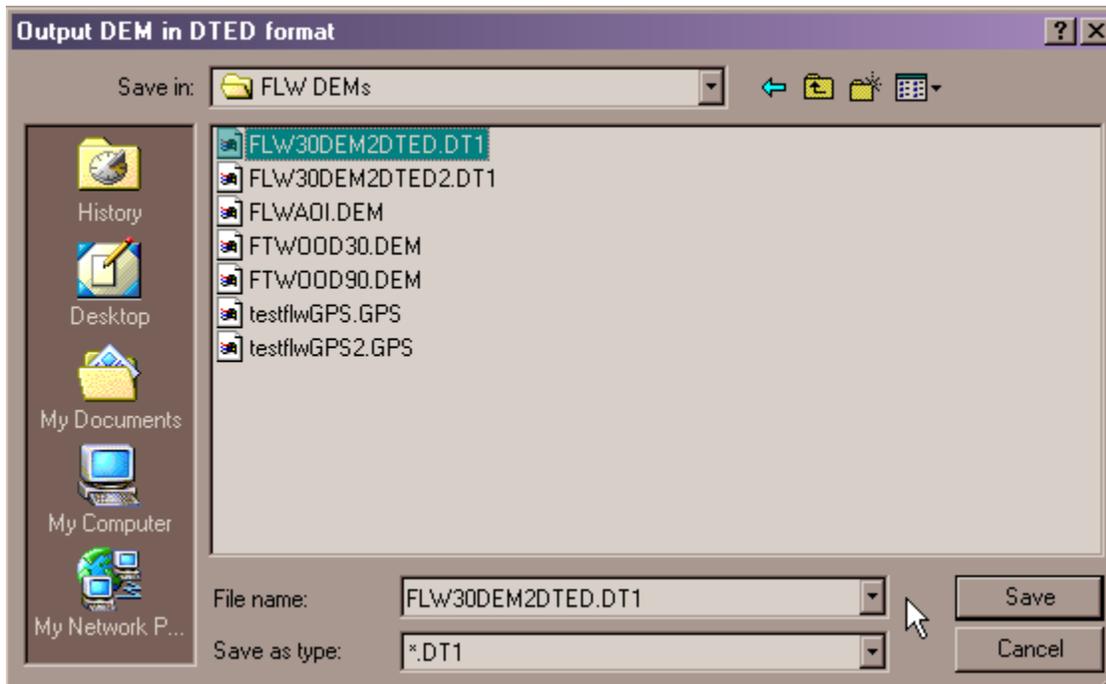
This will bring up the OPEN window where you will navigate to the location and enter the name of the DEM file you wish to convert to DTED.



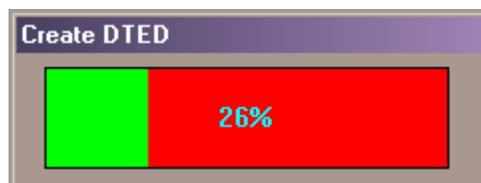
This will open the DTED SAVE PARAMETERS window.



Here you will enter the lat and long spacing in arc seconds. Remember that DTED Level 1 data spacing equals 3 arc seconds and that DTED Level 2 data spacing equals 1 arc second. If you plan to use the exported DTED with other GIS packages you must check the 'FORCE 1 Degree Cell' box. The default null value is zero; however some GIS software packages require other null values and you may have to experiment. Clicking the <OK> button will close the DTED SAVE PARAMETERS window and open the OUTPUT DEM IN DTED FORMAT window.

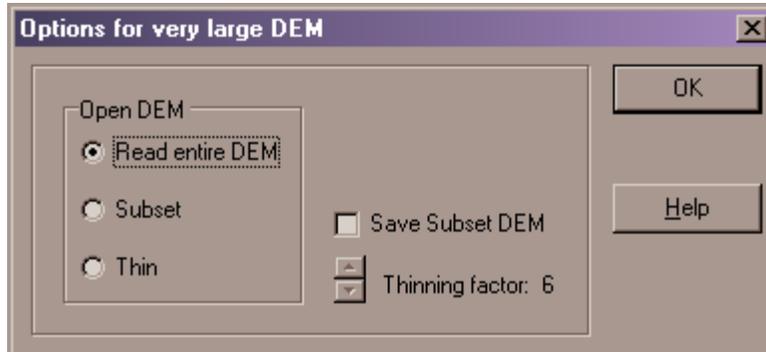


After entering the name for the output DTED file name you will be presented with a CREATE DTED progress bar.



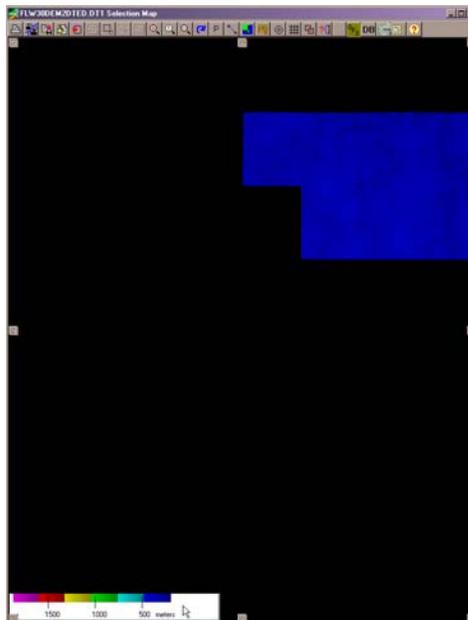
After the progress bar closes, another 'OPEN' window will appear allowing you to process another file. If you do not wish to process another file simply click on the <CANCEL> button to close the Open window and then select FILE / CLOSE to close the Data Manipulation window.

After the DEM file has been exported to DTED format you can reload the data as you would any other DTED file. At the main menu select FILE / OPEN DEM. If you are loading DTED Level 1 data it will simply be displayed as expected. If however you are loading DTED Level 2 this will bring up the OPTIONS FOR VERY LARGE DEM window.



Here you are presented with several options for displaying your DTED.

The display (below) shows the Fort Leonard Wood DEM data (blue) and the surrounding padded data (black) with null values. Note that all the 'real' data is displayed as a single blue tint, this is due to the elevation range being stretched from the null value to the end of the real data range. Once you zoom into the actual data you may correct the elevation tint display range by right clicking in the display and selecting ELEVATION COLORS / EXPAND COLOR RANGE.



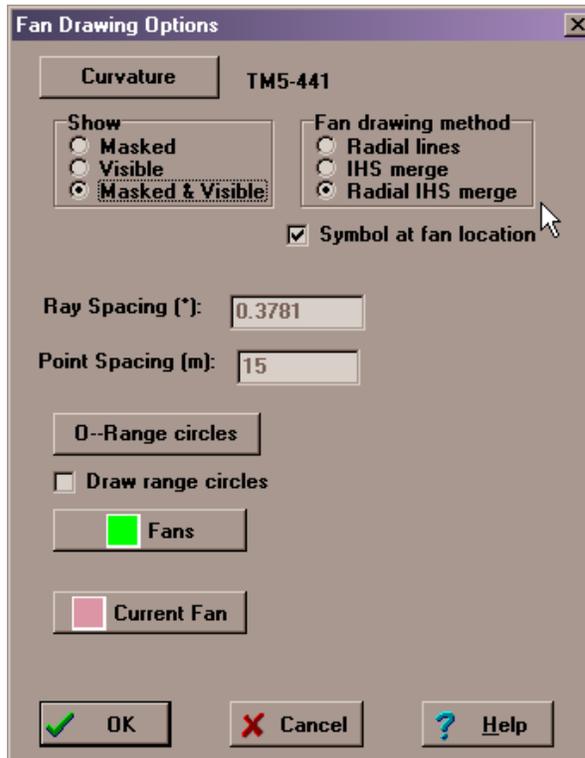
The DTED 2 padded 1 degree cell exported from a smaller 30 meter DEM file.

## ***New Radial I.H.S Weapons Fans.***

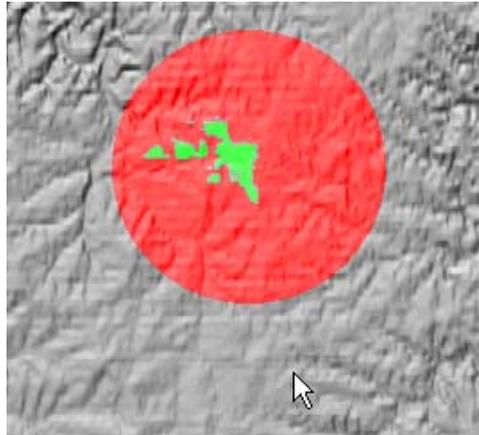
There are now three types of weapons fans that you can create in MicroDEM. After you have loaded your elevation file and any imagery or map that you wish to use as a background for your weapons fans, select OVERLAY / WEAPONS FAN from the main menu then double click on your display at the position for the center point for your weapons fan. This will bring up the 'Weapons Fan Parameters' window.



Click on the <FAN COLOR OPTIONS> button to open the 'Fan Drawing Options' window.



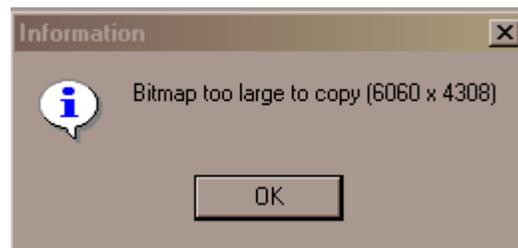
As you can see you now have three options for the fan drawing method: RADIAL LINES, I.H.S MERGE and RADIAL I.H.S MERGE. Select RADIAL I.H.S MERGE then click the <OK> button to close the 'Fan Drawing Options' window. Next click on the <OK> button to close the 'Weapons Fan Parameters' window and draw the weapons fan on your display.



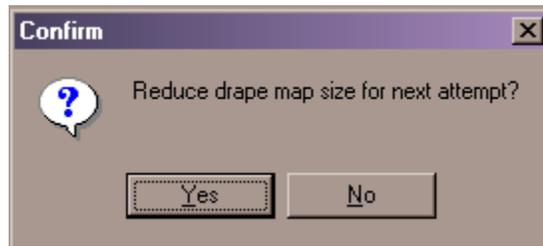
The RADIAL I.H.S MERGE weapons fan with 'masked' areas displayed in red and 'visible' areas displayed in green.

### ***BITMAP TOO LARGE Popup***

During creation of 3D Oblique and Perspective Views, if you are using high resolution data such as imagery, you have your OPTIONS / VIEWS /MAX SIZE DRAPES X DIMENSION and MAX SIZE DRAPES Y DIMENSION set to too high a value and you are attempting to display a very large area you will see a 'Bitmap Too Large' popup window.



You will be offered the chance to reduce the values for your Max Size Drapes X and Y Dimensions to a lesser value. The default setting for these parameters is 2000 pixels per axis and the maximum setting is 6000 pixels per axis.



Selecting the <YES> button will bring up the 'Bitmap Dimensions' window.



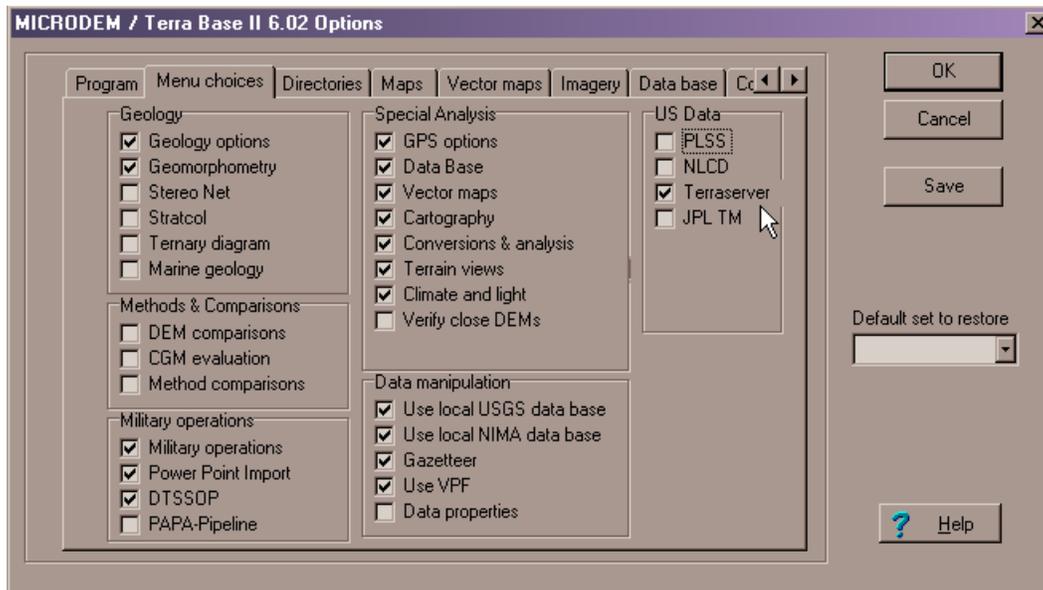
After reducing the values for Width and Height you will have to repeat the steps necessary to generate the 3D product which caused the initial error.

This new popup serves the same purpose as the `OPTIONS / VIEWS / MAX SIZE DRAPES X DIMENSION` and `MAX SIZE DRAPES Y DIMENSION` entries from the main menu.

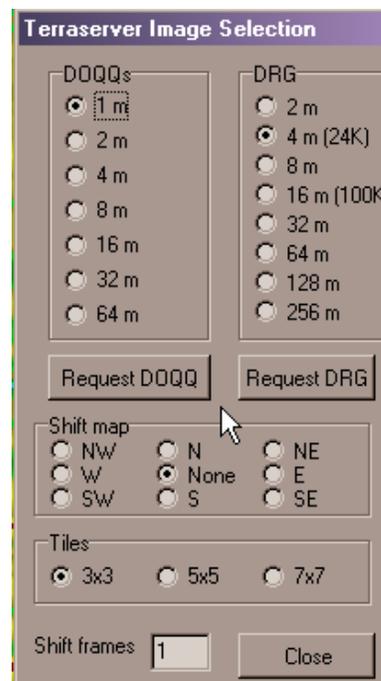
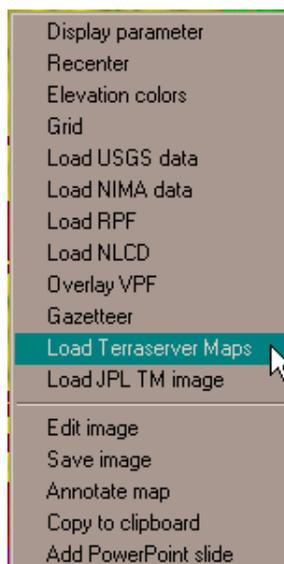
## TerraServer Digital Ortho Photo Quads and Digitized Raster Graphics.

If you are working with CONUS data and you have an active Internet connection you can quickly download DOQ imagery or DRG maps of your area by simply right clicking on the center point for your area of interest on your display.

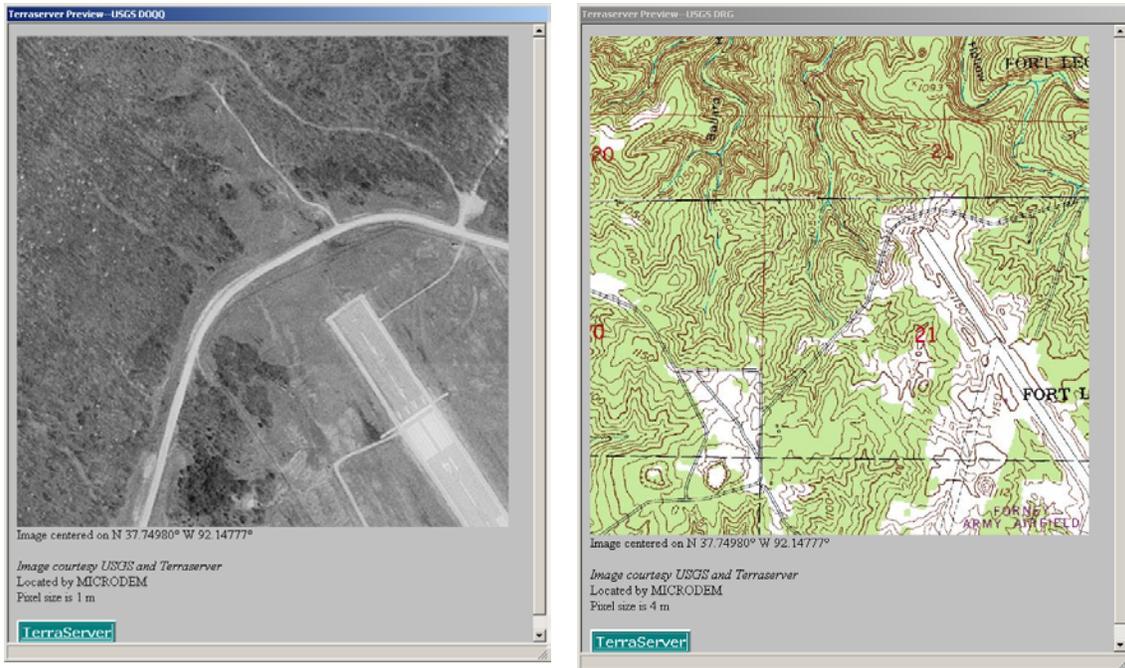
Make sure you have already checked the Terraserver box under the 'US Data' section of the OPTIONS / MENU CHOICES.



Once you right click on your display this will bring up the menu where you select LOAD TERRASERVER MAPS.



This in turn will bring up the ‘Terraserver Image Selection’ interface. Here you will select the desired scale and tile size for your image or map. After selecting the desired scale simply click on the <REQUEST DOQQ> or <REQUEST DRG> buttons.

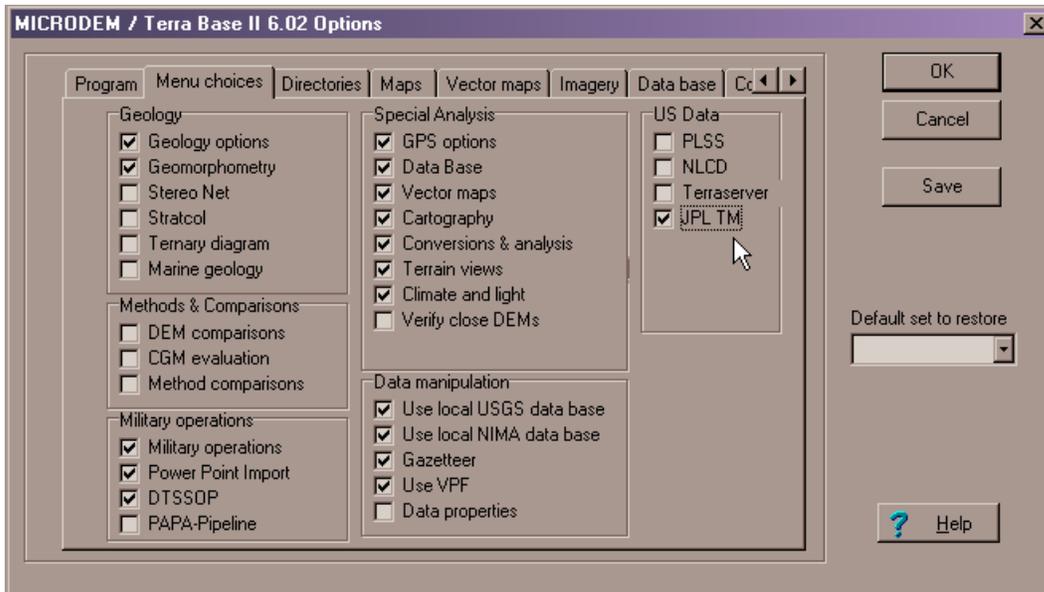


The image or map tiles for your area of interest will then be displayed. Note that these images and maps are for visual reference only and cannot be used for analysis.

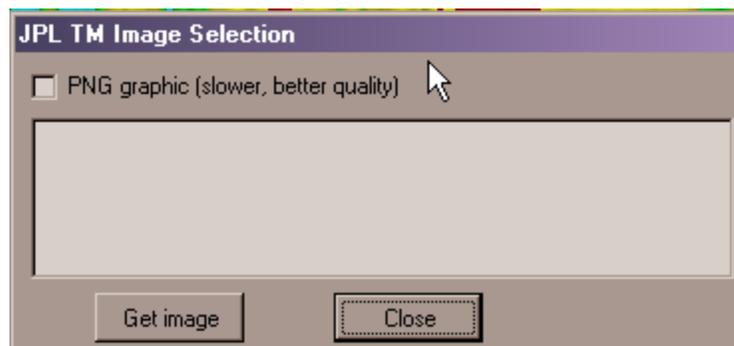
## **Jet Propulsion Laboratory Landsat Thematic Mapper Imagery.**

If you are working with CONUS data and you have an active Internet connection you can quickly download Landsat Thematic Mapper imagery of your area by simply right clicking on the center point for your area of interest on your display.

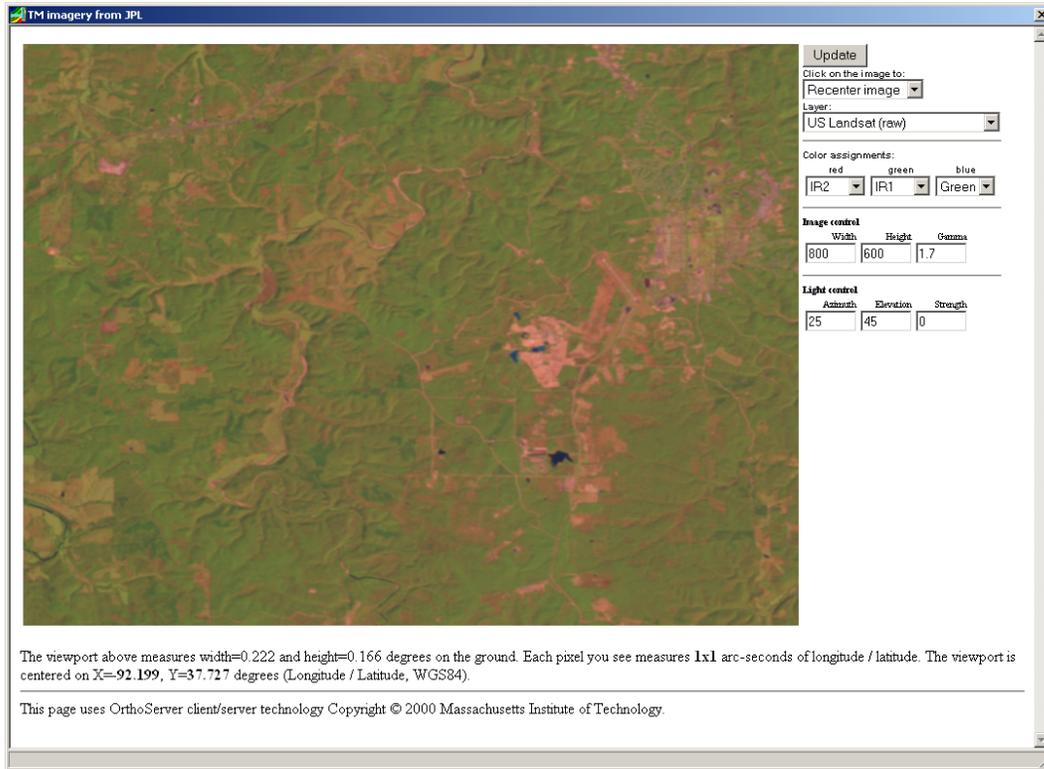
Make sure you have already checked the JPL TM box under the 'US Data' section of the OPTIONS / MENU CHOICES.



Once you right click on your display this will bring up the menu where you select LOAD JPL TM IMAGE.



For a quick download simply click on the <GET IMAGE> button. For a better quality image first check the 'PNG graphic (slower, better quality)' box and then click on the <GET IMAGE> button.



The image for your area of interest will then be displayed. Note that these images are for visual reference only and cannot be used for analysis.

### ***Problems Maximizing and Minimizing OpenGL Displays.***



If you 'Maximize' your OpenGL display, your other MicroDEM displays will also be maximized; you will therefore need to 'Restore Down' the size of all your displays using the button as shown below.



Otherwise your displays will be stacked at the top left with their title bars obscured by the Main menu GUI bar and you will not be able to move them.

## Overlay Public Land Survey System (PLSS) Township and Range.

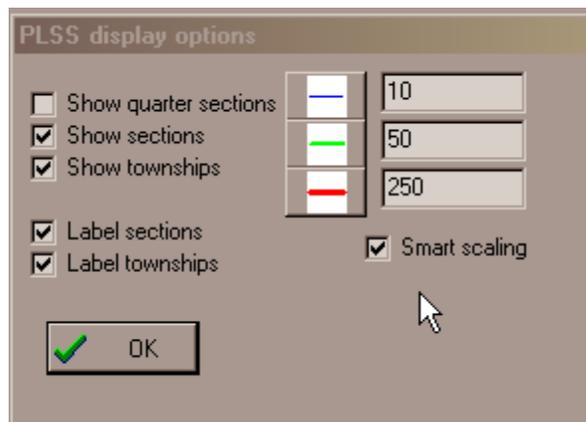
After downloading the zipped files for your Quad, County or State; you can display the PLSS Township and Range overlay for your area of interest over your background map display.

Download the necessary zipped files from <http://www.geocommunicator.gov/LSI> and unzip them in your ..\Mapdata\PLSS folder.

At the main menu select OVERLAY / PLSS GRID.

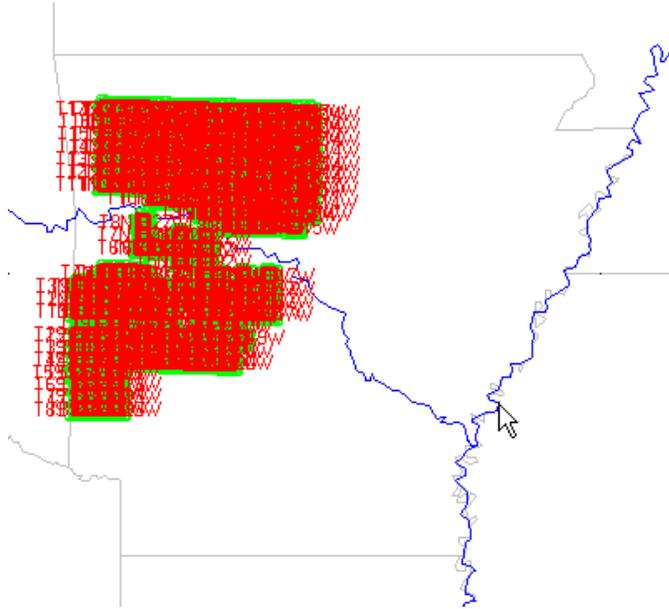


After processing the 'PLSS Display Options' interface will appear allowing you to check and uncheck the desired parameters for your PLSS display; click on the <OK> button to display your overlay.



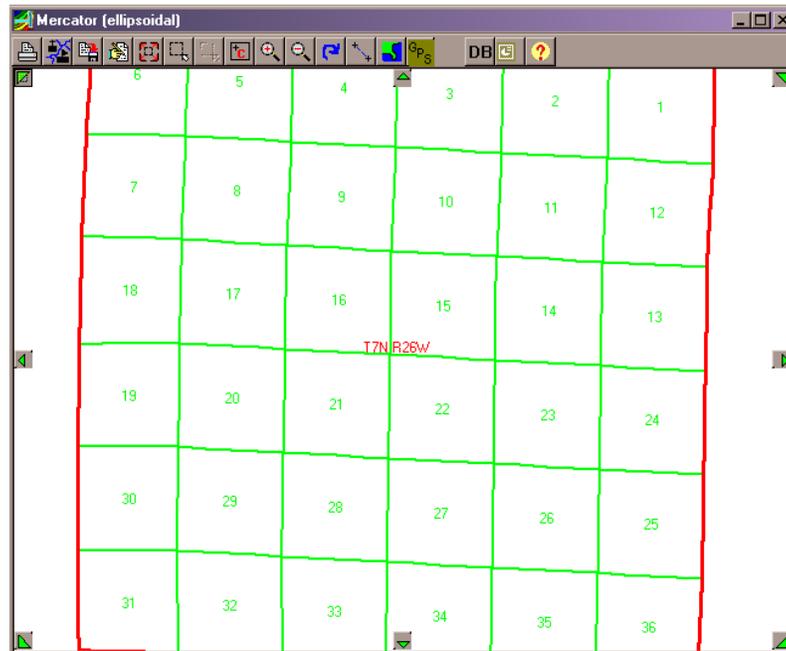
The data entry fields to the right of the line color selection buttons allow you to enter the scale that the feature will first be displayed. You may need to experiment to determine your preferences.

If you zoom-out to small scale, and have not checked the 'Smart scaling' box the display of your map may look like the following.



Here we have displayed the world vector map of Arkansas overlain with the PLSS data for the west part of the state.

Once you zoom-in, the level of detail will allow you to read the actual Township, Range, Section and Quarter.



These examples were created over the Vector World Map. You may utilize this function to overlay any type of data in the United States.

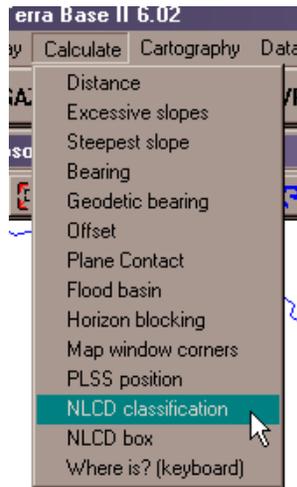
## ***Display National Land Cover Data.***

Download the National Land Cover data in geotif format for your area of interest from <http://seamless.usgs.gov> by selecting the <VIEW AND ORDER DATA SETS> button. Copy the downloaded data files into your ..\Mapdata\USGSData\NLCD folder.

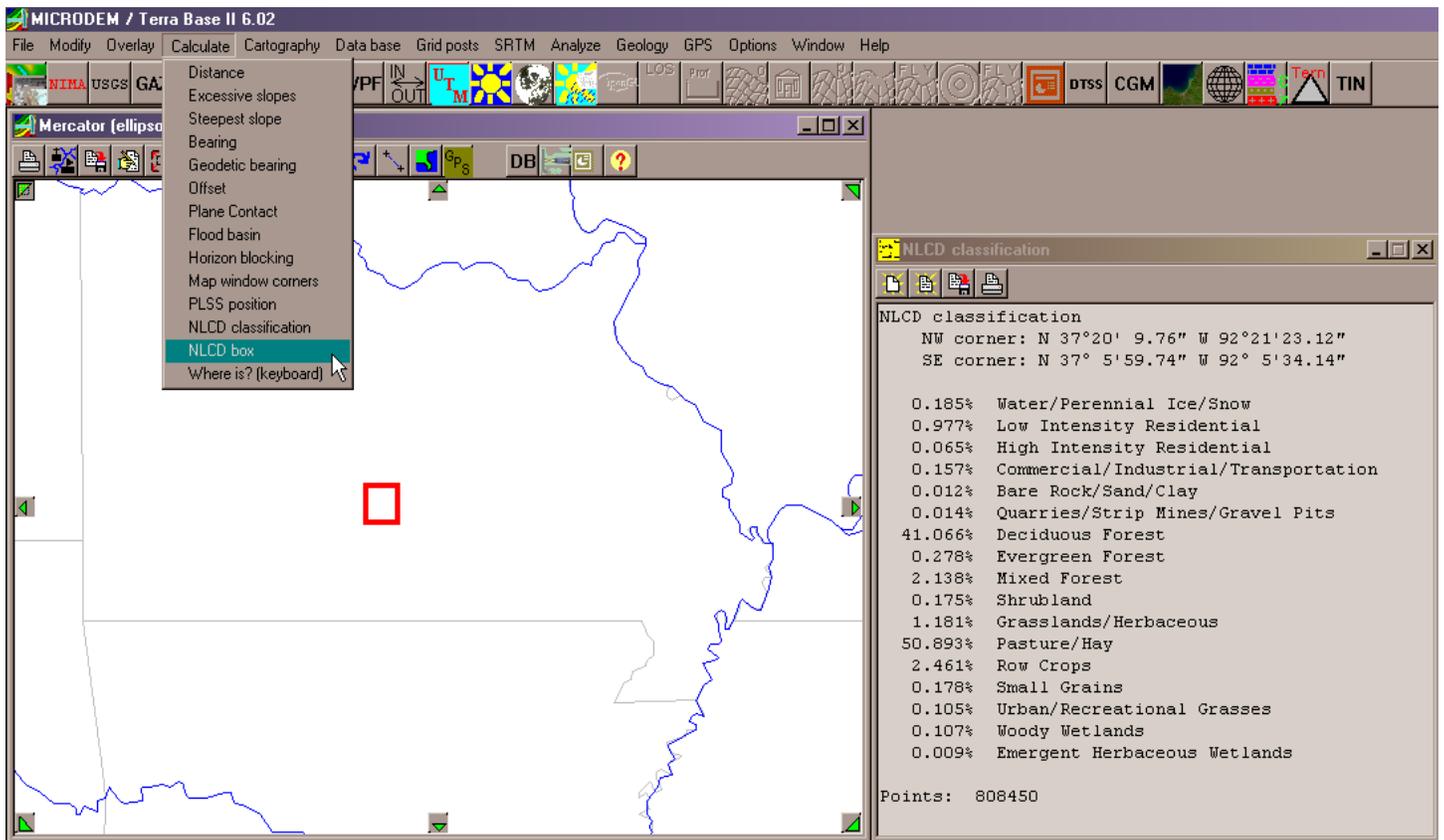
After loading the background world vector map, elevation, imagery or map data for your area of interest; you can generate a continuous readout of the land cover class for the area under your mouse-pointer at the bottom right of your MicroDEM display



This is done by selecting CALCULATE / NLCD CLASSIFICATION at the main menu.



You can display all the land classification data for an area by selecting CALCULATE / NLCD BOX from the main menu and then defining the area with your mouse.



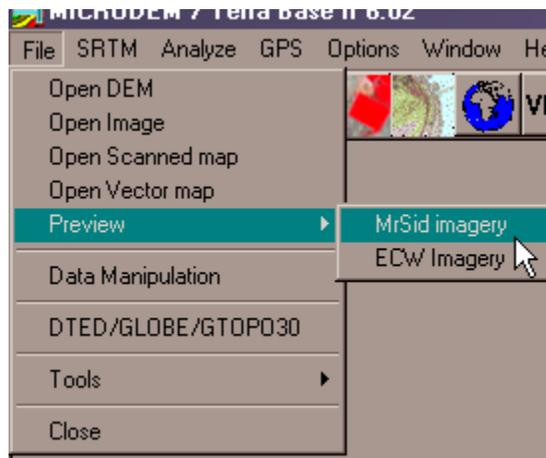
The area you selected is displayed as the red rectangle on your map display (left).  
The NLCD data is displayed in a second window (right).

## ***Active X MrSID and ECW Plugins for MicroDEM.***

MrSID compressed imagery may be viewed using the Active X plugin downloaded from <http://www.lizardtech.com/solutions/geospatial> .

ECW Compressed imagery may be viewed by downloading the ActiveX plugin from <http://www.ermapper.com>.

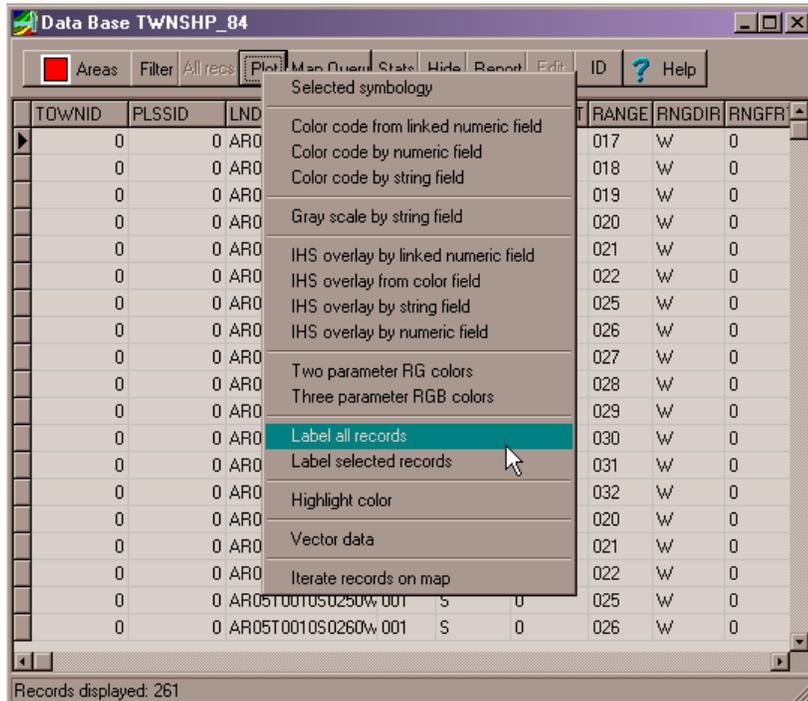
Once you've downloaded and installed the necessary files you may display MrSID and ECW imagery by selecting FILE / PREVIEW / MrSID IMAGERY or ECW IMAGERY from the main menu.



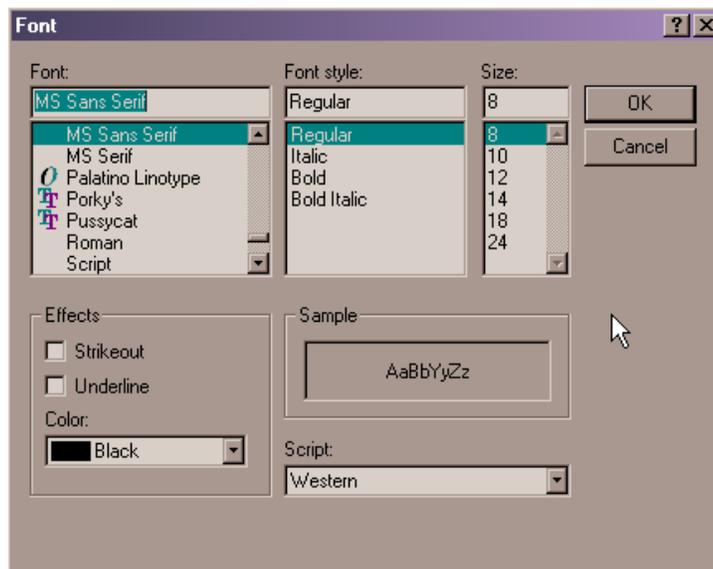
Note that these displays are for visual reference only and you may not use the imagery for analysis.

## Font Control in Database Label Records Functions.

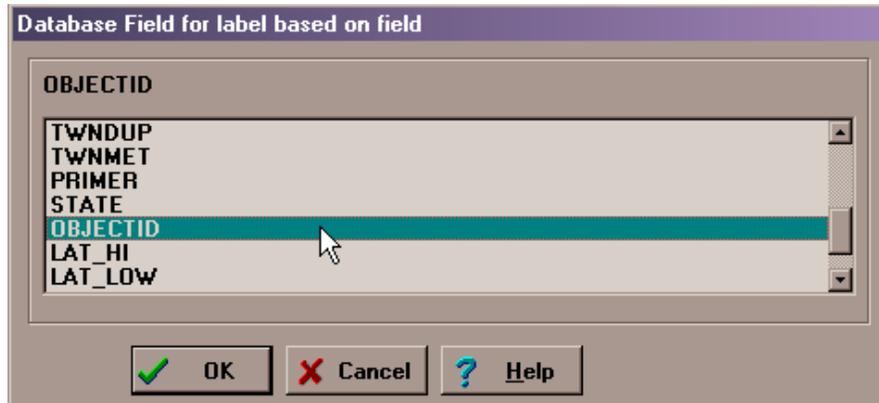
When you use the <DB> button or Database function to open a shape files (.dbf) attribute table; you now have complete control over the font type, size and color used in the PLOT / LABEL ALL RECORDS or LABEL SELECTED RECORDS functions.



Here we have opened the attribute table for one of our PLSS Township shape files and selected the LABEL ALL RECORDS menu choice. This opens the 'Font' interface.



Here you are given the opportunity to select the font, font style, size and color for your attribute labels. Once you have selected the desired font features you click on the <OK> button. This will bring up the 'Database Field for Label Based on Field' interface.



Here you will select the specific record label or column header field whose contents will be used to label each record.

## ***Proper Display of Attribute Labels in 3D Views and Fly Throughs.***

Once you have displayed the chosen attribute labels for your vector overlays you may wish to use them in generating Perspective Views, Oblique Views or in movies. Your first step after creating your overlays and labels is to zoom –in to the data until the text is clearly visible on-screen. For generation of Perspective View and movies you will need to check both boxes ‘Show Overlays on Drapes’ and ‘Drape Map Without Redrawing’.

**Perspective Options**

Height above ground (m)

Your elevation (m)

Horizontal Field of View (°)

Vertical Field of View (°)

Depth of view (m)

Distance to first profile (m)

Frame separation (m)

Movie name (4 chars)

Vert Exag

Width (pixels)

Height (pixels)

**Flight**

Nap of the earth

Constant elevation

**Method**

Wire frame (Regular)

Wire frame (ChromaDepth)

Quick reflectance

Reflectance

Draped

Show flight map

Side by side windows

Filter directions

Label viewport

Title in viewport

Viewshed fan on map

Show grid on drapes

Show overlays on drapes

Drape map without redrawing

Dual fields of view

Dual drape maps

FOV1

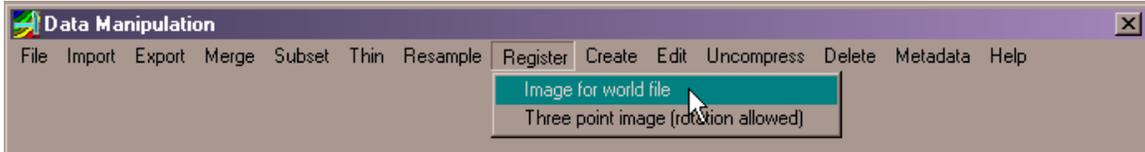
FOV2

## Registering Imagery and Scanned Maps.

This new capability to register .BMP, .JPG, .GIF and .PNG images using three or more control points with known UTM or Lat/Long coordinates allows you to georeference an image or scanned map and create an associated world file.

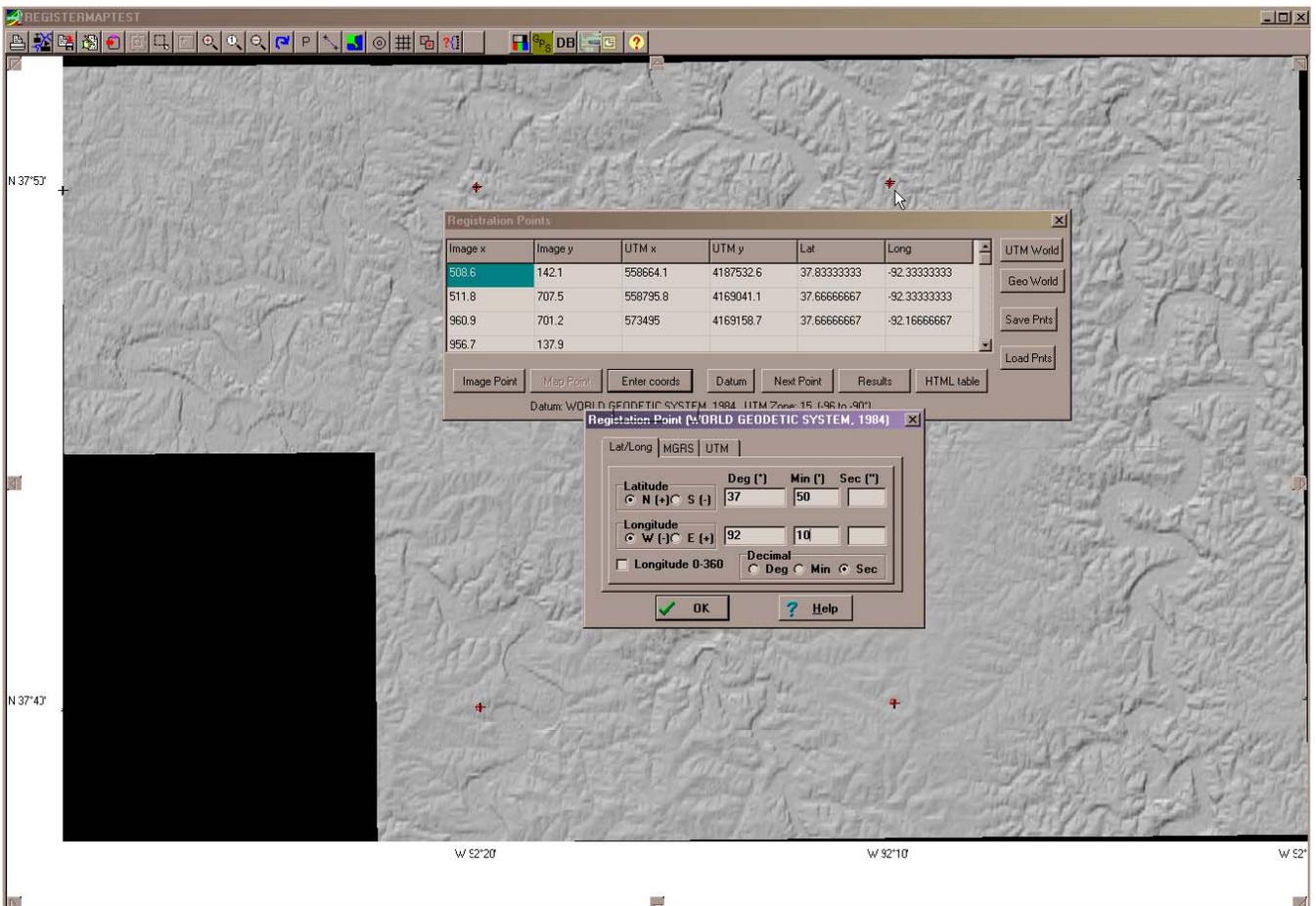
Before you start make sure that you've set the correct Datum and/or UTM zone.

Step 1. At the main menu select FILE / DATA MANIPULATION to bring up the Data Manipulation menu.



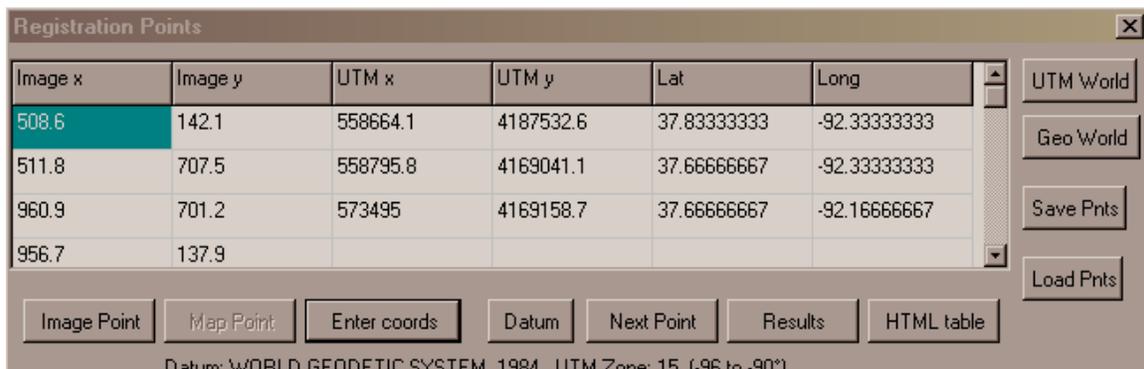
Step 2. In the Data Manipulation menu select REGISTER / IMAGE FOR WORLD FILE. This will open the 'Open Image for World File' window where you will navigate to and select the desired image. After selecting the image this will open the 'RegisterImage' display and the 'Registration Points' interface.

Step 3. Zoom-in the image to 1:1 or as close as you can get to allow precise selection of control points.



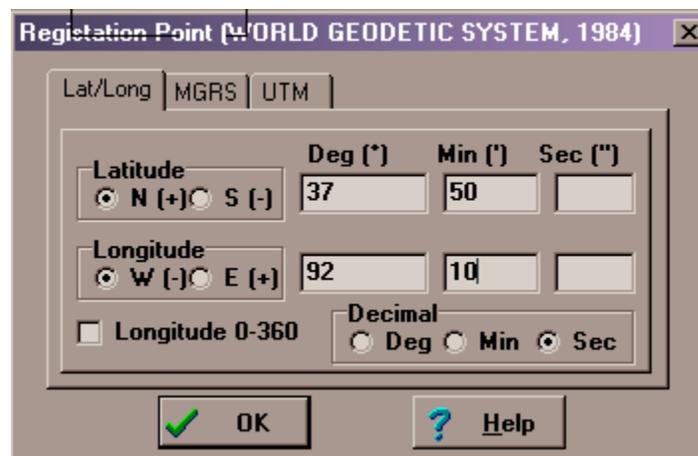
Here we have (previously) saved a reflectance display of elevation data with lat/long grid ticks and marginal labels. This gives us a product similar to a map, in that the control points and the correct coordinates for the control points are readily available on the face of the product for our use.

Scanned maps are the ideal product for this registration function since there is no tedious comparison of features, such as road intersections and no need for GPS coordinates or ground truth for such features used as control points. Also since the map is already built to a given projection it is already geometrically correct. Only 'rectified' imagery should be used in this fashion since unrectified imagery will be distorted due to camera geometry and 'terrain layover'.



Step 4. To begin registration click on the <IMAGE POINT> button then double click on the location for the first control point on the image display; in this case the grid tic at the top left. This will enter the image coordinates (X&Y) for the point.

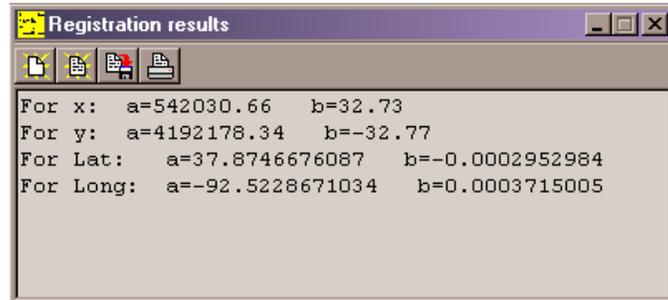
Step 5. Next, click on the <ENTER COORDS> button, this will bring up the 'Registration Point (WORLD GEODETIC SYSTEM, 1984) interface. Here you will enter the coordinates for the point in either Lat/Long, MGRS or UTM coordinates. After entering the coordinates click the <OK> button to close the interface and enter the coordinate values in your registration table.



Step 6. Click on the <NEXT POINT> button and then double click on the display at the next control point/feature.

Step 7. Repeat steps 5 through 6 until you have entered at least three control points, widely spaced around the image. If you have a scanned map you should use at least 4 control points, scattered around the perimeter of the map. You may enter as many control points as necessary.

Step 8. If you wish to review the resulting intercepts and pixel size you may do so by selecting the <RESULTS> button.



Step 9. Click on the <GEO WORLD> button (for lat/long coordinates) or the <UTM WORLD> button (For UTM or MGRS coordinates) to generate the 'World File' with the coordinates of your image/map. NOTE: You may save and restore registration data by selecting the <SAVE PNTS> and <RESTORE PNTS> buttons. See the MicroDEM HELP section on 'world file' for more information on this subject.

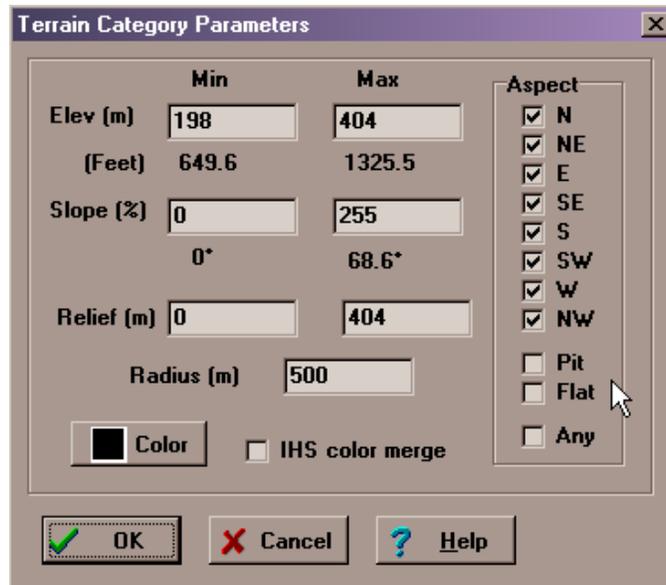
You may display your newly georeferenced image/map by selecting FILE /OPEN SATELLITE IMAGE from the MicroDEM main menu. This will bring up the 'Open Satellite Image' window. Set your 'Files of type' to 'BMP/JPEG/PNG, World File'.



Navigate to the location of your original image and load the associated .PNW world file you've just created.

### ***Terrain Categories Pits and Flats.***

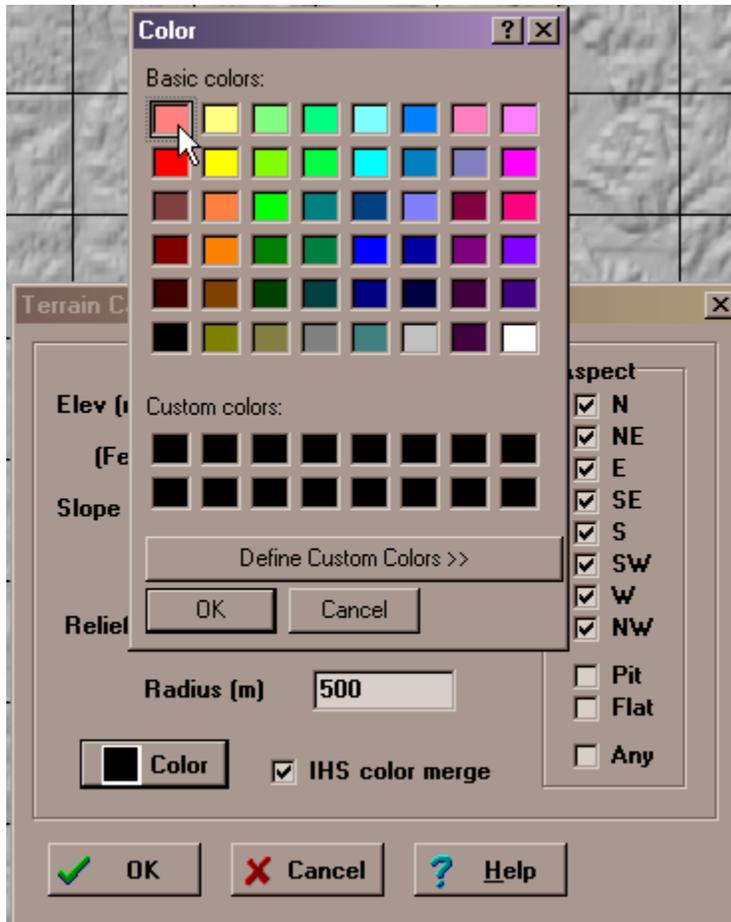
New capabilities have been added to the Terrain Categories function. This function is accessed via the main menu by selecting OVERLAY / TERRAIN CATEGORIES. This will bring up the 'Terrain Category Parameters' interface.



The addition of PIT and FLAT checkboxes offer an easy to use method of applying terrain mask Elevation, Slope and Relief parameters to depressions and level areas.

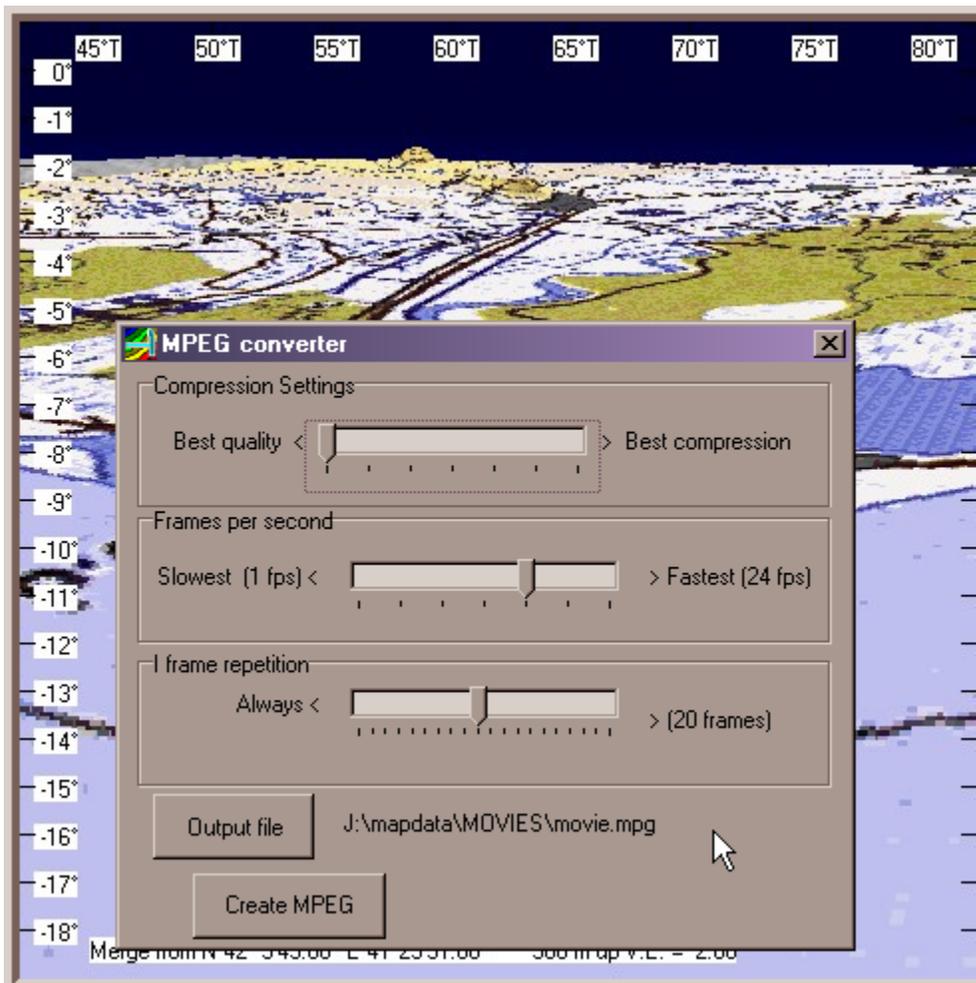
## ***Transparent Terrain Category Masks.***

When you create a Terrain Categories product and you wish the resulting mask to be transparent you must check the 'I.H.S Color Merge' box and when selecting the color you must be careful to select a **'pastel'** color rather than a 'primary' color, as shown below.



## ***New MPEG Encoding for Movies.***

The new MPEG encoding in MicroDEM allows you to create larger view, longer duration, higher quality movies than previously possible. The new interface also gives you more control over compression, image quality, frame rates and frame repetition parameters.



If you have trouble running these movies with your current movie player you can download the new Microsoft Media Player 9.0 for Windows from the following <http://www.microsoft.com/downloads/search.aspx?displaylang=en>  
NOTE: MS Media Player will require a live Internet connection to download the correct CODEC the first time you try to play a movie.  
Alternatively, you can download the new QuickTime 6.0 movie player from <http://www.apple.com/quicktime/download/>.

## ***New Movie Creation Method for Large Areas of High Resolution Data.***

Former versions of MicroDEM allowed you to either define the route for your movie, after which the individual frames were generated over optimized data, or to LiveFly over a lesser resolution data set but with greater control over the route, look direction and other parameters.

You now have the capability to LiveFly your route, changing look direction, pitch, altitude etc, over low resolution data to quickly define the route and other parameters for your movie. You then utilize the FILE / REPLAY FLIGHT ROUTE function with the .FLT file created from your LiveFly session to generate the movie with same flight parameters over optimized, high resolution data.

Step 1. Load the elevation data and the low resolution map or imagery for your area of interest. This can be the same imagery you use for the high-resolution end product, but zoomed-out (subsampled) to display at lower resolution. Note that your display will need to be zoomed-in enough for you to recognize features so that you may choose your desired route.



Step 2. Use the LiveFly button to initiate your real-time fly through. In the 'Fly Through Parameters' window be sure you have checked the 'DRAPE MAP WITHOUT REDRAWING' box.

A screenshot of the 'Fly through parameters' dialog box. The dialog has a title bar 'Fly through parameters' and a 'Reset defaults' button. It contains several input fields and checkboxes. The 'Flight' section has radio buttons for 'Nap of the earth' (selected) and 'Constant elevation'. The 'Method' section has radio buttons for 'Wire frame (Regular)', 'Wire frame (ChromaDepth)', 'Quick reflectance', 'Reflectance', and 'Draped' (selected). The 'Drape map without redrawing' checkbox is checked. Other fields include 'Height above ground (m)' (500), 'Your elevation (m)' (1000), 'Horizontal Field of View (\*)' (40), 'Vertical Field of View (\*)' (20), 'Depth of view (m)' (7500), 'Distance to first profile (m)' (250), 'Frame separation (m)' (250), 'Movie name (4 chars)' (TEST), 'Vert Exag' (2), 'Width (pixels)' (320), and 'Height (pixels)' (240). There are also fields for 'FOV1' (5.87) and 'FOV2' (1.65). At the bottom are 'OK', 'Cancel', and 'Help' buttons.

Step 3. After you have flown your desired route, load the elevation data and high resolution imagery for your area of interest. This can be the same data sets you just flew with the LiveFly.

Step 4. At the main menu select FILE / REPLAY FLIGHT ROUTE and then select the (.FLT) file from the LiveFly session.



Step 5. In the 'Fly Through Parameters' make sure you **uncheck** the 'DRAPE MAP WITHOUT REDRAWING' box.

Your fly through movie will be regenerated using optimized imagery to give the best quality movie. Note that the imagery for the immediate scene will be processed to optimize the image quality, then several frames of the movie will be generated over this optimized data. Then the imagery for the next area will be processed to optimize the image quality and the frames which fall over this area will be generated. This process is repeated until the movie is completed. Be aware that this process can take several hours depending on the length of your movie, the amount of data displayed and the capability of your computer.

## ***NIMA Country Data Importing Procedures.***

If you plan to use any of the new NIMA Country Data in MicroDEM you must first manually copy the data shapefiles, which may actually be composed of several files per feature (.prj, .shp, shx, .sbn, .sbx, .dbf) to your ..\Mapdata\Nimadata\VPF-Shapes folder.

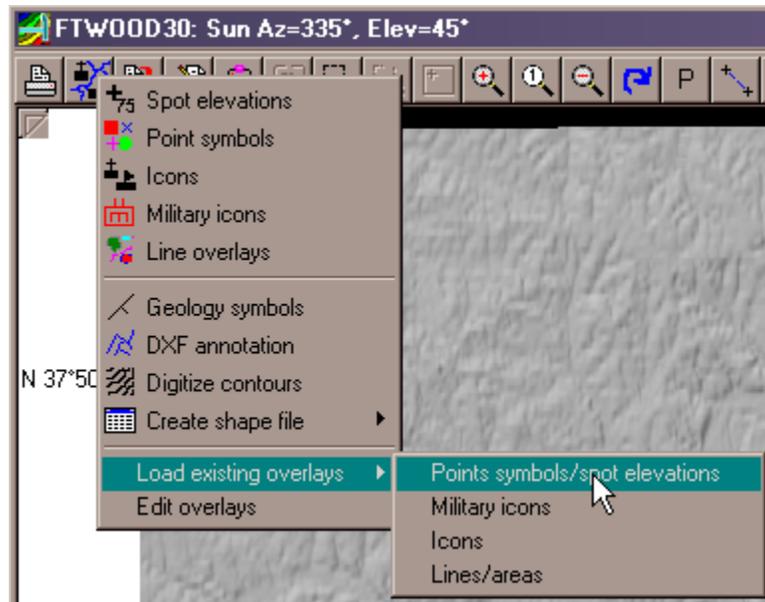
Next select FILE / DATA MANIPULATION from the main menu then select CREATE / VPF COUNTRY GIS INDEX from the Data Manipulation menu. This method may be necessary because there is yet no standard layout for these Country Data sets.

The alternative method of FILE / DATA MANIPULATION / IMPORT / VPF / COUNTRY SHAPE FILES may work your data set. This method is required if you plan to use the Geosym map symbology for your map.

## ***Map Annotation - Spot Elevations and Point Symbols.***

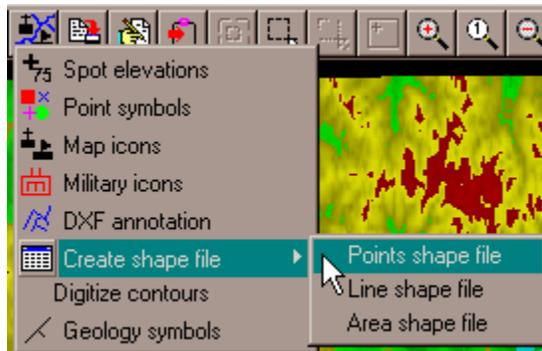
These symbols are now stored as dBase (.dbf) files and may be reloaded and queried by clicking on the <DB> button, navigating to their location on your hard drive ( by default in ..\Mapdata\MD-Proj \Points folder) and then selecting the individual file name. This method will open the attribute table for each point or spot elevation record and will allow you to filter and perform queries on the records but will not properly symbolize the features as they were originally created.

The proper way to redisplay these files is to utilize the <Map Annotation> icon and select LOAD EXISTING OVERLAYS and POINT SYMBOLS/SPOT ELEVATIONS from the pull down menu.

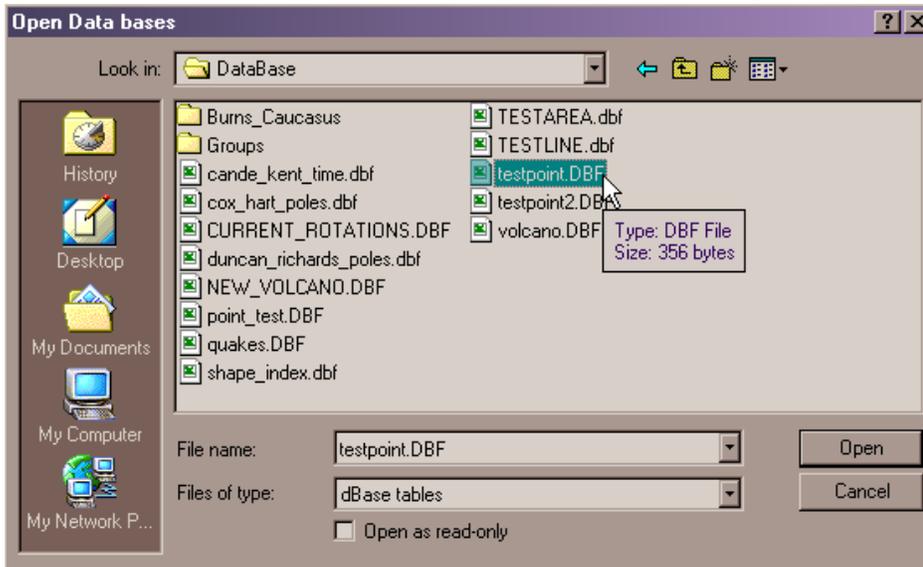


Using this method will redisplay the points and spot elevations as they were originally created. See **Map Annotation Editor for more information.**

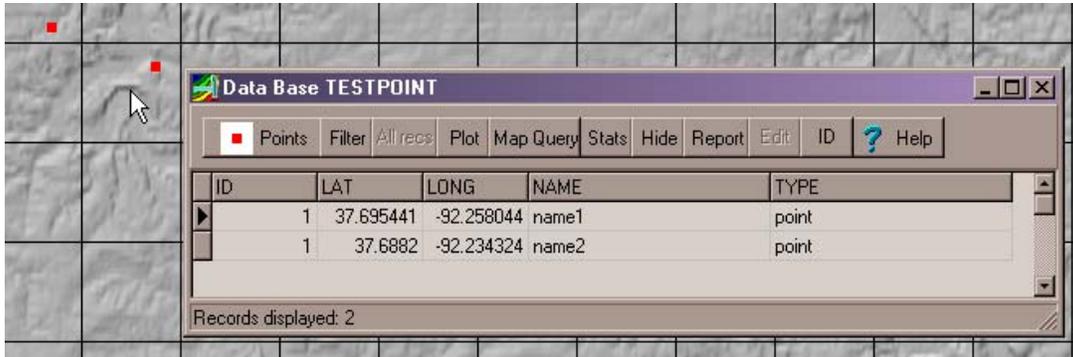
### **Map Annotation – Shape Files.**



Normal shape files created through the MAP ANNOTATION/CREATE SHAPEFILE /POINTS SHAPEFILE, LINE SHAPEFILE and AREA SHAPEFILE procedure may be reloaded and queried by clicking on the <DB> button, navigating to their location on your hard drive ( by default in ..\Mapdata\Database folder) and then selecting the individual file name.



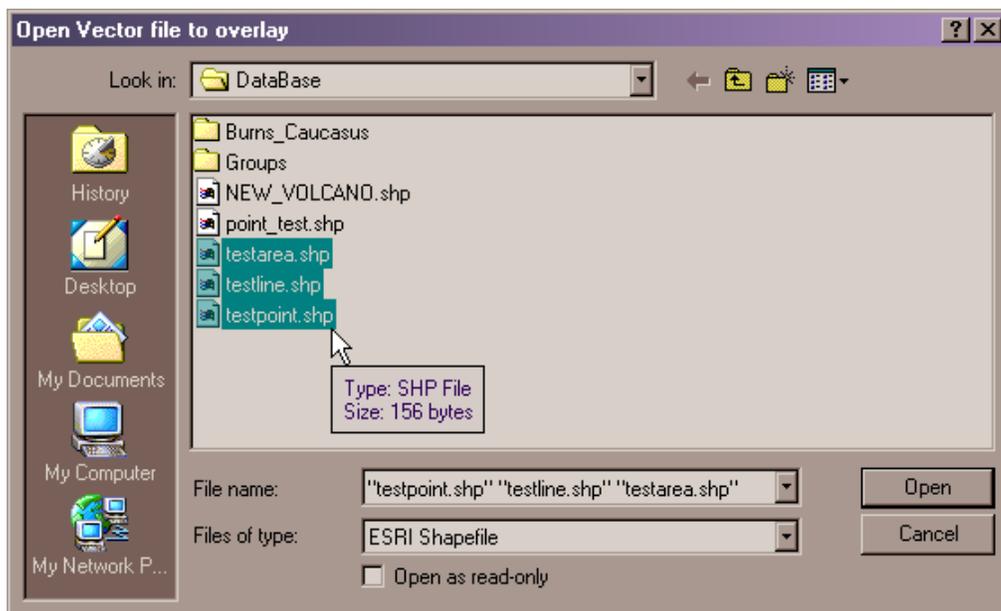
This method will open the attribute table for each point, line or area record and will allow you to filter and perform queries.



If you simply wish to redisplay these files as they were originally created then at the main menu select OVERLAY/VECTOR OUTLINES/ESRI SHAPEFILES.



This will bring up the 'Open Vector File to Overlay' window.



Make sure you've selected 'Files of Type' 'ESRI Shapefiles'. Navigate to the location of your files and select one or more (.shp) files to be redisplayed. **See Map Annotation Editor for more information.**

### ***Map Annotation Editor, Drag'n'Drop Editing and Share the COP.***

The new Map Annotation Editor works with four classes of data objects and offers Drag'n'Drop, Deletion and Editing functionality for these objects:

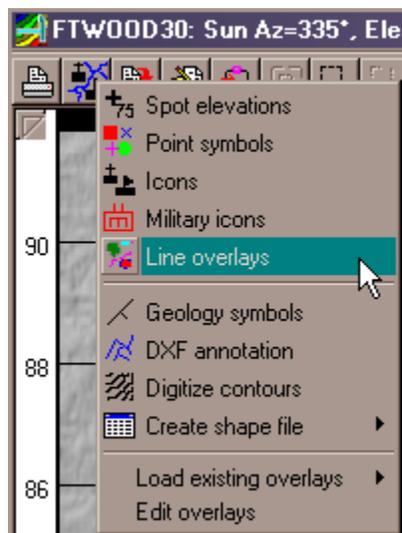
POINTS – which include Spot Elevations and Point Symbols (Spots and Points can be appended to and share the same .dbf file).

ICONS – which include pre-scaled .bmp, gif and .cgm files in your ..\Mapdata\Icons folder.

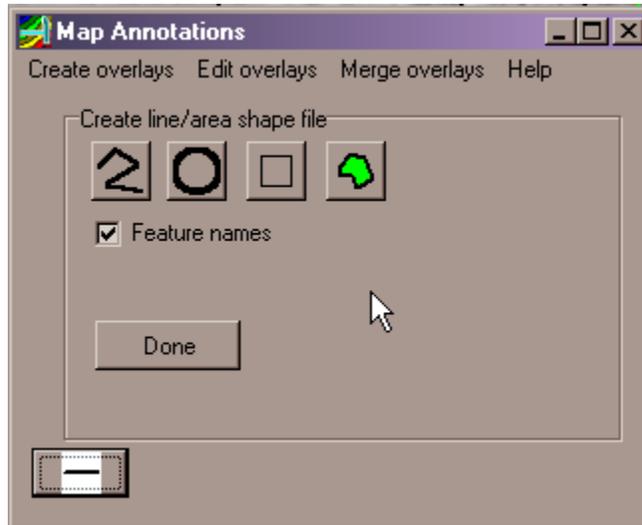
MILITARY ICONS – which include icons generated in the Military Icon Composer.

LINES – a new class of simple line, circle, rectangle and polygonal shapefiles whose only attributes are their coordinates and their name.

Here we have selected the LINE OVERLAYS function from the pull down menu.



This will bring up the Map Annotations interface with the 'Create line/area shape file' functions.



Here you can select the type of Line object you wish to delineate: line, circle, rectangle, and polygon. When you are finished drawing click on the <DONE> button to close the Create line/area shape file section of the interface. You will then be able to continue creating other objects via the 'Create Overlays' menu or close the Map Annotation interface by clicking on the <X> button at the top right corner.

Once you have created your Spot, Point, Icon, Milicon and Line overlays their respective .dbf files are stored in your ..\Mapdata directory in the following folders:

SPOT ELEVATIONS – in ..\Mapdata\MD-Proj\Points folder.

POINT SYMBOLS – in ..\Mapdata\MD-Proj\Points folder.

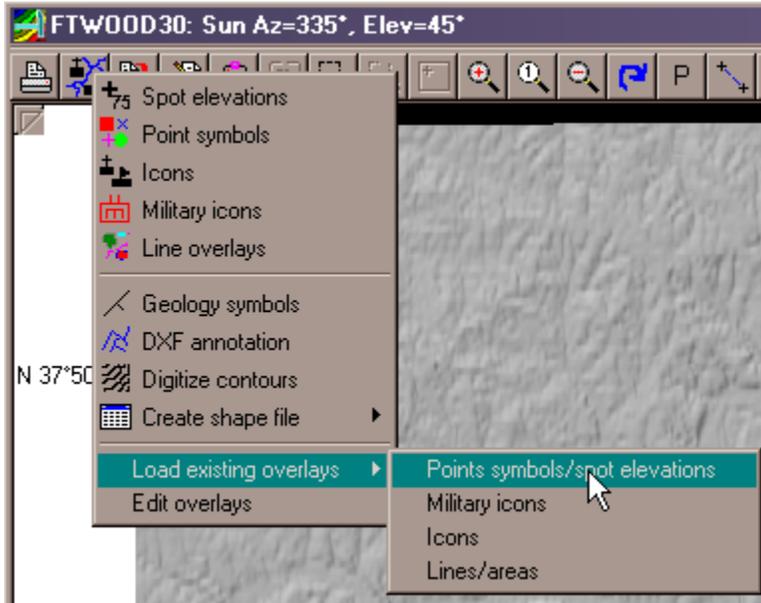
ICONS – in ..\Mapdata\MD-Proj\Icons folder.

MILITARY ICONS – in ..\Mapdata\MD-Proj\Milicons folder.

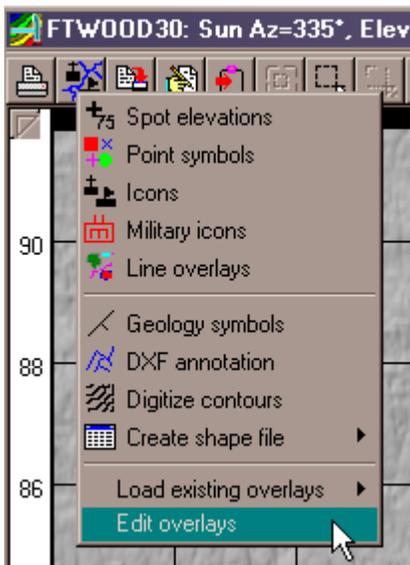
LINE OVERLAYS – in ..\Mapdata\MD-Proj\Annotation folder.

This allows you to redisplay your overlays at any time.

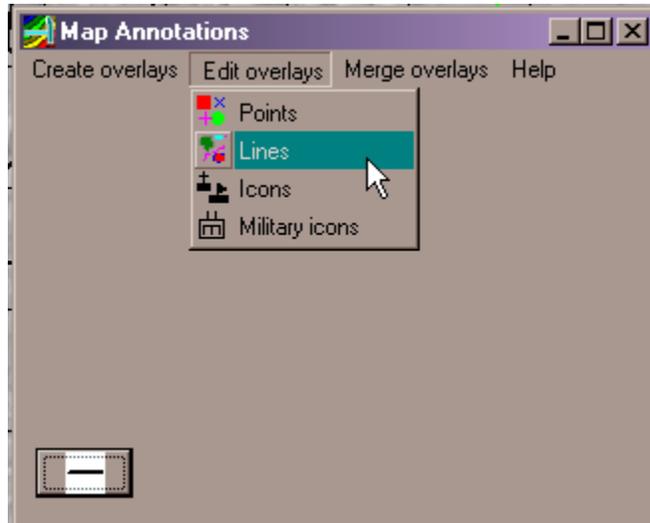
This also allows you to **email and share these overlays with other MicroDEM 6.03 users**. Now you can build and share the **Common Operational Picture (COP)** as long as all users have the background elevation, imagery or map data over which they will redisplay these common overlays.



Once you have redisplayed your overlays you can edit them using the new Map Annotation Editor. To bring up the editor select EDIT OVERLAYS from the Map Annotation icon pull down menu.



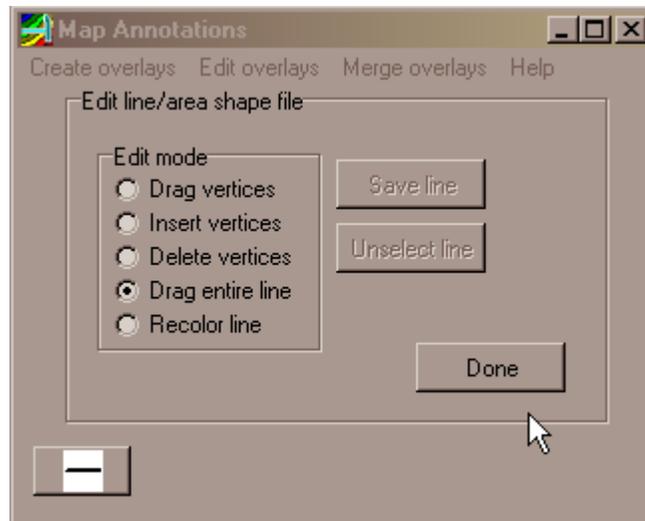
This will bring up the Map Annotations editor interface.



Here you select the type of object overlay you wish to edit. This will open the 'Open Vector File to Overlay' window.

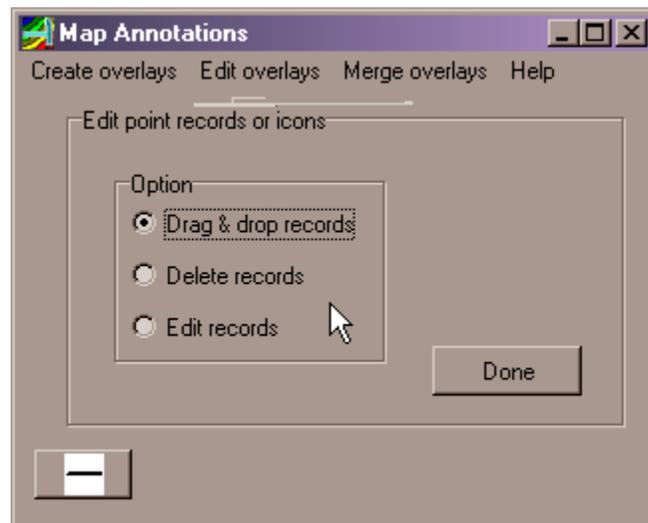


Here you will navigate to the location and select the .dbf file you wish to edit. This will bring up the 'Map Annotations' Editor with the 'Edit line/area shape file' interface.



The 'Lines' editor is the most complicated editor available on the Map Annotations interface allowing you to DRAG VERTICES, INSERT VERTICES, DELETE VERTICES, DRAG ENTIRE LINE and RECOLOR LINE.

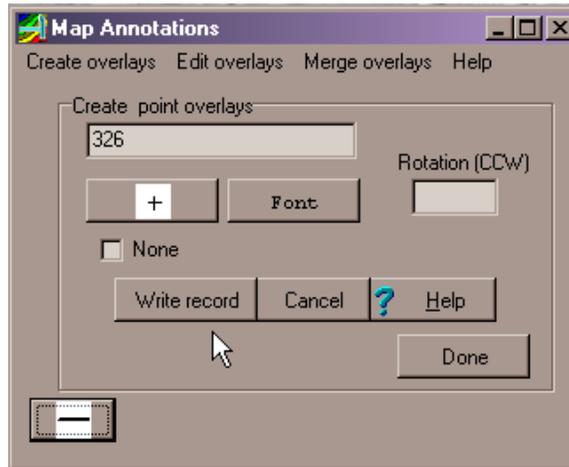
When you have completed the edits for the selected line, circle, rectangle or polygonal object you must click the <SAVE LINE> button to save the results of your edit. When you have completed all Line editing you must click the <DONE> button to close the 'Edit line/area shape file' section of the editor.



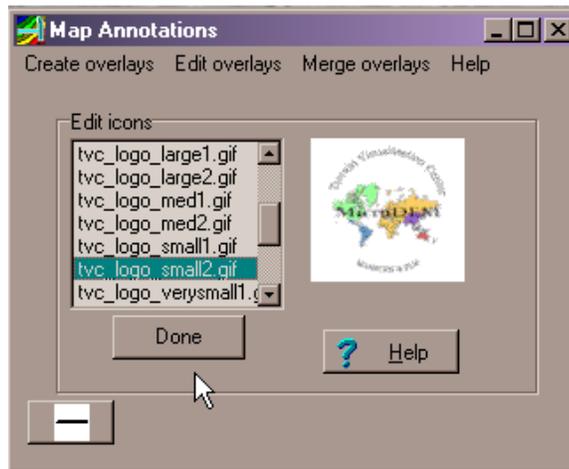
The Spot Elevations, Point Symbols, Icon and Military Icons 'Edit point records or icons' interface (shown above) is much simpler. The DRAG & DROP RECORDS and DELETE RECORDS options are self-explanatory. The EDIT RECORDS options will bring up the

original Spot Elevation, Point Symbols, Icons or Military Icon Composer interface (as show below).

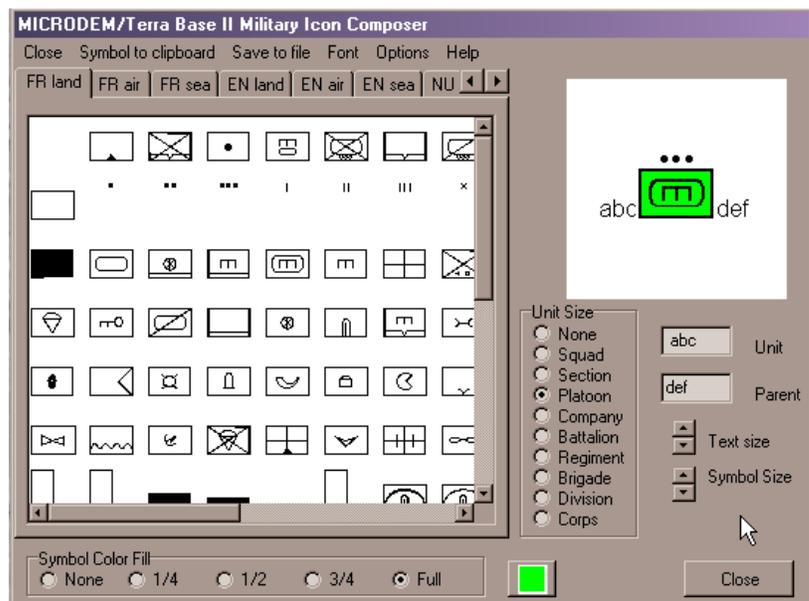
SPOT ELEVATIONS & POINT SYMBOLS →



ICONS →

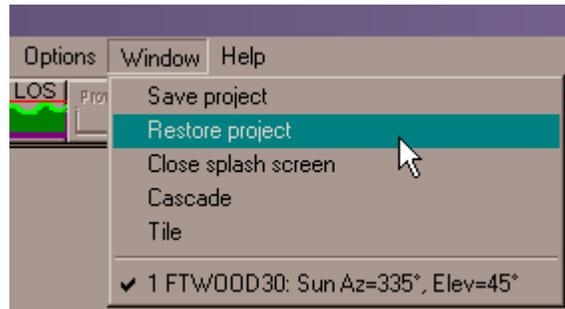


MILITARY ICONS →

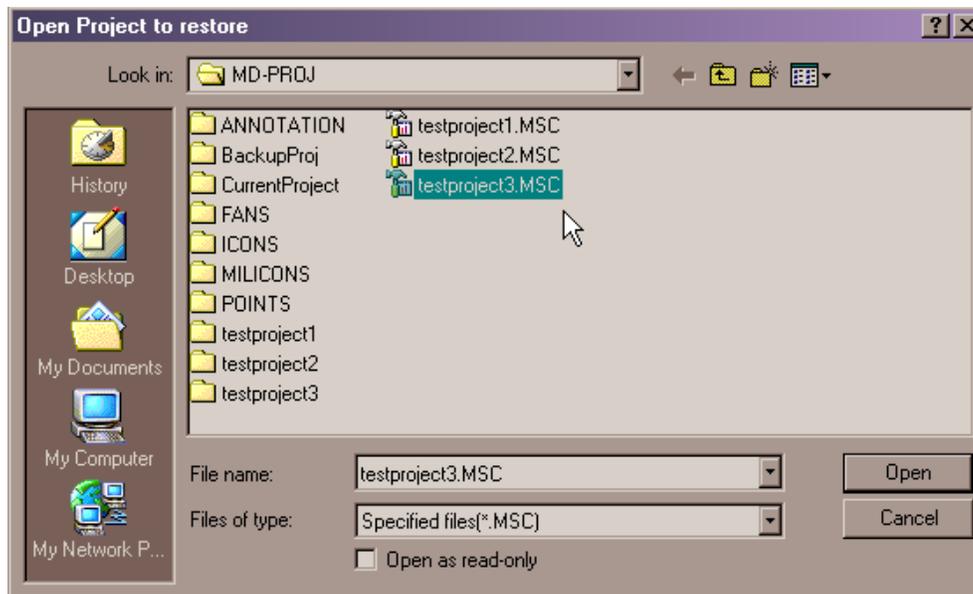


## Save Project and Restore Project.

The new Save and Restore Project functions are accessed at the main menu by selecting WINDOWS / SAVE PROJECT and RESTORE PROJECT. These functions now will save and restore your background map/imagery/grid as well as overlays for: Autocad Digital Exchange Files (.dxf), Spot Elevations, Point Symbols, Icons, Military Icons and the line, circle, rectangle and polygons objects (.dbf) of the new Line class. **See Map Annotation Editor, Drag'n'Drop Editing and Share the COP.**



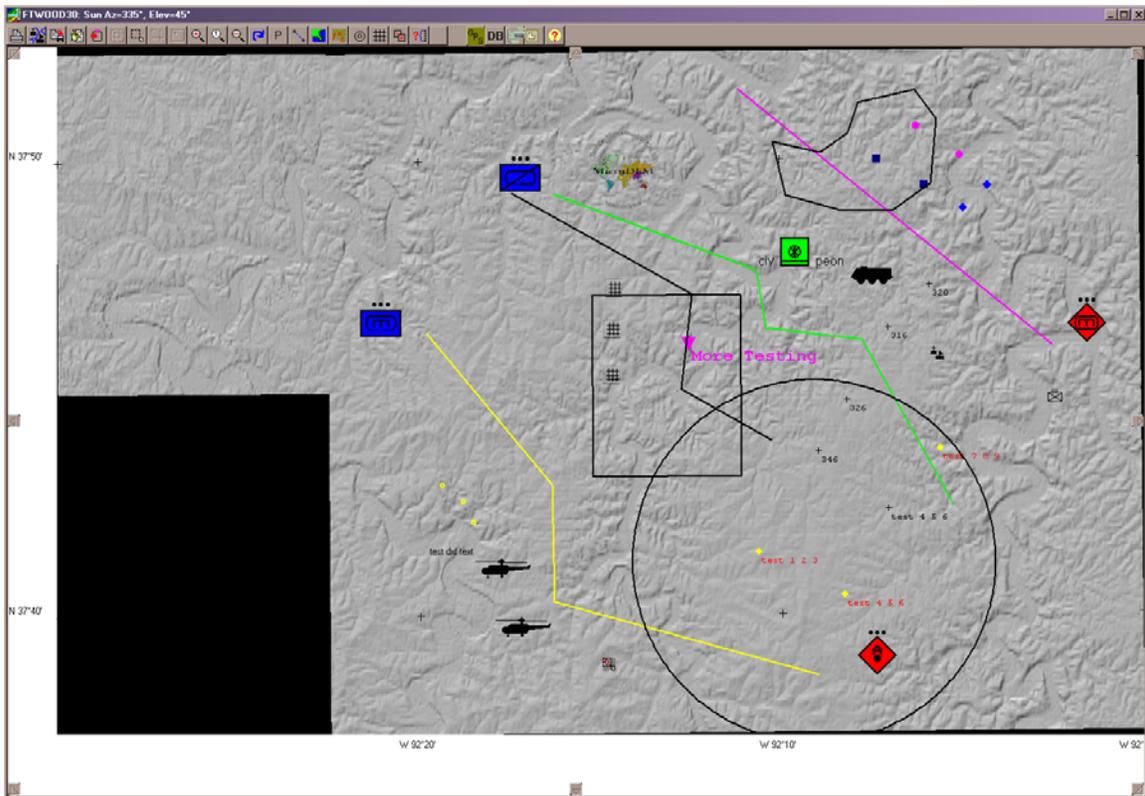
Projects are stored as both a file and directory in your `..\Mapdata\MD-Proj\` folder.



Selecting the desire (.MSC) file will restore your project.



NOTE: The OVERLAY / OVERLAY MANAGER allows you to restack or delete individual components of your project.

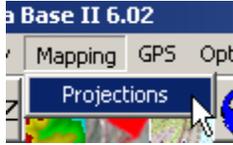


This is a quick example of a restored project containing the background 30 meter DEM and six types of overlays: DXF, Spot Elevations, Point Symbols, Icons, Military Icons and Lines which may be saved and restored in a project.

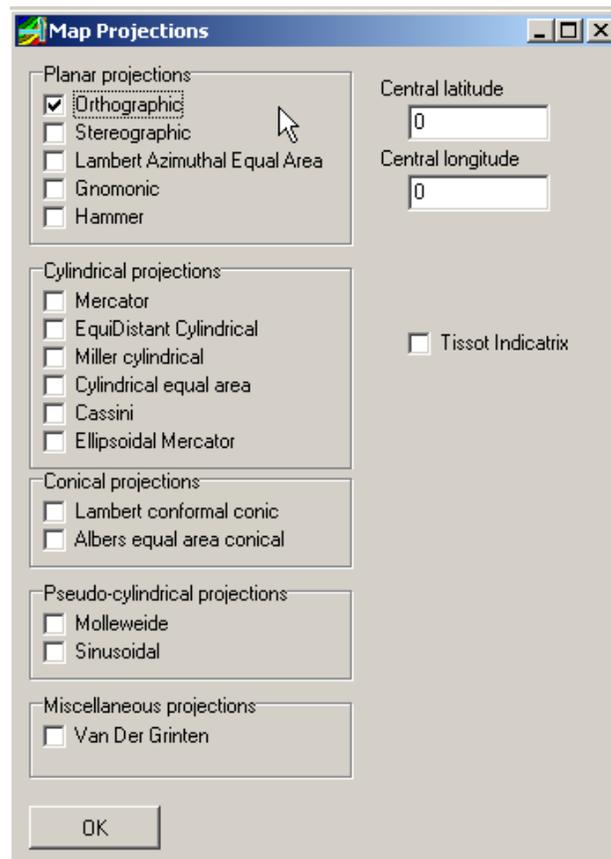
NOTE: Projects cannot be shared between different computers unless the drive names and data layout are identical since the absolute path to each component of the project is stored in the project file.

## Map Projections

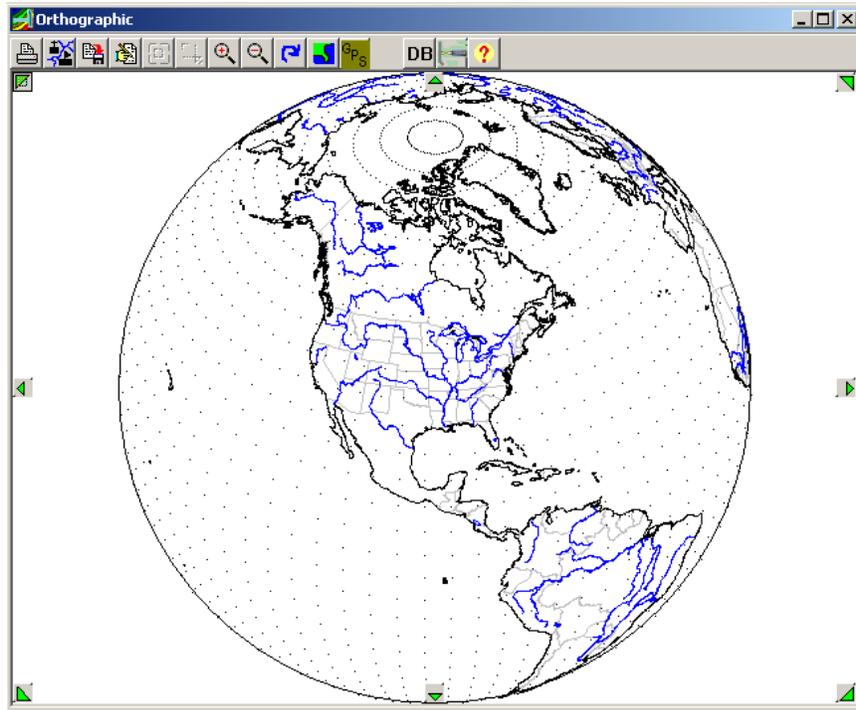
The new Map Projection displays are intended to be used for educational purposes and are accessed via the MAPPING / PROJECTION function in the main menu.



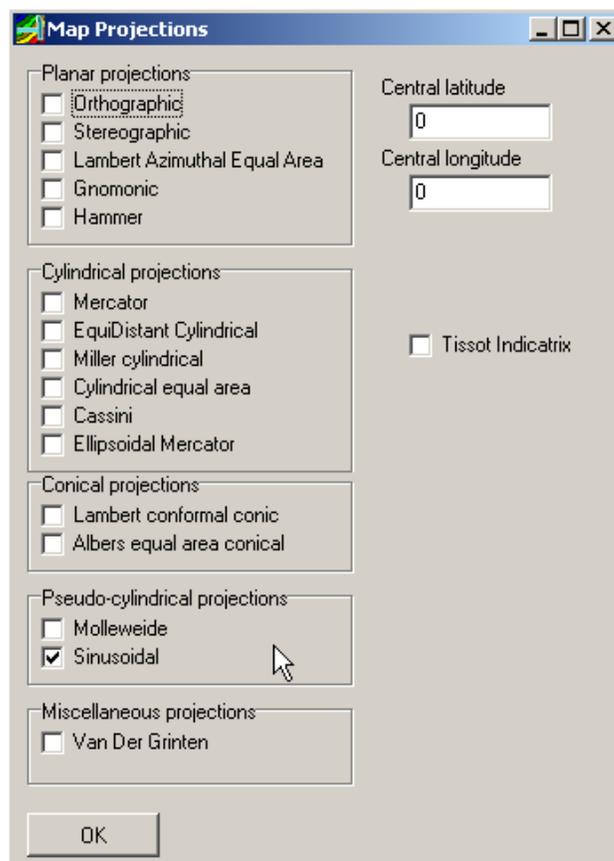
This will bring up the Map Projections interface.



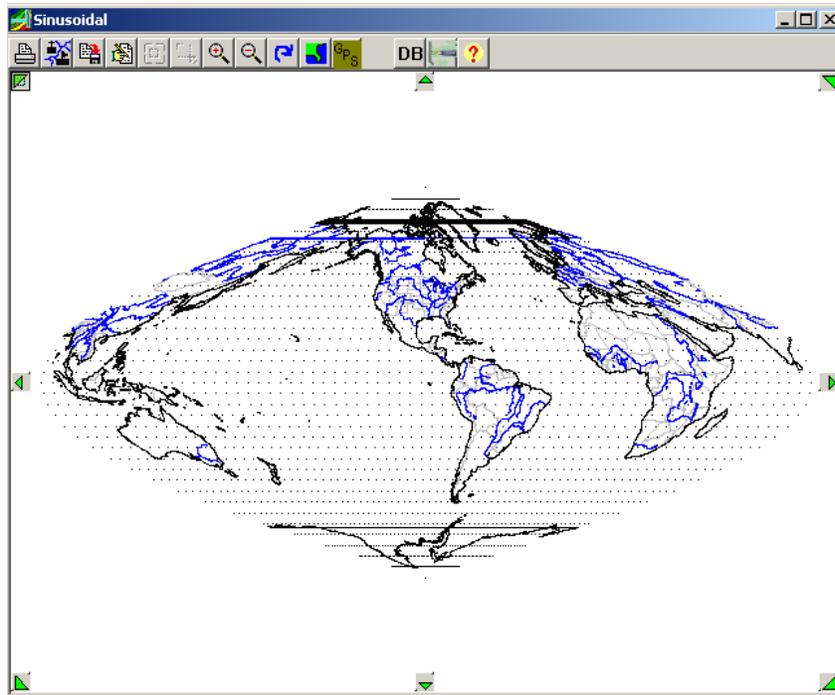
Here you select the desired projection and enter the lat/long coordinates in the Central latitude and Central Longitude data entry fields.



Here we see the world vector map displayed in Orthographic projection centered on Fort Leonard Wood.



Here we have selected Sinusoidal projection from the list of Pseudo-cylindrical projections.

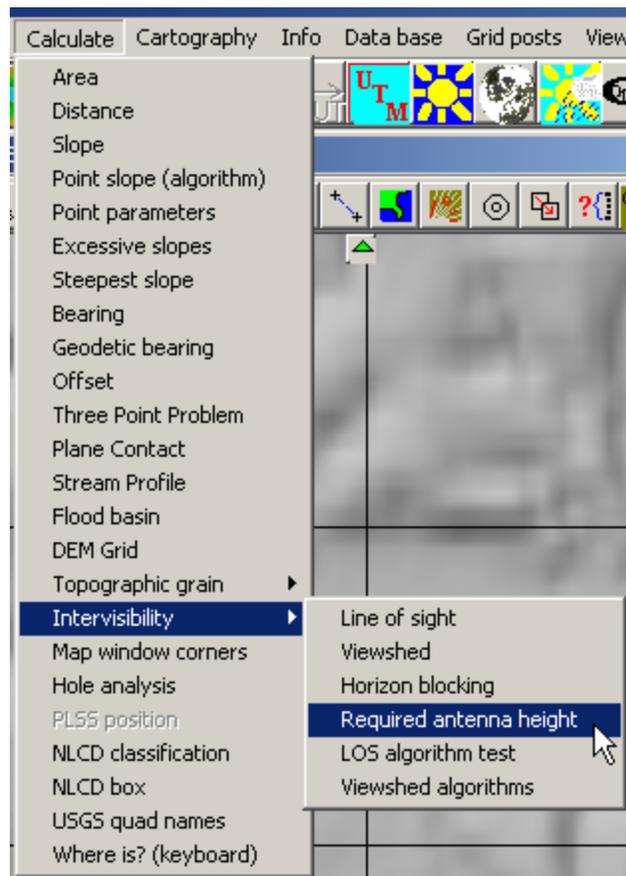


Here we see the world vector map displayed in Sinusoidal projection.

## **Required Antenna Height**

This new function allows you to enter the location and height for one antenna and will then generate another DEM map. Then as you roam over the map, the status bar will show you the height of the antenna required at that location to see the fixed antenna, using the earth curvature algorithm in use.

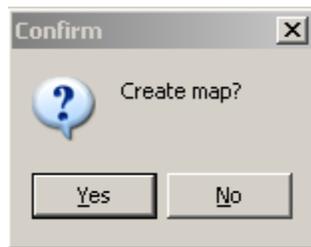
After loading the elevation data for your area of interest you access this new function by selecting CALCULATE / INTERVISIBILITY / REQUIRED ANTENNA HEIGHT from the main menu.



Double clicking on the elevation display (or draped map/imagery), at the desired location for the first antenna, will bring up the Input Real Number interface.



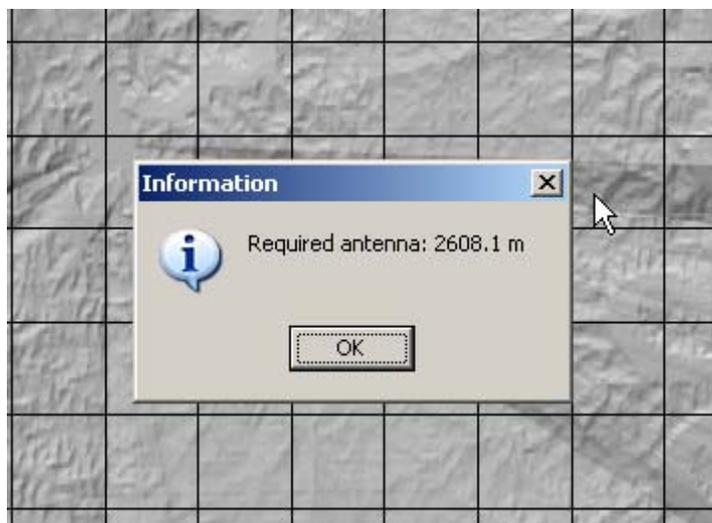
Here you will enter the height, above ground level (AGL) of the antenna. This will bring up the 'Confirm' pop-up.



Here you should select the <YES> button. After a period of time a new DEM map will be generated and displayed.

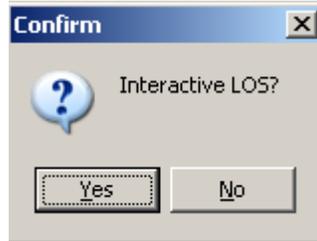


As you move your mouse cursor over the new map the required antenna height at that location will be displayed at the bottom of the display.

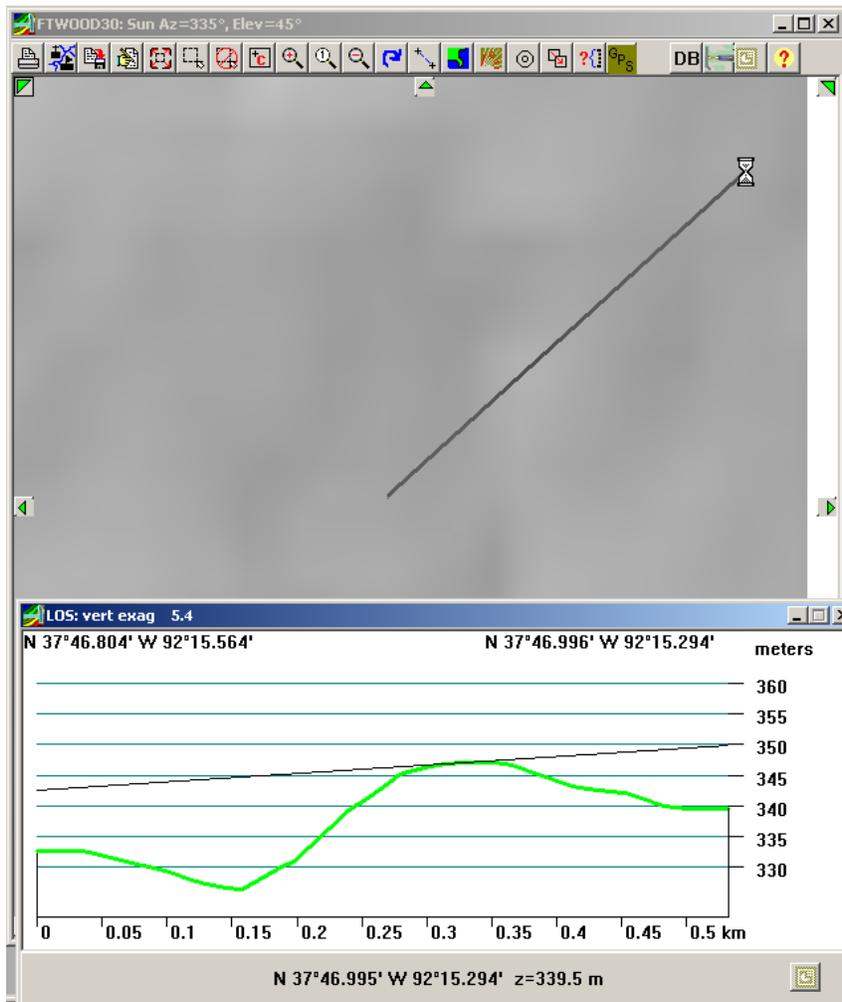


Double clicking on the new map will generate a pop-up 'Information' display with the required antenna height.

You will also get another 'Confirm' pop-up asking if you would like an 'Interactive LOS' display.



Answering <YES> will generate a graphical display with the initial antenna position shown on the left end of the graph and the location second antenna (located at your mouse pointer) on the right end of the graph.



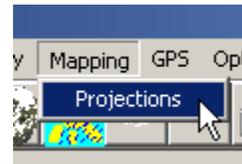
Here we show the DEM map (very small area) and graphical cross section (rescaled to fit screen). The map display shows the black line connecting the original antenna and the new antenna position. Moving your mouse cursor over the **original** DEM display will generate a new graphical display with the second antenna at the current mouse pointer location. NOTE that there will be a time delay between the calculations for each position on the display, indicated by the cursor changing from an arrow to an hourglass.

## Earth Rotation Movies

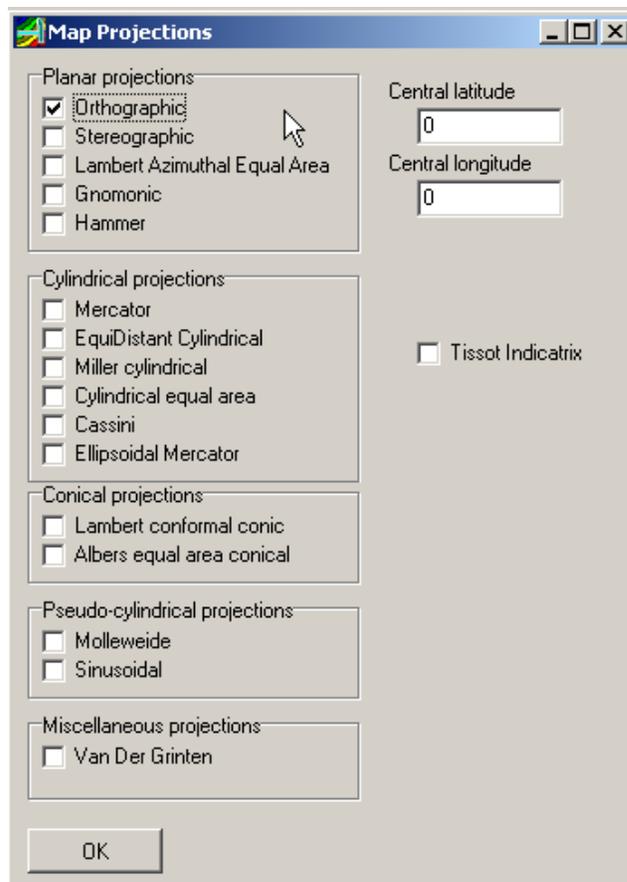
If you have downloaded world-wide elevation data, such as ETOPO5 or Globe or world-wide imagery such as NASA's Blue Marble imagery you can use it to drape over a globe and then create a movie of the rotating Earth. See the HELP file for links to these and other data sets, which may be downloaded (free of charge) from the Internet.

NOTE: You must first select OPTIONS at the main menu and check the 'Cartography' box under the Menu Choices tab for this feature to work.

At the main menu select MAPPING / PROJECTIONS.



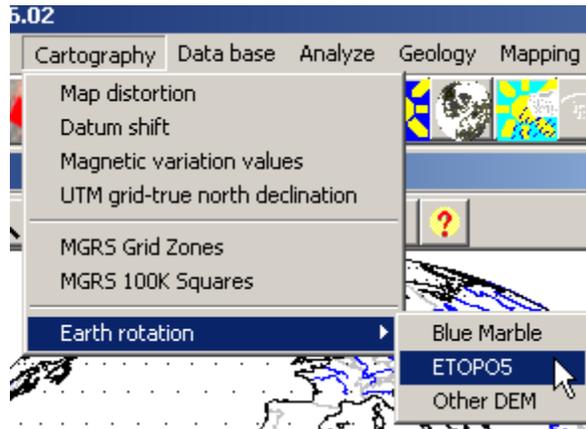
This will bring up the Map Projections interface.



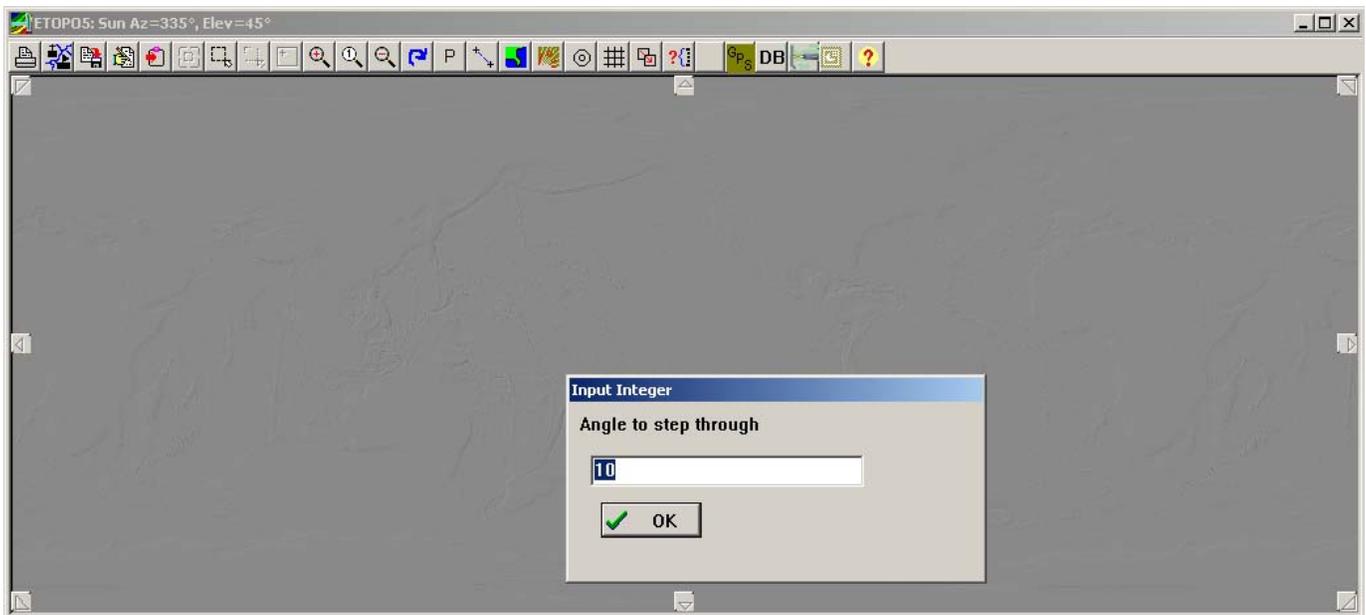
Here you must select Orthographic, Stereographic or Lambert Azimuthal Equal Area projection from the Planar Projections list.

NOTE: You must have already placed your elevation data in your ..\Mapdata\DEM folder. You must have already placed your Blue Marble imagery's 'NASA' folder in your ..\Mapdata folder. The ETOPO5 data is a single file after being unzipped. The NASA folder contains a JPEG subfolder which contains 2594 jpegs.

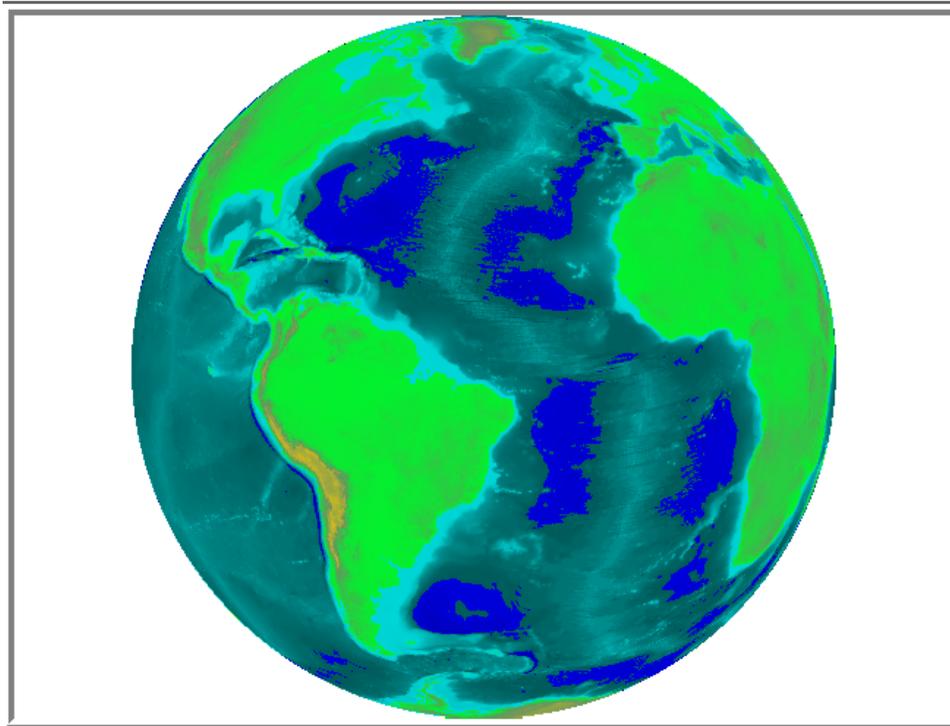
Next select CARTOGRAPHY / EARTH ROTATION from the main menu. The pull down menu offers three choices: Blue Marble, ETOPO5 and Other DEM.



Here we have selected ETOPO5 from the pull-down menu.

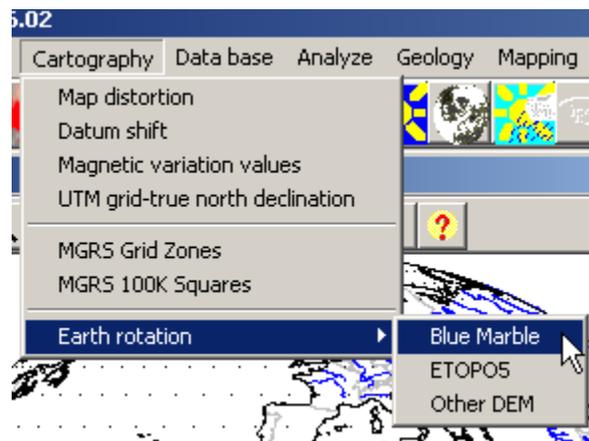


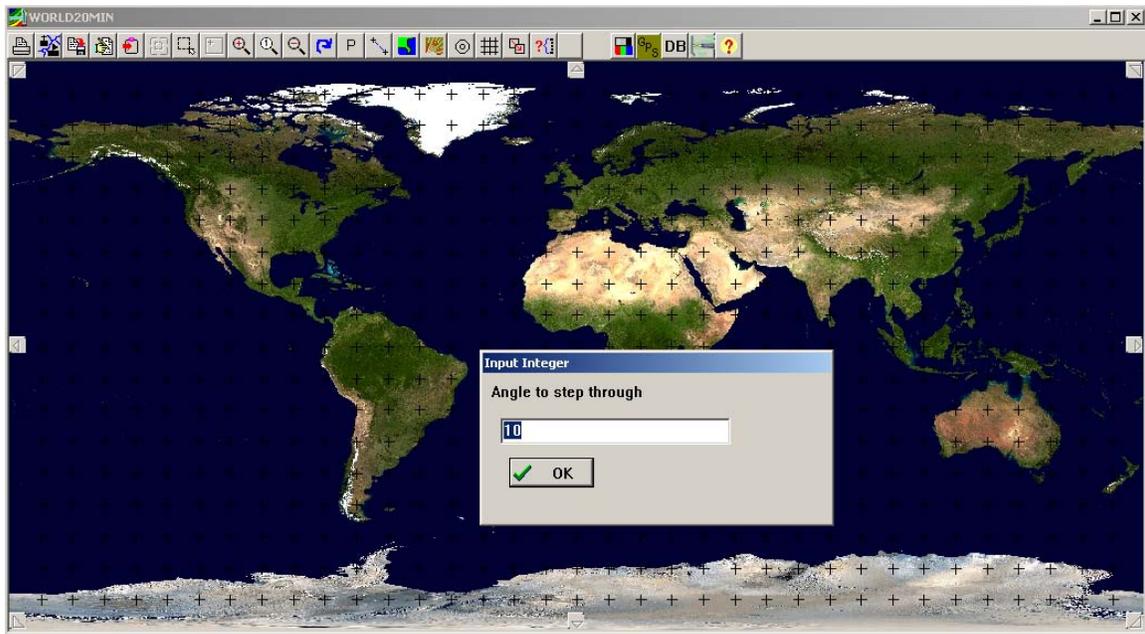
A 2D grayscale display of the elevation data is produced and the 'Input Integer' dialog pop-up will ask you to enter the angular distance the globe will be rotated between each frame of the movie. The default 10 degree setting will generate a 36 frame movie.



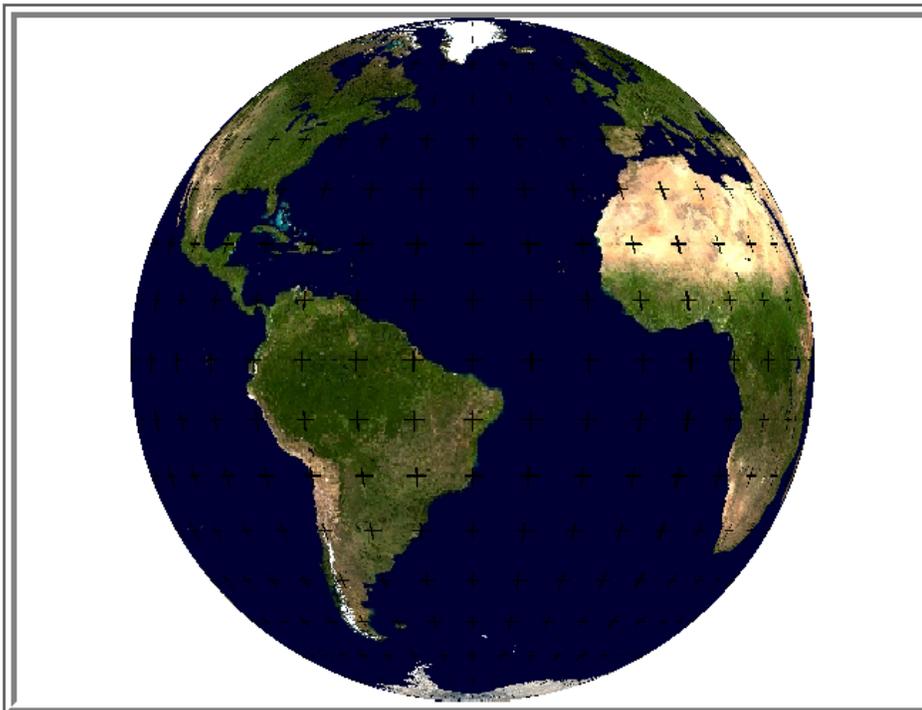
Here is one frame of the Earth Rotation movie using the ETOPO5 dataset.

To generate a Blue Marble Earth Rotation Movie go to the main menu and select CARTOGRAPHY / EARTH ROTATION. Then select Blue Marble from the pull-down menu.





A 2D display of the Blue Marble imagery is produced and the 'Input Integer' dialog pop-up will ask you to enter the angular distance the globe will be rotated between each frame of the movie. The default 10 degree setting will generate a 36 frame movie.



Here is one frame of the Earth Rotation movie using Blue Marble imagery.

Once created, you may convert these movies to standard .AVI, .GIF or .MPG format as described in previous sections of the manual.

## Gazetteer Labeling of Map Displays

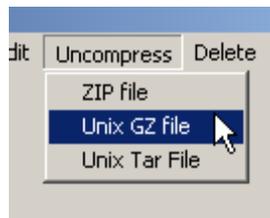
Gazetteers are files containing significant place names and their locations. These files may be used to locate and label a variety of natural and made-made features to include: Peaks, Lakes, Airports, Populated Places, Schools and Churches. There are three basic types of gazetteers available for MicroDEM users. (The following paragraph is borrowed from the MicroDEM HELP file.)

[NIMA Geonet names server](#): there are 1-2 files per country, but no coverage for the US.

**DTED CDs**, which have a different version of the NIMA files than is present on the WWW.

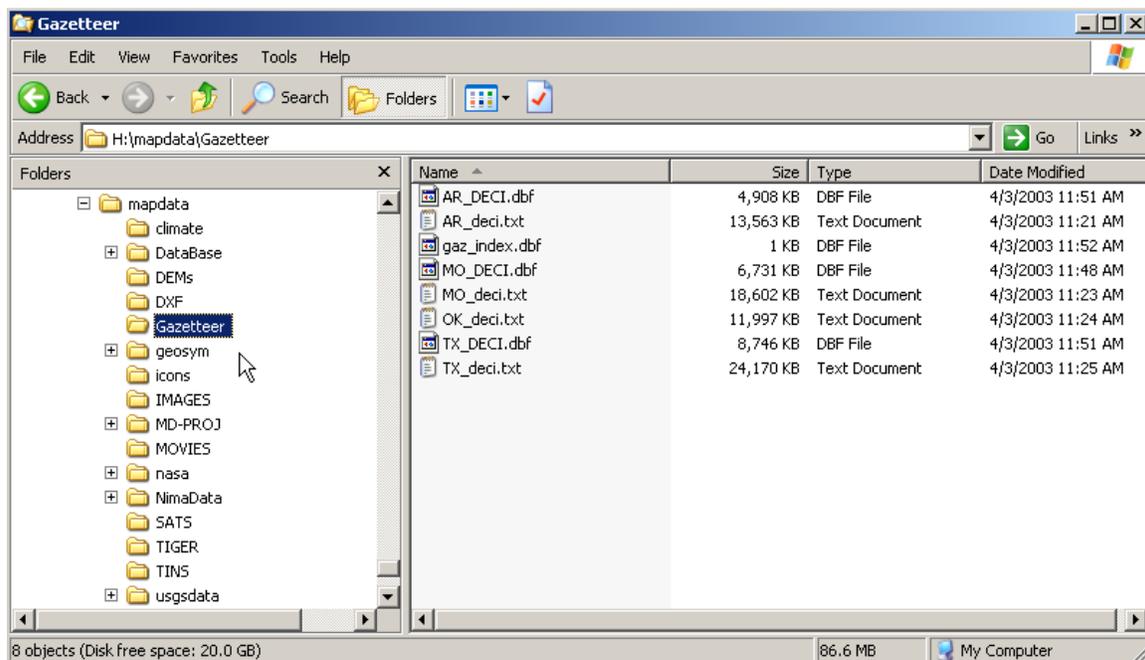
[USGS NAMES server](#): there are files for each state, in two formats. You need the Quote and Comma Delimited Format, with the "deci" in the file name.

Files downloaded from the USGS Names Server are standard ASCII files and are not compressed. Other gazetteer files downloaded from the Internet may need to be decompressed. You can decompress standard .zip, gzip and .tar format files by selecting FILE / DATA MANIPULATION from the main menu to bring up the Data Manipulation interface.



Here you will select UNCOMPRESS and the desired format from the menu.

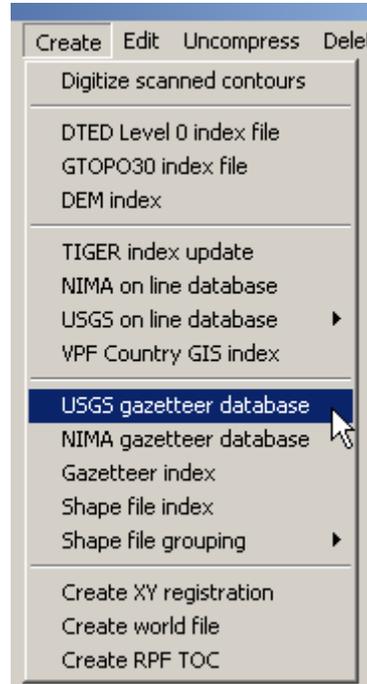
Next you will need to copy the uncompressed files to your ..\Mapdata\Gazetteer folder.



Once you've copied the data to the Gazetteer folder you will need to convert each file from its ASCII format to a (.dbf) database file. At the main menu select FILE / DATA MANIPULATION to bring up the Data Manipulation interface.

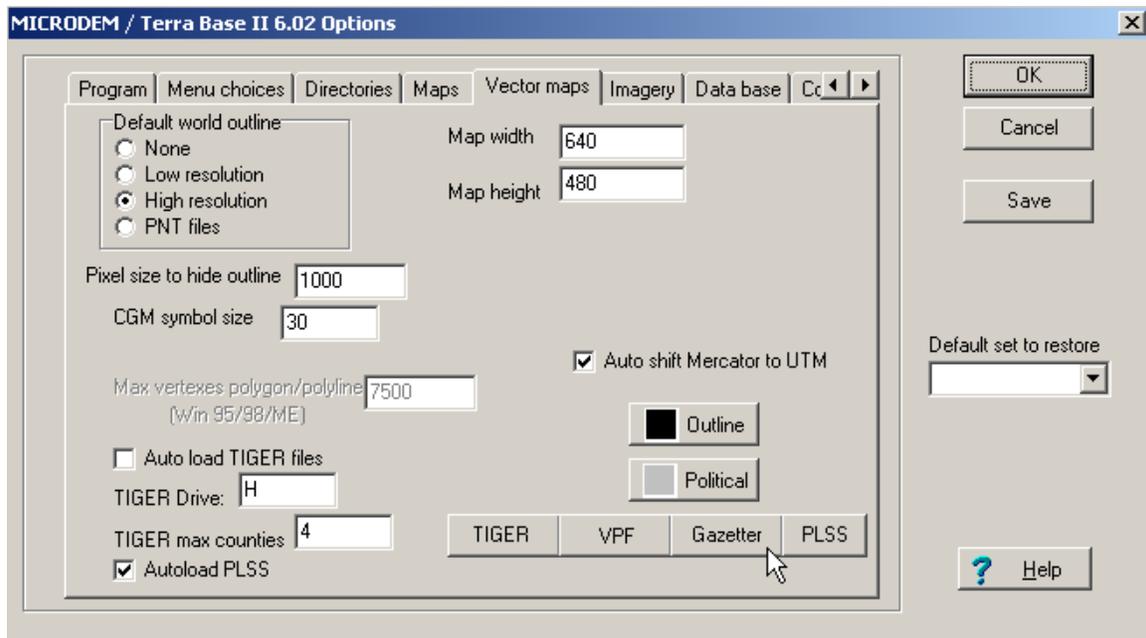
In the Data Manipulation menu select CREATE / USGS GAZETTEER DATABASE

NOTE: Users of DTED or NIMA Gazetteers will need to select NIMA GAZETTEER DATABASE from the menu.

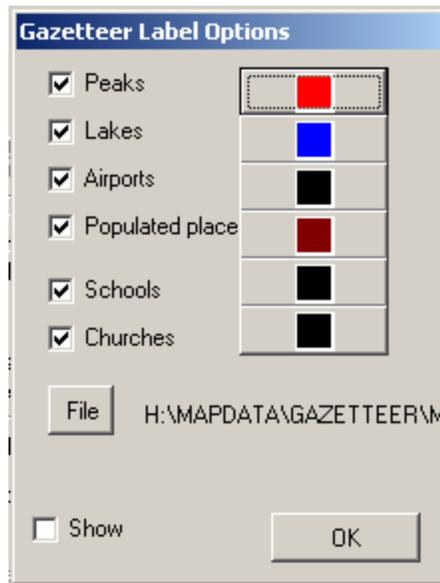


After you've converted your gazetteer files close the Data Manipulation interface.

Next go to the main menu select OPTIONS to bring up the OPTIONS interface.



Next click on the <GAZETTEER> button to bring up the Gazetteer Label Options.



Here you select the desired features you wish to display by checking the appropriate boxes. Point and line symbology are very basic but you do have control of the color assigned to each feature type by clicking on the colored buttons on the right side of the interface.



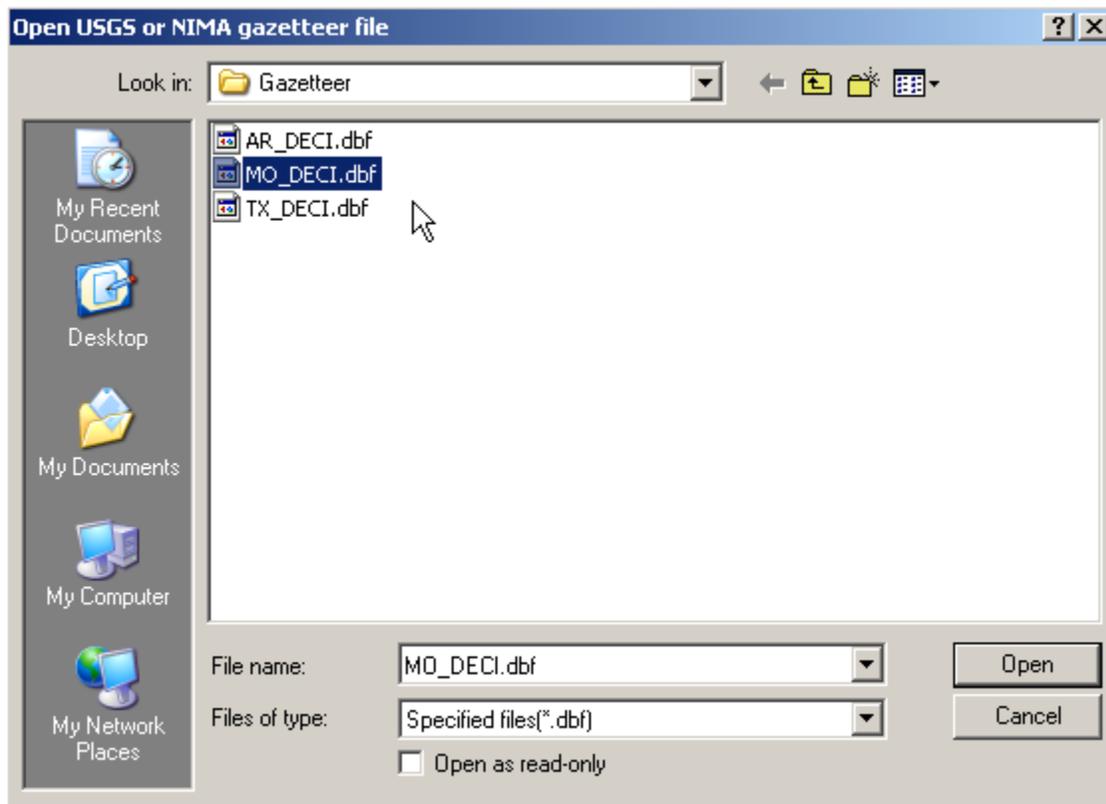
This will bring up the 'Color' interface where you click on the desired color and then close by clicking on the <OK> button.

Click on the <OK> button to close the Gazetteer Label Options interface and again to close the Options interface.

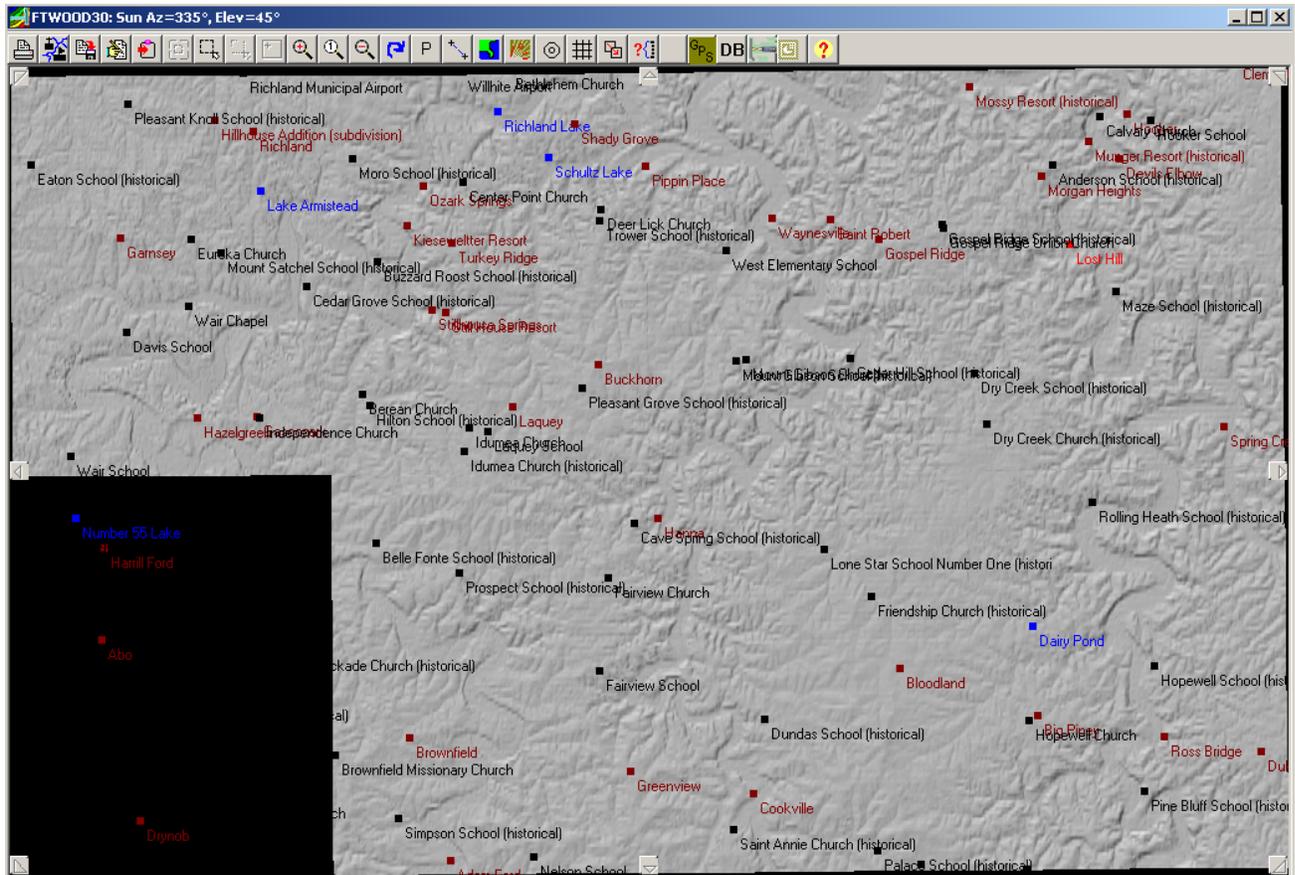
Gazetteer data may be displayed over the world vector map, elevation data, scanned map data or imagery. As with any other (.DBF) file there are several different ways to display the data, each having their own advantages and disadvantages. Once you've opened your background map display go to the main menu and select OVERLAY / LABEL GAZETTEER FEATURES.



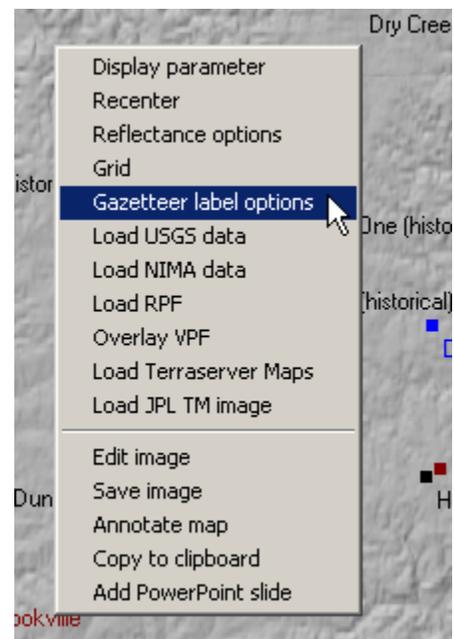
This will bring up the 'Open USGS or NIMA Gazetteer File' interface where you select the desired .dbf file from those available in your ..\Mapdata\Gazetteer folder.



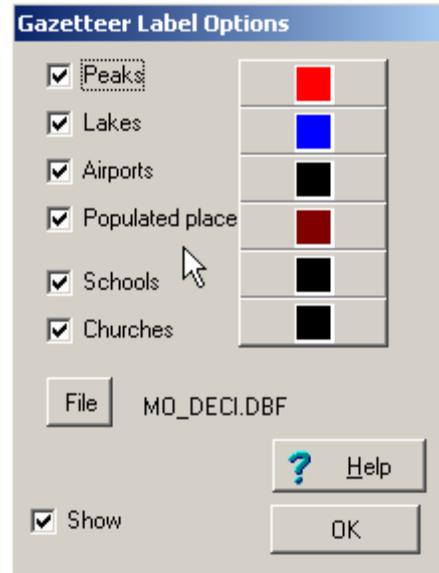
Here we select the Missouri gazetteer (MO\_DECI.DBF) file to be displayed.



Here we have displayed the USGS 30 meter Digital Elevation Model (DEM) of the Fort Leonard Wood area with the Missouri Gazetteer overlay.



Right-mouse clicking on your display will bring up the pop-up menu. Here selecting GAZETTEER LABEL OPTIONS from the menu will bring up the Gazetteer Label Options interface.



Here you can quickly deselect/select desired feature classes to be displayed or change colors of feature symbology.

The advantage of this method is that it will quickly plot the positions and names for features in your area of interest. This method also color codes the symbols and text for easy recognition.

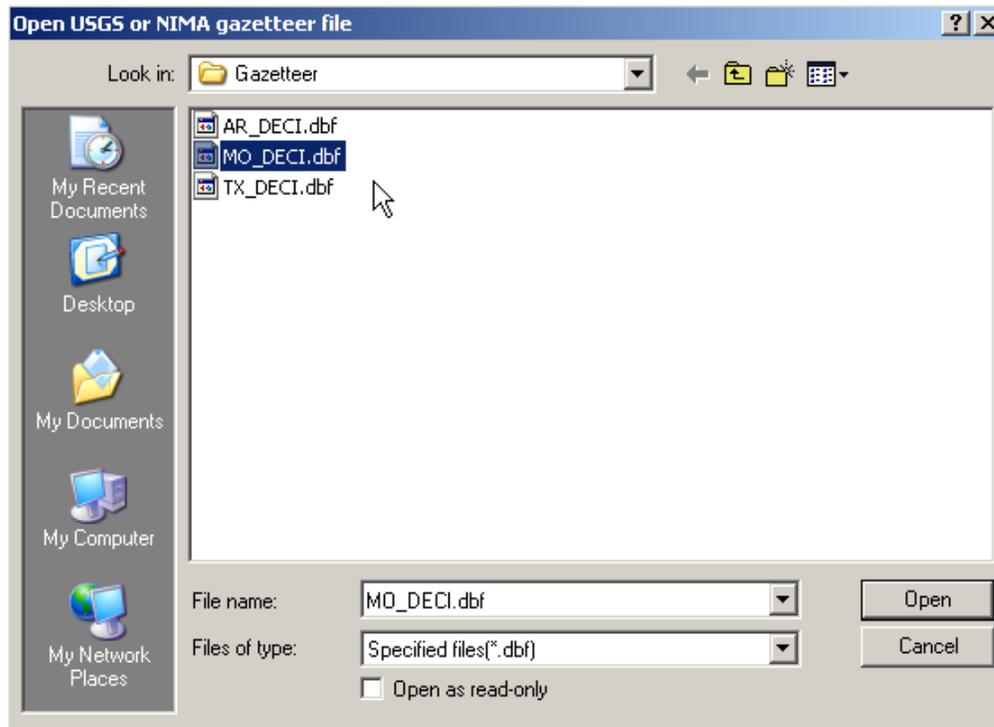
The disadvantage is that you have very little control over what is plotted on your display. Remember we had previously checked all the boxes for peaks, lakes, airports, populated places, schools and churches in the 'Gazetteer Label Options' interface.

What if you wanted to find a specific mountain, lake or school ? This is easy.

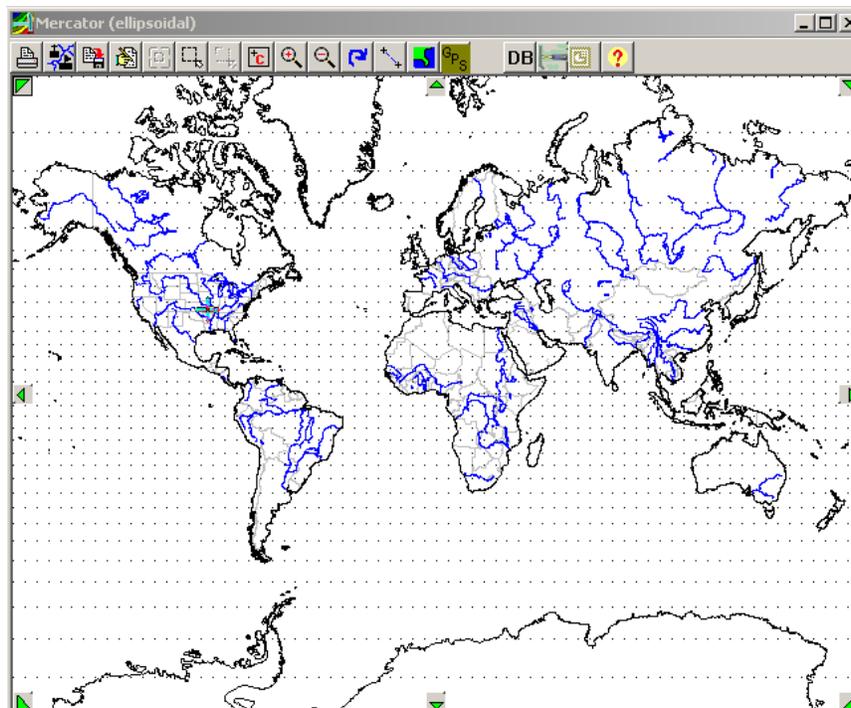
Simply click on the <GAZ> button at the main menu.



This will bring up the 'Open USGS or NIMA Gazetteer file.



Select the proper gazetteer (.dbf) file for your area. This will open the world vector map and the attribute table for the gazetteer .dbf file.



Data Base MO\_DECI

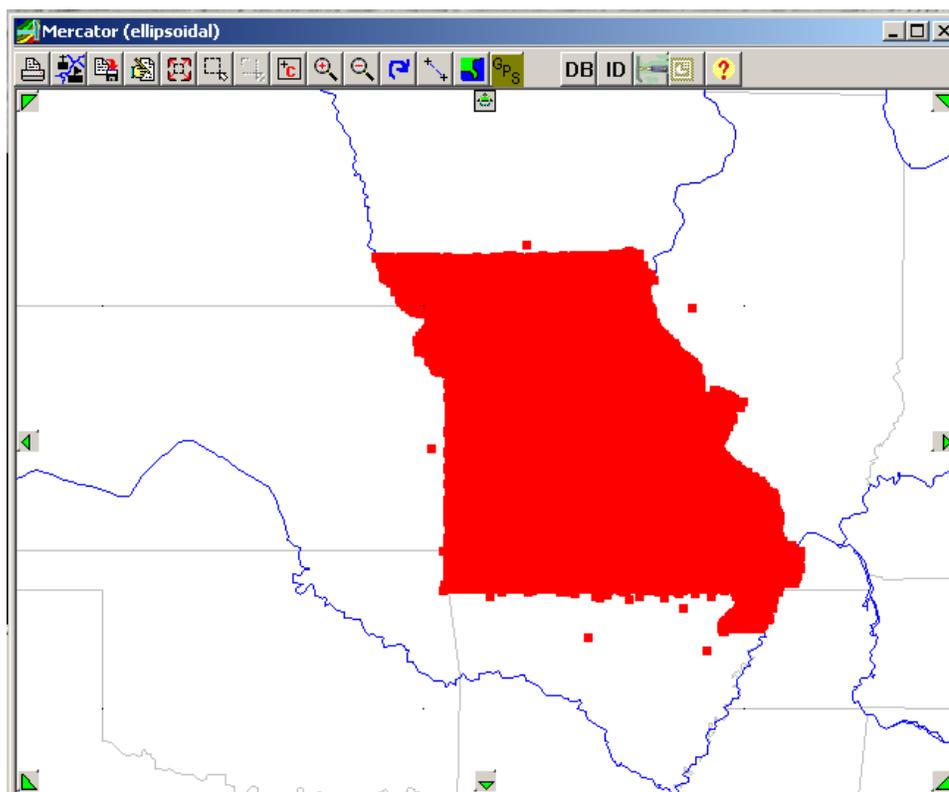
Points Filter All recs Plot Map Query Stats Hide Report ? Help

Find:

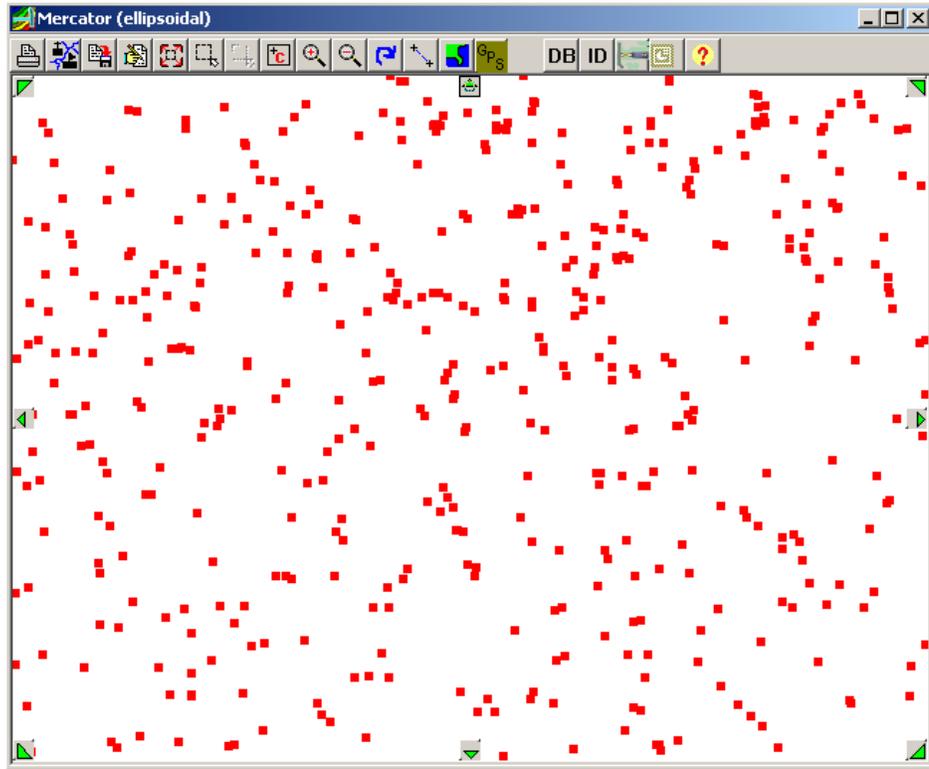
NAME	STATE	COUNTY	LAT	LONG	FEATURE	LAT2	LONG2
Alexander Farms Dam	MO	Pulaski	37.937545	-92.35167	dam		
Alexander Farms Lake	MO	Pulaski	37.937545	-92.35167	reservoir		
Anderson School (historical)	MO	Pulaski	37.84282	-92.09	school		
Antioch Cemetery	MO	Pulaski	37.915876	-92.20917	cemetery		
Armistead Dam	MO	Pulaski	37.837534	-92.40167	dam		
Assembly of God Church	MO	Pulaski	37.920305	-92.2575	church		
Bailey (historical)	MO	Pulaski	37.685026	-92.19639	locale		
Bald Ridge Creek	MO	Pulaski	37.656413	-92.07056	stream		
Baldrige (historical)	MO	Pulaski			locale		
Baldrige School (historical)	MO	Pulaski	37.623364	-92.10278	school		
Ballard Hollow	MO	Pulaski	37.776408	-92.16472	valley		
Barlow Creek	MO	Pulaski	37.796683	-92.39	stream		
Bartlett Cemetery	MO	Pulaski	37.846118	-92.25028	cemetery		
Bartlett Springs (historical)	MO	Pulaski			locale		
Bates School	MO	Pulaski	37.949732	-92.21889	school		
Bear Ridge	MO	Pulaski			ridge		
Bear Ridge School	MO	Pulaski	37.870559	-92.24889	locale		
Bell Branch	MO	Pulaski	37.743337	-92.38417	stream		

Records displayed: 389

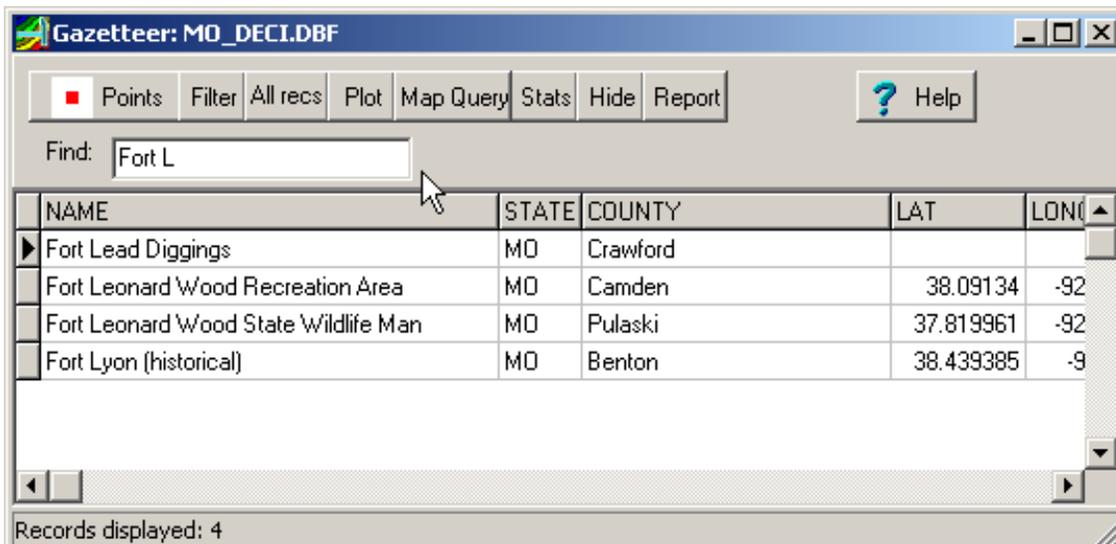
The attribute table data for our Missouri gazetteer file.



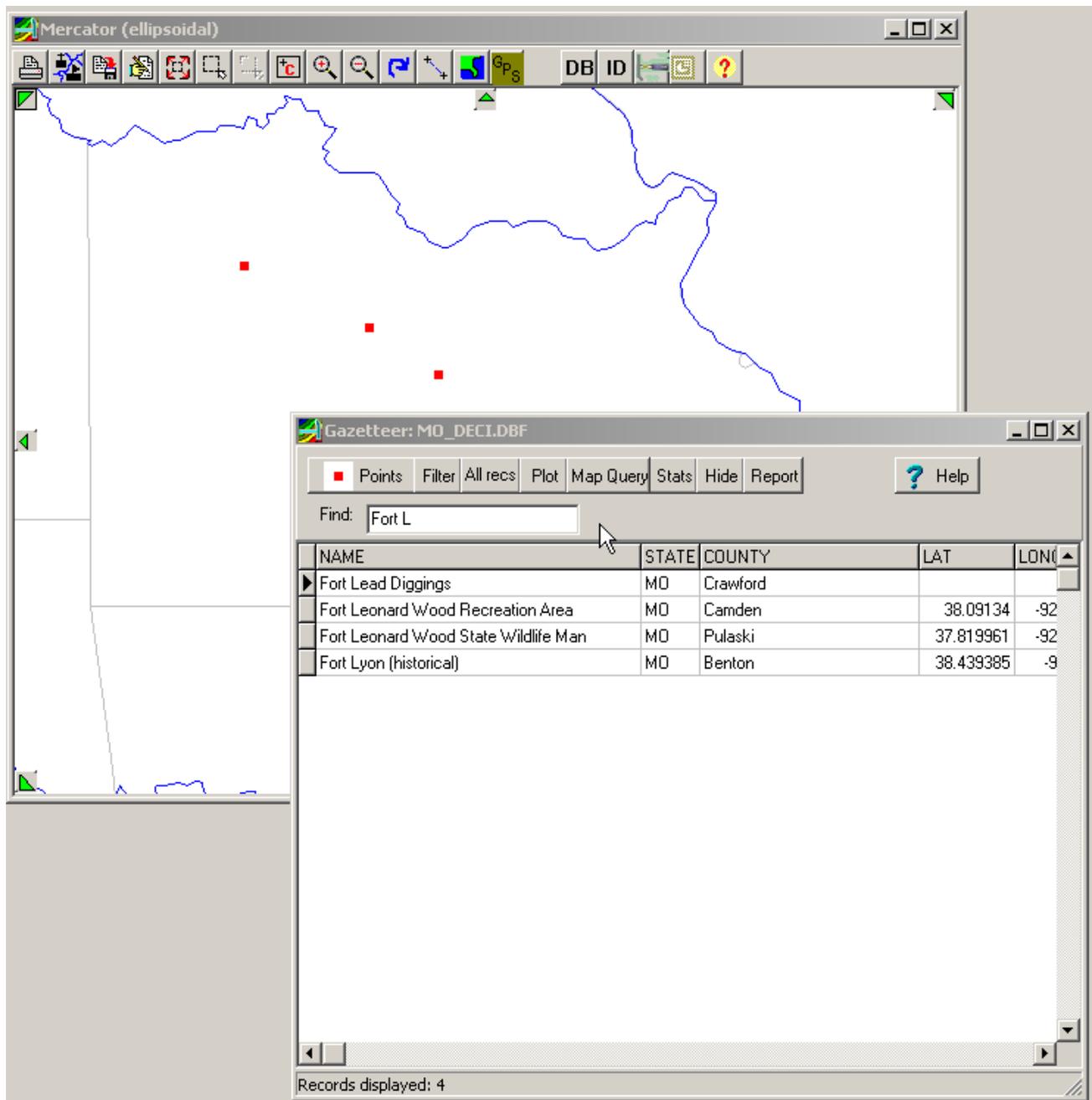
We can zoom-in to see the location of the data relative to the state.



We can zoom in further to see the individual feature symbols .

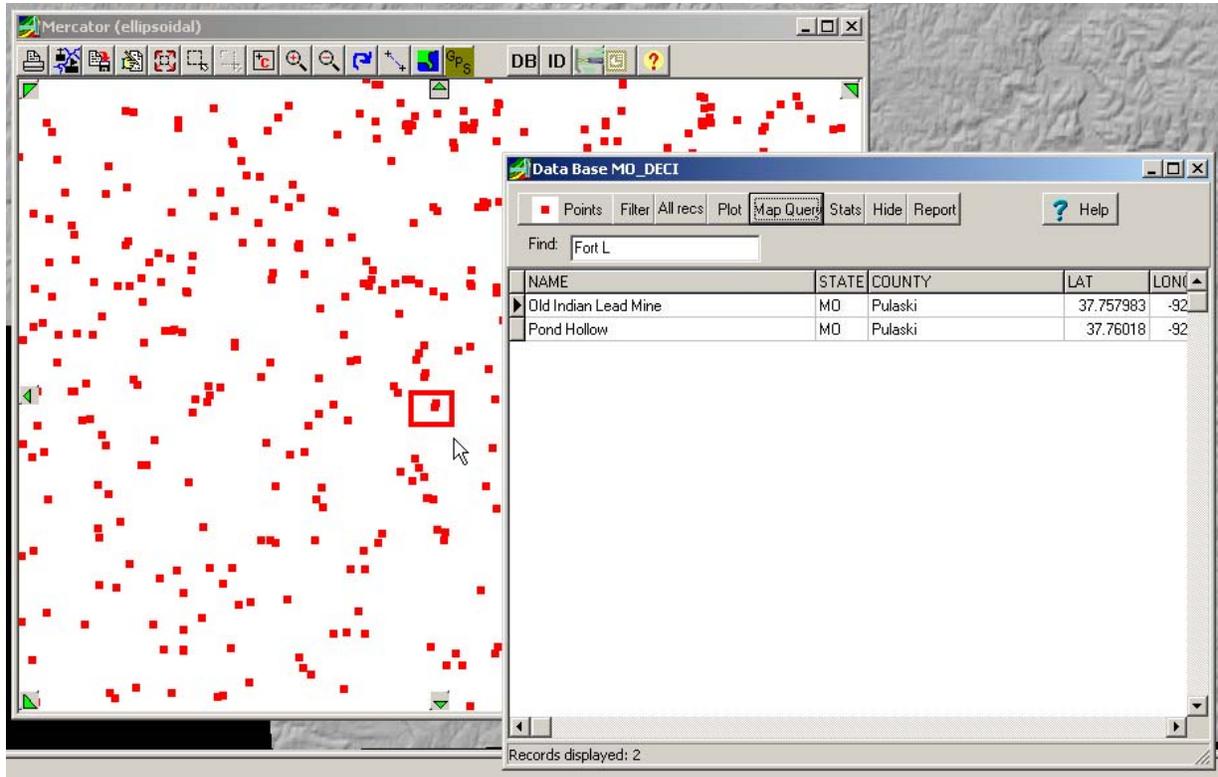


By typing in the FIND: data entry field as shown above you can quickly limit the number records displayed in your table and on the map. NOTE: This feature applies only to the NAME character field of the .dbf file.



Here we have narrowed the display down to only five records whose names begin with “Fort L”.

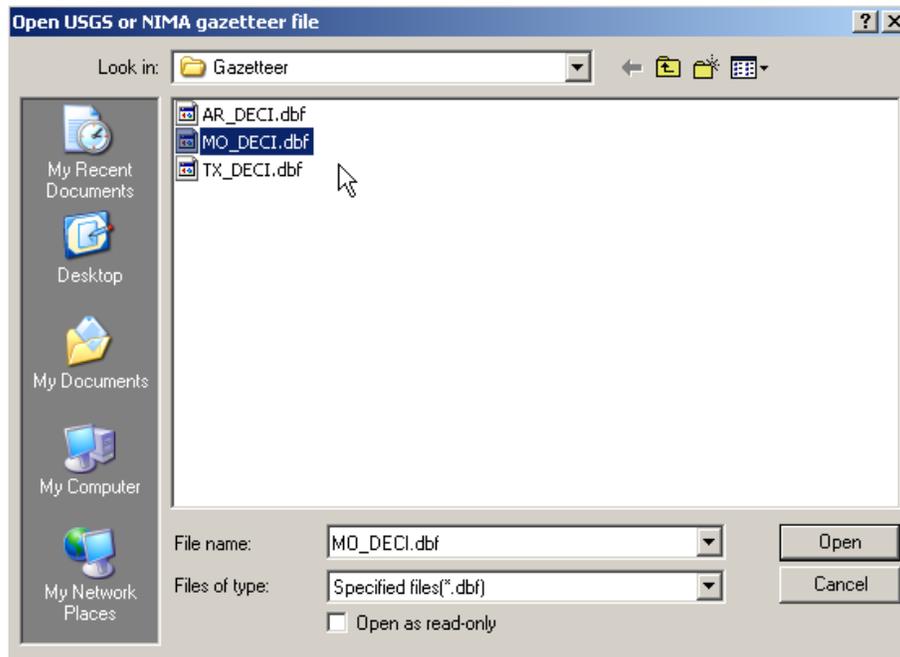
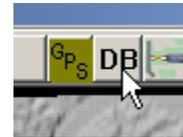
There are many other functions available from the attribute table menu. Most have been covered in earlier sections of the manual but we will cover a few more just to refresh your memory.



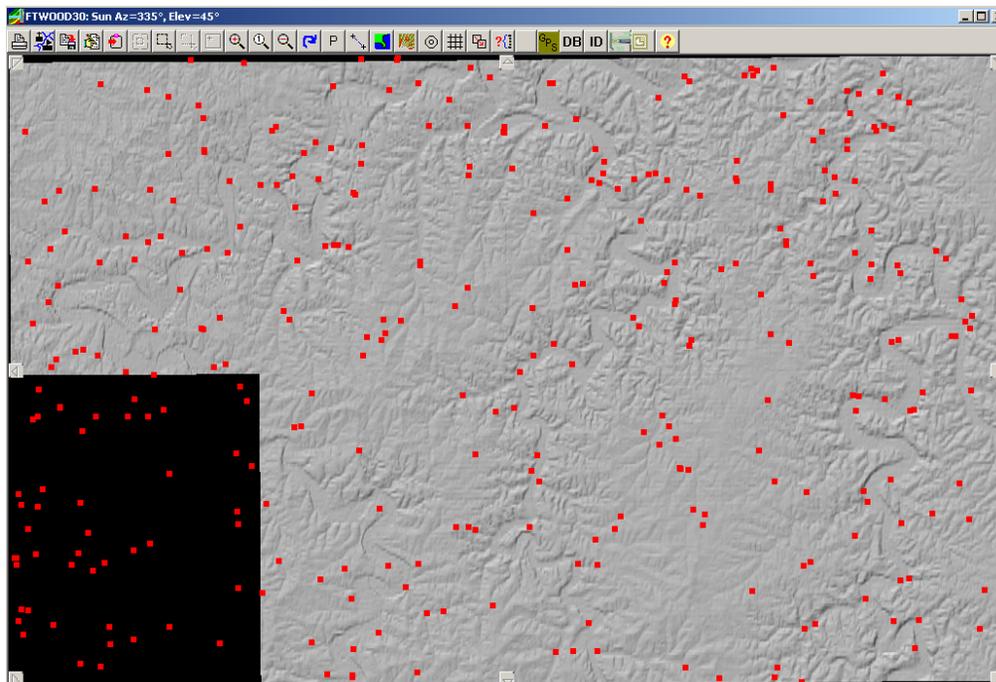
You can identify individual features or groups of features by performing a MAP QUERY from the attribute table menu. Click on the <Map Query> button and then click and hold the left mouse button on to the north-west and drag to the south-east and then release the mouse button. This will select the features within the box; the associated records are then displayed in the attribute table.

The disadvantages of this method are that you cannot display the data over your own map and you can't take advantage of many of the PLOT and FILTER functions normally available with .dbf files.

Another way to display the gazetteer data over your own map background is to click on the <DB> button on the display GUI bar. This will open the 'Open USGS or NIMA Gazetteer File' interface.

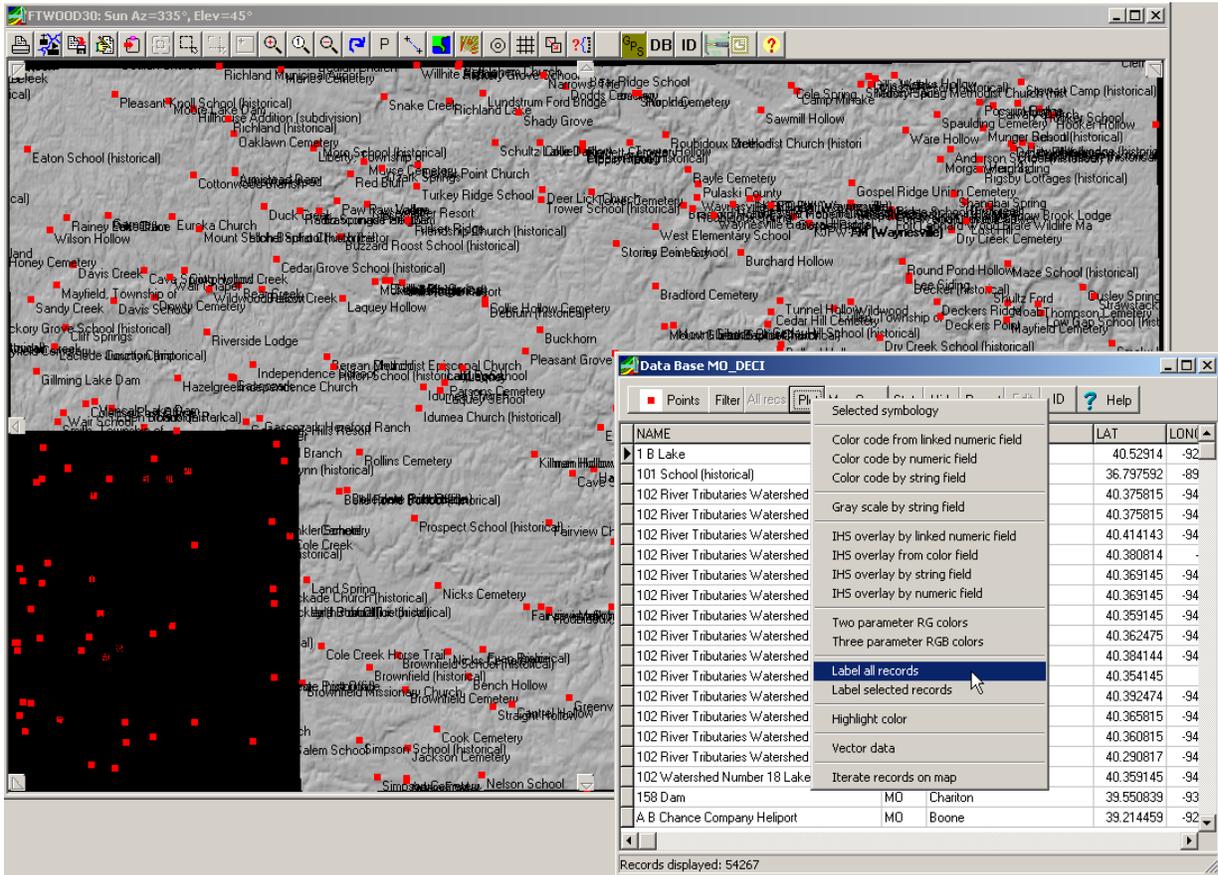


Select the proper gazetteer .dbf file for your area.



This will display the symbols and locations for the features over your current map background and open the attribute table for the chosen file.

We can label our features by selecting PLOT / LABEL ALL RECORDS from the attribute table menu.



Opening your gazetteer .dbf file with this method gives you greater control over what records are displayed through a greater range of functions available from the attribute table menu. Again most of these functions have been covered in earlier sections of the manual but we will cover one more useful function in the next section.

Gazetteer: MO\_DECI.DBF

Points Filter All recs Plot Map Query Stats Hide Report ? Help

Find:

NAME	STATE	COUNTY	LAT	LONG	FEATURE	LAT2	LONG2
Zoar Church	MO	Gasconade	38.471143	-91.46472	church		
Zoar Church	MO	Gasconade	38.405306	-91.52944	church		
Zoar Church	MO	Lincoln	38.892781	-91.01306	church		
Zoar Church (historical)	MO	St. Louis (city)			church		
Zoar German Methodist Episcopal Chur	MO	Clay	39.208605	-94.35417	church		
Zodiac	MO	Vernon	37.645346	-94.09194	ppl		
Zodiac School (historical)	MO	Vernon	37.645346	-94.09167	school		
Zodiac Springs	MO	Vernon			spring		
Zoll School (historical)	MO	Stoddard	36.807342	-90.19083	school		
Zollman Lake	MO	Worth	40.528262	-94.46333	reservoir		
Zollman Lake Dam	MO	Worth	40.528262	-94.46333	dam		
Zolman Cemetery	MO	Ste. Genevieve	37.804507	-90.39667	cemetery		
Zonker Post Office (historical)	MO	Douglas			po		
Zora	MO	Benton	38.284762	-93.09639	ppl		
Zounds Creek	MO	Nodaway	40.309662	-94.53556	stream		
Zulu Post Office	MO	Vernon			po		
Zumwalts Mill (historical)	MO	St. Charles			locale		
Zurbuchen Lake Dam	MO	Clinton	39.588306	-94.54333	dam		

Records displayed: 54267

Clicking on the <FILTER> button on the attribute table will bring up the ‘ Data Base Filter’ interface.

**Data Base Filter**

Field

< COUNTY = Pulaski

+ Add condition Query field

Filter Criteria

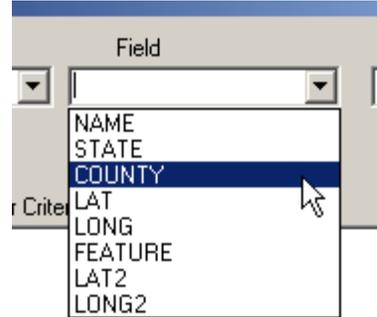
COUNTY='Pulaski'

Case insensitive Geographic Criteria Clear

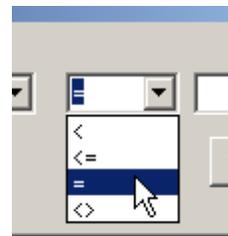
Apply Filter Cancel Help Clear

This interface provides great flexibility in performing searches through your .dbf files. Here we will perform a simple search of the ‘County’ field for all ‘Pulaski’ entries.

We click on the Field 'down arrow' to bring up the list of available fields for the data and select 'county'.

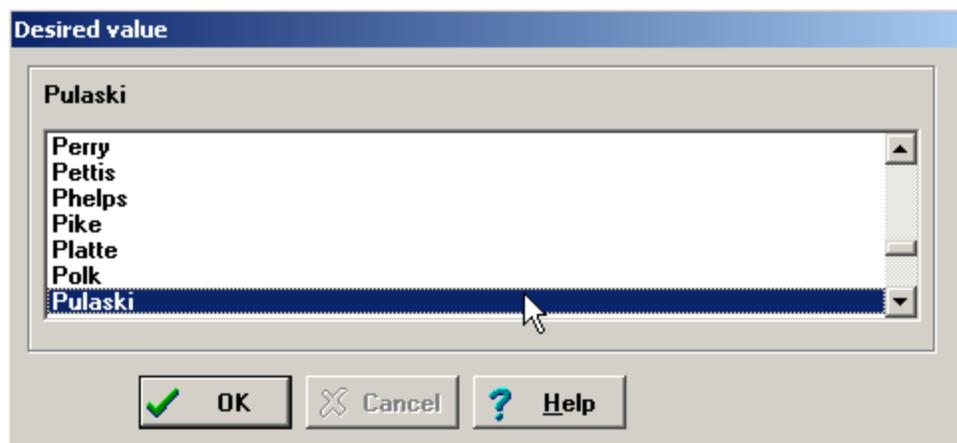


We then click on the Boolean Logic 'down arrow' to select the desired operator for our search.



Here we have selected the 'equals' sign.

We then click on the <Query Field> button to bring up the 'Desired Value' selection.



Here we select 'Pulaski' from the list of county names.



As you can see in the previous picture the records which fall-in Laclede County have been removed from the left side of the display, only those records falling in Pulaski County are displayed.

NOTE: This method will only redisplay the symbology and location of the filter results; you will need to re-label the data using the PLOT / LABEL ALL RECORDS function.

This concludes the Addendum to the User's Guide for MicroDEM 6.03. We hope that you find the software and this manual useful and relatively easy to use.

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