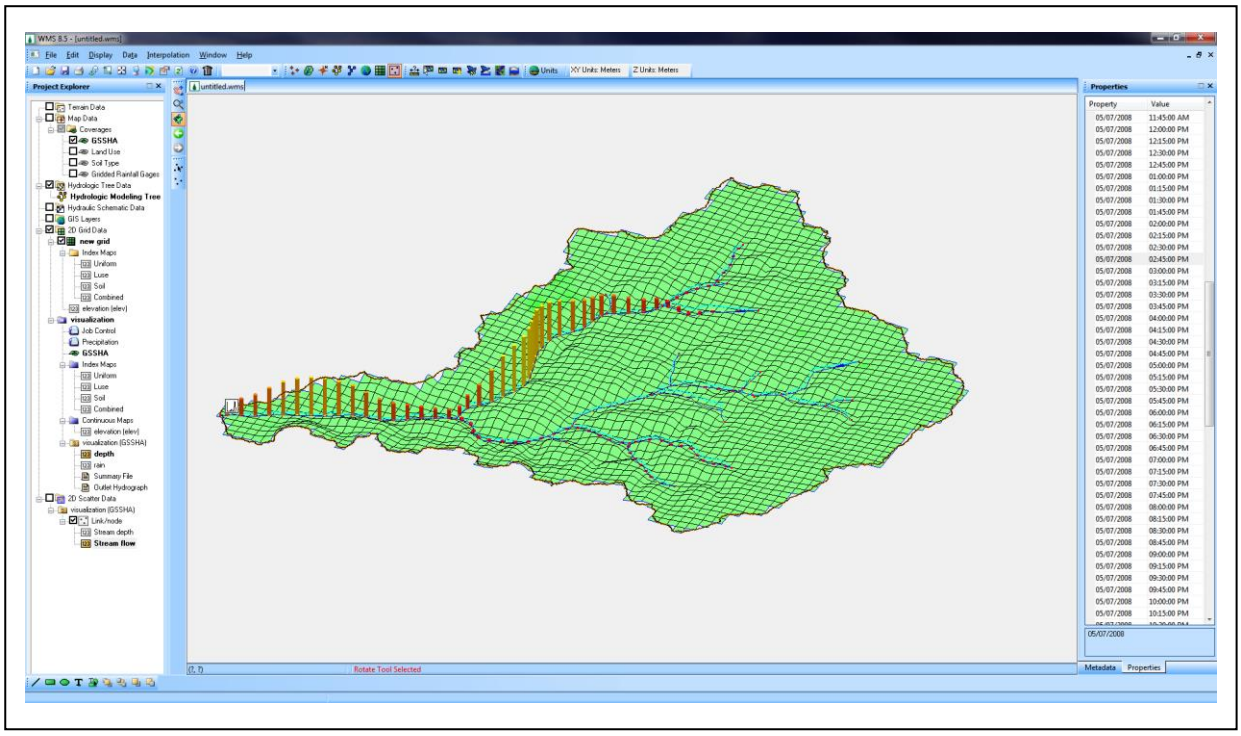
WMS

v. 10.0

WMS 10.0 Tutorial

Introduction to WMS

Become familiar with the WMS interface



Objectives

Read files into WMS and change modules and display options to become familiar with the WMS interface.

Prerequisite Tutorials

- None

Required Components

- Data
- Map

Time

- 10-15 minutes

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1 Introduction

In this first exercise users will get familiar with the WMS interface and help system. It's recommended that users explore the different menus, modules and tools so they have a good idea of the organization.

1.1 Outline

This is what users will do:

1. Become familiar with the modules, menus, tools, display options, and help system in the WMS interface.
2. Import a digital elevation map (DEM) and a background image.

1.2 Exercise Files

Tutorial files needed for these tutorials are found by going to the http://www.aquaveo.com web site and downloading the required files for each tutorial directly from the WMS learning center section of the web site.

2 The WMS Screen

The WMS screen (Figure 1) is divided into six main sections: the Main Graphics Window, the Project Explorer (this may also be referred to as the Tree Window), the Modules, the Menu Bar, the Properties Window, and the Toolbars, as shown in Figure 1. Normally, the main graphics window fills the majority of the screen.

Other sections, such as the Help Strip and Units are also an important part of the interface, though used less frequently in most projects.

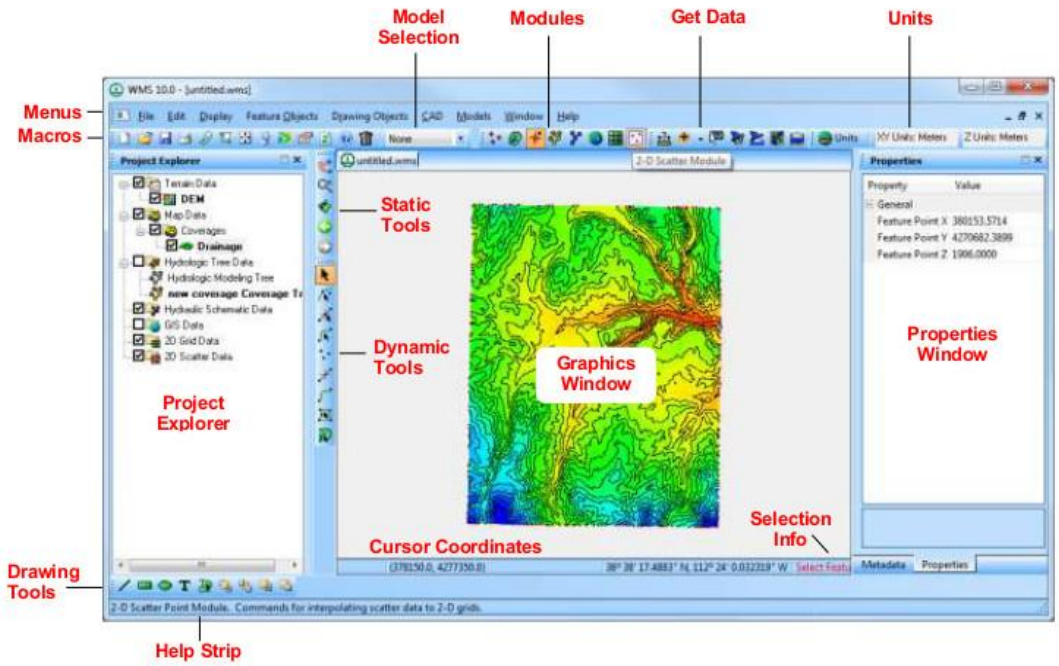

Figure 1 WMS interface layout

2.1 Menu Bar and Macro Toolbar

The Menu Bar contains commands that are available for data manipulation. The menus shown in the Menu Bar depend on the active module.

The macros appear in a toolbar directly below the menu bar as a set of icons at the top of the tool palette. They are shortcuts to frequently-used menu commands.

- **New** . Creates a new project.
- **Open** . Opens an existing project or other file.
- **Save** . Saves the currently open project.
- **Print** . Prints the visible contents of the Graphics Window.
- **Perspective View** . Displays the data in the Graphics Window in a 3D perspective. Also called "Oblique View".
- **Plan View** . Displays data in the Graphics Window from a top-down perspective, like a blueprint.
- **Frame** . Centers the entire project, with all extents visible, within the Graphics Window.
- **Display Options** . Brings up the Display Options dialog. Used to change how the project is displayed in the Graphics Window, including which elements are displayed, colors, and other settings.

- **Contour Options** . Brings up the Contour Options dialog. Used to set options for how contours appear.
- **Properties** . Brings up the Dataset Info dialog. Used to adjust the properties of the selected object.
- **Refresh** . Redraws the contents of the Graphics Window.
- **Help** . Accesses the WMS Help website.
- **Delete** . Deleted any selected objects. The Delete and Backspace keys can also be used.

2.2 Modules

WMS is organized into eight modules, each associated with a particular object type. Only one module is active at any given time. When switching modules, the menus and tools unique to the active module are displayed. The names and basic functions of each module are as follows:

- **Terrain Data** . Used for basin delineation with Triangulated Irregular Networks (TINs).
- **Drainage** . Used for basin delineation with gridded Digital Elevation Models (DEMs).
- **Map** . Used to create data layers from GIS objects (drainage, soil, land use etc.)
- **Hydrologic Modeling** . Contains interfaces to hydrologic models.
- **Hydraulic Modeling (River)** . Contains tools for creating 1D hydraulic models.
- **GIS** . Used to open shapefile data and convert it to feature objects.
- **2D Grid** . Used for finite difference models (currently research models only).
- **2D Scatter** . Contains 2D scatter point interpolation tools.

2.3 Static Tools

Static Tools are used for manipulating the display, such as zooming, panning, and 3D rotation. The toolbar is shown below, and a description of each of the static tools follows below that.

- **Pan** . Use to move the contents of the Graphics Window in any direction.
- **Zoom** . Use to zoom in on the contents of the Graphics Window.
- **Rotate** . Use to rotate the image on the X and Z axes to allow for viewing from different angles.

- **View Previous** . Redraws the contents of the Graphics Window to the state prior to the most recent viewing command (zoom, rotate, pan).
- **View Next** . Redraws the contents of the Graphics Window to the state after to the most recent viewing command. Can only be used after *View Previous* has been used.

2.4 Dynamic Tools

The Dynamic Tools are module-specific tools used for creating and editing objects in the Graphics Window. The tools vary depending on the selected module. Each toolbar is shown below, with brief descriptions of each of the tools which appear on it.

Terrain Data

- **Select Vertices** . Select individual points.
- **Select Triangles** . Select individual triangles.
- **Create Breakline** . Create breaklines.
- **Swap Triangle Edges** . Change the direction of triangles within a polygon.
- **Add Vertices** . Create additional points.
- **Create Triangle** . Create a new triangle.
- **Select DEM Points** . Select individual DEM points.
- **Place Contour Labels** . Set the location of a contour label.
- **Set Contour Min/Max** . Set the range for the contour.

Drainage

- **Select Vertices** . Select individual points.
- **Select Feature Point/Node** . Select one or more points or nodes.
- **Select Feature Vertex** . Select one or more vertices.
- **Create Outlet Point** . Create an outlet point for a drainage basin or unit.
- **Select Drainage Unit or Basin** . Select one or more drainage basins or units.
- **Move Basin Label** . Move the label for a particular basin or drainage unit.
- **Flow Path** . Draw the flow paths for specified points.

Map

- **Select Feature Objects** . Select one or more feature objects.

- **Select Feature Point/Node** . Select one or more points or nodes.
- **Select Feature Vertex** . Select one or more vertices.
- **Select Feature Arc** . Select one or more feature arcs.
- **Create Feature Point** . Create a feature point.
- **Create Feature Vertex** . Create a feature vertex on an arc.
- **Create Feature Arc** . Create a feature arc.
- **Select Feature Polygon** . Select one or more feature polygons.
- **Select Feature Line Branch** . Select all arcs on a specific branch of a river or stream.

Hydrologic Modeling

- **Select Outlet** . Select one or more basin outlets.
- **Select Basin** . Select one or more basins or drainage units.
- **Select Diversion** . Select one or more diversions.
- **Select Hydrograph** . Select a hydrograph for display in the Hydrograph Window.

Hydraulic Modeling

- **Select River Cross Section** . Select and edit parameters for a river cross section.
- **Select River Reach** . Select and edit parameters for a river reach.
- **Select Hydraulic Node** . Select and edit parameters for a hydraulic node.
- **Select Hydraulic Link** . Select and edit parameters for a hydraulic link.

GIS

- **Select Features** . Select features from GIS layers when ArcObjects® are enabled.
- **Identify** . View attributes of selected features.
- **Select Shapes** . Select shapes when ArcObjects® are not enabled.

2D Grid

- **Select Grid Cell** . Select individual grid cells or grid nodes.

- **Select Grid Row** . Select an entire row of grid cells.
- **Select Grid Column** . Select an entire column of grid cells.
- **Place Contour Labels** . Set the location of a contour label.
- **Create Monitoring Gage** . Interactively create defined gages.
- **Select Monitoring Gage** . Select one or more previously defined gages.
- **Select Hydrograph** . Select a hydrograph for display in the Hydrograph Window.

2D Scatter Point

- **Select Scatter Point** . Select one or more individual scatter points.
- **Create Scatter Data Point** . Create new scatter points.

2.5 Annotation Tools

The Annotation Tools, or Drawing Tools, allow users to add graphical information (such as text labels and drawing objects) to the Main Graphics Window.

- **Create Line** . Select individual grid cells or grid nodes.
- **Create Rectangle** . Select an entire row of grid cells.
- **Create Oval** . Select an entire column of grid cells.
- **Create Text** . Select an entire column of grid cells.
- **Select Drawing Objects** . Select an entire column of grid cells.
- **Move to Front** . Select an entire column of grid cells.
- **Move to Back** . Select an entire column of grid cells.
- **Shuffle Up** . Select an entire column of grid cells.
- **Shuffle Down** . Select an entire column of grid cells.

2.6 The Project Explorer

The Project Explorer window (Figure 2) allows the user to view all the data that makes up a part of a project. It contains a hierarchical representation of the data. It appears by default on the left side of the screen, but can be docked on either side, or viewed as a separate window.

The main function of the Project Explorer window is to manage data. It can do so in multiple ways, including creation of new data objects, deletion of data objects, and control of what appears in the Graphics Window.

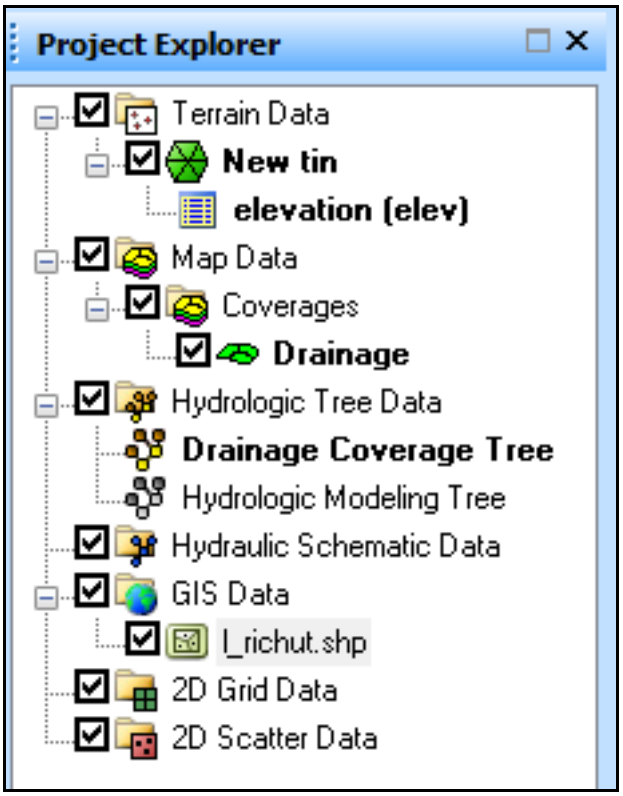

Figure 2 Project Explorer window

2.7 Main Graphics Window

The Main Graphics, or just Graphics Window, is the biggest part of the WMS screen. Most of the data manipulation is done in this window. DEMS or other downloaded images appear in this window.

2.8 The Properties Window

The Properties window (Figure 3), by default on the right side of the WMS window, is comprised of edit and information fields. The edit fields can be used to edit the coordinates of selected objects (e.g., points, nodes, vertices). Like the Project Explorer, this window can also pop out or be moved to another part of the screen.

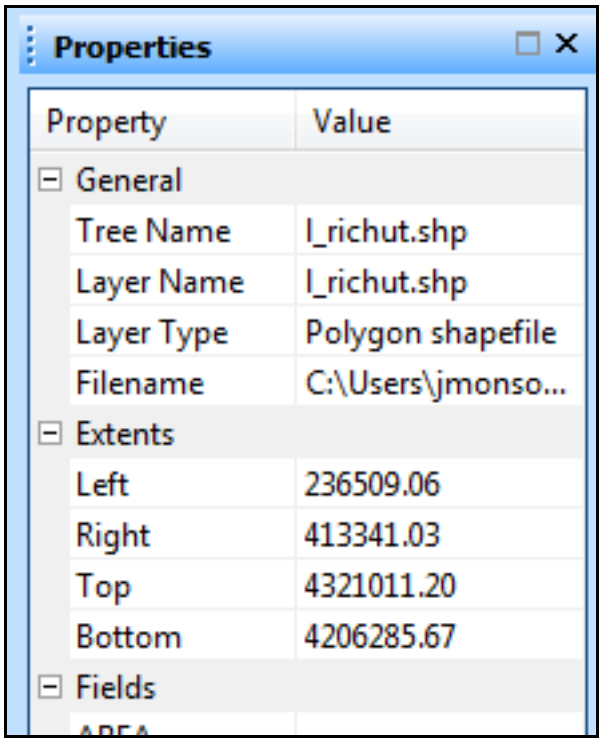

Figure 3 Properties window

3 Starting Over

It is suggested that users start WMS new at the beginning of each tutorial. If users continue from one to another without exiting the program or resetting to the defaults, then data, display options, and other WMS settings may not be in sync with the instructions, which may lead to confusion.

Reset to the defaults by doing the following:

1. Press *Ctrl-N*, or select *File* | **New…**
2. A dialog will appear asking to save changes. Click **No** to clear all data.

The graphics window of WMS should refresh to show an empty space.

4 Getting Around the WMS Interface

The WMS wiki has more detailed information on the basic elements of the WMS graphical user interface (GUI). To access the WMS wiki, select *Help* | **WMS Help…** and the WMS wiki will open in an internet browser.

4.1 Opening Files

To open a file, do the following:

1. Select *File* | **Open…** to bring up the *Open* dialog.

2. In the *demedit* directory for this tutorial, select "trailmount.dem" and click **Open** to close the *Open* dialog and open the *Importing USGS DEMs* dialog.
3. In the *Files* section, select "Trail Mountain" from the list.
4. Click **OK** to accept the defaults and close the *Importing USGS DEMs* dialog. The DEM data should appear in the main graphics window. Notice the item "trailmount" is now under Terrain Data in the Project Explorer.

Now the TIFF needs to be imported:

1. Select *File* | **Open…** to bring up the *Open* dialog.
2. Select "trailmountain.TIF" and click **Open** to import the file and close the *Open* dialog.
3. If a dialog appears asking to convert the TIFF to a JPEG, click **No** to close the dialog.
4. If a dialog appears asking to build image pyramids, select **No** to close the dialog. Image pyramids are sets of images that are resampled at different resolutions using the original image to make the image look better for on-screen display.

Notice the "trailmount.TIF" has appeared under GIS Data in the Project Explorer.

4.2 General User Skills

As a minimum, the user should be comfortable with the following operations within the WMS interface (for questions, search on the topic inside the WMS help page for further explanation):

- Switching modules and noticing that switching the modules will also change the tools and menu options
- Switching tools.
- Zooming, panning, framing the project, rotating in 3D, and returning to plan view.
- Using **Display Options**  , **Contour Options**  , and other macros
- Toggle visibility on and off and accessing menus from the Project Explorer (Figure 4). This done by clicking on the check box next to each item.
- Saving a project file 

Continue exploring the different elements of the interface and/or reviewing the information within the WMS Help page.

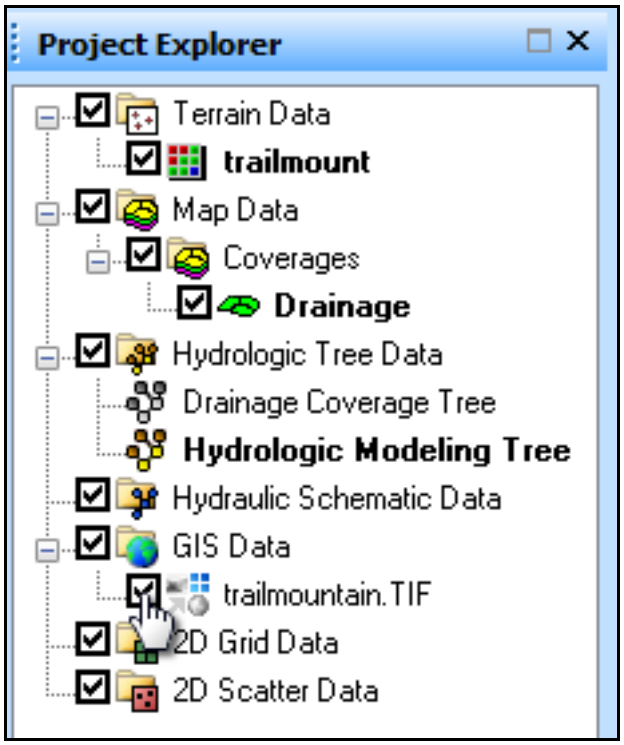

Figure 4 Turning objects on or off in the Project Explorer

5 Conclusion

In this exercise, users were introduced to WMS and became familiar with the layout as well as some of the modules, tools, and options which will be used throughout the program's use.