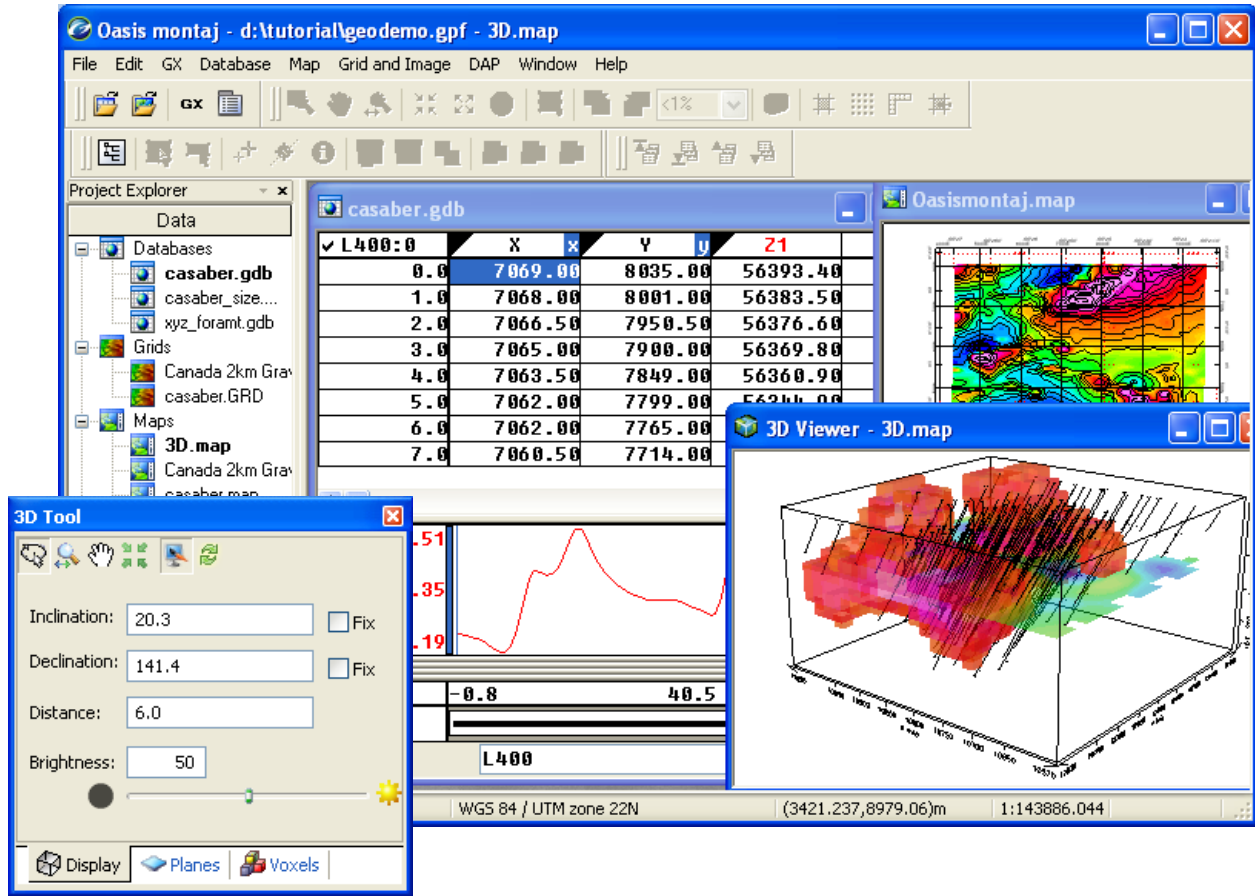# Oasis montaj 7.0 Viewer

*The core software platform for working with large volume spatial data*

## QUICK START™ TUTORIAL



GEOSOFT
Oasis montaj

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# Contents

# Oasis montaj 7.0

**Oasis montaj 7.0** is the latest major release from Geosoft. **Oasis montaj** is available in two versions – a free *Viewer* and a licensed *Mapping and Processing System*.

The **Oasis montaj** *Viewer* is a free software product that enables you to view Geosoft data (databases, profiles, grids, voxels, maps), ArcGIS MXD files (*Note: The installation of ArcMap or ArcEngine is required to view MXD files in Oasis montaj*), and a variety of common image and data exchange formats. Specifically, this version provides you with the following capabilities:

- Access Geosoft project data (databases, profiles, grids, voxels, maps, ArcGIS MXD files), tools (3D Tool and Project Explorer), and Geosoft tool bars (Database Tools, Map Layout, Map Tools, and Standard)

- Evaluate data, information and interpretations by viewing and performing specific tasks using Geosoft databases, profiles, maps, and grids as well as Geosoft and third-party images (including Geosoft PLT, AutoCAD DXF, MapInfo TAB, ArcView SHP, ArcGIS LYR, and Microstation DGN files)

- Verify data quality, analyses and interpretations by tracking processes applied to databases and maps

- Perform selected processes made available through Geosoft menus or third-party GXs

- Share results and knowledge by viewing and/or sending E-maps and 3D PDF files (see the Export To PDF 3D for more details)  to team members and other professional contacts

- Prepare reports by exporting to 3D PDF or using clipboard image copying capabilities

## Software and Hardware Requirements

To run **Oasis montaj**, you require the following software and hardware:

| | |
|---|---|
| **Operating System** | XP required (2000,95,98,ME,NT not supported), Vista Business Edition under compatibility testing |
| **CPU** | No requirement on a specific CPU type.  An Intel Celeron processor is <u>not</u> recommended |
| **RAM** | 2 GB recommended, 512 MB required |
| **Graphics** | 256MB 3D (DirectX and OpenGL) Accelerated graphics card recommended. |
| **Printer/Plotter** | Any Windows® supported colour printer. Hewlett Packard® large-format ink-jet plotters are recommended |
| **Installation** | **Oasis montaj** MUST be installed by a user with Local Administration rights on the machine. |
| **Installation Disk Space** | 1 GB or more of free space on the *Program Files* drive is required for the installation process |

| | |
|---|---|
| **Data Disk Space** | Data disk space depends on the volume of project data to be processed and the printer driver you are using, however 100 GB is recommended.  This is largely based on your business and data requirements. |
| **Internet** | To use the Internet capabilities in **Oasis montaj**, you will need to install <u>Internet Explorer 5.0</u> or later. This does not mean that you have to have Internet Explorer as your default browser; **Oasis montaj** just uses the Internet connection technology supplied in IE5 |

# Installing Oasis montaj *Viewer*

The **Oasis montaj** *Viewer* can be installed from a CD-ROM or downloaded from the web and installed via an EXE file.

To use the Internet capabilities in **Oasis montaj**, you will need to install Internet Explorer 5.0 or later. This does not mean that you have to have Internet Explorer as your default browser; **Oasis montaj** just uses the Internet connection technology supplied in IE5 to connect to the web.

## Install from the Oasis montaj *Viewer* CD ROM

Please note that your installation procedure will vary slightly depending on the operating system you are using. When installing **Oasis montaj** users **MUST** be logged on as **Administrator**.

1. Insert the **Oasis montaj** CD into your CD-ROM drive. The Geosoft Install Package setup dialog is displayed and tells you that the system is preparing the installation.

2. When ready, the program displays the Geosoft **Oasis Montaj** *Viewer* – Setup Wizard Welcome screen. To continue, follow the directions on the screens that appear.

3. When the "Installation Completed" dialog is displayed, you can check the boxes provided to launch **Oasis Montaj** *Viewer* and view the release notes.

4. Click the **[Finish]** button to complete the installation process.

## Install from the Web

The **Oasis montaj** *Viewer* can be downloaded from the Geosoft website at (<u>www.geosoft.com/downloads/index.asp#free</u>).

Please note that your installation procedure will vary slightly depending on the operating system you are using.

When installing **Oasis montaj** users **MUST** be logged on as **Administrator**.

1. Download the **Oasis montaj** *Viewer* (*.exe) file from the Geosoft website (<u>www.geosoft.com/downloads/index.asp#free</u>).

2. Run the self-extracting file (Oasis montaj Viewer.zip), the InstallShield Wizard Setup dialog is displayed and tells you that the system is preparing the installation.

3. When ready, the program displays the Geosoft **Oasis Montaj** *Viewer* – InstallShield Wizard Welcome screen. To continue, follow the directions on the screens that appear.

4. When the "Installation Completed" dialog is displayed, you can check the boxes provided to launch **Oasis Montaj** *Viewer* or view the release notes.

5. Click the **[Finish]** button to complete the installation process.

## Authorizing Your Internet Communication Settings

The **Authorize Internet Communication** dialog box enables you to authorize what communication takes place between your **Oasis montaj** system and the Geosoft Internet Server. The **Internet Trust Relationship** dialog box enables you to select the default setting for authorizing all future communication with the server.

All communication with the Geosoft Server is encrypted for your privacy and security.

### Authorize Internet Communication Dialog

This dialog box is displayed when **Oasis montaj** tries to communicate with an internet server. For example, when you try to download data from the Geosoft DAP server and your authorization is set to **Verify** (the default setting).

- Click the **[Authorize]** button to authorize the communication and connect to the server.
- Click **[Deny]** to cancel the communication. The server will not be accessed.
- Click **[Security]** to view the **Internet Trust Relationship** dialog box and change your default authorization setting (see below).

### Internet Trust Relationship Dialog

This dialog box enables you to set the type of access you want when communicating with an internet or external server to download data.

You can select from three levels of access that will define how the Geosoft Server will communicate with your computer:



*Trusted*

This setting **will automatically authorize all communication** with the server. This means that you will not be prompted to verify everytime you connect with the Geosoft server. All communication with the server saved in a log file on your local computer so that you can check to see what information was sent and received.

*Verify*

This setting **will ask you to verify all communication** with the server before proceeding with a download. This means that whenever you access the server, the server will show you what is being downloaded and ask you to authorize it.

Click the **[Accept]** button to give permission and download the file(s) or click the **[Deny]** button if you do not want to download the file(s).

All communication with the server saved in a log file on your local computer so that you can check to see what information was sent and received. This is the default setting

*Restricted*

This setting **will not authorize any communication** with the server. This means that you do not want any communication with the server to take place. With this setting, you will not be able to download any data from the server.

**Tip:**  You can modify your **Internet Trust Settings** at any time by clicking the *Global Settings/Internet* menu item from the *GX* menu.

# Setting High-Resolution Graphics

In order to view the colours in your maps and grids correctly, you may have to change your video card settings.

1. Click right mouse button on desktop screen.

2. On the *Properties* menu, click *Settings*.

3. Set the *Colour Palette* to Medium  Colour 16-bit or Highest Colour 32-bit.

# Configuring Oasis montaj Settings

Before you begin working with **Oasis montaj,** you may want to configure your other default settings. The *General Settings* can be accessed from the *GX/Global Settings* menu option. For information on the different settings available in **Oasis montaj,** see the **SETTINGS GX** help topic in the online help system.

# Finding More Help Information

There are several other functions included in the basic **Oasis montaj** help system that may be useful to your work. The entire documentation for the system is available through the online help system. This electronic library of information enables us to constantly update the information and provide you with the most up-to-date information available.

The best way to find information in this system is to use the **Search** tab to perform a full-text search of all help topics. If you still can't find the information you're looking for, all of the Geosoft *Manuals and Tutorials* are available online, www.geosoft.com/resources/tutorials/

## Contacting Geosoft

The list below provides contact information for Geosoft offices around the world. Note that, technical support is for **Licensed Users Only**.

**North America**

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Email: info@geosoft.com

**South and Central Africa**

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c/o Nossob & Jochemus Streets
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**Australia and Southeast Asia**

**Geosoft Australia Pty. Ltd**
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# Tutorial 1: Getting Ready to Work

In this tutorial, we will guide you through the steps you need to know to start working with your new software. At this point you should have already installed **Oasis montaj.** You should begin by starting **Oasis montaj.**

### TO START USING OASIS MONTAJ

1.  On the *Start* menu bar click *Programs* and then click *Geosoft* and then click *Oasis montaj Viewer|Oasis montaj Viewer*.

    *or*

2.  Double click on the **Oasis montaj Viewer** icon in Windows Explorer or File manager or the icon located on you desktop screen.

## Welcome to the Oasis montaj Environment

When you run **Oasis montaj,** the system opens the **Oasis montaj** interface window.
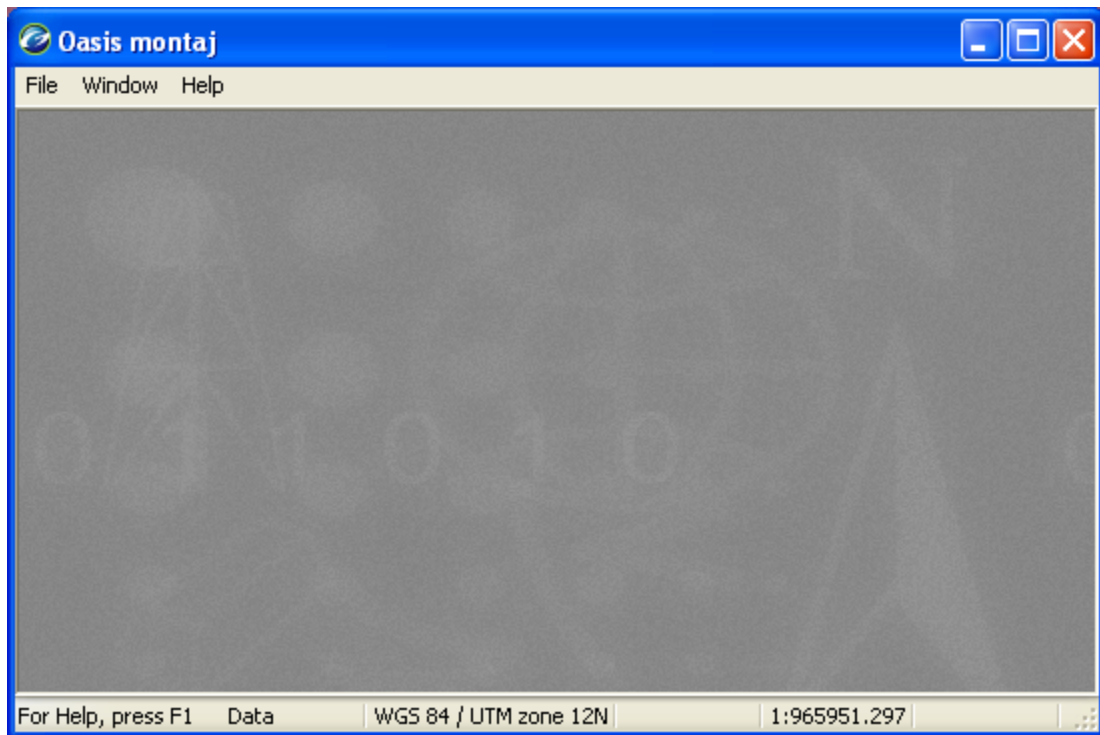
### System Files

As you work with the system, you will become familiar with a variety of standard files used for specific functions. The following list provides a short summary of the more important files.

| Oasis montaj System Files | System File Extensions |
|---|---|
| Geosoft Database File | *.GDB |
| Map File, including Plots and Grids | *.MAP |
| Geosoft Grid File | *.GRD |
| Geosoft Voxel Files | *.GEOSOFT_VOXEL |
| Geosoft Metadata files | *.XML |
| Colour Information for Grids/Images | *.AGG |
| *ArcGIS MXD file | *.MXD |
| Geosoft eXecutable | *.GX |
| Geosoft Script File | *.GS |
| Oasis Menu, Oasis Sub-Menu | *.OMN, * .SMN |
| Geosoft Project File | *.GPF |
| Geosoft Projection Information File (for maps) | *.GI |
| Geosoft Map file (used in the MapInfo software to distinguish a Geosoft map file from a MapInfo (*.map) file | *.GM |

*To access ArcGIS MXD files in **Oasis montaj** requires ArcMap or ArcEngine to be installed on your computer.*

## Creating a Working Directory

The system enables you to access files anywhere but it is a good strategy to carefully organize your data (project information and files) before carrying out any processing.

To start this tutorial, please create a working directory called **D:\Tutorial**. A general rule to follow in working with Geosoft applications is to avoid working in the directory where **Oasis montaj** was installed. In this tutorial, we will follow this rule by keeping all the working data files in **D:\Tutorial.**

### Before you Begin

This tutorial uses sample data (**casaber.gdb**, **casaber.grd**, **casaber.grd.gi**, **Oasis montaj.map**, **oasismontaj.map.gm**, and **xyz_format.xyz**) which is available on the Geosoft website http://www.geosoft.com/pinfo/oasismontaj/free/montajviewer.asp. Before you begin the tutorial, download and copy the data files to your working directory **D:\Tutorial.**

## Creating a Project

To work in **Oasis montaj** requires an open Project. An **Oasis montaj** "Project" encompasses every item in your working project; from the data files in your project (databases, maps, and grids), to the tools used (including 3D tool and the Project Explorer), to the project setup including the menus you have displayed and whether you are working on a map or profile and the state in which you left it the last time you used it.

The project also controls your working directory. Projects are saved as (*.gpf) files. If you open an existing project from a directory, the system assumes that all your project files are located in the same directory. To streamline your work, as well as keep it organized, you may wish to make sure that your project file is in the same directory as the other files you want to use. We recommend that each project you work on have its own project (*.gpf) file.

The *Project Explorer* tool enables you to browse as well as open any project item. The Project Explorer has two windows, the *Data* window that includes all data files included in the project and the *Tools* window that organizes and maintains the project tools. To access the Tools window click the Tools bar on the bottom of the Project Explorer. To return to the Data window, click the Data bar on the top the Project Explorer.

> ### TO CREATE A PROJECT:

1.  Start **Oasis montaj**.

2.  On the *File* menu, select *Project* and then select *New.* The *New Project* dialog is displayed.
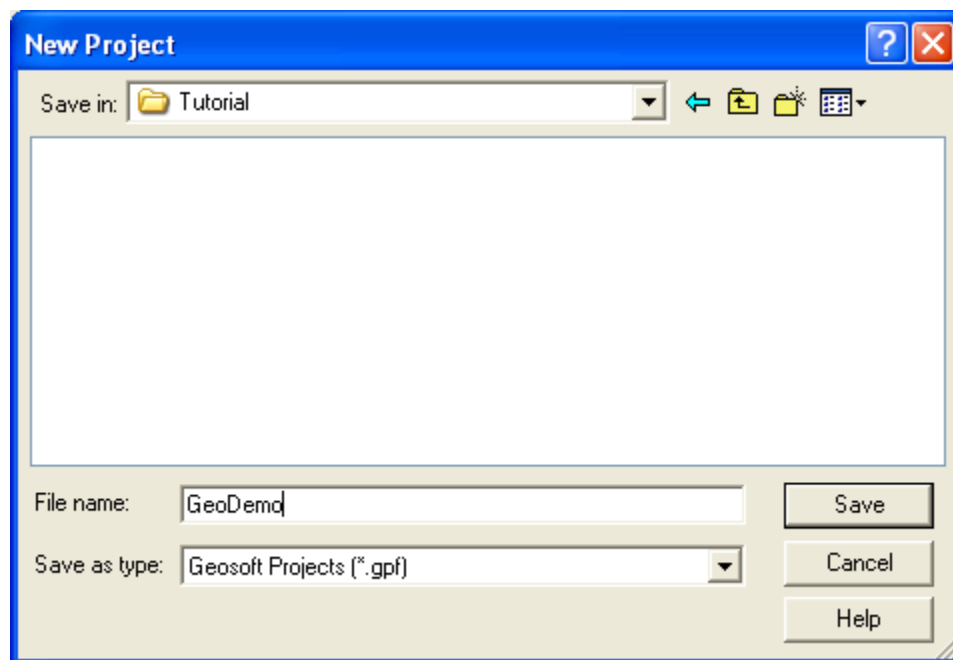


> **Note:**  **Oasis montaj** assumes that your data is in the directory containing this project

3.  Specify a name and directory for the project. For example, name the project **GeoDemo** and specify the working directory as **D:\Tutorial**

4.  Click the **[Save]** button. The system saves the project and indicates it is open by adding menus to the menu bar, adding buttons to the *Database Tools*, *Map Layout*, *Map Tools* and *Standard* short-cut tool bars and by displaying the *Project Explorer* window. These are visual clues indicating that you are ready to start working with the system.
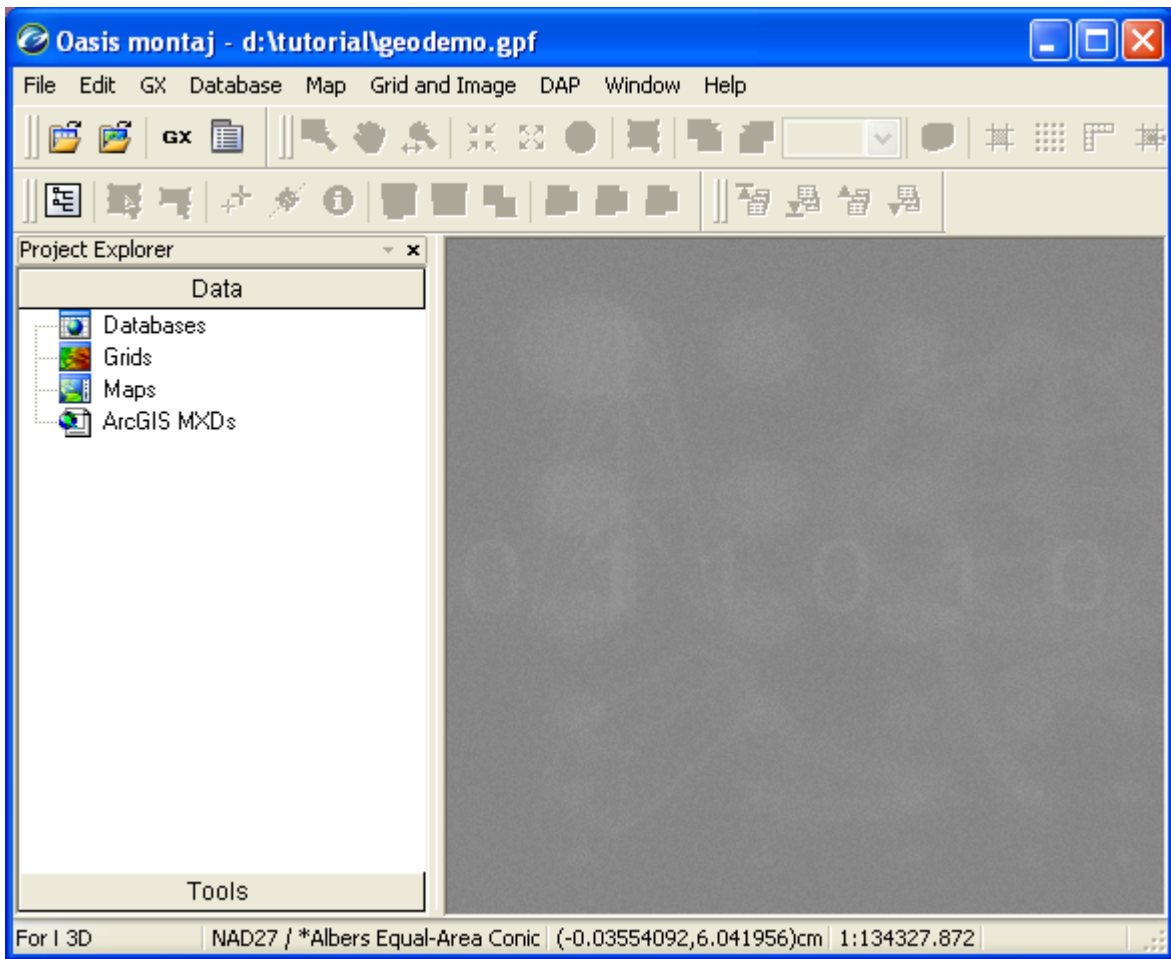


5.  To close a project, on the *File* menu, select *Project|Close*.

## Changing Default Settings

The program will work correctly with all of the standard default settings; however these may be changed to reflect your personal requirements or those of your computer. The default settings are the selections made for many of the programs where there is no user input and are designed to yield logical results.

You may overwrite some of these intelligent defaults in normal use but this should not create any problems since the defaults are only intended to get you started with the system and should change as your knowledge of the system increases.

1.  On the *GX* menu, select *Global Settings|General*. The *Default Oasis montaj settings* dialog is displayed.

2.  Select the desired choices from the available selections. You need not change any selections at this time. Once you are more familiar with Geosoft, you may come back to alter the settings.
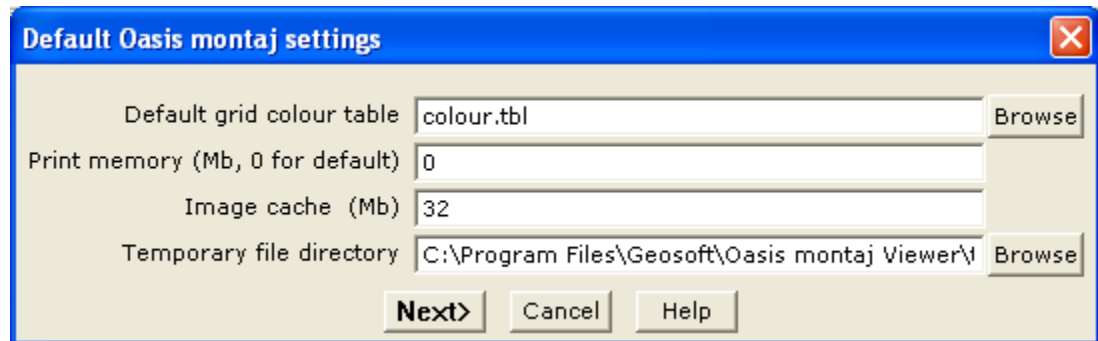


The following list summarizes the default **Oasis montaj *Viewer*** settings:

| | |
|---|---|
| **Default grid colour table** | Select the default colour table to use for displaying grids |
| **Print memory (megabytes)** | Select the amount of RAM you would like the Geosoft print driver to use when printing.  This only effects print configurations that use the Geosoft drivers.  Enter 0 to use the default, which is 33% of the total physical RAM available on the system. |
| | The Geosoft print driver will slice each print job into bands of this size.  The more RAM you use for printing, the faster printing will be.  If you specify too much RAM, it is possible to significantly diminish the performance of other tasks on the computer.  This amount should normally not exceed 50% of the installed RAM on your system, although we will allow the value to be up to 75% of the available RAM. |
| | This setting is not used by the Windows driver.  If you use the Windows print driver, the printing process will use virtual memory up to the size required by the print.  This can be up to 600 MB for A0 (E) size plots.  We recommend that you use the Geosoft drivers when working with large plotters. |

**Image Cache**

Select the amount of virtual RAM you would like to reserve for the image cache.  As images are displayed in **Oasis Montaj**, an efficient access version of the image will be stored in the cache if there is room.  The cache copy of the image greatly improves the performance of rendering the image when zoom/pan/redraw operations are performed.  If there is insufficient room in the cache, the image will always be rendered from the DAT interface, which is slower.

We recommend that you should set the image cache size to about 4 times the largest images that you routinely work with.  Note that the image cache will be created in the GEOTEMP directory, and there must be sufficient room to hold the cache plus other Geosoft temporary files.  The image cache should not be more than 50% of the available room in GEOTEMP.

**Temporary file directory**

This directory is used by **Oasis montaj** to store temporary files. Depending on the application, the requirements for storage in this directory can be VERY large (from 10 megabytes to gigabytes). We recommend setting this parameter to a very FAST drive. This will improve performance of all large data operations (magmap, gridding, etc).

**Oasis montaj** cannot start if this drive is invalid or if it is set to a drive in which it cannot create files (CD ROM). Please ensure that the directory is always valid.

Note that in previous versions of **Oasis montaj** the GEOTEMP environment variable determined where this directory was stored. This variable is no longer used and the setting is controlled through the Windows registry.

## Finding Help

**Oasis montaj** provides help information through two different interfaces. The ***Online Help*** system, which can be access by clicking the *Help* () button on the individual dialogs or by selecting the *Help|Help Topics* menu, can be used to locate quick information as well as access *Contents*, *Search* and *Favorites* tools. For new users we recommend that you take the online tour included in the *About* topics, which will introduce you to **Oasis montaj**. The ***Manuals, Tutorials, and Technical Notes*** system, accessed through *Help|Manuals and Tutorials*, contains full-length PDF documents that you can download from the Geosoft website (www.geosoft.com/resources/tutorials/) and print.
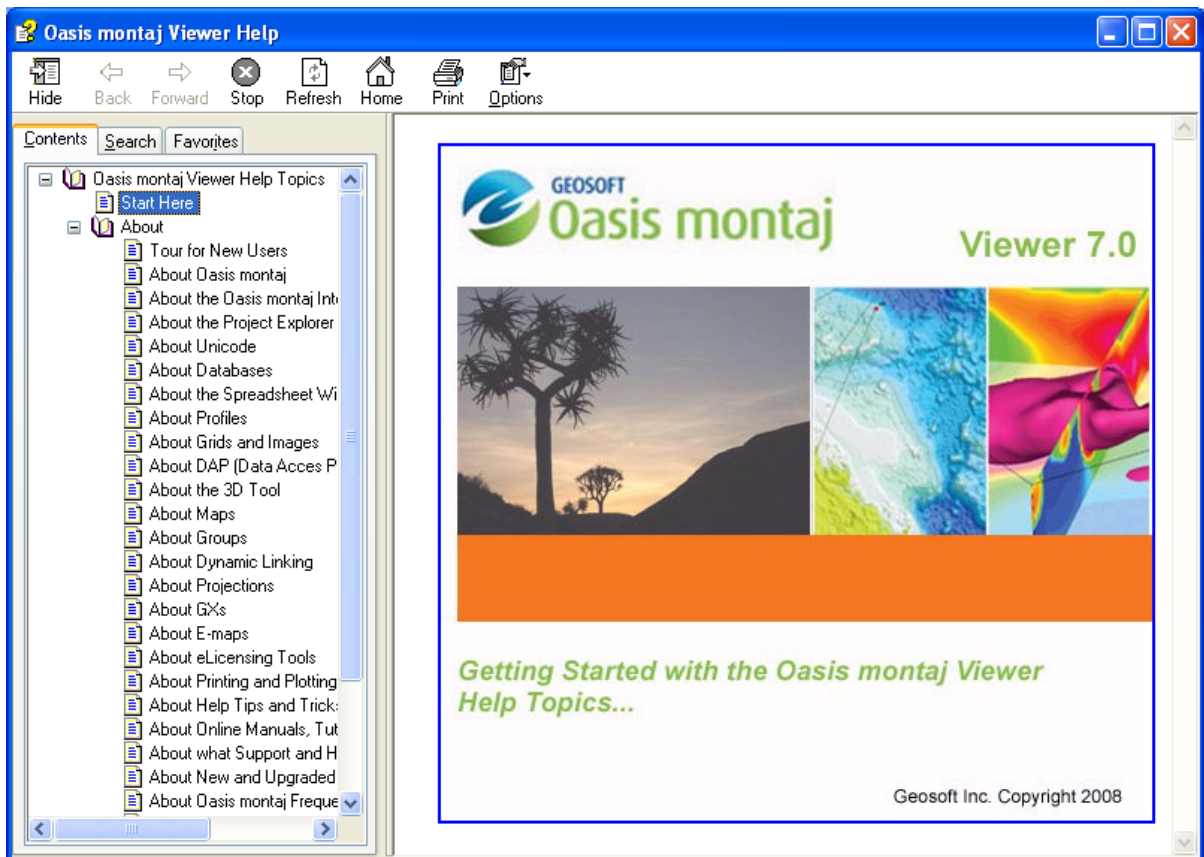
# Tutorial 2: Working with Data

To a use **Oasis montaj** effectively, you will need to understand a bit about databases, spreadsheets, profiles and maps. The "window" to the database in **Oasis montaj** is a specialized earth science spreadsheet that appears automatically when you open a database. This spreadsheet provides access to a wide range of data management and profile viewing capabilities. Maps have special properties that you will learn about in later tutorials.

The purpose of this tutorial is to provide you with an overview of how you can use this data management system effectively.

## Oasis montaj Databases

One of the fundamental technologies in **Oasis montaj** is its unique database architecture. This architecture is designed to let you display many kinds of data formats (ASCII and binary) in high-performance **Oasis montaj** databases.

**Oasis montaj** provides the ability to add compression to a database. You can choose to compress for speed, size or use no compression at all. The type of compression you use depends on which type better suites your needs. We recommend that you use speed, as it provides the fastest access to your data with a good compression rate.

### Opening a Database

Geosoft databases store and organize your survey data. Databases are displayed and organized in **Oasis montaj** in the Spreadsheet Window.

TO OPEN A DATABASE

1. On the *Database* menu, select *Open database.* The *Open Database* dialog is displayed.

**2.** Select the tutorial database (**casaber.gdb**) and click **[Open]**. The *casaber.gdb* is displayed in your project.
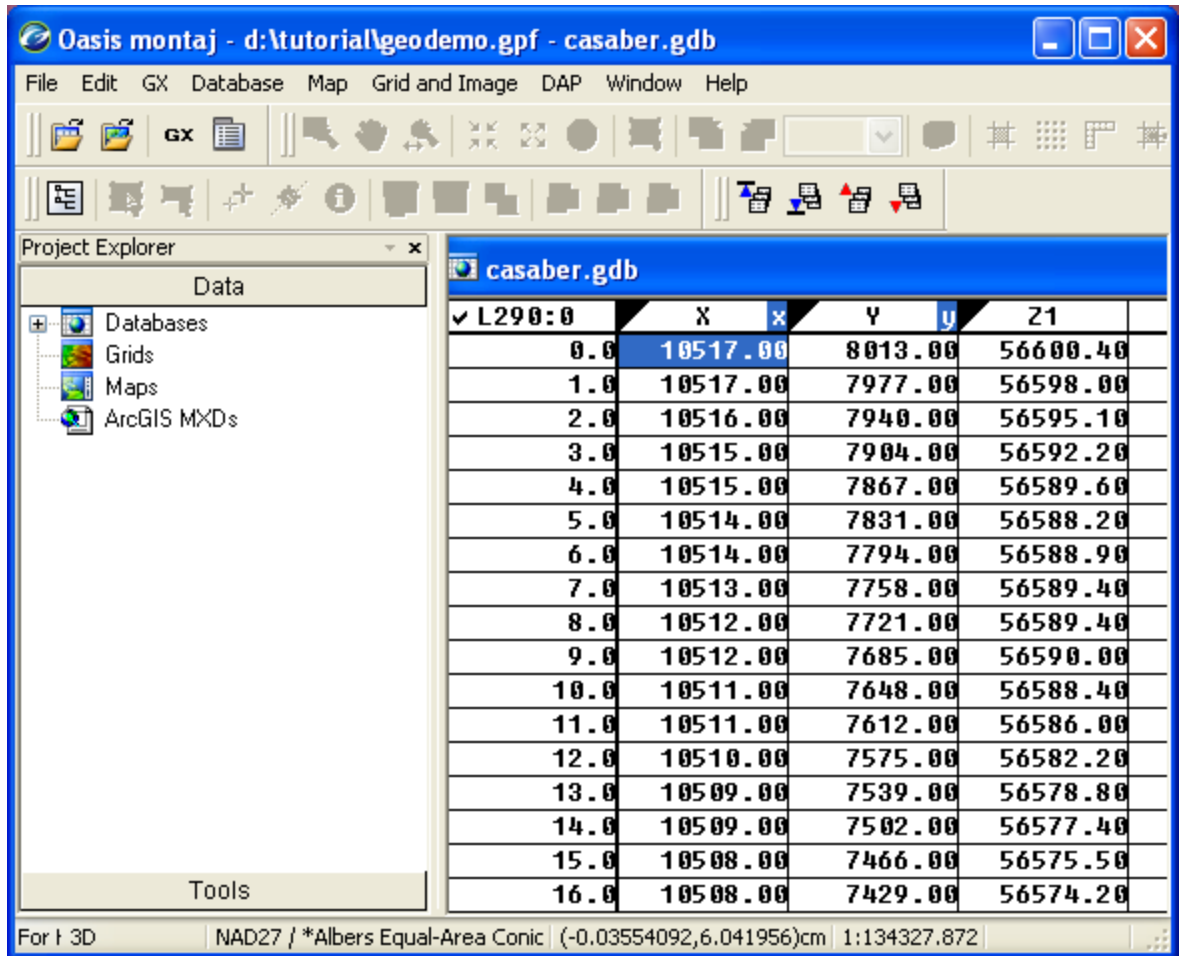


## Adding Compression to your Database

**1.** On the *Database* menu, select *Save database as*. The *Save database as* dialog is displayed.



**2.** Specify a new database name as (**casaber_size.gdb**) and then from the *Compression Type* dropdown list, select (**Size**). Click the **[OK]** button to continue.

**3.** The new compressed database (**casaber_size.gdb**) is displayed in your project.

## Displaying Data Files in an Oasis montaj Database

There are a number of options for displaying Geosoft and third-party formatted data files in an **Oasis montaj** database. In this tutorial, you will display a standard Geosoft XYZ file. For more information about the Geosoft XYZ format and other file formats that can be displayed in an **Oasis montaj** database see *Appendix 2: Displaying Data Formats*.

### DISPLAYING AN XYZ FORMAT FILE IN A DATABASE

1.  On the *Database menu*, select *Import*, and then select *Geosoft XYZ*. The *Open a Geosoft XYZ file into a new database* dialog is displayed.
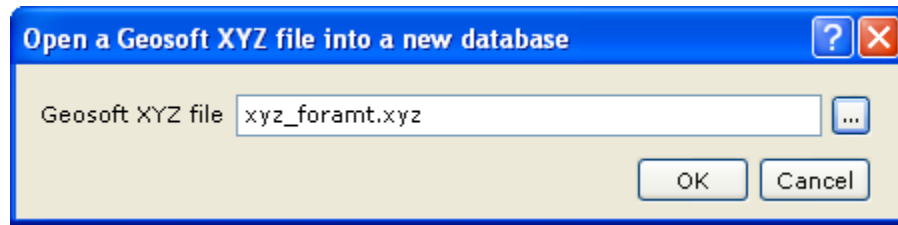
2.  Using the *Browse* () button locate the *Geosoft XYZ file* (**xyz_format.xyz**) in your project directory.

    The *Browse* () button allows you to browse and select files from anywhere on your computer or network drives.

3.  Click the **[OK]** button. The system displays the *Specify Maximum Database Sizes* dialog.
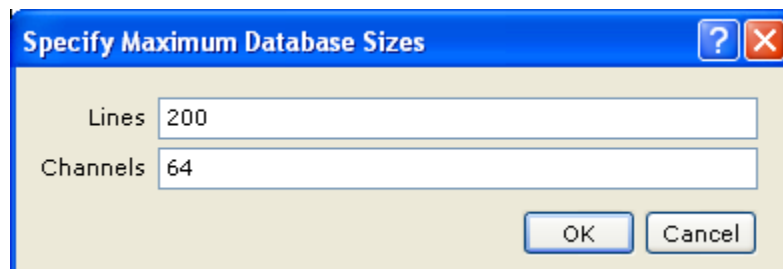
4.  This dialog enables you to specify the maximum size of the database in which the file will be displayed. You can accept the intelligent defaults and click the **[OK]** button. The file will be displayed in a Geosoft database with the same name as the XYZ file, but with a (*.gdb) extension (**xyz_format.gdb**).
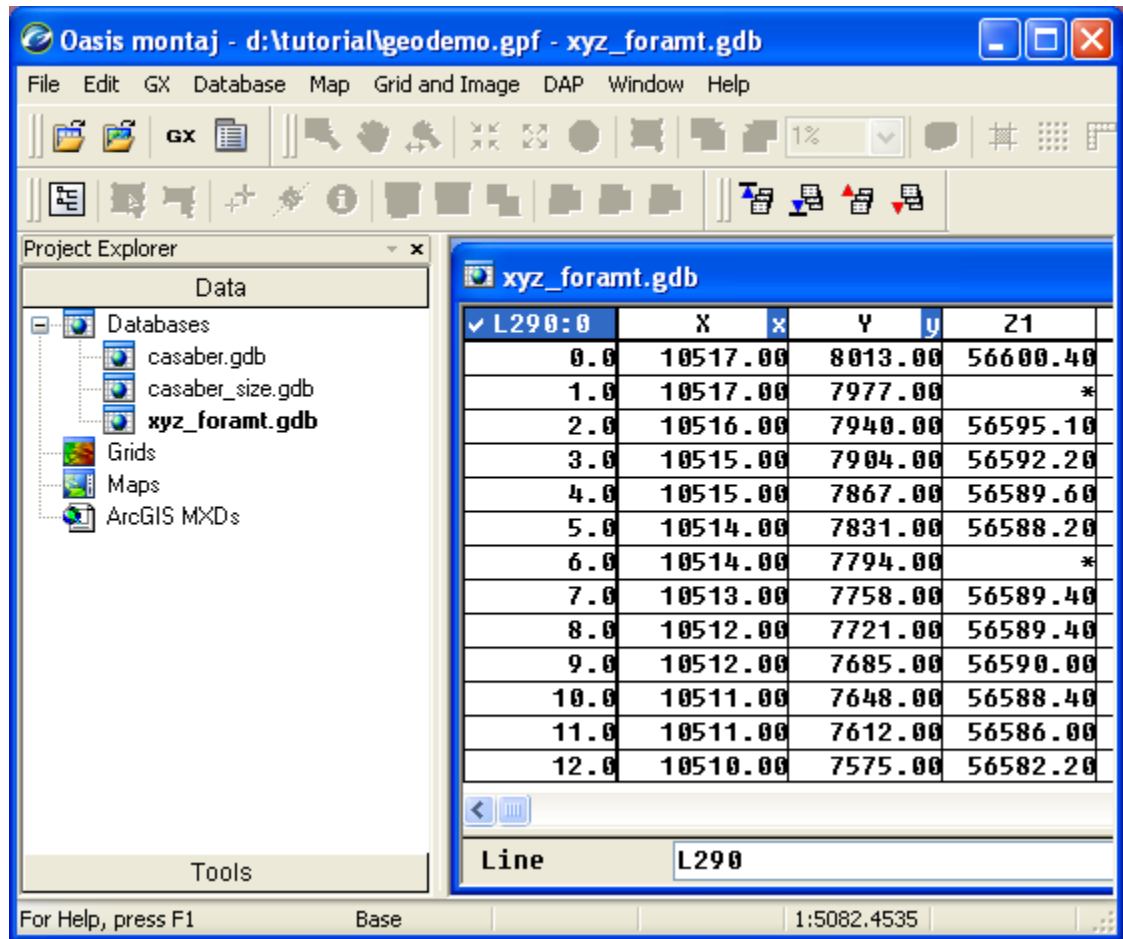
**Note:**  The default placeholder for missing or blank data (i.e. dummy value) in an XYZ file is "*".

## Displaying/Hiding Channels (Columns) in the Spreadsheet

Unlike traditional spreadsheets, the **Oasis montaj** Spreadsheet windows provide a *view* of your database instead of the actual data in the database. This design enables you to customize the spreadsheet to display data to your specifications.

### TO HIDE A CHANNEL (COLUMN)

1.  Select (highlight) the channel header cell you want to hide, for example (**Z1**). Press the **[space bar]** key on the keyboard or using the mouse right-click and from the popup menu select *Hide Column*. The channel/column will be hidden from the Spreadsheet view.

**Note:**   The database (*.gdb) file still contains all the data. The Spreadsheet is only used to provide a view of selected channels.

### TO DISPLAY A CHANNEL

1.  Move to the top of the first empty channel header and using the mouse, right-click and from the popup menu, select *List*.
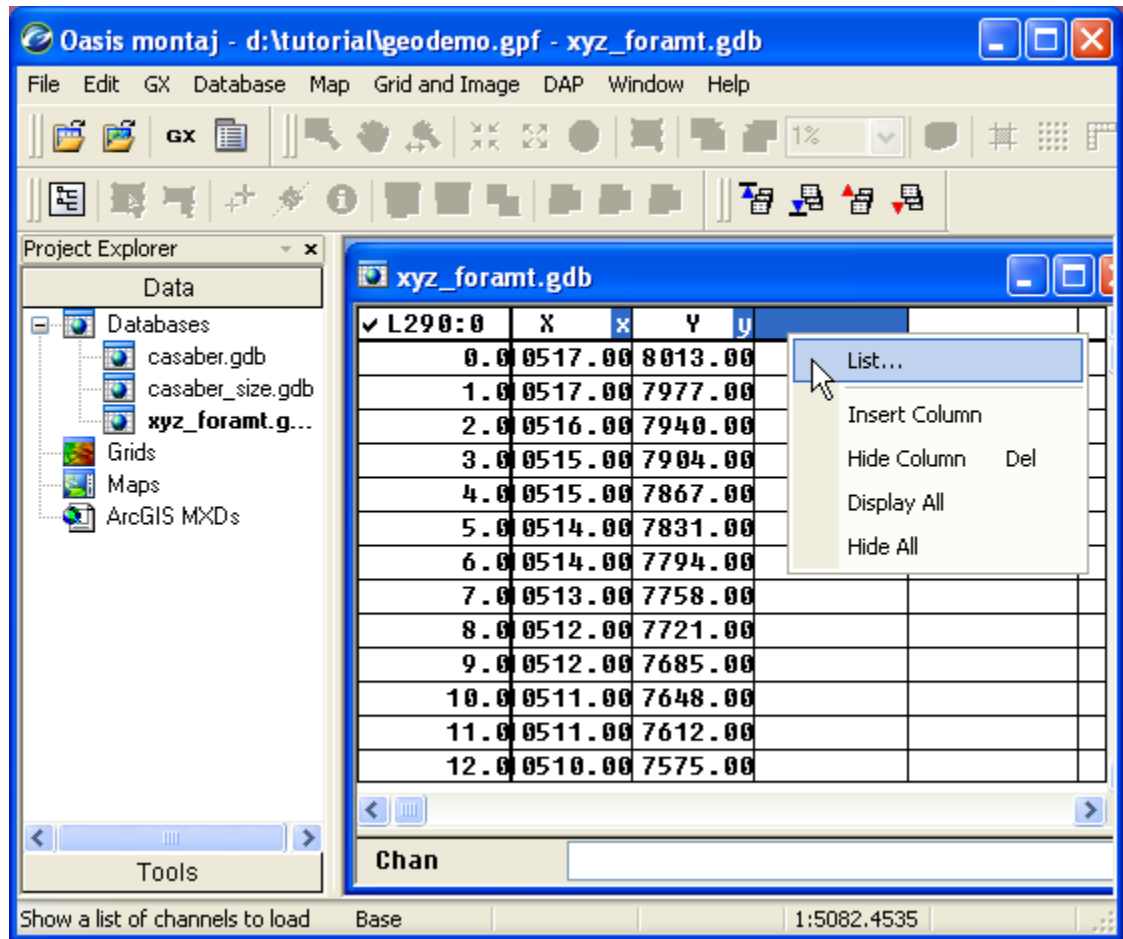
2.  A box will appear beneath the empty channel header listing all the available channels that are not currently being viewed in the Spreadsheet window.

3.  Select **Z1** and click the **[OK]** button, to display the channel in the Spreadsheet.

If you know the name of the data channel already, you can simply position the cursor on a specific Channel Header Cell, type the name and press the **[Enter]** key.
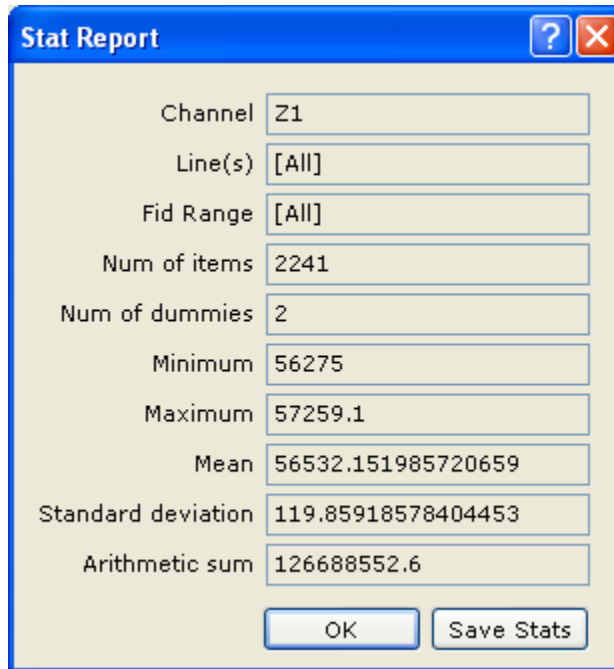
**Note:**  The symbol '**\*\***' in a channel cell indicates that the data are too wide for the spreadsheet column. To change the width of a column, place the cursor on the dividing line between the column headers. The cursor changes to a double arrow. Holding the left mouse button, drag the line to the right to increase the column width. Release the mouse button when done.

## Displaying Basic Channel Statistics

After you open a Spreadsheet and display one or more channels, you can display and save the channel statistics.  In this example we will display the Statistics for the Z1 channel.

### TO CALCULATE BASIC STATISTICS ON A CHANNEL:

1. Click three times on the channel header cell labelled **Z1** to select (highlight) the channel for all of the lines in the database. The selected data is the data the system will calculate the statistics on.

2. Using the mouse right-click and select *Statistics* from the popup menu.

| Stat Report | |
|---|---|
| Channel | Z1 |
| Line(s) | [All] |
| Fid Range | [All] |
| Num of items | 2241 |
| Num of dummies | 2 |
| Minimum | 56275 |
| Maximum | 57259.1 |
| Mean | 56532.151985720659 |
| Standard deviation | 119.85918578404453 |
| Arithmetic sum | 126688552.6 |

OK    Save Stats

3. You can save a copy of the statistical report by clicking the **[Save Stats]** button. The *Save Stats* dialog is displayed.

| Save Stats | |
|---|---|
| New statistics file | xyz_F1_Stats  ... |

OK    Cancel

4. In the *New statistics file* box, specify a file name (**xyz_F1_Stats.txt**). Click the **[OK]** button to save the file to your project directory. Then, click the **[OK]** button to close the *Stat Report* dialog box.

The following list summarizes how to obtain results on specific parts of your database:

| | |
|---|---|
| **Click once on the channel header cell to highlight the header cell.** | No statistics can be calculated. |
| **Click twice (double click) on the channel header cell to highlight the data in the current line (group).** | Statistics are calculated for that specific line of the database. |
| **Click three times on the channel header cell to highlight the data in all of the selected lines (groups) in the database.** | Channel statistics are calculated for all of the selected lines in the database. |

## Displaying Profiles in the Spreadsheet

After you open a Spreadsheet and display one or more channels, you have the option of displaying them as a graphical profile line. You can display profiles for one or more channels in your database. The profile appears in the profile windows directly below the corresponding database. You can have up to five windows displayed, with a maximum of 32 channels displayed in each window. Profile windows are linked dynamically to their corresponding database. When you select a value or range of values in either the database or profile window respectively, they are also highlighted in the other window.

For more information about the Profile window, please refer to the *Help* system.

### TO DISPLAY A PROFILE:

1. Select (highlight) the channel header cell labelled **Z1** and then using the mouse right-click and from the popup menu, select *Show Profile*.

2. The system displays a profile of the data channel in the *Profile Window* below the spreadsheet.
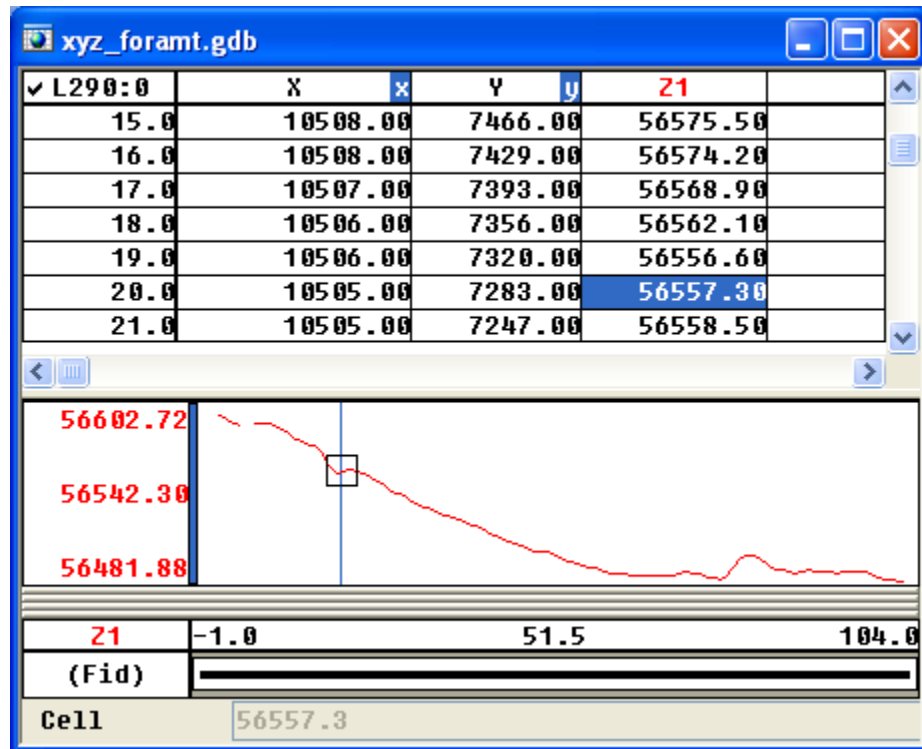
**Note:** To see where the Z1 values are located on the profile line simply click on a value in the **Mag** channel and the system will show a box indicating the corresponding area on the profile.

**3.** We recommend you experiment with the various "Profile" options accessed via the *Profile* popup menu, including *Profile Options*, *X*-and *Y Axis Options*, *Horizontal* and *Vertical Rescaling*, *Zooming*, and *Profile Plotting*.
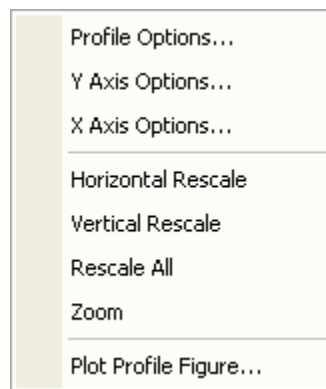


***Profile menu -*** *The **Profile** menu is accessed by right-clicking while holding your cursor over the Profile window*

<u>TO DISPLAY A DIFFERENT PROFILE:</u>

1.  Move the cursor to the *Line Header Cell* in the top left corner of the spreadsheet. The currently displayed line in the worksheet is **L290:0**.

2.  Click right mouse button on this cell and select the *List* option from the popup menu. A list of the line numbers is displayed. You can think of each line number as a worksheet in the spreadsheet window. When you view a new line number a new worksheet is opened in the spreadsheet window with corresponding line number information.
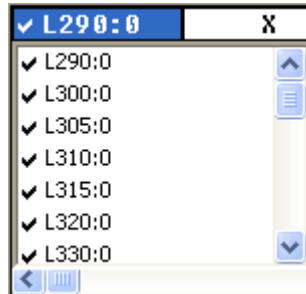


3.  Click on **L350:0** from the list and display a profile for this line. The profile for **L350:0** is shown below:
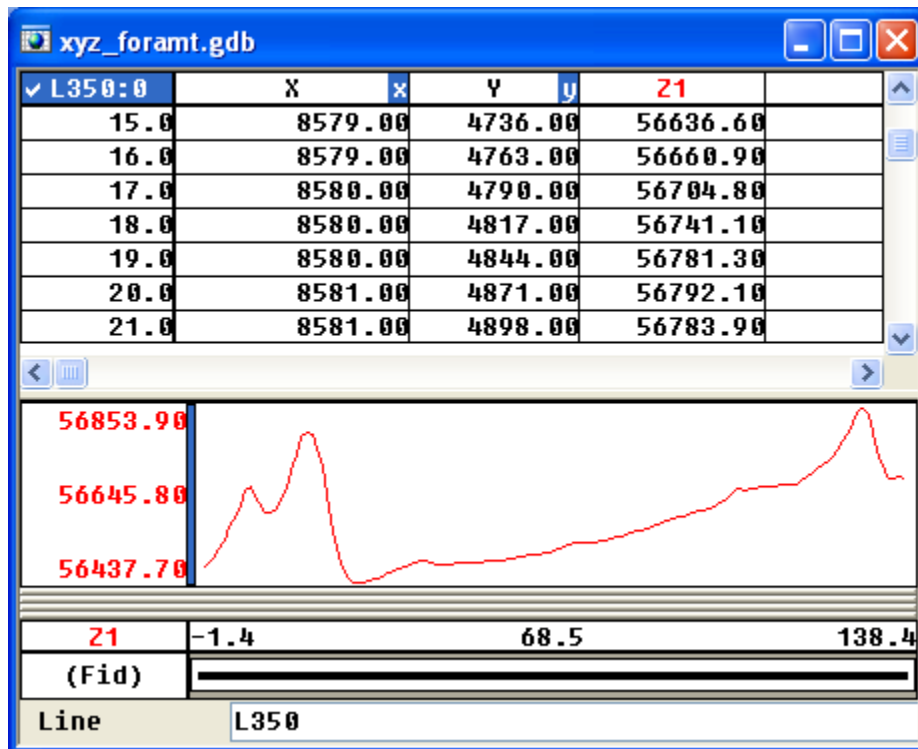


**Note:**  When the Line Number Cell is highlighted, you can use the **[Page Up]** and **[Page Down]** keys from your keyboard to scroll through lines. You can also use the *Database Tool Bar* to scroll through the lines. The figure below shows what each of these buttons do.

**DATABASE TOOL BAR**

**Display First Line/Group**. Click this button to show the data and profiles for the starting line in your database.

**Display Previous Line/Group**. Click this button to show the data and profiles for the previous line in your database.

**Display Last Line/Group**. Click this button to show the data and profiles for the final line in your database.

**Display Next Line/Group**. Click this button to show the data and profiles for the following line in your database
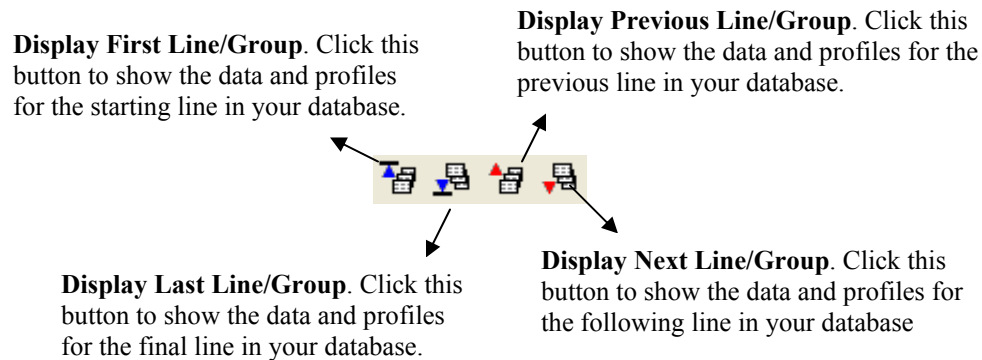
## Y-Axis Options

The *Y-Axis Options* menu item on the *Profile* popup menu enables you to set the Y axis scale options for the profiles in the profile window.

TO SET THE Y-AXIS OPTIONS:

1. Using the mouse, right-click while holding your cursor over the *Profile* window and the *Profile* popup menu will be displayed.

2. From the *Profile* popup menu, select *Y-Axis Options*. The *Panel Options* dialog will be displayed.

TO DISPLAY PROFILES AT THE SAME SCALE:

1. To display two profiles at the same scale, select the *Scale to fit for each line* option and check the *Same scale for all profiles in panel* option box.
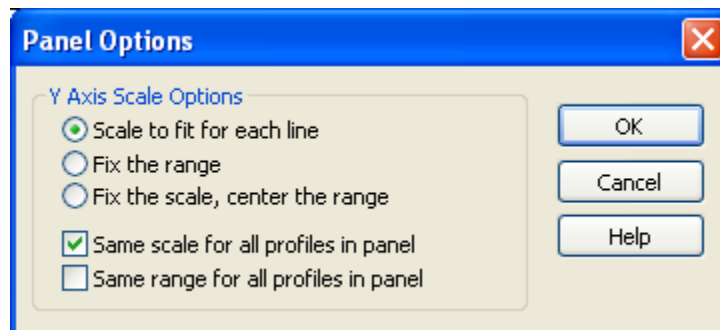
2. All profiles displayed in the selected profile window will have the same scale.

The following list summarizes the different scale options available to you:

| | |
|---|---|
| **Scale to fit for each line** | Adjusts the scale in the profile box to fit each line that is displayed. |
| **Fix the range** | Uses the same range for all the profiles that are displayed.. |
| **Fix the scale, centre the range** | Fixes the ranges and displays the line in the centre of the window. |

| Same scale for all profiles in panel | All profiles (including those from different channels) are set to the same scale. |
|---|---|
| Same range for all profiles in panel | All profiles are centred individually on their own mid-data value.<br><br>**Note:** This is useful, for instance, in observing in-phase and quadrature values where there is a DC shift between the two levels. |

## Plotting Profile Windows

**Oasis montaj** enables you to quickly plot your displayed profile windows as an **Oasis** montaj *Map* file. The map is named using the name of the current database and the profile line number.

1.  On the *Profile* popup menu, select *Plot Profile Figure*. The *Create a profile figure* dialog is displayed.
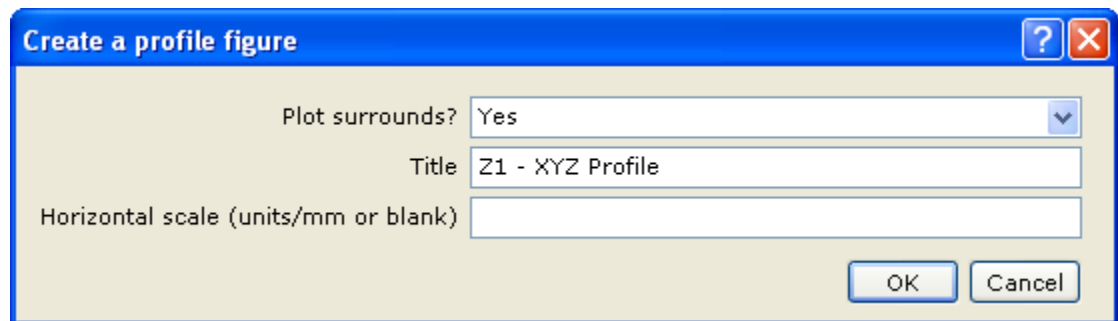


2.  From the *Plot surrounds?* dropdown list select **Yes**. Then specify a *Title* (**Z1 – XYZ Profile**) and optionally specify the *Horizontal scale (units/mm or blank)*.

3.  Click the **[OK]** button and the profile plot map (**xyz_format_L350.map**) is displayed in your project.

## Metadata

Metadata (data about data) is captured by **Oasis montaj** from the first time the data is touched. The metadata information, which is based on ISO 19115 standards, is stored inside the data (if supported) or as a companion XML file. When you import or work with data in **Oasis montaj**, *User name*, *Date*, *Time* and any actions performed on the data will be maintained in the Metadata. When data is derived from other data, the Metadata is passed on and the lineag*e* of what was done to the data is maintained in the *Lineage* section.

### Viewing and Editing Metadata

Attributes (or metadata), information about data, can be simple or complex and the descriptive needs of different kinds of data are infinitely diverse. To allow for this and provide flexibility, Geosoft developed the *XML Metadata Viewer* and *Metadata Editor* to help you organize your metadata.

Even though each Geosoft data type (*Database*, *Grid*, *Map*, *ArcGIS MXD*, *Voxel*, etc) exhibits many different attributes, using these tools are easy.  The current selection drives what exists inside the tool.

**To View / Edit your Metadata:**

1. From the *Project Explorer* window, you can select the data of interest, right-click and from the popup menu, select *Metadata*. The *Metadata Viewer* will be displayed.

   or

2. From the *Database* (or *Map*, *MXD*, *Grid and Image*, *3D Tools*) menu(s), select *Metadata*. The *Database Metadata* dialog (or the appropriate data type dialog i.e. *Map Metadata*, *Grid Metadata*, etc) will be displayed.
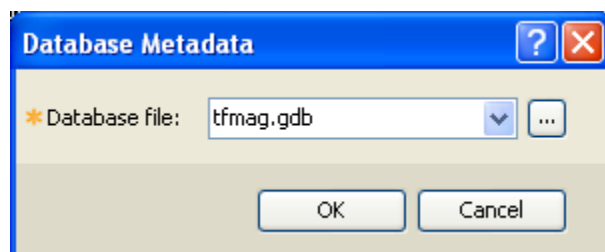


3. Using the *Browse* button, locate the *Database file* and click the **[OK]** button (or *Map file*, *Grid file*, etc). The *Metadata – file_name* dialog is displayed.
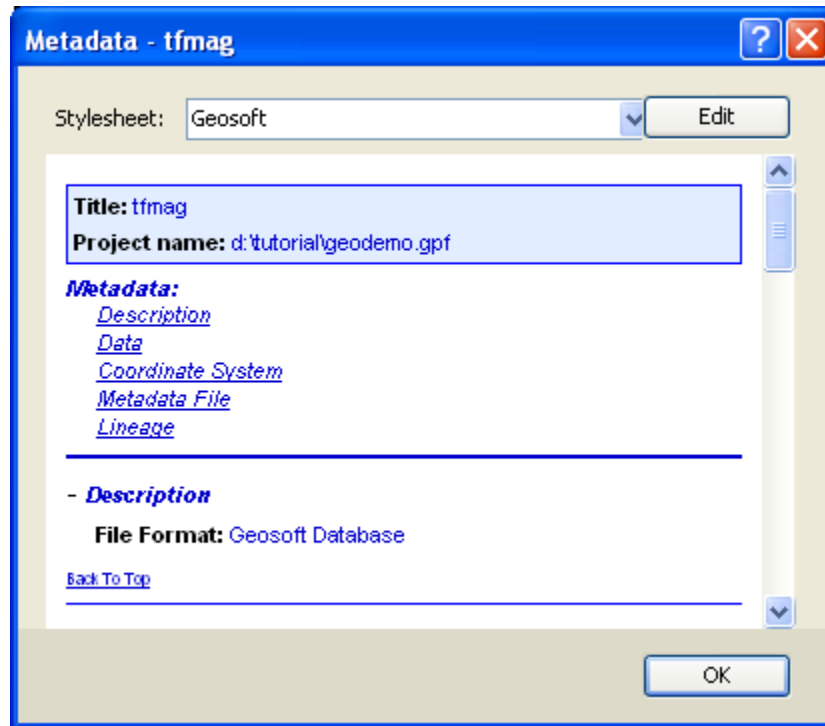
4.  Use this dialog to *View* the Metadata associated with the selected database file. The *Stylesheet* dropdown list enables you to select from 3 style sheets (Geosoft, Geosoft ISO 19139 and Xml).

5.  To edit the Metadata, click the **[Edit]** button and the *Edit Metadata* dialog will be displayed.
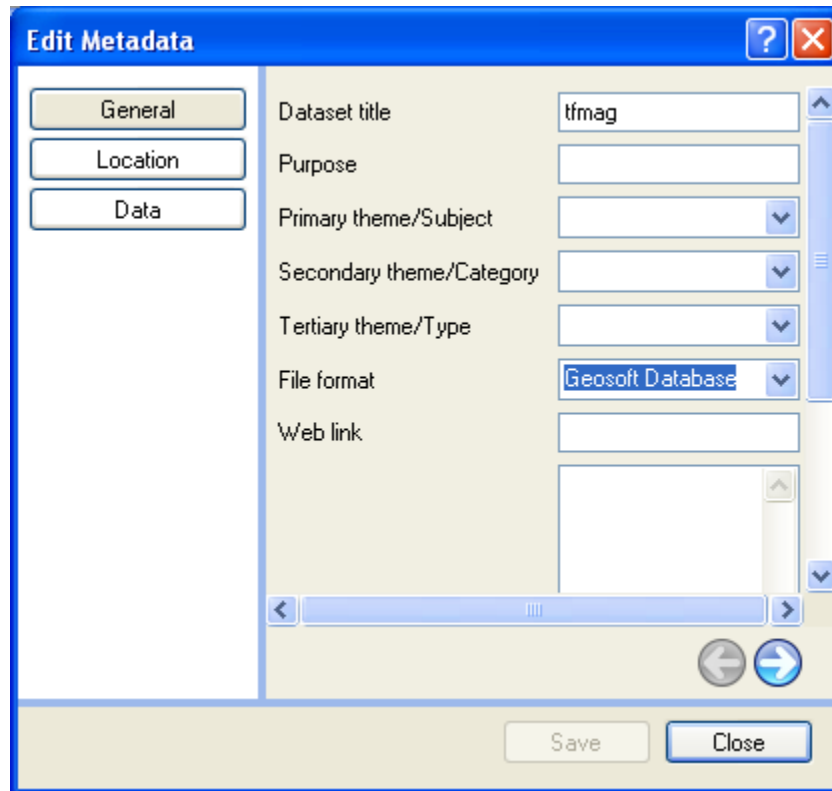
6. You can use this dialog to edit the Metadata associated with the selected database file. Selecting the **[General]**, **[Location]**, and **[Data]** buttons, enables you to access the different types of Metadata.

7. Click the **[Save]** button to save your edits and then click the **[Close]** button to close the *Edit Metadata* dialog and return you to the *Metadata Viewer*.

8. You can review your changes and then click the **[OK]** button to close the window.

## Metadata Tool

The *Metadata Tool* is a context-oriented, interactive method for viewing and editing attributes assigned to Geosoft Global Settings, DAP Data, etc.

**Note:** Values displayed in a grey box cannot be edited. Values displayed in a white box may be edited.

### TO VIEW METADATA TOOL:

1. On the *GX* menu, select *Global Settings|Advanced*. The advanced global settings will be displayed in the *Metadata Tool*.
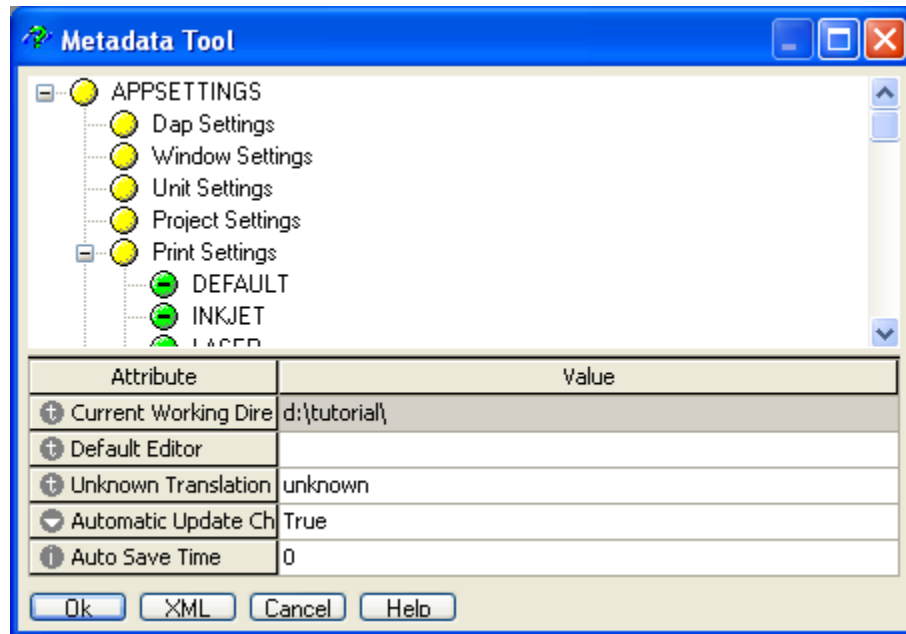
2.  The white letter in a grey circle to the left of the "Attribute" indicates the data value type; "i" for integers, "r" for real floating point numbers, "t" for text, and "o" for data objects.

3.  To close the dialog, click the **[Cancel]** button.

## Drag-n-Drop

**Oasis montaj** includes the technology to drag data files directly from Windows Explorer and drop them into an **Oasis montaj** project for display. Data files that can be Drag-n-Dropped include, database files (*.GDB), grid files (*.GRD), map files (*.MAP) and *ArcGIS MXD files (*.MXD).

**Note:**  *The installation of ArcMap or ArcEngine is required to view MXD files in Oasis montaj. ArcEngine is included with the installation of **Oasis montaj 7.0** (licensed version).*

Also, any item in the *Project Explorer* may be dragged and dropped into the *Project* window for quick display.

The ability to drag XYZ files and drop them into an open database file (*.GDB) is also included in the **Oasis montaj Viewer**. Note that, only default parameters are used and XYZ files must be in the correct format and the database must be large enough to hold the dropped XYZ file.

# Oasis montaj Maps

In **Oasis montaj**, a *Map* is more than a printed sheet of information. Maps are special items that serve a number of purposes in the system. The map window provides the basic mechanism for creating maps, displaying images, and linking to other maps and data. To work effectively with maps, you need to be familiar with the purposes of maps in the system as well as the role of *Views* and *Groups*.

Maps use *Views* to organize and display information. A *View* divides the information on a map into a Base view, (e.g. map surrounds, north arrows, and scale bars) which uses paper coordinates, and a Data view, (e.g. map coordinates, contours, and grids) which uses ground coordinates.

Maps use *Groups* to determine the order in which objects are displayed (rendered) on a map. *Groups* are layered on top of each other in a specific order determined by the *Map View/Group Manager Tool*.

## Displaying a Map

1. On the *Map* menu, select *Open map*. The *Open Map* dialog box is displayed.

2. Select the map file (**Oasismontaj.map**) and click **[Open]**. The map is opened in your project.

## Adding Map Comments

Map Comments can be included with your map by using your default text editor. Map comments are saving in the map file (*.MAP).

1. On the *Map* menu, click *Edit Map Comments*.

2. The *Default Text Editor* (i.e. notepad) is displayed.

**Note:** If you have not specified your *Default Text Editor*, the *Select a default text editor* dialog is displayed. Using the **[Browse]** button, locate a text editor on your computer (notepad is recommended), and then click **[OK]**.

3. Type your comments in the text window, then save the file and exit the text editor. The comments are saved in the map file (*.map file).

## Displaying a ArcGIS MXD File

The installation of ArcMap or ArcEngine is required to view MXD files in **Oasis montaj**. ArcEngine is included with the installation of **Oasis montaj 7.0** (licensed version).

1. Select an *ArcGIS MXD file (*.mxd)* in Windows Explorer and drag-n-drop the file into your open project.

2. The *MXD file* will be opened and displayed in a *MXD Viewer*.

3. The MXD file appears exactly as it would in ArcGIS with no loss of data quality. Dynamic linking and cursor tracking is implemented between MXDs and Geosoft Maps.

## Using the View/Group Manager Tool

You can use the *View/Group Manager* tool (⊞) to display and edit the *Views* and *Groups* in a map. This tool consists of a 'tree' structure that contains two main branches representing the *Base* view and the *Data* view. Under each view, a number of groups are listed according to their layer on the map

Each group in a view shows an icon beside its name that identifies the group as either a map vector object (✗) or an aggregate (⬥). Views can either be normal *2D views* (⬜) or *3D views* (⊞ ). The check boxes in the tree controls and indicates visibility of an item.

To select single items in the tree click on the item desired. Multiple selections of groups within a view can be achieved by holding the <Ctrl> key and clicking on the desired items.  Changing the selection during group editing will end group editing without cancelling any current changes.

The effect of a double click on any item depends on the state of the map. If in shadow cursor mode the map will switch to either group or view selection mode and select the item that was clicked upon. If the map is already in either of these selection modes a double click has the same effect as hitting the  Edit  button or using the activate shortcut key (default <Enter> key).

The group on the top layer (closest to the front) is listed first, followed by the next layer behind it, followed by the rest of the layers to the bottom layer at the end of the list. It is possible to control the render order in the tree by using the *Drag n Drop* technology. The *Drag n Drop* capability enables you to move map groups up and down within Views and also to move Views relative to each other.
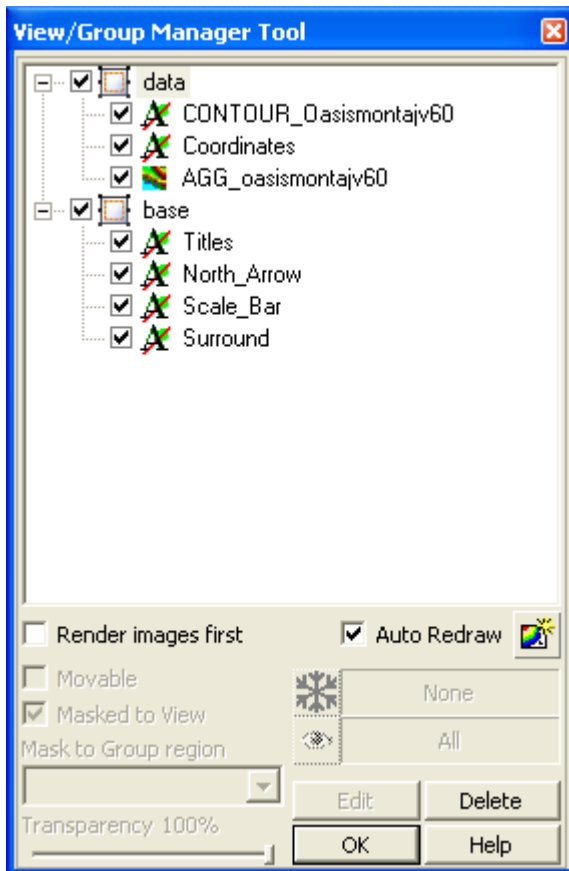
**RENDERING OPTIONS**

☑  Check the *Render images first* box to render (draw) the images groups first.

☑  Check the *Auto-Redraw* box to automatically redraw the map when a change is made to it.

🖼  Click the *Redraw* button to redraw the map when changes are made to the groups in the View/Group Manager and the Auto-Redraw option is off.

The *View/Group Manager Tool* is a "modeless" dialog, which means it can remain open while you work on your map. It can be toggled on or off using the "M" hot key and can even be docked on the side of your screen or at the top with the toolbars.

**OTHER TOOL OPTIONS**

The other Tool options include moving, masking, transparency settings, editing and deleting.  All of the following properties require the licensed version of **Oasis montaj**.

❄  *Frozen Scale*

Click this button to freeze the scale of the currently selected map group, independent of the view scale of the map. For example, when zooming in the text size in a group will not grow but remain the same size on the screen.

*Visible Scale*

Click this button to set a scale range in which the currently selected Group will be visible. For example, individual groups may be made visible only at specific scales. Then, while zooming, if the map scale is outside the range, the group is not drawn.

**Moveable**

Check the *Moveable* box to enable the movement of the selected group on the map using the cursor.

**Masked to View**

Check the *Masked to View* box to mask the selected view using the mask applied to the View (*Mapping|Masking|Apply mask to a view* - VIEWCLIP.GX).

This option enables you to apply a mask to selected groups within a View.

**Mask to Group region**

Using the *Mask to Group region* dropdown list, select the extended view mask applied to the View (*Mapping|Masking|Add|Replace group mask in view* - VIEWEXTCLIP.GX).

This option enables you to save the mask into the map and activate it on specific groups in the View.

**Transparency**

Check the *Transparency* box to enable the slider (Transparent - Opaque). Move the slider to the transparency level wanted for the selected group.

**Edit**

Click the button to edit (or activate) the selected item.

**Note:** Double click on a group or view in a map or using the activate shortcut key (default Enter-Key) will also activate the edit mode for that item. The edit mode depends on the item; group edit mode for vector groups, image color tool for images and color symbols and 3D Viewer for 3D views.

**Delete**

Click the *Delete* button to delete the selected View/Group.

Note: If you delete a group my mistake or make any other undesired changes, you can click the *Undo last map change* ( ) button on the Standard Toolbar or use the shortcut (Default Ctrl-Z) at any time to undo any changes and revert to the original map.

## Using the Viewer Tool Bars

The following *Tool Bars* can be displayed in the **Oasis montaj *Viewer***. Note that the **Database Tools Bar** can be found on page 22.

To *Show|Hide* tool bars, on the *Tools* tab of the *Project Explorer* select the tool bar of interest, right-click and select *Show|Hide* from the popup menu.

**STANDARD BAR**

*Open Database*

Use this command to open a previously defined Oasis montaj database.

*Open Map*

Use this command to open an existing Geosoft map.

*Run GX*

Use this command to run a GX from the GX directory.

*Load Menu*

Use this command to load a menu to the menu bar.

**MAP LAYOUT BAR**

*Zoom Box (Default Shortcut: B-Key)*

Click this button to activate the zoom box. Click on the map, then while holding down the left mouse button, move your cursor in the area of the map you want to zoom, click the left mouse button to select the area. Click the mouse button again to zoom to the area selected.

**Note:**  Once the box has been defined, the cursor and the box are linked and by moving the cursor around the map you can move the box to another location, and then click the left mouse button to zoom to the boxed area.

You can also access this command by clicking the right mouse button on a map and selecting *Zoom Box* from the popup menu.

*Pan (Default Shortcut: P-Key or Spacebar)*

Click this button to move around in the currently selected map. Click the left mouse button and while holding the button down, move the hand cursor to pan around the current map area.

You can also access this command by clicking the right mouse button on a map and selecting *Pan* from the popup menu.

*Interactive Zoom (Default Shortcut: Shift-Z)*

Click this button to activate the interactive zoom. Click on the area of the map you want to zoom (e.g. an anomalous location on a grid), then while holding down the left mouse button, move your cursor left to zoom out and right to zoom in on the selected area.

You can also access this command by clicking the right mouse button on a map and selecting *Interactive Zoom* from the popup menu.

*Zoom Out (Default Shortcut: X-Key)*

Click this button to zoom out and shrink the displayed map features by 50%.

You can also access this command by clicking the right mouse button on a map and selecting Zoom Out from the popup menu.

*Zoom In (Default Shortcut: Z-Key)*

Click this button to zoom in and increase the displayed map features by 50%.

You can also access this command by clicking the right mouse button on a map and selecting Zoom In from the popup menu.

*Full Map (Default Shortcut: F-Key)*

Click this button to display the whole map area in the map window.

You can also access this command by clicking the right mouse button on a map and selecting *Full Map* from the popup menu.

*Zoom to Selection (Default Shortcut: S-Key)*

Click this button to zoom to the selected map view or group.

You can also access this command by clicking the right mouse button on a map and selecting *Zoom to Selection* from the popup menu.

*Last View (Default Shortcut: L-Key)*

Click this button to undo navigation changes that you have made recently. This command is useful for returning the view to any extents that was previously viewed after changing it by zooming and panning.

*Next View*

Click this button to redo navigation changes that you have made recently.
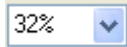
*Zoom Level Control*

This option enables the user to specify an estimation percentage of print size on screen (100%) or various other levels (for example, 400%, 200%, 100%, 75%, 50% and 25%). The control also supports custom levels by typing a percentage in the control and pressing the <Enter> key.

The zoom level reported here is somewhat related to the scale reported in the status bar. The scale shown in the status bar depends on the view selected. For example, for a **50%** zoom reported or typed in the toolbar with a **1:500** scale data view with:

Base view Selected: Status bar shows **1:2**

Data view Selected: Status bar shows **1:1000**

*Create Snapshot*

Click this button to create a snapshot (or bookmark) of the current map extents, based on the coordinate system and units of the current map view.

This option enables you to easily return to a favourite location on your map. For more information on managing your snapshots, see the *Manage Snapshots* help topic.

*Auto Snap to Grid*

Click this button to automatically *Snap to Grid* when working in your map. The snapping grid origin is at the lower left corner of a map or map template and the snapping distance can be controlled using the *Layout View Properties* button (licensed version only).

*Toggle Snapping Grid*

Use this to toggle the visibility of the snapping grid. The units and snapping grid size are controlled by the *Layout View Properties* button. (licensed version only).

*Toggle Ruler*

Use this to toggle the visibility of a ruler on the left and top sides of the view the snapping grid. The units displayed on the ruler are controlled by the *Layout View Properties* button (licensed version only)

*Layout view properties*

Click this button to set the resolution, units and other properties for snapping and rulers. The default is 5mm.

The units set here controls the units that is used for layout of maps and map templates and also affects coordinates and measurements displayed in the status bar for Base view operations (licensed version only).

**MAP TOOLS BAR**

*Toggle Map View/Group Manager*

Click this button to open the *Map View/Group Manager* tool which enables you to display and edit the *Views* and *Groups* in a map. This tool consists of a 'tree' structure that contains two main branches representing the *Base* view and the *Data* view (note that other Views such as 3D views and multiple Base and Date Views can also be included).

Under each view, a number of groups are listed according to their layer on the map.

For instructions on how to use the manager, please refer to the ***Online Help***.

*Map View Mode*

Click this button Switches between Views; Data (ground coordinate), Base (map coordinate) and 3D views.

*Map Group Mode*

Click this button to select the different groups in a Map (including image aggregates, contours, surrounds, and other graphics layers). Once selected, you can move, cut, copy or edit the group.

*Shadow Cursors*

Click this button to enable desktop dynamic linking ($^-_|{}^-$). As you move the cursor around the map, the value for that same geographic location is highlighted or indicated in all linked databases, profiles and maps.

**Note:** When you open a map the system automatically turns on a map link and activates the Shadow Cursor.

*Shadow Cursor Data Linking Tool*

Click this button to create a dynamic link between one or more maps and data (in Spreadsheet and Profile windows) to assist in locating and comparing data, profiles and maps.

If you have plotted flight lines on your map, you can use this button to dynamically link the map to the database and profiles.

When you move the Shadow cursor on the map, the database and profile views will update to show the corresponding data. If the corresponding data are in a different database line, then the spreadsheet window will automatically display this line. When you select a value in the database or a point on a profile, the Shadow cursor will update in the map view.

*Geosoft Map Identify Tool*

Click this button to display the "Geosoft Map Identify Tool" dialog.

**Note:** To enable the "Geosoft Map Identify Tool" button you must have a Geosoft map open and select in your current project and the map must include ArcGIS LYR information.

*Auto-Redraw Maps*

Click this button to toggle the *Auto-Redraw* option on/off. The Auto-Redraw option refreshes/redraws a map automatically after changes are made to it.

- When this option is **ON** any changes made to the map contents will cause the map to be refreshed/redrawn.  This includes editing changes, group selection changes, or changing the rendering order of a group.

- If the Auto-Redraw is **OFF** the map is only refreshed on zoom, pan, or if the refresh button is pressed.

- A refresh button has also been added to the *Map View/Group Manager* dialog to support this feature.  If the Auto-Redraw option is off, and you make changes to the groups in the Map View/Group Manager, click this button to refresh and show your changes on the map. This is useful for displaying your changes when moving groups in front or behind each other. By default *Auto-Redraw Maps* is initially **ON**.

You can also access this command by clicking the right mouse button on a map and selecting *Redraw* from the popup menu.

*Redraw (Default Shortcut: R-Key)*

Click this button to refresh/redraw a map in the Map window after making editing changes.

You can also access this command by clicking the right mouse button on a map and selecting *Redraw* from the popup menu.

*Auto Recolour Grids*

Click this button to toggle the *Auto Recolour Grids* option on/off. The Auto Recolour Grids option recolours the displayed grid area as the grid extents change within a map window (e.g. when zooming or panning).

Note that, when turned on the grid values stay the same. However, as the viewed extents of the grid change; the grid colour is recalculated and redrawn using the entire colour palette over the current displayed grid area.

- When this option is **ON** any changes made to the extents of the viewed grid area will cause the grid to be recoloured based on the grid values in the current viewed area, using the entire colour palette.

- All displayed grids will be recoloured when changes are made to the extents of the viewed area.

- When Auto Recolour Grids is **OFF** the grids return to their original colours.

The *Auto Recolour Grids* option is a temporary viewing tool. To save/share a recoloured view of a grid you can *Create a Snapshot* or print the current map extents.

**Note:**  If the *Auto Recolour Grid* mode is turned **ON** when you print it will apply to the printed page. Either turn **OFF** the mode when printing or print out a selected area and it will apply the recolouring.

*Change Extent on This Map Only*

Click this button to apply map commands to the currently selected map window only.

*Change Extent on All Maps*

Click this button to apply map commands to all the open map windows in the project.

*Change Extent on Other Maps Only*

Click this button to apply map commands to all maps other than the currently selected map.

## Displaying Grids and Images on a Map

In **Oasis montaj**, grids and images are always displayed on a map in the Map window. There are several types of grids and images you can display. For a complete list of the grid and image formats that are supported in **Oasis montaj** see the online help topic *Data Formats*

In **Oasis montaj**, a *Grid* is a visual representation of a survey area interpolated from a series of survey points. For example, magnetic survey data are collected as a series of point values organized using a number of lines and arranged in a grid pattern.

When you create a grid, **Oasis montaj** takes these point values from the database and interpolates between them, creating a visual representation similar to a contour map. However, instead of simple contour lines, colours and shading are used to represent the magnetic differences across the grid.

There are two types of images in **Oasis montaj**, **Raster** and **Vector** images.

### Raster Images

Raster images or bitmap graphics (.bmp, .tif, and .jpg) are created from a series of pixels to represent graphics. Each pixel in a bitmap image has a specific location and colour value assigned to it.

Bitmap images are resolution dependent—that is, they represent a fixed number of pixels. As a result, they can appear jagged and lose detail if they are scaled on-screen or if they are printed at a higher resolution than they were created for.

### Vector Images

Drawing programs such as AutoCAD create vector graphics (.dxf, .eps, .wmf), made of lines and curves defined by mathematical objects called vectors. Vectors describe graphics according to their geometric characteristics. The **Oasis montaj** CAD drawing tools (licensed version) enable you to draw vector lines and shapes.

A vector graphic is resolution-independent—that is, it can be scaled to any size and printed on any output device at any resolution without losing its detail or clarity. As a result, vector graphics are the best choice for type (especially small type) and bold graphics that must retain crisp lines when scaled to various sizes—for example, logos.

Because computer monitors represent images by displaying them on a grid, both vector and bitmap images are displayed as pixels on-screen.

#### DISPLAYING A GRID ON A MAP

1. On the *Grid and Image* menu, select *Display* and then click *Single Grid*. The *Place a grid on a map* dialog is displayed.
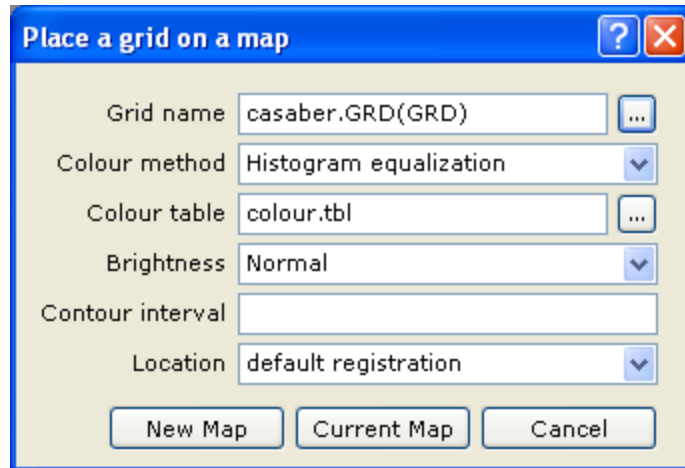
2. Select the *Grid name* (**casaber.grd**), *Colour method*, *Colour table*, *Brightness*, *Contour interval,* and the *Location*. For more information on these parameters click the *Help* () button.

3. Click **[New Map]**. The grid is displayed on a new map.

**Note:** To display a grid on a current map, click the **[Current Map]** button.

### DISPLAYING AN IMAGE ON A MAP

1. On the *Grid and Image* menu, select *Display* and then select *Image (bmp, tiff, etc.)*. The *Place an Image on a map* dialog is displayed.

2. Using the *Browse* () button, display the *Image* dialog and select the image *File name* and *File type*.

3. Click **[Open]**. The *Place an image on a map* dialog is displayed again.

4. Select the image *Location* (*default registration* or *fit to an area*).

5. Click **[New Map]** the image is displayed on a new map.

**Note:** To display an image on a current map, click the **[Current Map]** button.

### DISPLAYING A GEOSOFT PLOT FILE

1. On the *Map* menu, select *Import* then select *Geosoft PLT files*. The *Display a Geosoft PLT file* dialog is displayed.

2. Select the *Plot file* name. Click **[New Map]**. The Geosoft plot file is displayed on a new map.

**Note:** To display a Geosoft plot file on a current map, click the **[Current Map]** button.

### DISPLAYING AN AUTOCAD DXF FILE

1. On the *Map* menu, select *Import* then select *AutoCAD DXF files*. The *Display a DXF file on a map* dialog is displayed.

2. Select the *DXF file* name, the *Plot layers to*, the *Maximum number of pen styles*, and *Colour*. For more information on these parameters, click the *Help* ( ❓ ) button.

3. Click **[OK]**. The DXF file is displayed on a map.

## Auto Recolour Grids

Click the *Auto Recolour Grids* ( 🔷 ) button to toggle the Auto Recolour Grids option on/off. This option recolours the displayed grid area as the grid extents change within a map window (e.g. when zooming or panning).

Note that, when turned **ON** the grid values stay the same. However, as the viewed extents of the grid change; the grid colour is recalculated and redrawn using the entire colour palette over the current displayed grid area.

- When this option is **ON** any changes made to the extents of the viewed grid area will cause the grid to be recoloured based on the grid values in the current viewed area, using the entire colour palette.

- All displayed grids will be recoloured when changes are made to the extents of the viewed area.

- When Auto Recolour Grids is **OFF** the grids return to their original colours.

The *Auto Recolour Grids* option is a temporary viewing tool. To save/share a recoloured view of a grid you can create a *Snapshot* or print the current map extents.

> **Note:** If the *Auto Recolour Grid* mode is turned **ON** when you print, it will apply to the printed page. Either turn **OFF** the mode when printing or print out a selected area and it will apply the recolouring.

## Create Snapshots

Use the *Create Snapshot* option to capture a snapshot (or bookmark) of the current map extents, based on the coordinate system and units of the current map view.

The Create Snapshot option was designed to help improve your workflow and ease of use, enabling you to quickly and easily capture and return to a favourite location on your map.

### HOW TO CREATE A SNAPSHOT

The **Create Snapshot** option can be found on the **Map** menu, **Navigation Bar** ({bmct snapshot.bmp}) and various Map popup menus.

1. Zoom into an area of interest on your current map. Right-click and from the popup menu select *Create Snapshot*. The *Set Snapshot Name* dialog is displayed.
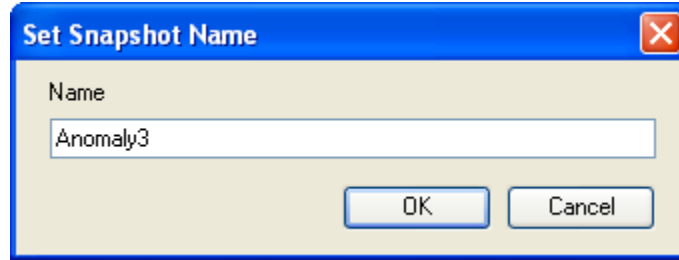
2.  Specify a descriptive name for your snapshot and click the **[OK]** button. The snapshot will be saved with the current map.

**HOW TO VIEW A SNAPSHOT**

Snapshots can be quickly and easily viewed using the dynamic *Snapshot* menu item on the map popup menus.

1.  Open and select a map that already includes associated Snapshots. Right-click, and from the popup menu select *Snapshots*. A dynamic sub-menu will be displayed listing all of the snapshots associated with the current map.
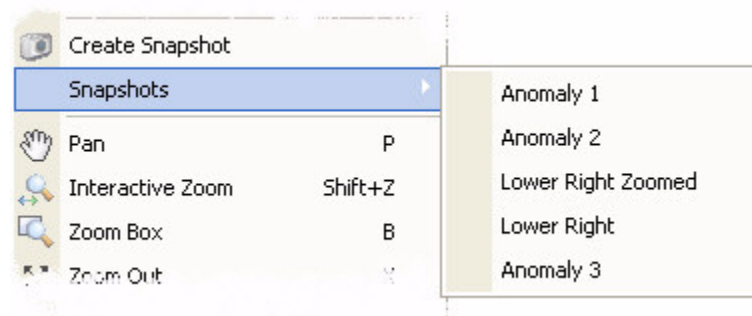


2.  Select one of the previously created snapshots and your current map will be redrawn to the extents of the selected *Snapshot*.

**Note:**   To manage your snapshots select the *Manage Snapshot* menu item on the *Map* menu.

**MANAGING YOUR SNAPSHOTS**

Use the *Manage Snapshots* dialog, found on the *Map* menu, to open, rename or delete your map snapshots.
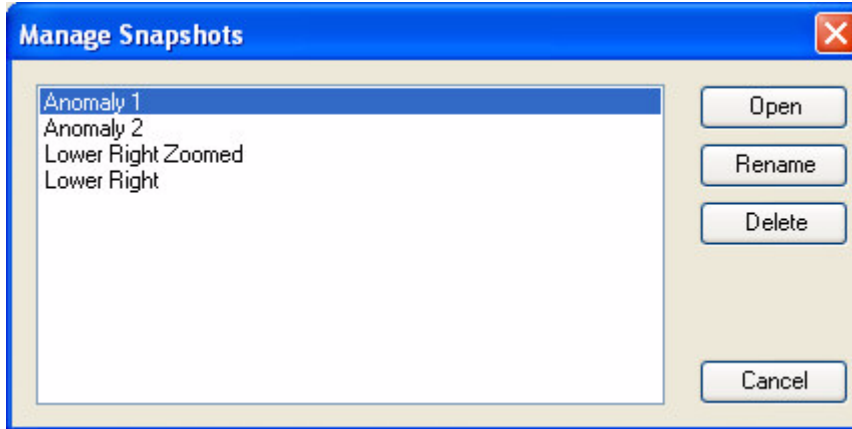
Map snapshots (or bookmarks) are saved views of the map extents, based on the coordinate system and units of the map view. Map snapshots enable you to return to a favourite location on your map quickly and easily.

The snapshot option was designed to help improve your workflow and ease of use. For example, if you are working on a regional scale map and have a number of active project areas (or a number of anomalies in one project area) you can use this tool to quickly and easily zoom into your areas of interest.

## DAP (Data Access Protocol)

**Oasis montaj** includes a Geosoft DAP client which enables users to search and retrieve geoscientific datasets, imagery and other map data directly form a DAP server on a local network or on the Internet. There are two types of DAP clients, a thick client (a desktop software application) and a thin client (web browser).

**Oasis montaj**, MapInfo and ArcGIS are thick DAP client software applications. Thick client applications enable you to download and save the actual data to your hard drive, so you can use the data in **Oasis montaj** or any other GIS or spatial data processing program.

Thin clients, like Geosoft's DAP Data Explorer use a web browser to browse, view and extract data from a DAP server. Visit www.geodap.com/map/ and see how it works!

Geosoft's DAP capability enables both licensed and free Viewer users to access global and corporate spatial servers – Geosoft DAP servers, NASA servers, USGS servers, and the many, many WMS servers currently available.

**DAP's main features include:**

- **Large Volume Data Transfer:** DAP technology handles the efficient transfer of very high-volume data, and its associated metadata, through a streaming technology.

- **Spatially Aware:** DAP is spatially aware, enabling user-specified spatial querying and retrieval.

- **Ready-to-use Data:** DAP provides localized data that matches your current Oasis montaj map window and projection information.

- **Safe and Efficient Data Transfer:** DAP data transfer technology provides direct DAP client/server communication enabling the transfer of compressed data that maintains original data integrity.

The *DAP* menu includes two options for finding data, **Find Data with Dapple** and **Find Data.**

## Find Data with Dapple

Use the *DAP|Find Data with Dapple* option to search for data with *Dapple*. Dapple, Geosoft's global data explorer, enables you to browse, discover and display graphically rich data from global and corporate spatial servers – Geosoft DAP servers, NASA servers, USGS servers, and the many, many WMS servers currently available.

The *Dapple* project is an open-source activity sponsored by Geosoft and derived from the NASA World Wind (http://worldwind.arc.nasa.gov/) open source project. *Dapple* represents our effort to make this powerful technology accessible and useful to professional earth scientists. For more detailed information about *Dapple*, visit http://dapple.geosoft.com/default.asp

Dapple includes a set of menus (*Tools*, *Servers*, *View*, *Settings*, and *Help*), an interactive Global Explorer window that displays the selected data layers, a Search window that enables you to define your 'Area of Interest' via Servers or the Web based on spatial extents and keywords, a Data Layers window that displays the selected data, an Overview Map window that displays your current spatial extents, and a Metadata window that displays the metadata for the currently selected Data Layer.

### TO ACCESS DAPPLE IN OASIS MONTAJ VIEWER:

The ability to access data from global and corporate spatial servers (Geosoft DAP servers, NASA servers, USGS servers, and WMS servers) along with the Internet is a powerful and insightful way to work with spatial data. Dapple provides effective data browsing tools for locating geoscience data, satellite imagery, remote sensing data, geology maps, geophysical data, and many other data sets of interest to geoscientists.

1. On the *DAP* menu, select *Find Date with Dapple* and the *Dapple* dialog will be displayed.

**2.** To specify the spatial extents you can use the *Global Explorer* and *Navigation* tools, or in the *Overview map* window you can select an area (including the entire globe) or select a specific region using the dropdown list. You can further focus your *Search* criteria by entering "Keywords" in the text box () provided. To clear the search parameters, click the *Clear search* () button.

**3.** In the *Search* window, select the "Servers" tab and click the *Search* () button. The *Available Servers* will be searched for any data that falls within your spatial extents and matches your keywords. (Note that, when you select the "Web" tab the Internet will be searched for data files that fall within your area of interest and match your keywords.)
The results are displayed on the "Servers" (or 'Web') tab and can be viewed in either 'Tree view' or 'List view'.

4.  To download your search results, the selected dataset(s) must be added into the *Data Layers* window. To add datasets to the *Data Layers* window, select (highlight) a dataset from the "Servers" tree view (or select multiple datasets from the "Servers" list view), right-click and from the popup menu, select *Add to Data Layers* and the selected data will be added to the *Data Layers* window (Note that you can also use Drag-n-Drop to move the "Search" result datasets to the "Data Layers" window).
    In the *Data Layers* window, select (highlight) the datasets to download. Then, on the *Tools* menu, select "Download Layers" and all selected data layers will begin the download process.

5.  Once the download is initiated, the *Download Settings* dialog will be displayed. Use this tabbed dialog to set the "General" and "Individual" properties of the downloaded dataset(s). Click the **[Download]** button to complete the process and download the selected data to your current project directory.

For more detailed information on the Dapple dialog, select *Help* on the main *Dapple* menu bar.

## Find DAP Data

Use the *Get DAP Data* dialog to search for data on one or more DAP data servers. This tool includes a set of menus, an interactive DAP browser window that displays the browser map of the active server, an 'Area of Interest' window that enables you to define your view area, and three tabbed dialog tools that control your data retrieval.

### To access the Get DAP Data dialog in Oasis montaj:

When data is downloaded from the DAP server, it will be windowed, resampled and reprojected to match the current client context within the limitations of the type of data you are dealing with.

Note that, you should have a map open and selected (with projection assigned to it) in your current project.

1.  On the *DAP* menu, select *Find Data*. The *Authorize Internet Communication* dialog is displayed. Note: If your *Internet Trust Configuration* is set to "Trusted" this dialog will not appear.

2.  Click the **[Authorize]** button. The system will query the DAP server to determine what data the DAP server has that matches the data view of your current map. When a match has been made the *Get DAP Data* dialog will be displayed.
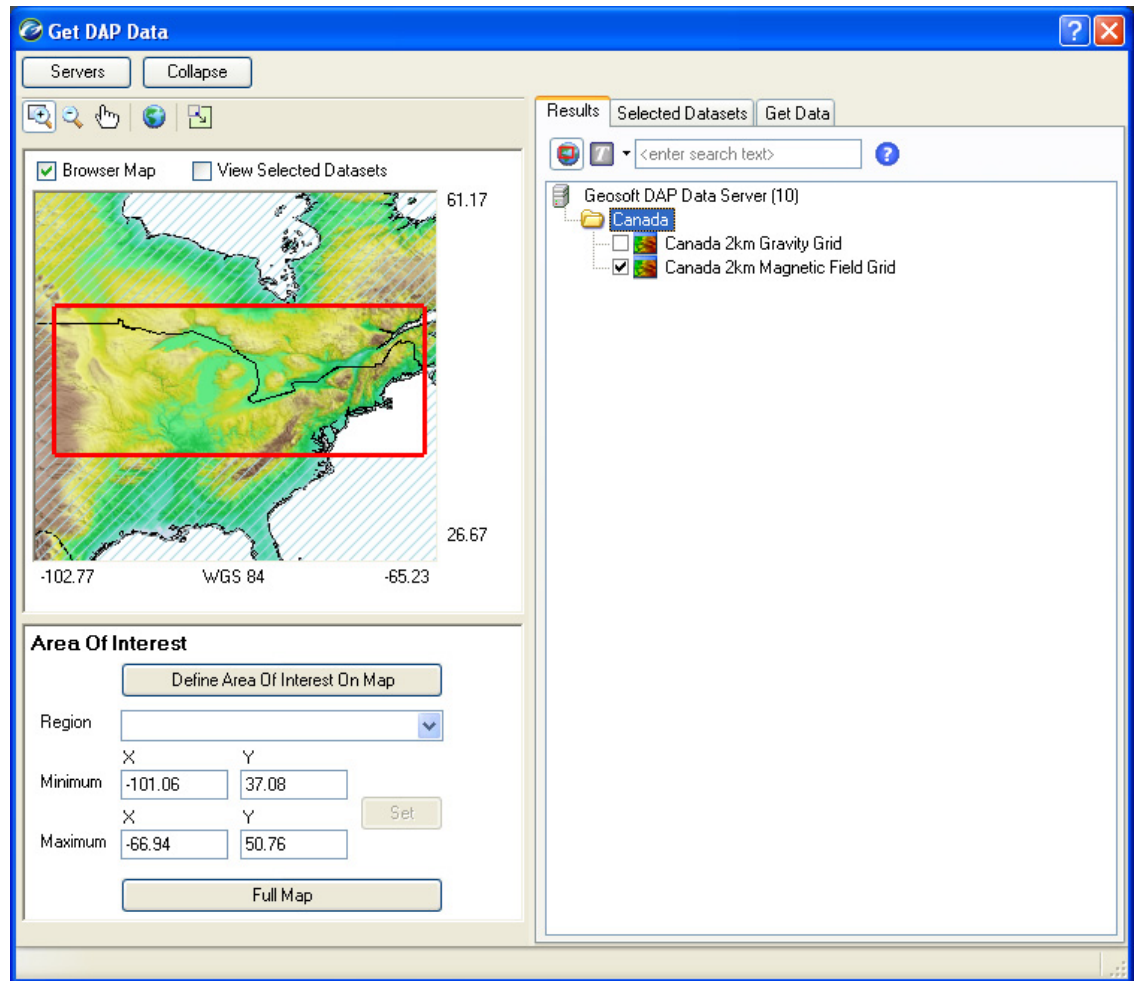
3. The *Results* tab, on the right side of the dialog window, will display the data that is available for download. Note the number of data files available is specified beside the DAP Server name (e.g. **10** datasets are indicated above). Select (✔) the data you would like to downloaded and display on your map.

4. Your *Results* can be filtered to only display items that intersect your *Area of Interest* (AOI) and/or contain *Text* that matches a *Text string*. These *DAP Filters* are provided on the top of the *Results* tab ( ). For more information on using the *DAP Data Filters*, click the *Help* ( ) button.

5. The *Selected* tab enables you to control the both the data to download and the visibility of the data on the current browser map by placing a check in the box on the left side of the list. You can also use this tab to control the rendering order of the displayed datasets using the upward and downward arrows.

**Note:** To view the selected data sets in the *Browser Map* check the *View Selected Datasets* check box (✔).

6. The *Get Data* tab enables you to specify your selected data options, such as *Filename*, *Resolution*, *Projection format* and *Display*. Once you are satisfied with

the selected datasets and their download options, click the **[Get Data]** button to download and display the DAP data on your current map.

**Note:** There are a variety of DAP display technology features available including: re-project the grid to the projection of the current map view, re-project and resample the grid to a specified resolution, save the grid in the native projection format, display the grid as a simple colour image, display the grid as a shaded colour image, and download and save only, do not display the grid.

7. Once the download is complete click the *Exit* ( ) button to close the window. The gridded data will be displayed in your open map. For more information, click the *Help* ( ) button on the *Get DAP Data* dialog.
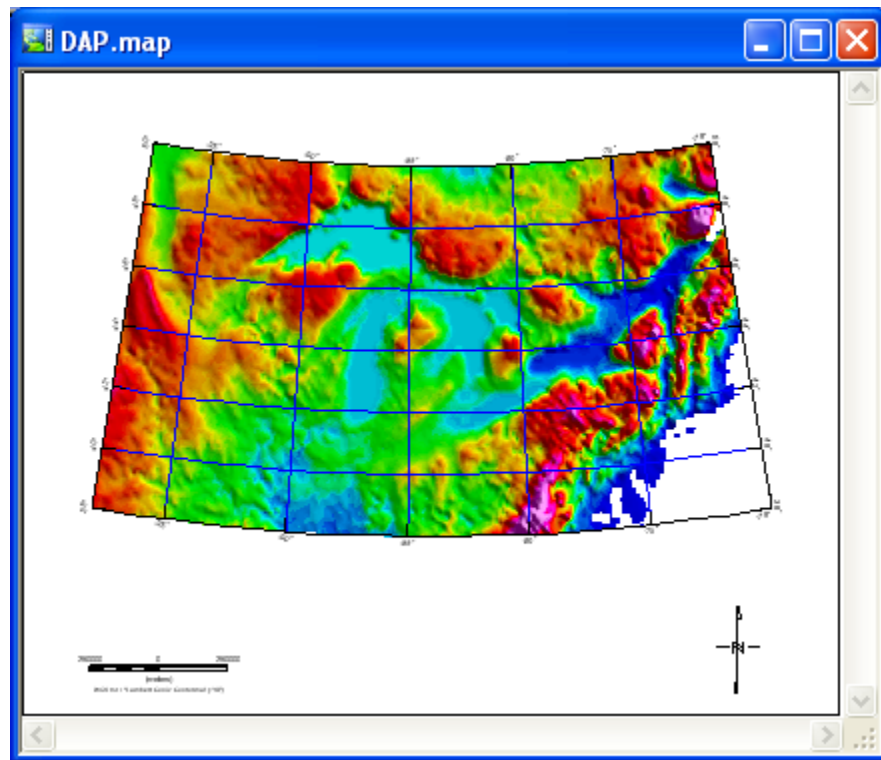


### Using the Metadata Tool

The *Metadata Browser* is a tool for viewing metadata associated with a DAP dataset.

Metadata is information about data. Metadata can be simple or complex and the descriptive needs of different kinds of data are infinitely diverse. To allow for this and provide flexibility, Geosoft metadata is stored in a hierarchical data structure called a "meta". The Metadata browser will displays the meta structure (also called a "schema") and the metadata information of a specific data source. Each branch of a metadata structure may contain a set of Attributes with associated Values, and other branches.

Following is an example of the metadata that is stored for the "Canada_Gravity_2k.grd" file on the DAP server:
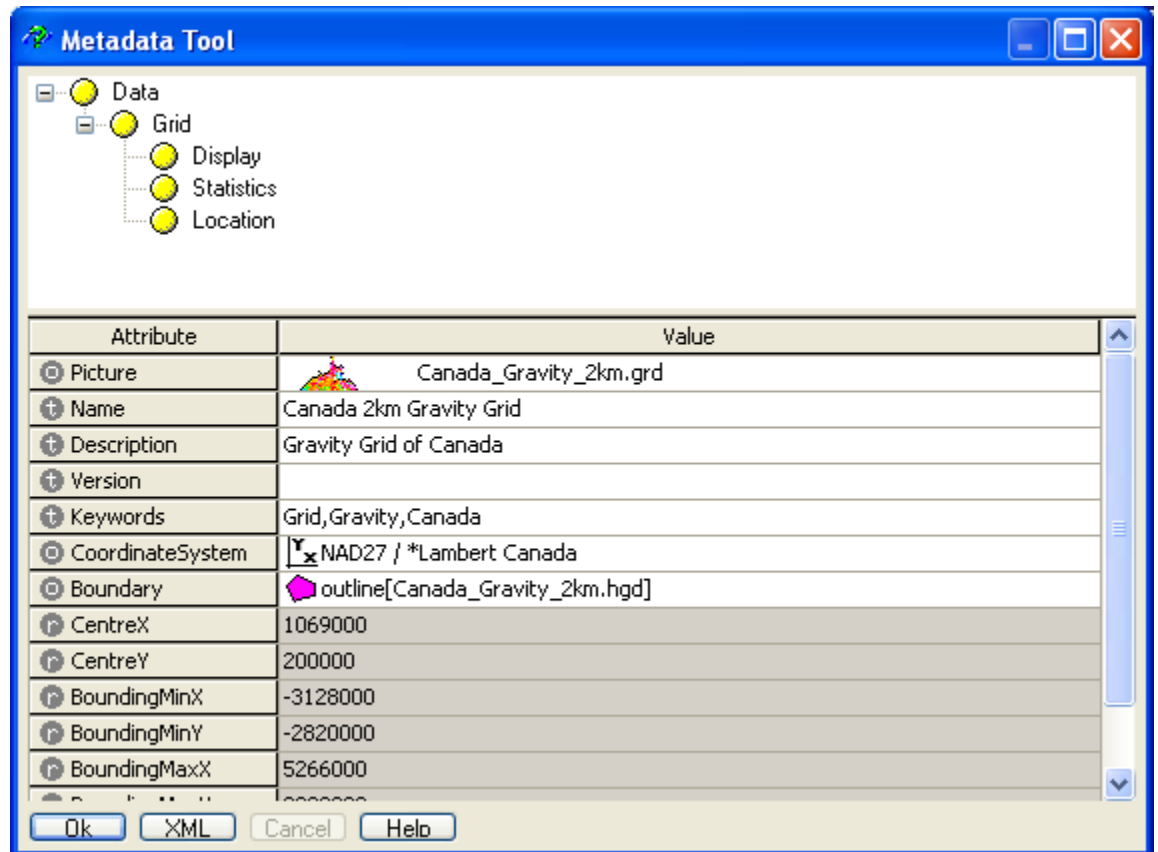
**TO VIEW METADATA IN THE GET DAP DATA DIALOG:**

1.  Select (highlight) a dataset on the *Results*, *Selected Datasets* or the *Get Data* tabs in the *Get DAP Data* dialog, right-click and from the popup menu, select *View Meta*.

2.  The *Metadata Tool* is displayed.

## 3D Tool

The **3D Tool** consists of a dialog with four tabs and an associated **3D Viewer**. Each tab enables you modify different aspects of the 3D View within the 3D Viewer.

The **3D Tool** enables you to modify the appearance of your 3D View in the **3D Viewer**. The 3D Tool is available in the *Tools* section of the *Project Explorer* and will appear whenever a 3D Viewer is open.  If more than one 3D Viewer is open, the parameters of the 3D Tool will represent whichever Viewer currently has focus.

For more detailed information on the *3D Tool*, select (highlight) the *3D Tool*, and press the **F1** key, or use the *Search* tab in the **Oasis montaj** help system to locate the *3D Tool* help topic(s).

> **Note:**  To create an **Oasis montaj** 3D View requires the **Oasis montaj** *Mapping and Processing System* (licensed version).
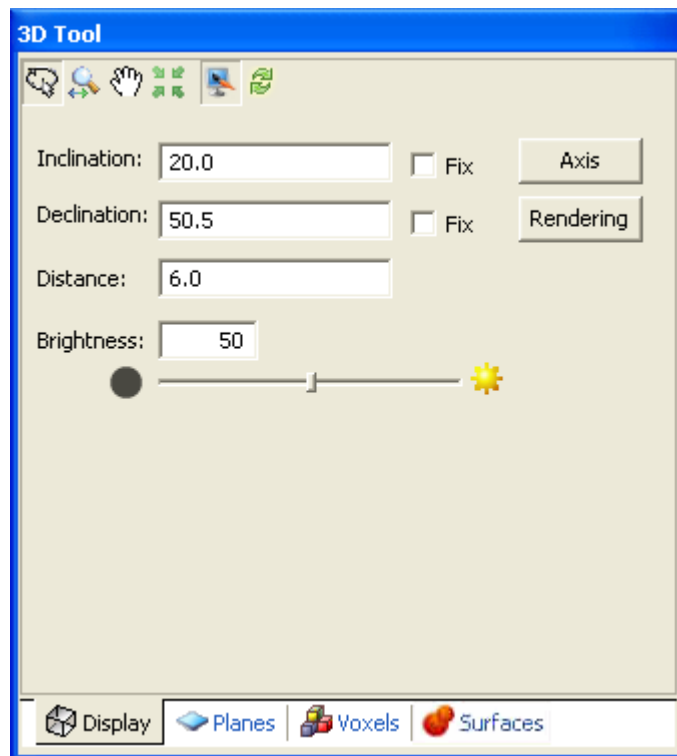


## 3D Viewing Tools

The following interactive viewing buttons are provided along the top of all four of the **3D Tool** tabs:

**Rotate Mode** - enables you to rotate the displayed View 360 degrees in all directions. Note that, users that have a mouse wheel can zoom in and out while rotating the View, by turning the wheel.

**Zoom Mode** - enables you to zoom in and out of the displayed View. Note that you can also move the model closer and farther in any mode using the roller on your mouse (if you have one).

**Pan Mode** - enables you to move the entire displayed View.

**Centre Map in Window** - resets the focus point of the view and the current 3D View is centred in the 3D Viewer (independent of the zoom).

**Toggle Redraw On/Off** - enables the auto-redraw to refresh/redraw a map automatically after changes are made to it.

**Force Redraw of 3D window** - forces the refresh/redraw of the 3D View in the 3D Viewer.

## Using the 3D Viewing Tools

### TO ROTATE (AND SPIN) THE 3D GRID:

When you select the *Rotate* (and *Spin*) button the curser changes to the rotate mode, and enables you to rotate the displayed grid 360 degrees in all directions. Note that, users that have a mouse wheel can zoom in and out while rotating the View, by turning the wheel.

1. Select the Rotate button. The curser changes to rotate mode ( )

2. Left click, and while holding down on the mouse key move right to left or up and down. The grid will rotate in the direction in which you move the mouse.

3. You can also Spin the view by releasing the mouse button while you are rotating the View and the View will continue to spin until you click inside the 3D Viewer window

**Note:** Moving the mouse from left to right turns the grid in an anti-clockwise direction, and moving right to left turns the image in a clockwise direction. If the model is "upside-down", the rotation will appear opposite to what you expect.

### TO ZOOM THE 3D GRID:

When you select the *Zoom* button the curser changes to the zoom mode, and enables you to zoom in and out of the displayed grid.

1. Select the *Zoom* button. The curser changes to zoom mode ( ).

2. Left click, and while holding down on the mouse key move to the right to zoom in and to the left to zoom out.

### TO USE THE PAN TOOL:

When you select the *Pan* button the curser changes to the pan mode, and enables you to move the entire displayed grid.

1. Select the Pan button. The curser changes to pan mode ( ).

2. Left click, and while holding down on the mouse key move the grid right to left or up and down. The entire grid will move in the direction in which you move the mouse.

### TO CENTRE THE GRID:

When you select the *Centre* button, the focus point of the grid is reset and the current displayed grid is centred in the 3D Surface Display Tool.

1. Select the Centre button. The displayed grid is centred.

### TO TOGGLE THE REDRAW ON AND OFF

When you select the *Toggle redraw ON/Off* button the auto-redraw option refreshes/redraws a map automatically after changes are made to it.

1. Select the *Toggle redraw ON/Off* (  ) button to enable the auto-redraw option.

2. When the *Toggle Redraw* is *ON* any changes made to the map contents will cause the map to be refreshed/redrawn. This includes editing changes, group selection changes, or changing the rendering order of a group. When the *Toggle Redraw* is *OFF* the map is only refreshed on rotate, zoom, pan, or if the refresh button is pressed. By default the auto-redraw option is initially ON.

### TO FORCE THE REDRAW OF THE 3D WINDOW

1. Select the Force redraw of 3D window (  ) button to refresh/redraw the 3D view in the 3D map window.

## Display Tab

The  tab enables you to modify the overall Display of the 3D View:

- Select the **3D Viewing Tools** (*Rotate*, *Zoom*, *Pan*, *Centre*, *Redraw*)

- Specify and fix the **inclination** of the View

- Specify and fix the **declination** of the View

- Specify the viewing **distance** from the central focal point of the View

- Modify the **brightness** level by moving the slider bar or specifying a %

- Click the **[Axis]** button to display the **Axis Options** dialog

- Click the **[Rendering]** button to display the **Rendering Options** dialog
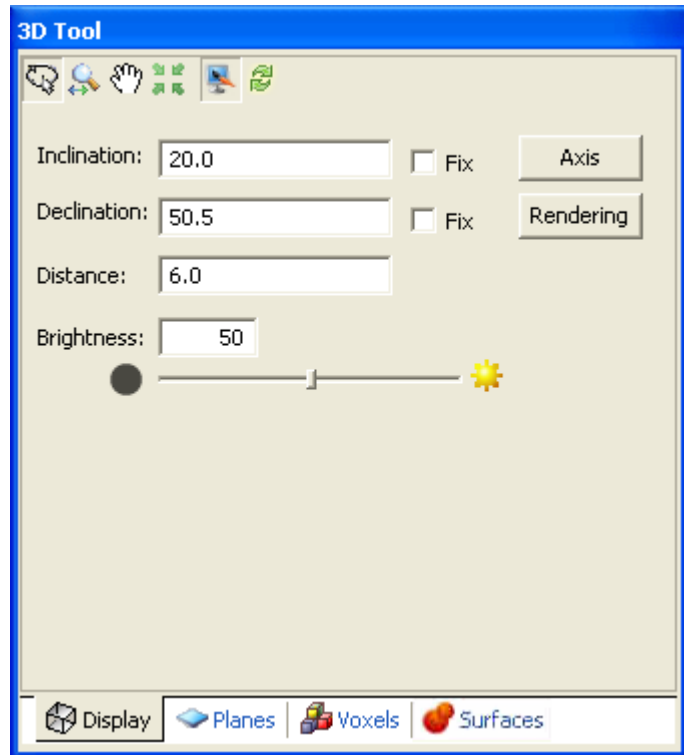


### Using the 3D Display Tab

**TO SPECIFY AND FIX THE INCLINATION OF THE GRID:**

1. Click inside the *inclination* box and specify the inclination you want for the 3D grid.

2. Check the Fix box, and then click the OK button. The grid will be redrawn on your map with the new fixed inclination.

**TO SPECIFY AND FIX THE DECLINATION OF THE GRID:**

1. Click inside the *declination* box and specify the declination you want for the 3D grid.

2. Check the Fix box, and then click the OK button. The grid will be redrawn on your map with the new fixed inclination.

**TO SPECIFY THE DISTANCE OF THE GRID:**

The *distance* specifies the distance away from the centre focal point relative to the longest displayed dimension. For example, a value of 5 will place the viewpoint 5 times the size of the grid away from the centre of the grid.

1. Click inside the distance box and specify the distance you want for the 3D grid.

2.  Click the OK button. The grid will be redrawn on your map with the new distance.

##### TO MODIFY THE BRIGHTNESS LEVEL OF THE GRID:

When you select the *Brightness* bar, you can modify the brightness of the displayed grid.

1.  Select the brightness bar.

2.  Slide the bar to the left to increase the brightness level and to the right to decreases the brightness level of the displayed grid.

##### TO ACCESS THE AXIS OPTIONS DIALOG

Select the **[Axis]** button to display the *Axis Options* dialog. This dialog can be used to add axis labels, axis, and a box to the 3D View.

1.  Click the **[Axis]** button and the *Axis Options* dialog will be displayed.

2.  Use this dialog to add Axis labels, change the background colour and add an Axis and/or a box around the 3D View. For more information see the Help topic *Modify Axis Options (3D Tool)*.

##### TO ACCESS THE RENDERING OPTIONS DIALOG

Select the **[Rendering]** button to display the *Rendering Options* dialog. This dialog can be used to adjust the rendering resolution in the 3D tool. It is important to note that the controls on the *Rendering Options* dialog are system controls and changes made to this dialog will affect all 3D maps in your **Oasis montaj** system. The 3D Views rendering process makes heavy use of the available memory on your video card, and performance will be substantially reduced if your limits are exceeded.

1.  Click the **[Rendering]** button and the *Rendering Options* dialog will be displayed.

2.  Use this dialog to adjust the rendering resolution in the 3D tool. For more information on applying these options see the Help topic *Modify Rendering Options (3D Tool)*.

## Planes Tab

The ⬢ Planes tab enables you to modify the individual Planes within each 3D View:

- Select the **3D Viewing Tools** (Rotate, Zoom, Pan, Centre, Redraw)
- Select the **Plane** to modify
- Click **[Delete]** to delete the current plane
- Select the plane **Offset** in Z units relative to the plane coordinates.
- Specify the **Transparency** of the plane

*Relief Grid Options*

- Indicate the name of the **Relief grid** (if one is used for the selected plane)
- Specify the **Sample** resolution of the relief grid
- Specify the **Base** value of the relief grid
- Specify the vertical **Scale** of the relief grid
- Specify a **minimum clipped** value for the relief grid
- Specify a **maximum clipped** value for the relief grid
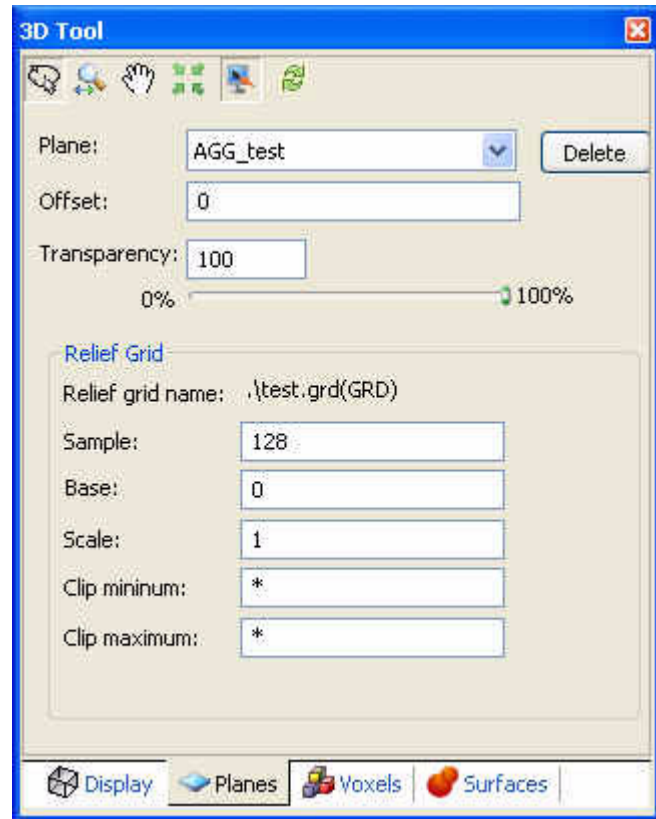
### Using the 3D Planes Tab

TO SELECT THE PLANE TO MODIFY:

1. From the *Plane* dropdown menu select the plane to modify.

TO DELETE A PLANE

1. Using the *Plane* dropdown list, select the plane you want to delete and then click the **[Delete]** button. The *Delete View* dialog is displayed.

2. This dialog asks if you are sure you want to delete the plane. Click the [Yes] button and the plane will be deleted from the current 3D View.

TO SELECT THE PLANE OFFSET IN Z UNITS:

1. In the *Offsets* box, specify the offset value in ground units. Press the **[Enter]** key. The plane will be redrawn in the 3D viewer with the new offset.

##### To Specify the Transparency of the plane:

1.  Move the *Trans.* Slider bar from left to right to increase the transparency.

**Note:**  True transparency has been added and is automatically enabled with video cards that support it.

##### To Specify the Relief Grid Sample Resolution:

1.  In the *Sample* box, set a sampling resolution that is reasonable for the detail required in the relief surface.  Higher sample resolutions provide more relief detail at the expense of performance.  You can select a number up to 768 (you entry will be converted to an even multiple of 16). Press the **[Enter]** key. The relief grid will be redrawn in the 3D viewer with the new sample resolution.

##### To Specify the Base value of the relief grid:

1.  In the *Base* box, specify the base value of the relief grid. Press the **[Enter]** key. The relief grid will be redrawn in the 3D viewer with the new base value.

##### To Specify the vertical Scale of the relief grid:

1.  In the *Scale* box, specify the vertical scale of the relief grid. Press the **[Enter]** key. The relief grid will be redrawn in the 3D viewer with the new vertical scale.

##### To Specify a minimum clipped value for the relief grid:

The *Clip minimum* enables you to specify the minimum Z value of your relief grid. Grid values below this will be clipped.

1.  Click inside the *Clip min* box and specify the minimum value you want for the Z data of the relief grid. Press the **[Enter]** key. The relief grid will be redrawn in the 3D viewer with the new minimum Z value.

##### To Specify a maximum clipped value for the relief grid:

The *Clip maximum* enables you to specify the maximum Z value of your relief grid. Grid values above this will be clipped.

1.  Click inside the *Clip max* box and specify the maximum value you want for the Z data of the relief grid. Press the **[Enter]** key. The relief grid will be redrawn in the 3D viewer with the new maximum Z value.

### 3D Voxel Tab

Use the 3D Voxel tab to modify the voxel display parameters in the 3D tool.

The ![Voxels] tab enables you to modify the Voxels display parameters in the 3D tool:

- Select the **3D Viewing Tools** (Rotate, Zoom, Pan, Centre, Redraw)

- Select the **Voxel** to modify from dropdown list

- Select (check) **Box** to add a box around the Voxel

- Select (check) **Mesh** to add a mesh to the Voxel

- Click the **[Colour]** button to display the **Color Symbol Tool** dialog

- Click the **[Statistics]** button to display the **Voxel Statistics** dialog

- **Clip Data** – depending on the voxel type you will have the option to clip the Voxel data range using the slider bar or data boxes or select the **[Lithology Unit Selection]** button

- Specify **Transparency** of the Voxel using slider bar or data box

- Use **Clip Axis** to adjust the range of the Voxel Axis using the slider bars or by specifying the minimum and maximum **X**, **Y** and **Z** values.
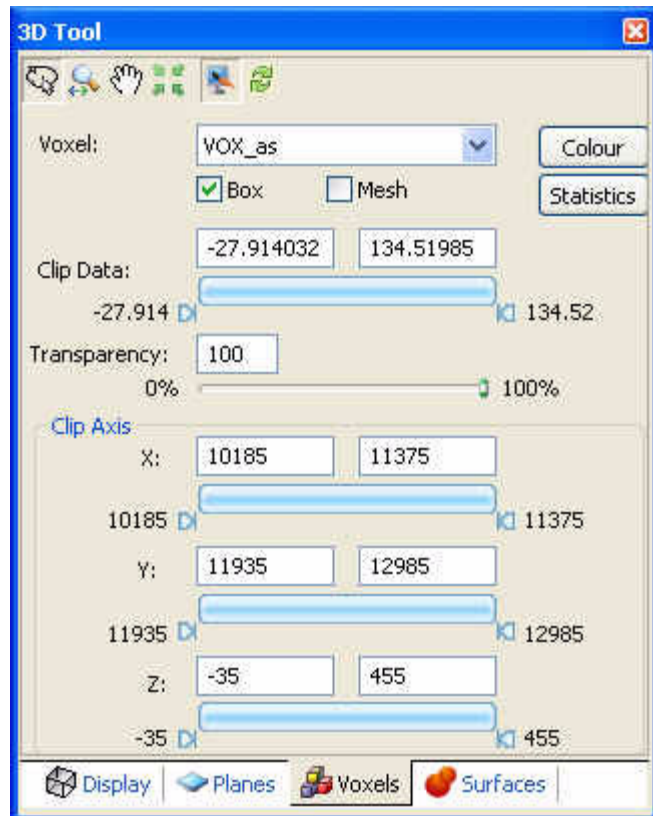
*Lithology Voxel*
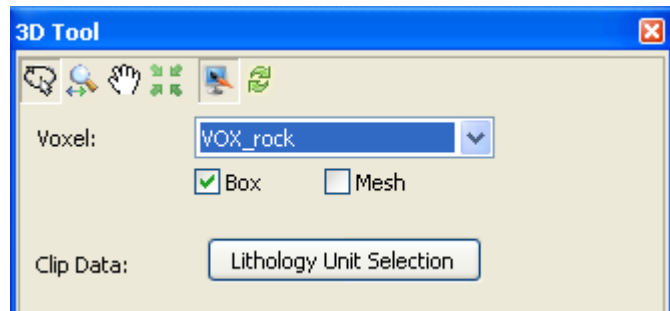
### Using the 3D Voxel Tab

TO SELECT A VOXEL TO MODIFY:

1. From the *Voxel* dropdown list select the voxel to modify.

TO ADD/REMOVE A BOX FROM AROUND THE VOXEL:

1. Select (check) the *Box* checkbox and a box will be added to the Voxel. Unchecking the *Box* checkbox removes the box.

2. This button works as a toggle you can toggle on or off the Voxel box.

**TO DISPLAY VOXEL MESH:**

1. Select (check) the *Mesh* checkbox and the Voxel will be displayed with mess lines. Uncheck the *Mesh* checkbox removes the mesh and displays the colour shading grid.

2. This button works as a toggle you can toggle on or off the Voxel grid lines and/or colour shading.

**TO ACCESS THE COLOR TOOL:**

1. Click the **[Colour]** button and the *Color Symbol Tool* will be displayed.

2. The *Colour Symbol Tool* enables you to interactively edit/modify the colour zoning of your zone coloured symbols, store your custom colour configurations in specialized colour palette files (*.ITR, *.ZON, *.TBL and *.LUT) and apply the colour palette files to any of your zone symbols. For more information, click the *Help* (  ) button on the *color Symbol Tool*.

3. Click the **[OK]** button to close the *Color symbol tool* and return to the 3D Tool.

**TO ACCESS THE VOXEL STATISTICS:**

1. Click the **[Statistics]** button and the *Voxel Statistics* dialog is displayed.

2. This dialog displays the *Voxel Name*, *Valid Data*, *Dummies*, *Volume*, *Minimum*, *Maximum*, *Mean Value* and *Standard Deviation*.

3. Click the **X** on the top right corner to close the dialog and return to the 3D tool.

**VOXEL TYPES**

Depending on the voxel type you will have the option to clip the Voxel data range using the slider bar or associated data boxes, or if it is a Lithology Voxel you can select the **[Lithology Unit Selection]** button, which enables you to select the Lithology units to include/exclude from your Voxel.

**TO CLIP DATA USING THE SLIDER OR DATA BOXES:**

The *Clip Data* can be modified interactively by moving the sliders on the *Clip Data* bar or by specifying a *Clip Data* range in the data boxes provided.

1. Click inside the *Clip Data* boxes and specify the minimum and maximum values and press the <*Enter*> key. The Voxel will be updated with the new clipped data range.

2. To interactively modify the *Clip Data*, use your cursor and move slider from either end of the slider bar (  ).

3. Your Voxel data range will be updated interactively as you move the *Clip Data* slider bar.

### TO CLIP DATA USING THE LITHOLOGY UNIT SELECTION DIALOG:

When working with a Lithology Voxel, the *Clip Data* option enables you to select/deselect the available Lithology units.

1.  Select the **[Lithology Unit Selection]** button and the *Lithology Unit Selection* dialog will be displayed.
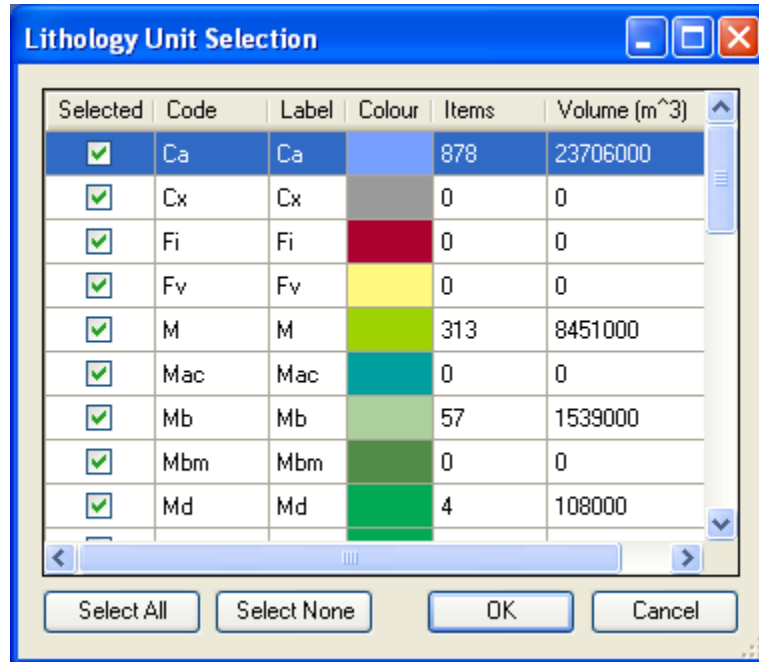


2.  This dialog provides a **[Select All]** and **[Select None]** buttons or you can select (☑) or deselect (☐) each Lithology Unit individually by checking or unchecking the boxes in the *Selected* column.

### TO SPECIFY THE TRANSPARENCY OF THE VOXEL:

The *Transparency* of the Voxel can be adjusted interactively by moving the slider on the *Transparency* bar or by specifying a value in the *Transparency* text box.

1.  Click inside the *Transparency* box and specity the transparency percentage level and press the *<Enter>* key. The transparency of the Voxel will be updated.

2.  To interactively modify the transparency level, using your cursor, move the slider on the *Transparency* bar 0% ⎯⎯⎯⎯⎯ 100%. To increase the transparency, slide the bar to the left and to decrease the transparency slide the bar to the right

### TO CLIP THE X, Y AND Z AXIS DATA USING THE SLIDER OR TEXT BOXES:

Using the *Clip Axis* you can clip each of the 3D Axis (*X*, *Y* and *Z*) independently. The *Clip Axis* can be modified interactively by moving the individual sliders or by specifying a*n Axis* range in the data boxes provided.

1. Click inside the *Clip Axis X (Y, Z)* boxes and specify the minimum and maximum values and press the *<Enter>* key. The Voxel will be updated with the new clipped Axis range.

2. To interactively modify the *Clip Axis X (Y, Z)* , use your cursor and move slider from either end of the slider bar ( -27.914    134.52 ). Your Voxel Axis range will be updated interactively as you move the *Clip Axis X (Y, Z)* slider bar.

## 3D Surfaces Tab

Use the 3D Surfaces tab to modify the surface display parameters in the 3D tool.

The 🔴 Surfaces tab enables you to modify the Surfaces display parameters in the 3D tool:

- Select the **3D Viewing Tools** (Rotate, Zoom, Pan, Centre, Redraw)
- Select the **Voxel** to modify from dropdown list
- Select (check) **Box** to add a box around the Voxel
- Select (check) **Mesh** to add a mesh to the Voxel
- Click the **[Colour]** button to display the **Color Symbol Tool** dialog
- Click the **[Statistics]** button to display the **Voxel Statistics** dialog
- **Clip Data** range using the slider bar or data boxes
- Specify **Transparency** of the Voxel using slider bar or data box
- Use **Clip Axis** to adjust the range of the Voxel Axis using the slider bars or by specifying the minimum and maximum **X**, **Y** and **Z** values.
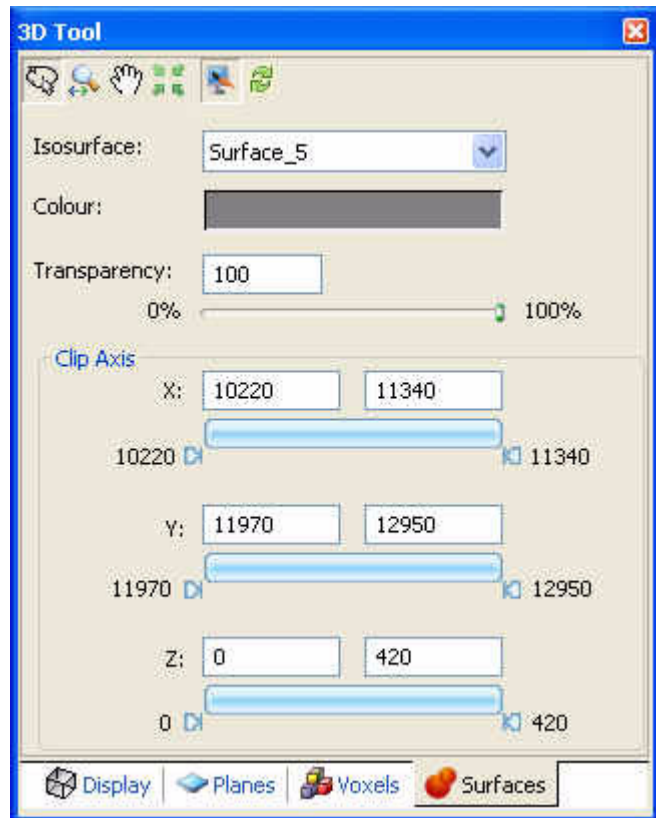
### Using the 3D Surfaces Tab

TO SELECT AN ISOSURFACE TO MODIFY:

1. From the *Isosurface* dropdown list, select the isosurface file from your current map.

### To access the Colour tool:

The *Colour* box enables you to specify the background colour of the 3D View.

1. Click inside the *Colour* box to display the *Color* tool dialog. Using this tool you can select a colour from the basic colour table or by clicking the **[Define Custom Colors>>]** button you can specify a custom colour.

2. Click the **[OK]** button to apply the colour to the selected isosurface.

### To specify the Transparency of the Isosurface:

The *Transparency* of the *Isosurface* can be adjusted interactively by moving the slider on the *Transparency* bar or by specifying a value in the *Transparency* text box.

1. Click inside the *Transparency* box and specity the transparency percentage level and press the *<Enter>* key. The transparency of the isosurface will be updated.

2. To interactively modify the transparency level, using your cursor, move the slider on the *Transparency* bar 0% ———————————— 100%. To increase the transparency, slide the bar to the left and to decrease the transparency slide the bar to the right.

### To Clip the X, Y and Z Axis data using the slider or text boxes:

Using the *Clip Axis* you can clip each of the 3D Axis (*X*, *Y* and *Z*) independently. The *Clip Axis* can be modified interactively by moving the individual sliders or by specifying a*n Axis* range in the data boxes provided.

1. Click inside the Clip Axis X (Y, Z) boxes and specify the minimum and maximum values and press the <Enter> key. The Isosurface will be updated with the new clipped Axis range.

2. To interactively modify the *Clip Axis X (Y, Z)* , use your cursor and move slider from either end of the slider bar ( -27.914 ☐ ☐ 134.52 ). Your Isosurface Axis range will be updated interactively as you move the Clip Axis X (Y, Z) slider bar.

## Copying and/or Converting Grid Files

**Oasis montaj** enables you to copy and/or convert any supported grid format to any other supported grid format.

### Copying and/or Converting Grid Files

1. On the *Grid and Image* menu, select *Utilities|Copy/convert*. The *Copy/convert grids* dialog is displayed.

2. Using the **[Browse]** button, select the *Input Grid File*, and specify the *Output Grid File*.
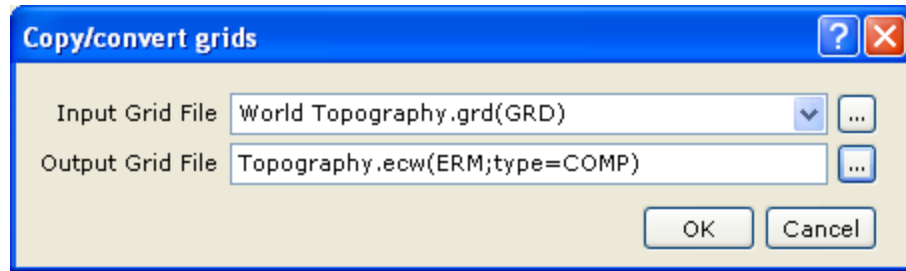
3.  Click the **[OK]** button. The grid is copied and/or converted as specified.

**Note:**   For more information on copying and /or converting grid files, click the *Help* () button. For information on the supported grid formats see the "Data Formats" help topic. (Hint: use the *Search* tab on the online Help system to locate topics of interest.)
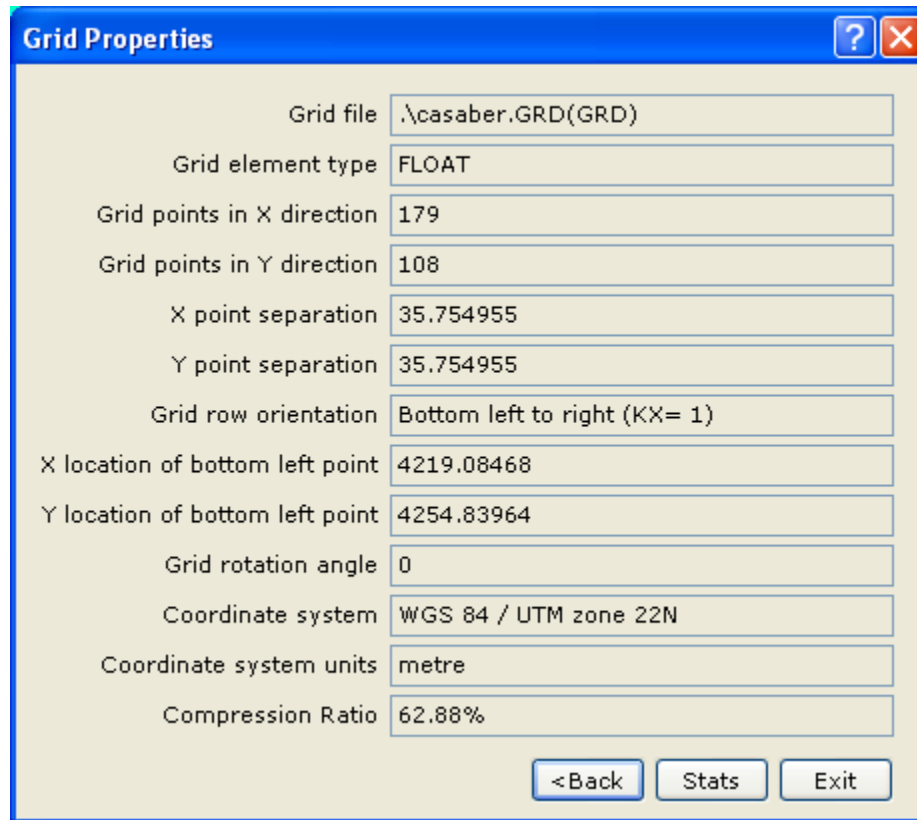
## Grid Properties

Basic grid property and statistics information can be quickly displayed in **Oasis montaj**.

### DISPLAYING GRID PROPERTIES:

1.  On the *Grid and Image* menu, select *Grid Properties*. The *Grid Properties* dialog is displayed.

2.  Using the **[Browse]** button select the *Grid file* you want information on, for example, select the grid file (**casaber.grd**). Click the **[Open]** button on the *Grid File* dialog to return to the *Grid Properties* dialog.

3.  Click the **[Next>]** button to view the *Grid Properties* dialog.
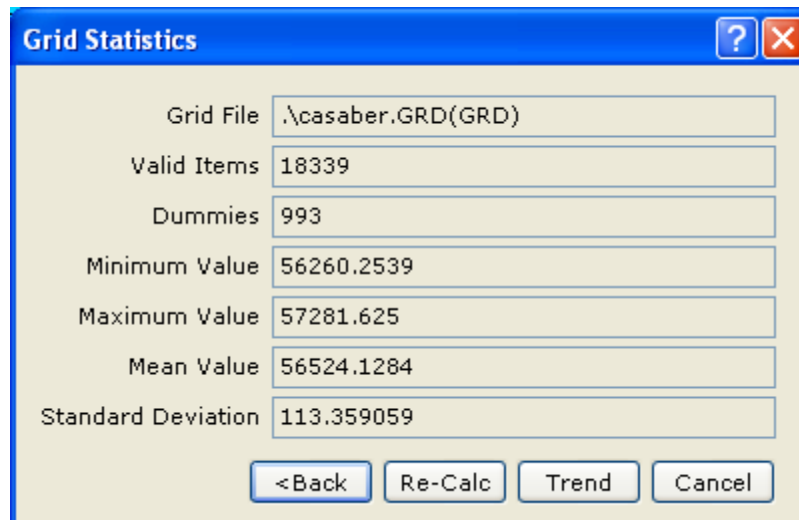
**Grid Properties**

| | |
|---|---|
| Grid file | .\casaber.GRD(GRD) |
| Grid element type | FLOAT |
| Grid points in X direction | 179 |
| Grid points in Y direction | 108 |
| X point separation | 35.754955 |
| Y point separation | 35.754955 |
| Grid row orientation | Bottom left to right (KX= 1) |
| X location of bottom left point | 4219.08468 |
| Y location of bottom left point | 4254.83964 |
| Grid rotation angle | 0 |
| Coordinate system | WGS 84 / UTM zone 22N |
| Coordinate system units | metre |
| Compression Ratio | 62.88% |

[<Back] [Stats] [Exit]

4. Click the **[Stats]** button to view the *Grid Statistics* dialog.



**Grid Statistics**

| | |
|---|---|
| Grid File | .\casaber.GRD(GRD) |
| Valid Items | 18339 |
| Dummies | 993 |
| Minimum Value | 56260.2539 |
| Maximum Value | 57281.625 |
| Mean Value | 56524.1284 |
| Standard Deviation | 113.359059 |

[<Back] [Re-Calc] [Trend] [Cancel]

5. Click the **[<Back]** button to return to the *Grid Properties* dialog. For more information on the *Grid Properties* and the *Grid Statistics* click the *Help* (?) button. Click the **[Exit]** button to exit the *Grid Properties* dialogs.

## Sending E-maps

E-maps, also called packed maps, enable you to pack all the files (grids, images, map objects) that are displayed on a map into a single file. This means that you don't have to worry about making sure all the files (such as *.GI or *.GRD files) associated with a map are included in the e-mail. When you open an e-map in **Oasis montaj**, all the information can be read in this format by all related functions, such as grid statistics.

1. Select (highlight) the map you want to send.

2. On the *Map* menu, click *Send map to*.

3. A new e-mail is composed in your default e-mail program with an attached e-map file.

### Unpacking an E-map

If you receive an e-map and you would like to for example, view the grid statistic of a displayed grid, you must first unpack the map and extract the grid file.

#### TO UNPACK A MAP:

1. Select (highlight) the **Oasis montaj.map.**

**Note:** The **Oasis montaj.map** file is a packed map that contains 2 files (**Oasis montajv60.grd**, and **Oasis montajv60.grd.gi**).

2. On the *Map* menu, click *Unpack map files*. The map is unpacked and the extracted associated grid files are placed in the current project directory.

## Exporting Data

**Oasis montaj** *Viewer* provides a variety of exporting capabilities including exporting databases and maps.

| **Exporting Databases** | **Exporting Maps** |
|---|---|

<table>
<tr><td>

CSV etc...

Geosoft XYZ...

Geosoft GBN...

ASEG-GDF

Mark...

</td><td>

Enhanced Metafile (*.emf)
Geosoft Plot (*.plt)
ArcView Shapefile (*.shp)
DXF AutoCAD (*.dxf)
DXF AutoCAD v12 (*.dxf)
Bitmap (*.bmp)
JPEG (*.jpg)
JPEG High Quality (*.jpg)
J2K JPEG 2000 (*.j2k)
JP2 JPEG 2000 (*.jp2)
PCX (*.pcx)
PNG (*.png)
TIFF (*.tif)
TIFF Compressed (*.tif)
TIFF JPEG 2000 Compressed (*.tif)
GeoTIFF (*.tif)
MapInfo TIFF (*.tif)
ArcView TIFF (*.tif)
Encapsulated PostScript (*.eps)
Geosoft COLOR grid (*.grd)
ER Mapper RGB (*.ers)
ER Mapper ECW Compressor (*.ecw]
MapInfo TAB (*.tab)
SVG Export (*.svg)
Keyhole Markup Language (*.kmz)

</td></tr>
</table>

## Exporting Databases

**Oasis montaj** *Viewer* enables you to export **Oasis** databases in a variety of data formats. This tutorial will describe how to export to a Geosoft XYZ and CSV Data format file.

### EXPORT GEOSOFT XYZ DATA FORMAT

The directions below describe how to export a database as a Geosoft XYZ file.

1.  Select the **Casaber.gdb** database in your current project.

2.  On the *Database menu*, click *Export*, and then click *Geosoft XYZ.* The *Export XYZ data* dialog box is displayed.

| Export XYZ data | | |
|---|---|---|
| XYZ data file | Export_XYZ | Browse |
| Export template | | Browse |
| | OK    Cancel    Help    Template | |
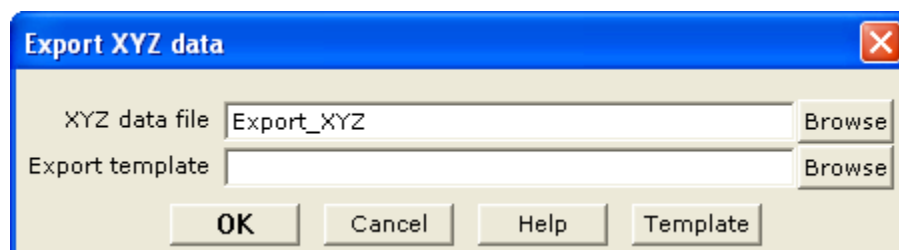
3.  Specify the XYZ data file name (**Export_XYZ**), and click the **[Template]** button. The *Export XYZ Template* wizard is displayed.
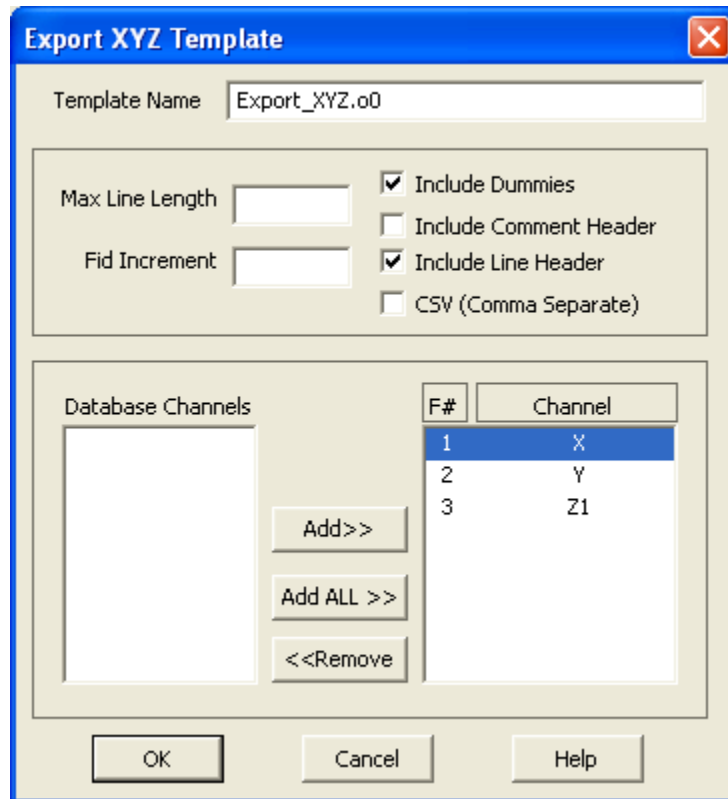
**Note:** The *Export XYZ Template* uses a wizard to determine which channels to export, the export parameter settings (maximum line length, fiducial increment), and to include (or not include) dummies, comment headers, line headers, and CSV formatting.

4. You can specify a *Template name* (**Export_XYZ.o0**) or use the default (default.o0) template.

5. Click **[OK]** to return to the *Export XYZ data* dialog, click **[OK]** to export the data as **Export_XYZ.xyz**.

**EXPORT CSV FORMAT**

1. Select the **Casaber.gdb** database in your current project.

2. On the *Database menu*, click *Export*, then click *Other*. The *Export to Other format* dialog is displayed.
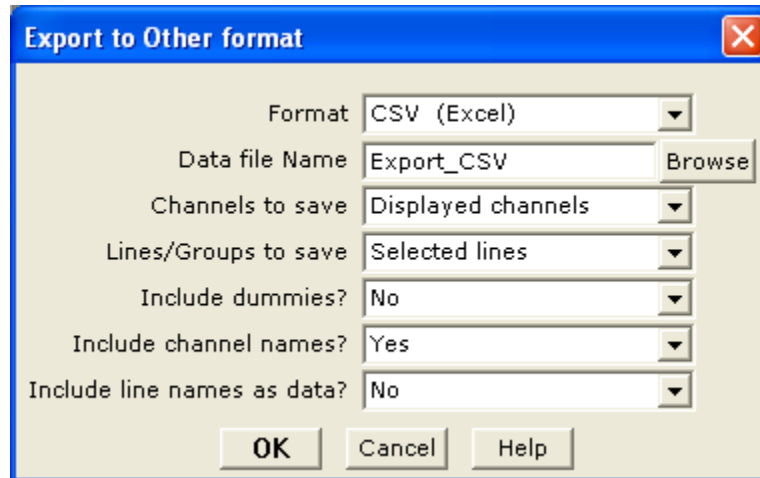
3.  Specify the *Format* as **CSV** (Excel).

4.  Provide the *Data file Name* (**Export_CSV**), and then specify the *Channels to save*, and the *Lines/Groups to save*. You can also specify to *Include dummies?*, and to *Include channel names?*.

5.  Click the **[OK]** button. The system exports the data to the designated file name.

## Exporting Maps

**Oasis montaj** *Viewer* enables you to export **Oasis** maps to a variety of grid and image formats. This tutorial will describe how to export a map to a tiff file format.

### EXPORTING MAP

1.  Select (highlight) the map you want to export (**Oasis montaj.map**).

2.  On the *Map* menu, select *Export*. The *Export Map* dialog is displayed.
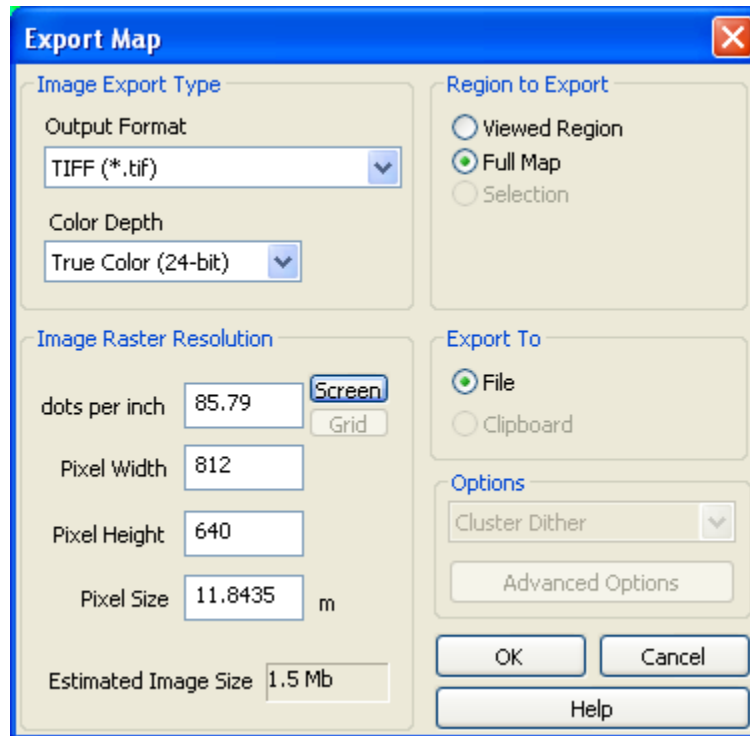
3.  In the *Image Type* box, choose the *Output Format* as (**TIFF (\*.tif)**) and select the *Colour Depth* (**True Color (24-bit)**)

4.  In the *Region to Export* box click the (**Full Map**) option.

5.  In the *Image Resolution* box, change the *Pixel Size* to **35.75**.

**Note:**  Pixel Size is the number of ground units each pixel in the image represents. In the example above, each pixel in the exported map represents **35.75** meters. You can set the pixel size to match the grid cell size *closely\**. However, rounding error usually prevents the grid cell size from exactly equalling the pixel size.

6.  In the *Export to* box click **File**.

7.  Click **[OK]** to export the **Oasis montaj.map** in tiff format. The *Export file name* dialog is displayed.

8.  Specify a file name for the tiff file and click **[Save]**. The tiff file is saved in your project directory.

## Printing Maps in Oasis montaj

**Oasis montaj**, by default, uses your Windows system drivers to create printer or plotter output. When you start printing maps for the first time, you will most likely accept the defaults. Depending on your driver's performance however, you may want to add a new configuration that uses more advanced printing options.

Geosoft provides a special printer setup capability that starts an internal rasterizing engine that performs most of the print/plot processing and passes it to the driver for final output.

If you are not satisfied with your driver's performance, you can try selecting; Geosoft bands, Geosoft bands and dither, HP-RTL or the Postscript printing option. Refer to the on-line help system for a complete discussion on the pros and cons of the different printing modes.

## Printer Setup

The *Printer Setup* dialog box enables you to specify the printer to use and the paper and orientation parameters.

You can plot the currently visible part of the map (i.e. enlarged or reduced map) or the entire map. When plotting, you also have the option of scaling the visible or entire plot to cover the entire plot area or to scale the entire plot to a specific range.

### SETTING UP THE PRINTER:

1. On the *File* menu, click *Printer Setup*, the *Print Setup* dialog is displayed.
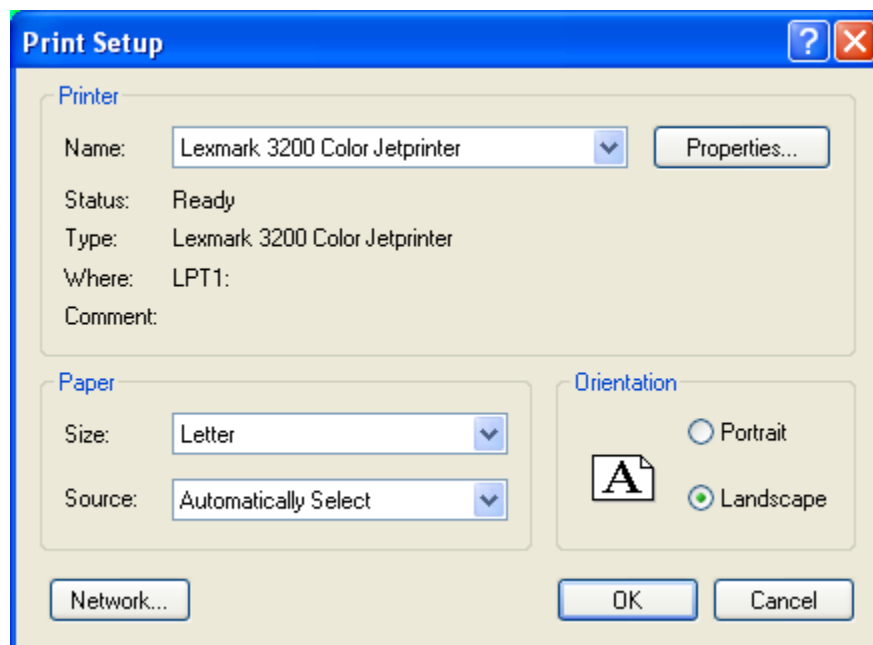


2. Change the paper *Orientation* to **Landscape** and click **[OK].**

**Note:**   For more information on printing setup parameters click the *Help* (?) button on the *Print Setup* dialog box, or see the **Printing** topics in the **Oasis montaj** online help system.

## Page Setup

The *Page Setup* dialog enables you to specify the paper settings (size, source, orientation and margins).

### SETTING UP THE PAGE:

1. On the *File* menu, click *Page Setup*, the *Page Setup* dialog is displayed.
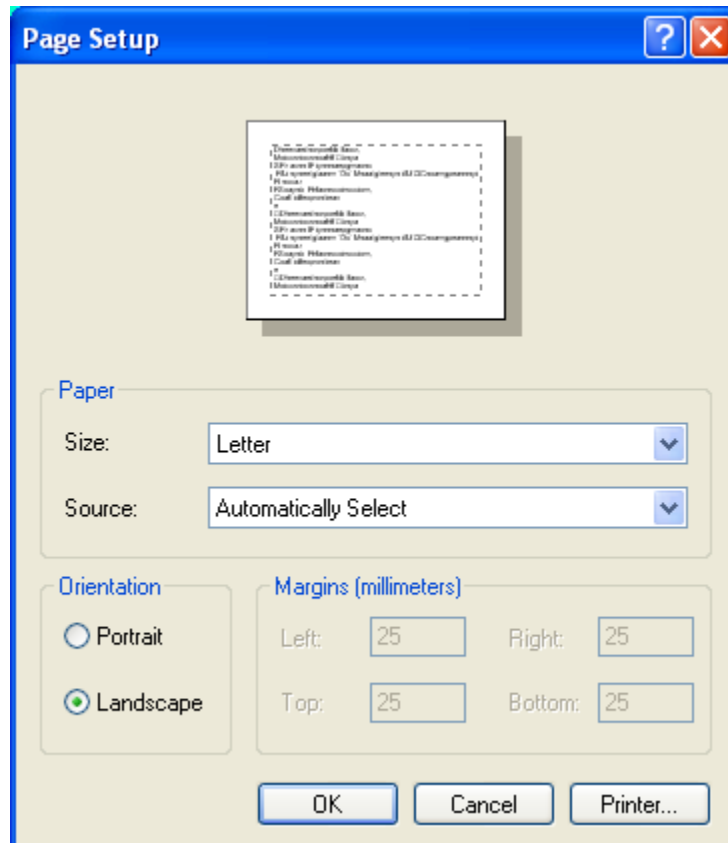
**2.** Change the paper *Size*, *Source*, *Orientation* and *Margins* and click **[OK].**

**Note:** For more information on page setup parameters click the *Help* (  ) button on the *Page Setup* dialog, or see the ***Printing*** topics in the **Oasis montaj** online help system.

## Print a Map

**1.** Select (highlight) the map that you would like to print.

**2.** On the *File* menu, click *Print*. The system displays the *Print* dialog box.
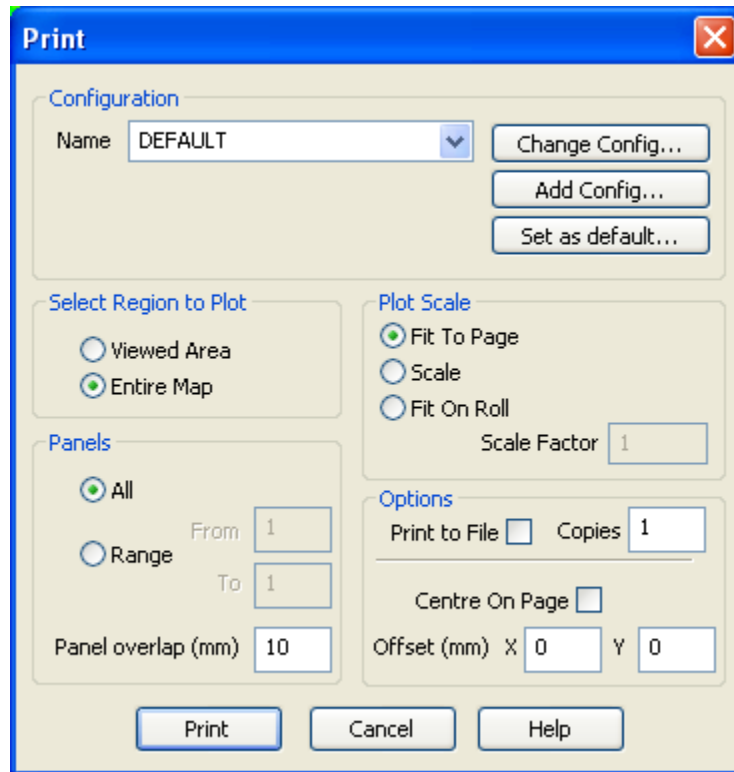
3.  In the *Select Region to Plot* box select **Entire Map** and in the *Plot Scale* box select **Fit To Page**.

**Note:** Map may not be plotted to scale. To maintain the map scale, select the **Use Scale Factor** option and specify a value, (**1 = 100%**). If you use this option, the map may require more than one page depending on the media to which you are printing or plotting.

4.  In the *Panels* box, select **All**.

**Note:** *Panel overlap (mm)* If you are printing multiple panels, you can specify an overlap in mm. This helps you to match panels later.

5.  In the *Options* box, select **1** copy.

6.  Click the **[Print]** button to send the map or plot to the currently configured printer or plotter.

**Note:** For more information on print parameters click the *Help* (?) button on the *Print* dialog box, or see the ***Printing*** topics in the **Oasis montaj** online help system.

# Appendix 1: Geosoft Concepts

This chapter contains information about the components included in **Oasis montaj**™ and describes the concepts you will need to know to use the system. A quick overview of the concepts described in this chapter are available in the **Oasis montaj** *Viewer* help system in the **About** directory called *Tour for New Users*.

**Oasis montaj** is Geosoft's core software platform for working with large volume spatial data. The core software platform consists of a free *Viewer* and a licensed *Mapping and Processing System*. For more information on the **Oasis montaj** *Mapping and Processing System* visit www.geosoft.com/pinfo/oasis_montaj.html

## Oasis montaj Viewer

The **Oasis montaj** *Viewer* is a free software product that enables you to view Geosoft databases, Geosoft Grids and a variety of common image and data exchange formats. Specifically, this version provides you with the following capabilities:

- Access Geosoft project data (databases, profiles, grids, voxels, maps, *ArcGIS MXD files), tools (3D Tool and Project Explorer) and Geosoft tool bars (Database Tools, Map Layout, Map Tools, and Standard)

- Evaluate data, information and interpretations by viewing and performing specific tasks using Geosoft databases, profiles, maps, and grids as well as Geosoft and third-party images (including Geosoft PLT, AutoCAD DXF, MapInfo TAB, ArcView SHP, ArcGIS LYR, and Microstation DGN files)

- Verify data quality, analyses and interpretations by tracking processes applied to databases and maps

- Perform selected processes made available through Geosoft menus or third-party GXs

- Share results and knowledge by viewing and/or sending E-maps and 3D PDF files (see the Export To PDF 3D for more details) to team members and other professional contacts

- Prepare reports by exporting to 3D PDF or using clipboard image copying capabilities

    *To access ArcGIS MXD files in **Oasis montaj** requires ArcMap or ArcEngine to be installed on your computer.*

The **Oasis montaj** environment provides direct access to data contained in Oasis databases through a spreadsheet window and an integrated profile display window. The Oasis database is a high-performance database that provides efficient storage and access for very large spatial data sets.

The *Viewer* provides visual data links that enable you to dynamically connect data in the spreadsheet, profile and map views. DAT technology (for accessing grids and images) enables the *Viewer* to display a variety of grid and image formats in **Oasis montaj**.

The **Oasis montaj** core platform provides the basic resources for all Geosoft Applications and Tools. Geosoft provides a variety of systems that address specific applications in

exploration geophysics, drillhole geology, exploration geochemistry and other areas. These systems consist of menus and corresponding Geosoft eXecutables (GXs) that run on the core platform.

## What is Oasis montaj?

The concept of an integrated environment for earth science data emerged from over two decades of software development at Geosoft and is now implemented in the **Oasis montaj** software platform. Geosoft's vision reflects the fast pace of today's professional work environment and the significant changes in data processing over the past twenty years:

- An order of magnitude increase in data volumes
- Increasing digital data availability and connectivity
- Shift in processing from office to *in situ* (or field) environments
- Replacement of proprietary software with commercial solutions

By design, Geosoft's **Oasis montaj** *Viewer* meets specific needs including:

- *Project Explorer Tool* enables users to browse as well as open any 'project' item
- *Metadata Tool* provides a context-oriented, interactive way to view and edit attributes assigned to Geosoft data
- *View/Group Manager Tool* enables users to manage and edit map View and/or Groups
- File locations are displayed in a popup dialog when you mouse over an item in the *Project Explorer*
- *Drag-n-Drop* display technology enables users to drag-n-drop Geosoft grids (.GRD), maps (.MAP), databases (.GDB), XYZ files (.XYZ) and *ArcGIS MXD files for quick viewing of data
- *3D Mapping* enables users to view their data in 3-dimensions, providing a real-world view of their data
- True transparency has been added and is automatically enabled, with video cards that support it
- Geosoft's DAP (Data Access Protocol) technology enables users to access very large spatial datasets residing on an Internet Server (or locally on a Personal Computer).
- Connecting you to your data and information via dynamic linking – a unique technology for graphically connecting data, profiles and maps in a single desktop environment
- Addressing high-volume data storage and access requirements for very large spatial data sets
- Delivering focused solutions to specific Earth Science problems
- Free **Oasis montaj** *Viewer* for Data and Information Sharing

*To access ArcGIS MXD files in **Oasis montaj** requires ArcMap or ArcEngine to be installed on your computer.*

## Viewer Capabilities

The **Oasis montaj** *Viewer* is a free software product for accessing and sharing data and images in native Geosoft and standard PC formats. The *Viewer* is available for download at [www.geosoft.com](www.geosoft.com). The *Viewer* can be freely distributed by anyone who wants to enable other geoscientists to share data and maps in a Geosoft environment. Some of the *Viewer's* capabilities are listed below.

**PROJECTS**

- Open and display projects and display/edit project comments
- Browse and open any project item in the *Project Explorer*
- Add or modify Metadata of all data items displayed in the *Project Explorer*
- View project data "Properties"

**DATA AND PROFILES**

- Open new databases imported from Geosoft GDB, Geosoft GBN, Geosoft XYZ and ASEG-GDF formats
- Export databases as Geosoft GDB, Geosoft GBN, Geosoft XYZ, ASEG-GDF, CSV (Excel), ODDF (USGS), POST PC (USGS) and POST UNIX (USGS)
- Show and plot data profiles in upto five database profile windows
- View data projected coordinate system information
- View data statistics and historical processing logs
- Dynamically link data between spreadsheet, profile window and maps

**MAPS, GRIDS AND IMAGES**

- Display a wide variety of grid and image files (for a detailed list see the ***Data Format*** Help topic)
- Import and display Geosoft PLT, AutoCAD DXF, MapInfo TAB, ArcView SHP and Microstation DGN files
- Display *ArcGIS MXD files in a MXD Viewer (*Note that, the installation of ArcMap or ArcEngine is required to view MXD data in Oasis montaj*)
- Open and display maps, and display/edit map comments
- Pan, zoom, and cursor-link map views
- View map view projected coordinate system information
- Copy and paste database data and maps to other Windows applications
- Export maps to a variety of formats
- Plot maps to Windows printers and large-format plotters
- Send and receive E-Maps

**ONLINE HELP AND TECHNICAL SUPPORT**

- Full on-line help system with links to Geosoft Web Server.
- Access to Geosoft **[geonet]** support list and Geosoft Web Site resources.

## Keeping you in touch with your data

An important design strategy in **Oasis montaj** was to keep you in touch with your data. In fact, the system is intended to connect you with your data and information in several unique ways:

- By providing an integrated environment that holds all of your project information
- By enabling quick and easy access all your project data via the Project Explorer including; databases, grids, maps, tools and metadata information
- By providing unique views of data (spreadsheet, profile and map)
- By connecting you to data and information in these views (through a specialized dynamic linking technology)
- By delivering a wide variety of algorithms and techniques
- By "memorizing" the processing you apply to data and maps by means of a proprietary process "maker" technology. This capability is especially useful for quickly testing and optimizing processing parameters. It also keeps a record of processing so that you can remember your settings if you stop working on your project and later return to it.

Geosoft's approach is intended to give you a means of keeping in close contact with your original and processed data and information — from start to finish. As you use the system, you will find your own ways to take advantage of these capabilities.
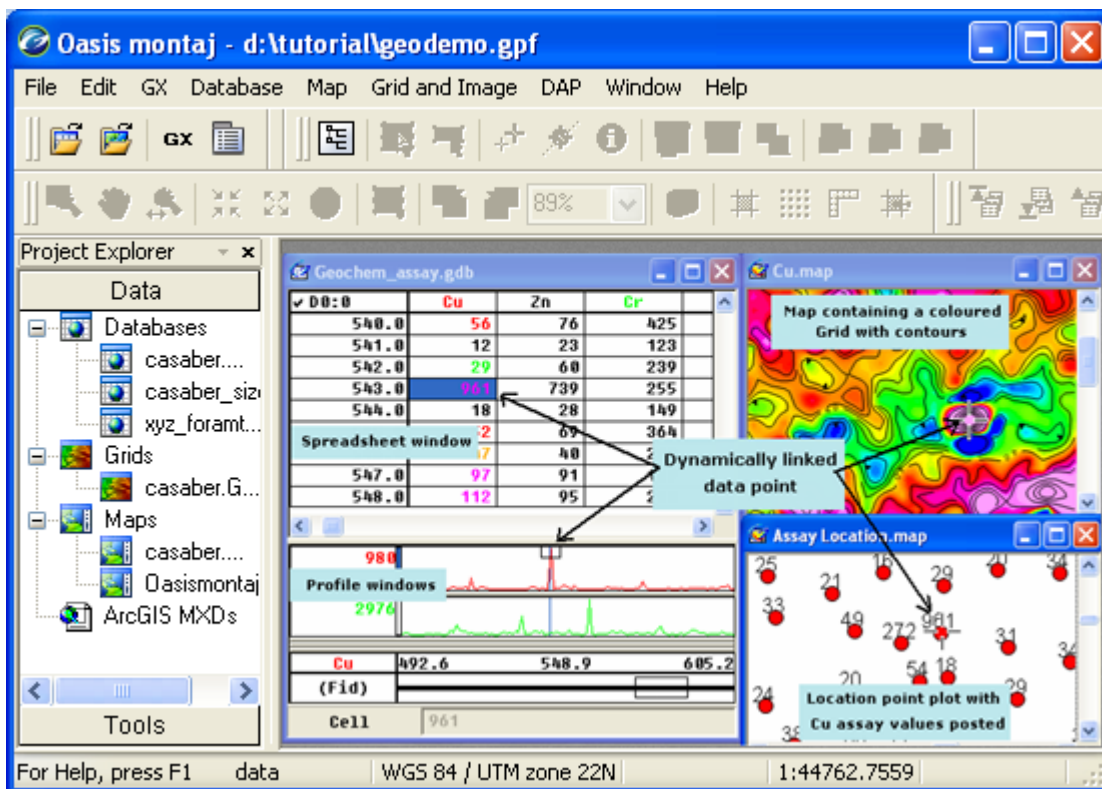
The remainder of this section provides some brief details about projects, databases, maps, views, dynamic links and process makers.

## Projects and the Project Explorer

To work in **Oasis montaj** requires an open Project. An **Oasis montaj** "Project" encompasses every item in your working project; from the data files in your project (databases, maps, and grids), to the tools used (including auxiliary tools such as histograms, scatter plots etc. - licensed version only), to the project setup including the menus you have displayed and whether you are working on a map or profile and the state in which you left it the last time you used it.

The **Project Explorer** enables you to browse as well as open any project item. The project file (*.gpf) is used to keep track of all information related to a working project.

The Project Explorer has two windows, the *Data* window that includes all data files included in the project and the *Tools* window that organizes and maintains the project tools.



| *Project Explorer Data Tab* | *Project Explorer Tools Tab* |
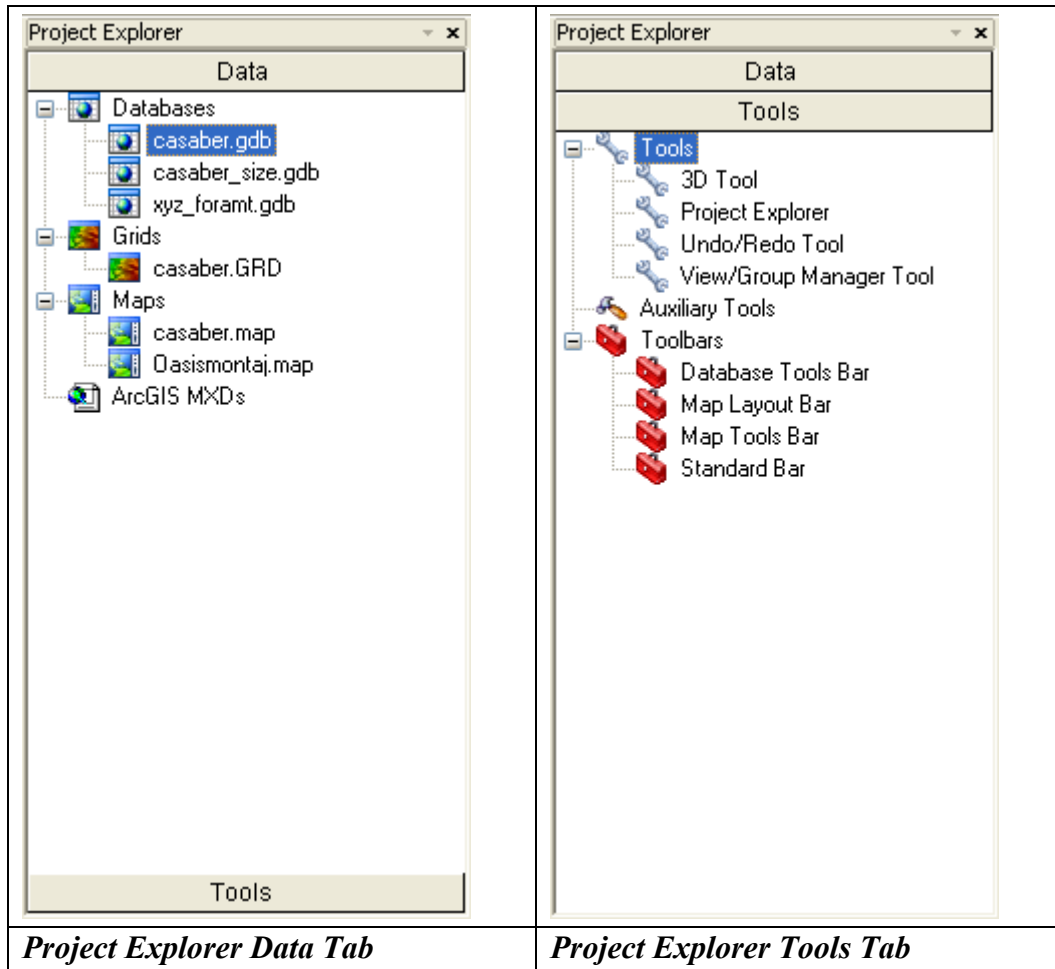
Some of the capabilities of the Project Explorer are:

- Keeps track of all files and using the description and metadata tools enables you to keep track of project information. Note that, in previous versions, file information was maintained in the file system and the user had to keep track of what the files were.

- Explorer tools including; Tools, Toolbars and Auxiliary Tools (licensed version only)

  **Tools**; 3D Tool, Metadata Tool, Project Explorer and Undo/Redo Tool and the View/Group Manager Tool.

  **Toolbars**; Database Tools Bar, Map Tools Bar, Navigation Bar and Standard Toolbar. Also available with the licensed version, Map Edit Tools Bar, Polygon Tools Bar and Script Bar.

  **Auxiliary Tools**: Histogram, Scatter plot, Probability plot and Triplot (licensed version only).

- File locations displayed in popup dialog when you mouse over item in the Project Explorer

- Enhanced metadata capabilities enable access to the Metadata of all items displayed in the Project Explorer

- Recent Projects & recent Geosoft data files available under File menu

**Note:**  Grids appear in the Project Explorer under "Grids". Opening a grid opens a view of the grid in its own internal "map". A grid map view is just like a real map and can accept any graphics that a map can. It can also be saved as a map, in which case the map will appear in the "Map" section of the project explorer.

## What you need to know about Project files

You require an open project to do any work in **Oasis montaj**. The project also controls your working directory. Projects are saved as (*.gpf) files. If you open an existing project from a directory, the system assumes that your files are located in the specified directory. To streamline your work, as well as keep it organized, you may want to make sure that your project is in the same directory as the other files you want to use.

We recommend that each project you work on have its own project (*.gpf) file. If you use a number of applications or add-on tools in **Oasis montaj** that have different menus, you can use the project to display only the menus you require.

### OPEN WORKSPACE (.GWS) FILES

Workspace files (*.gws) used in **Oasis montaj** prior to version 6.0 can be easily converted to *Project files* (*.gpf) simply by opening them in **Oasis montaj 6.0** or greater.

On the *File menu*, select *Project|Open* and the *Open Project* dialog will be displayed. Using the *Files of Type* dropdown list, select *"Workspaces (*.gws)"* and when asked if you want to convert the old workspace into a new **Oasis montaj** project file, select **[Yes]**. The workspace file will be converted to a project file and all associated workspace information will be transferred to the new project file.

# Metadata

Metadata (data about data) is captured by **Oasis montaj** from the first time the data is touched. The metadata information, which is based on ISO 19115 standards, is stored inside the data (if supported) or as a companion XML file. When you import or work with data in **Oasis montaj**, *User name*, *Date*, *Time* and any actions performed on the data will be maintained in the Metadata. When data is derived from other data, the Metadata is passed on and the lineag*e* of what was done to the data is maintained in the *Lineage* section.

## Viewing and Editing Metadata

Attributes (or metadata), information about data, can be simple or complex and the descriptive needs of different kinds of data are infinitely diverse. To allow for this and provide flexibility, Geosoft developed the XML *Metadata Viewer* and *Metadata Editor* to help you organize your metadata.

Even though each Geosoft data type (*Database*, *Grid*, *Map*, *ArcGIS MXD*, *Voxel*, etc) exhibits many different attributes, using these tools are easy.  The current selection drives what exists inside the tool.



*Metadata Viewer*

## Databases and high-volume data processing

Many commercial and governmental groups currently use **Oasis montaj** for routine processing of high volume datasets (tested up to 10 gigabytes) and also for relatively low volume processing in a variety of mapping and other applications. One key to the system's capabilities is the proprietary 3-dimensional database architecture, which enables the rapid processing and analysis of high volume data. This object-oriented database structure stores data in a form that enables rapid access and efficient storage of your data.

Databases are displayed and organized in **Oasis Montaj** in the Spreadsheet Window.

The spreadsheet window organizes and displays data differently than conventional (relational) spreadsheet and database programs. Conventional databases organize data as tables, records and fields, as shown below:

| Hole_ID | From_Dep | To_Depth | Sample | Au | As |
|---------|----------|----------|--------|------|------|
| | | | | ppm | ppm |
| DD001 | 0 | 1 | 15773561 | 0.05 | 13 |
| DD001 | 1 | 2 | 15773562 | 0.04 | 11 |
| DD001 | 2 | 3 | 15773563 | 0.03 | 19 |
| DD001 | 2 | 3 | 15773564 | 0.04 | 19 |
| * | * | * | * | * | * |
| DD003 | 98 | 99 | 15767021 | 0.4 | -0.5 |
| DD003 | 99 | 100 | 15767022 | 0.22 | -0.5 |
| DD004 | 0 | 5 | 15766457 | 0.04 | -0.5 |

Conventional databases organize data as tables, records and fields. This is effective for querying and searching type applications but limits it as a data processing engine because:

- Programs must read an entire record to access a single field
- It is computationally intensive to change record structures
- Data sampled at different intervals and starting points are difficult to store

**Oasis montaj** is based on a proprietary 3-dimensional-file format architecture that overcomes these limitations, as shown below:

| DD003 | | | | |
|-------|-------|--------|-------|----|

| DD001 | | | | |
|-------|-------|--------|-------|----|
| From_Depth | To_Depth | Sample | | Au |
| 1 | 2 | | | 0.05 |
| 2 | 3 | 15773561 | | 0.04 |
| 2 | 3 | 15773562 | | 0.03 |
| 3 | 4 | 15773563 | | 0.04 |
| 4 | 5 | 15773564 | | 0.03 |
| 5 | 6 | | | 0.02 |
| | | | | 0.02 |
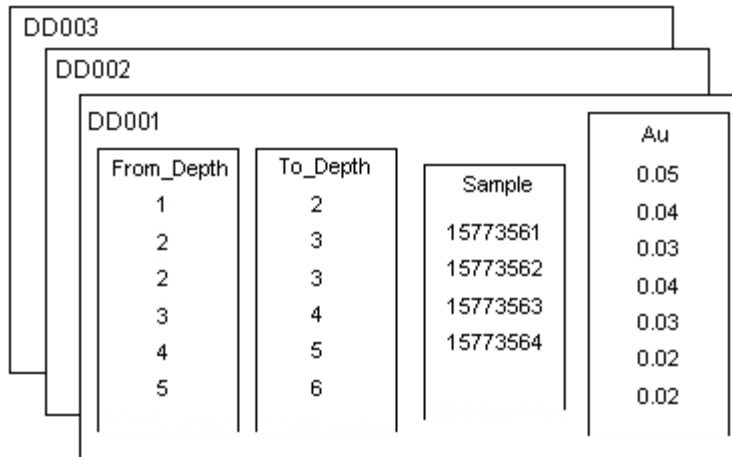
Organized in lines (or groups), columns and elements, the database stores all data values of a particular type in individual columns or channels. This enables stand-alone processing of columns and eliminates the need to write results to interim storage areas and then re-write them after processing. The result is a significant increase in processing efficiency. This Geosoft file structure provides additional advantages including:

- Ability to process any number of lines/groups
- Ability to handle lines/groups with unlimited columns
- Ability to handle very large datasets

In addition, since columns are stored separately, this file format is capable of storing and manipulating data with different end point and sample intervals.

## Spreadsheets are the windows to your database

When you create or open a database, you see a spreadsheet. The Spreadsheet view is your "window" to the **Oasis montaj** database and it also provides you with flexibility in setting up your working environment. All data is stored securely in the underlying database — you simply decide which data you want to display in the spreadsheet and keep all other data in the background, hidden from view.

The spreadsheet is organized in rows, channels (columns) and lines (also called groups in other applications such as drillhole plotting). Rows and columns work similar to standard spreadsheets in that you can edit and delete them as needed. The system also enables multiple "worksheets" in your database – depending on the type of data you are working with (line, random line or drillhole); the worksheets have different names. To see what type of name is used, look at the Line Header Cell located at the top left corner of the spreadsheet. An "L" for example, indicates that you are working with line data.

General spreadsheet capabilities include:

- The ability to display data from your database through a spreadsheet window
- Handling of any sample interval
- Supports full editing and mathematical processing capabilities
- The ability to process selected samples, selected channels and selected lines or groups

## How the Spreadsheet Displays Project Data

The spreadsheet does not display your actual data, but rather a view of the data. Depending on your type of project, the spreadsheet will display your data as either values or arrays.

For surveys where a single value is recorded at each station, for example an assay survey, each data cell will contain a single value.



For surveys where a multiple readings where recorded at each station, for example an Induced Polarization survey, each data cell will contain multiple values.
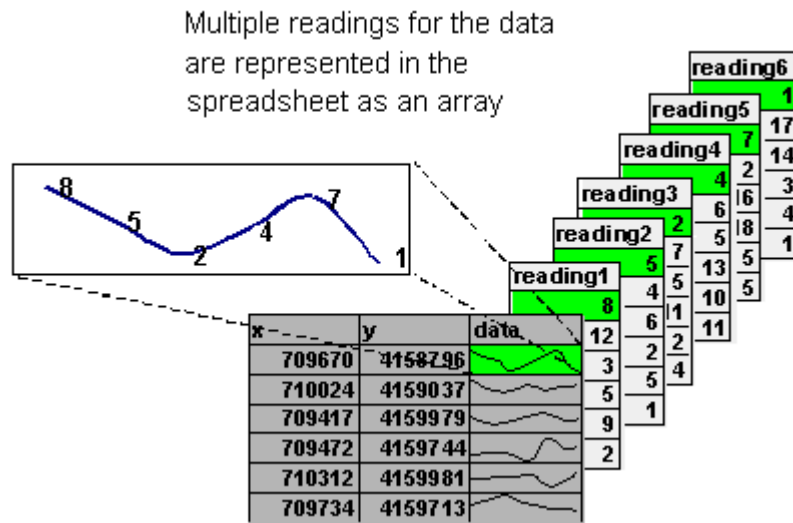


The spreadsheet represents these values as a profile line in an array channel.

## Profiles and viewing your data graphically

The Profile view is your "graphical window" to the **Oasis montaj** database. You can display profiles of one or more variables in your database simply by selecting the channel and selecting a simple menu item. The profile appears directly below its corresponding database in a profile window. You can have up to five "panes" with 32 variables in each pane.

A key point to note about profile windows is that they are linked dynamically to their corresponding database. When you select a value or range of values in either the database or profile window respectively, they are also highlighted in the other window.

This capability keeps you in touch with your data and gives you an interactive means of accomplishing quality control or analysis tasks.
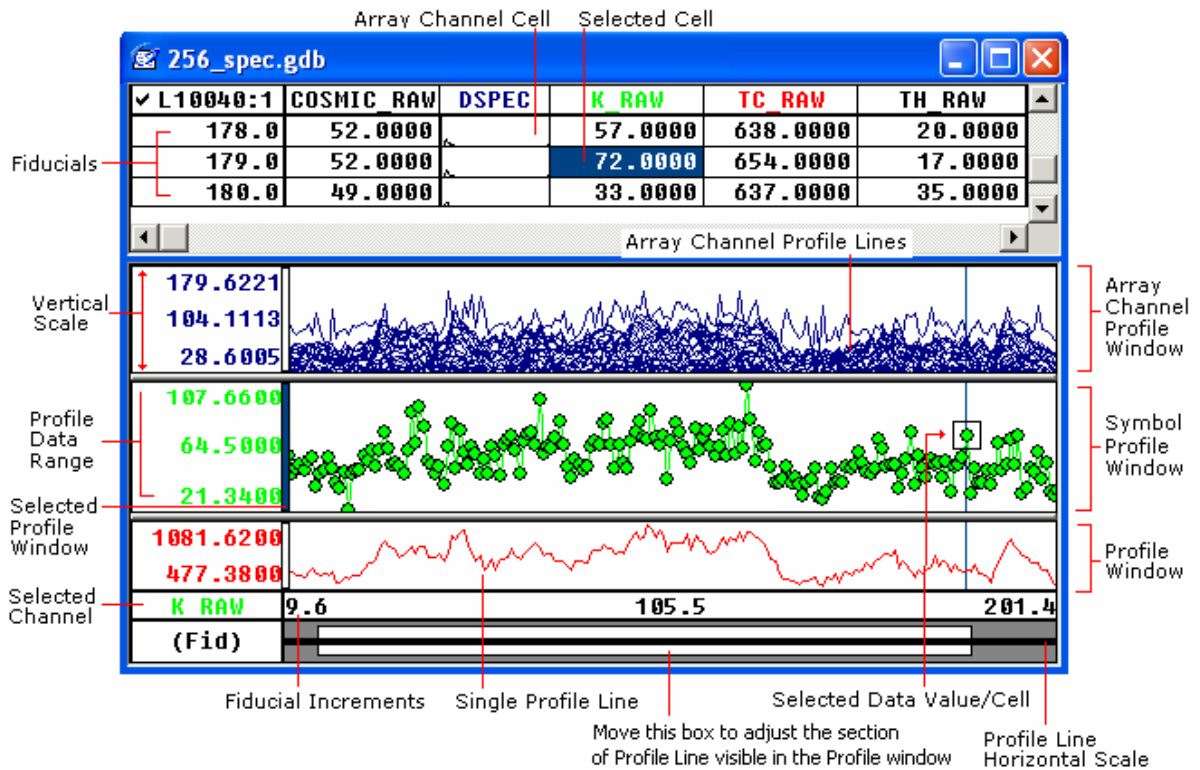
## Maps are more than printed sheets of information

Geosoft's mapping capabilities are the result of more than a decade of programming development, and the options for producing and editing maps — as well as the quality of output — reflect this level of experience. You can use the system to produce a variety of professional presentations quickly and easily.

However, you should also be aware that a map is more than a printed sheet of information in **Oasis montaj**; the Map view gives you an electronic area for analyzing, visualizing and editing your data and information.
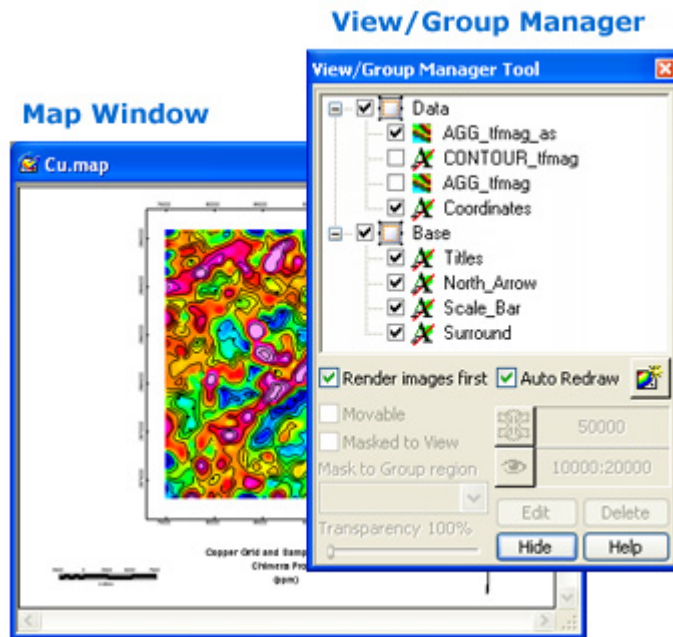


When you create a new map the system opens up a new blank *Map Window*. After a *Map Window* is open, you can add a wide variety of data- and base map-related information. **Oasis montaj** Maps use *Views* to organize and display information. A *View* divides the information on a map into a *Base* view, which uses paper coordinates, and a *Data* view, which uses ground coordinates. Map surrounds, north arrows, and scale bars are examples of map groups plotted in the *Base* view. Map coordinates, contours, and grids are examples of map groups that are plotted in the *Data* view.

Groups are a fundamental part of maps. **Oasis montaj** uses *Groups* to determine the order in which objects are displayed (rendered) on a map. Groups are layered on top of each other in a specific order determined by the *View/Group Manager Tool*. You can create, edit, move, hide, and mask groups. You can also move groups in front and behind each other. Any new object you add to a map, such as a polygon or line, is added to the current group.

True transparency has been added and is automatically enabled, with video cards that support it. For users who don't have video cards that support true transparency, 'Light table' display technology will be applied. Each group or layer in a map has individual

transparency settings, controlled from the *View/Group Manager Tool*. These transparency settings affect both 2D and 3D raster images and vector line work.

Map (and the rest of the layers)

Scale_Bar group (3rd layer)

North_Arrow group (2nd layer)

Surround group (top layer)

mag.map
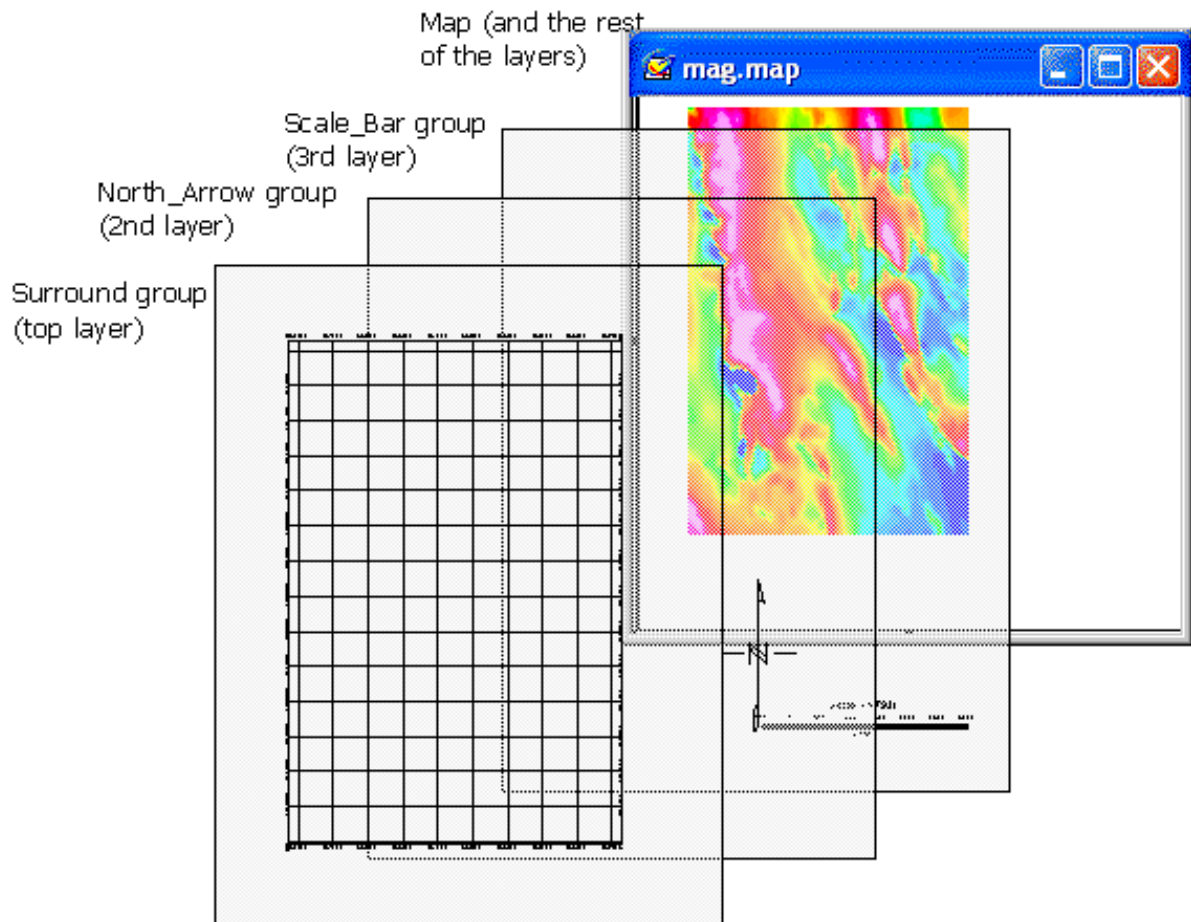
As you use the system, you will become familiar with the information that is stored in each type of *View* and how to manipulate them (for example, by turning off a map layer for plotting purposes). And as shown in the next section, you will also learn to activate dynamic links between databases, profiles and maps so that you can perform advanced processing (selection of parameters) as well as interactive analysis and visualization.

# ArcGIS MXD Files in Oasis montaj

ArcMap, the main application in the ArcGIS Desktop suite, is used for all mapping and editing tasks as well as for map-based query and analysis. An MXD map is the most common document type for users working with geographic information within ArcMap. In **Oasis montaj** (licensed version) you can now open MXDs and view and manipulate them in a similar fashion as in ArcMap. This enables ArcGIS desktop users to share maps created in that environment with **Oasis montaj** users. Users can even drag layers to Geosoft maps or the montaj background to make new maps. It is also possible to use drag-n-drop to place a Geosoft group from the *View/Group Manager Tool* into a MXD map.

An MXD represents geographic information as a collection of layers and other elements in a map view. Common map elements include; the data frame containing map layers for a given extent, a scale bar, north arrow, title, descriptive text, and a symbol legend.

There are two primary display panels in an **Oasis montaj** MXD window: the data frame and the layout view. The data frame provides a geographic "window", or map frame, in which you can display and work with geographic information as a series of map layers. The layout view provides a page view where map elements (such as the data frame, a scale bar, and a map title) are arranged on a page.
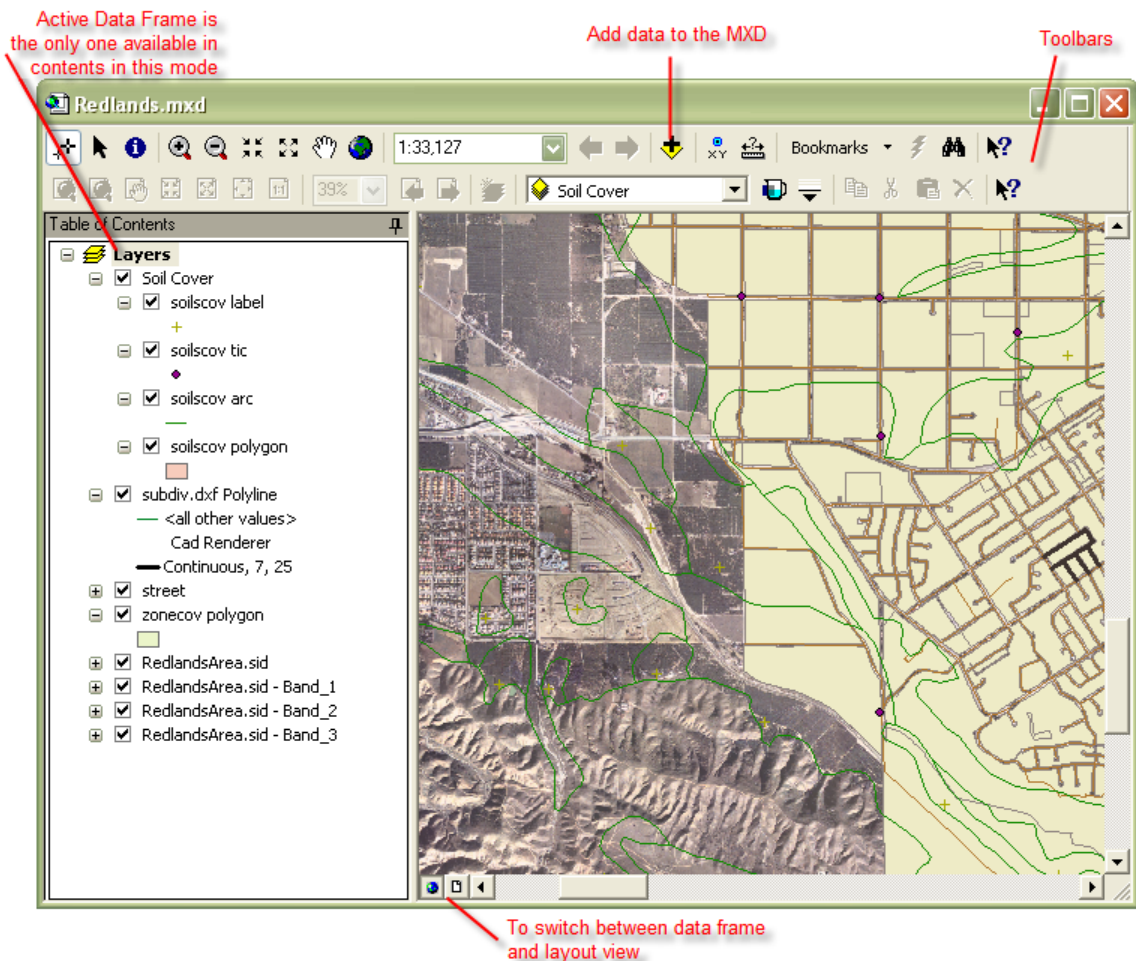
When you save a MXD you have created in ArcMap or **Oasis montaj**, it uses the file extension (.MXD). MXD document files are managed in file system folders. You can work with an existing MXD in **Oasis montaj** by opening it from the *ArcGIS MXD* menu. This will open an MXD window which enables you to switch between data frame and layout view mode. You can save the visible layers and certain layout elements to a new Geosoft map. It is also possible to create new MXDs in this menu at some predefined page sizes or to save a Geosoft map as an MXD.

You can also save a map layer definition as an ArcMap (.LYR) file and add it in an existing MXD window in the project using the toolbar or import it into a Geosoft map. One special feature that **Oasis montaj** adds in addition to the normal ArcMap tools, is the dynamic linking using the *Shadow Cursor Tool*.

> **Note:** *To access ArcGIS MXD files in **Oasis montaj** requires ArcMap or ArcEngine to be installed on your computer.*

For instruction on displaying an ArcGIS MXD file in the **Oasis montaj Viewer**, see *Displaying a ArcGIS MXD File*, page 28.

# Dynamically link data and information to knowledge

Dynamic links are a key part of Geosoft's strategy of helping professional's stay in close touch with their data—from import to processing to analysis. By definition, dynamic links are interactive graphical connections that you can activate between databases, profiles and any number of maps in your project. When you activate links and select any item or position in a database, profile or map, a cursor automatically connects the item or point in all items.

This capability gives you an important means of visualizing original or processed results in any view and seeing the corresponding representation in another view. The practical benefit is that you can quickly perform quality control, processing or analysis using all available data and information. Applying dynamic linking is also a highly efficient approach to building knowledge and making informed decisions.
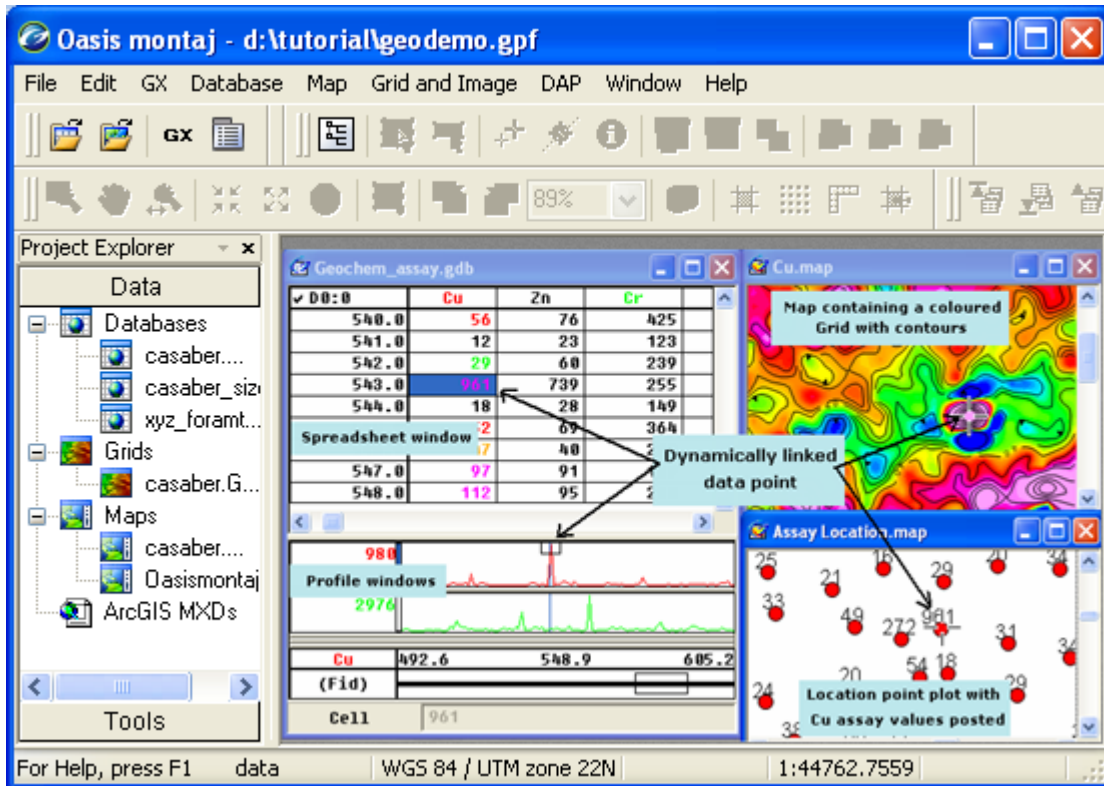
## Geosoft Algorithms and Techniques

The Geosoft eXecutable (GX) is the basic mechanism through which Geosoft provides the basic resources for all Geosoft Applications and Tools. GXs are programmed processes that are attached to the main menus in the system and to the special menus used in application suites. GXs run interactively in the graphical user interface but many GXs can also run in batch mode (using script commands).

All Geosoft GXs are signed. A Geosoft signed GX is a GX written and tested by Geosoft. It contains no viruses or code that can harm your system. As a user you can trust that this GX works and is safe to use. Non- signed GXs will generate a report warning the user that there could be a problem with the GX or its contents and that Geosoft did not test or create this GX.

Individual users can create GXs using the GX Developer Toolkit. Geosoft's own developers also use this product to develop applications. The GX Developer is designed for users who consider them selves to be computer-oriented scientists (i.e. you do not have to be a computer scientist to use it effectively). If you encounter a non-Geosoft GX a report warning will be displayed notifying you that this is not a Geosoft signed GX.

Third party developers are also creating GXs and the product offers many opportunities for integrating other products into the system either via DLLs or by directly accessing Geosoft's database and function library. For more information, please contact your Geosoft representative.

The following dialog box shows a standard GX dialog box. Geosoft now supports Visual Basic programming so that users can create even more advanced dialogs boxes as required for their specific applications.
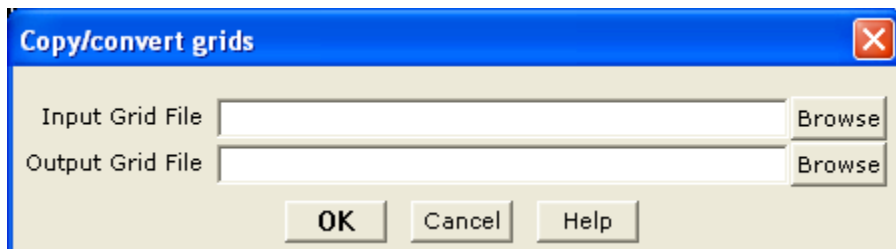
## Process Maker technology links data processing

A dynamic process link is a built-in feature that remembers the processing parameters associated with a specific object such as a channel, grid or map and that enables you to quickly rerun the process using different settings.

A quick tool for reprocessing data, the process link is also useful for remembering processing settings. This latter capability is particularly effective if you are away from your project for any length of time and want to recall the settings you were using.

To access the maker popup menu is the maker associated with the object. Select this option and you will see the corresponding dialog box and settings. You can either change settings and re-process, or exit from the dialog as required.

Process Maker technology brings dynamic linking to data processing.
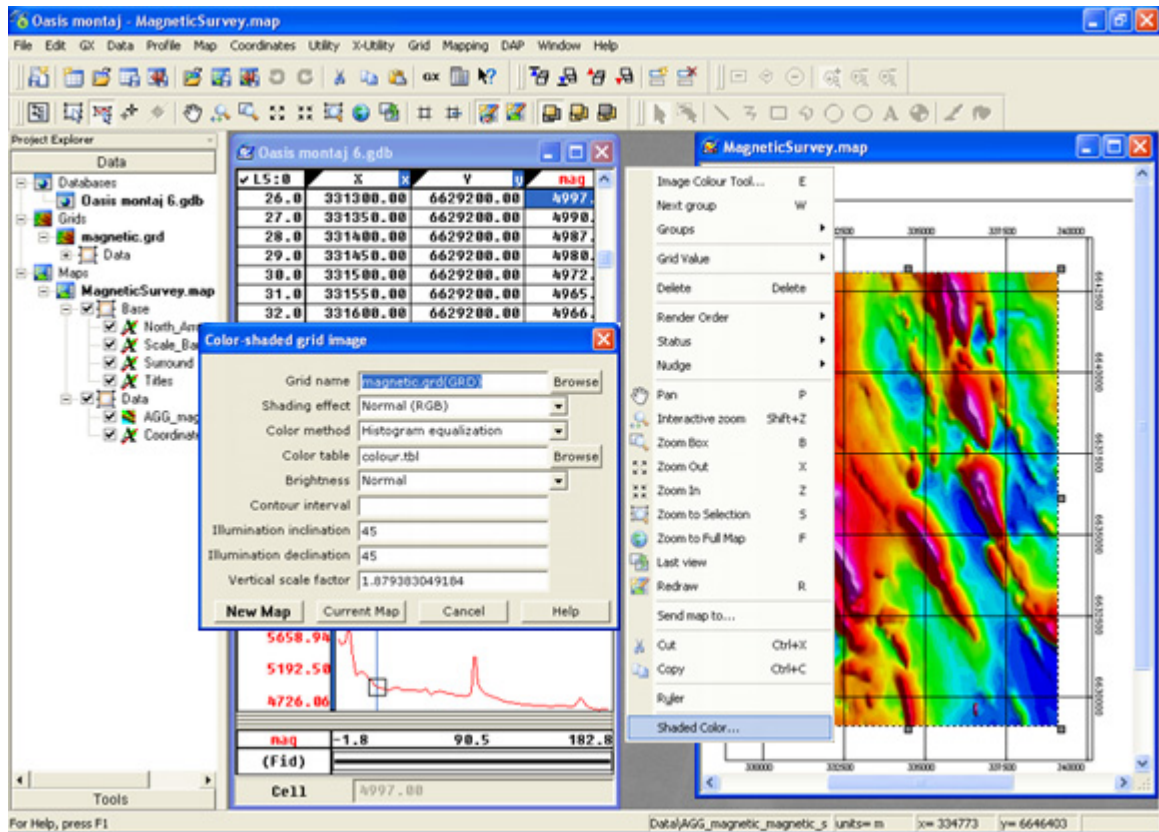
# Appendix 2: Displaying Data Formats

**Oasis montaj** *Viewer* enables users to display various file formats (Geosoft XYZ, Geosoft GBN, and ASEG-GDF) in an **Oasis montaj** database.

## Geosoft XYZ File Format

The following is an example of a Geosoft XYZ file format:

```
Line 290.0
  10517.0    8013.0    56600.4
  10517.0    7977.0
  10516.0    7940.0    56595.1
  10515.0    7904.0    56592.2
  10515.0    7867.0    56589.6
  10514.0    7831.0    56588.2
  10514.0    7794.0
  10513.0    7758.0    56589.4
  10512.0    7721.0    56589.4
  10512.0    7685.0    56590.0

Line 300.0
  10209.0    8013.0    56648.7
  10209.5    7973.0    56641.0
  10210.0    7933.0    56633.2
  10210.0    7893.5    56623.0
  10210.0    7854.0    56616.5
  10210.5    7814.0    56607.5
  10210.5    7776.5    56598.4
  10209.5    7741.5    56596.6
  10208.5    7706.5    56599.5

Line 305.0
  10012.0    5318.0    56492.4
  10012.5    5239.0    56489.4
  10013.0    5160.0    56488.4
  10013.5    5112.0    56487.5
  10014.0    5080.5    56485.4
  10014.0    5033.0    56487.5
  10014.5    4985.5    56491.5
  10015.5    4858.5    56492.9
  10016.0    4763.5    56493.3
  10017.0    4684.0    56501.3
  10017.0    4636.5    56509.1
  10017.0    4589.0    56518.0
Line 310.0
   9883.5    4329.5    56510.7
   9884.0    4356.5    56514.0
   9884.0    4384.0    56516.8
   9884.0    4411.5    56519.2
   9884.0    4438.5    56522.2
   9884.5    4465.5    56524.5
```

## ASEG-GDF File Format

Following is an example of an ASEG-GDF import template:

```
[IMPORT ASEG-GDF]
DEFN BOOTHILL.dfn
DATA BOOTHILL.dat
FLC  FLTLINE
IMPORT   FLIGHT,FLIGHT,SHORT
IMPORT   DATE,DATE,LONG
IMPORT   TIME,TIME,FLOAT
IMPORT   FIDUCIAL,FIDUCIAL,FLOAT
IMPORT   ALTITUDE,ALTITUDE,FLOAT
IMPORT   TMAGRAW,TMAGRAW,FLOAT
ALIAS   L20440,L20440
ALIAS   L20450,L20450
```

The template file is searched for the line [IMPORT ASEG-GDF], and the IMPORT and ALIAS lines that follow are read to determine what data to import and the channels in which to place the data. You may add any comment line you wish before the [IMPORT ASEG-GDF] line.

DEFN syntax:

   DEFN file_name
   where file_name is the name of the ASEG-GDF DEFN file to import.

FLC syntax:

   FLC flight_line_channel
   where flight_line_channel is the name of the ASEG-GDF channel containing the flight line information.

IMPORT syntax:

   IMPORT  name, channel, type
   The name is the name used in the ASEG-GDF DEFN file to indicate the data name. The channel is a mapping to the channel that will be created in the database.  And the data type (one of BYTE, UBYTE, SHORT, LONG, FLOAT or DOUBLE) which should correspond to the type in the DEFN file.

ALIAS syntax:

    ALIAS aseg_line_name,new_line_name

As the ASEG-GDF lines are imported, if a line-channel already exists in the database, it will be replaced. The ALIAS statement in the import template can be used to re-name lines of the ASEG-GDF data file during import. If the new_line_name is blank, the line will not be imported.

If ALIAS is used, ALL lines contained in the ASEG-GDF file must be defined by an ALIAS line in the same order that the lines appear in the file. The SCANASEG GX can be used to construct a default template that includes ALIAS lines for all lines of a file. This file can be edited as required by the system.

For example, if a file contains line L90, two sections of line L100 and a tie line L30, the following ALIAS lines can be used to import the data into properly named lines:

```
ALIAS L90,L90
ALIAS L100,L100.0
ALIAS L100,L100.1
ALIAS L30,T30
```

# Geosoft GBN (Binary Data File) Format

The following is an example of a Geosoft GBN file format:

```
A Geosoft Binary Data file (.GBN) contains survey data in a binary
format that can be imported directly into an Oasis montaj™
database.
The format is intended for programmers who wish to design output
data files that can be easily imported into an Oasis montaj
database.
//----------------------------------------------------------------
//
// gbn.fh   Geosoft Oasis montaj binary file structure.
//
//----------------------------------------------------------------
//
// An Oasis montaj database is an object oriented data structure
that is too
// complex to create without the use of the Geosoft object
libraries.
// If you would like to access the database directly, this can be
done
// from a GX using GX Developer, which also provides a mechanism
for
// calling Geosoft libraries from your own DLLs.
//
// The Oasis montaj binary file is a simple file structure that is
intended
// to be used by programmers as a convenient way to import data
into
// an Oasis montaj database.  The Oasis montaj GBN GX will import
Oasis montaj binary files
// into an Oasis montaj database.
//
// A Oasis montaj binary data file consists of an ASCII comment
header
// followed by an ASCII 26 (hex <1A>), followed by binary data.
//
// Binary data consists of a series of variable length binary
records.
// Each record begins with a single byte value that identifies the
// record type, followed by the record data and data in the case
of
// data records.
//
// Record type are:
//
//     <01> simple channel record (GBN_ChanRec)
//     <02> line record (GBN_ChanRec)
//     <03> data record (GBN_Data)
//
// Version 2 GBN record types (Oasis montaj  v4.2 and later):
//
//     <04> array channel record (GBN_ArrayChanRec)
//     <05> parameter (GBN_Parameter)
//
// The length of each record depends on the record type.
// The length of a data record will be the length of the data
record
// structure plus the length of the data.
//
// IEEE numbers and Intel byte order is required.
//
```

```
// The first 17 characters of the comment header must be:
//
//    "Oasis BINARY DATA"
//
// Any amount of ASCII text may follow.  Oasis montaj will start
reading
// binary data at the first byte after the first <1A> byte.
//
// The file structure is as follows:
//
//     Oasis BINARY DATA                    // required first 17
bytes.
//     comment text                         // As much ASCII text as
//         .                                // desired can be placed
//         .                                // in the comment
header.
//         .                                //
//     <1A>                                 // end of ASCII
comments.
//     <01> 80 byte simple channel record  // GBN_ChanRec
structure.
//     <05> 192 byte parameter record      // optional parameter
settings
//         .
//     <04> 84 byte array channel record   // GBN_ArrayChanRec
structure.
//                                          // <01> or <04> repeated
for
//                                          // each channel of data.
//     <05> 192 byte parameter record      // optional parameter
settings
//         .
//         .
//         .
//     <02> 28 byte line record            // GBN_LineRec
structure.
//     <05> 192 byte parameter record      // optional parameter
settings
//         .
//     <03> data record                    // GBN_Data structure +
data
//     <03> data record                    // GBN_Data structure +
data
//         .
//         .
//         .
//     <02> 28 byte line record            // GBN_LineRec
structure.
//     <05> 192 byte parameter record      // optional parameter
settings
//         .
//     <03> data record                    // GBN_Data structure +
data
//     <03> data record                    // GBN_Data structure +
data
//         .
//         .
//         .
//     <00>                                 // end of data.
//
// Notes:
//
//     Data records are related to the channels by channel number.
If
```

```
//     you have defined three channels, they will be numbered 0, 1
and
//     2. Channel data records can be in any order(i.e. 0,1,2 or
1,0,2)
//     and you do not need to specify all channels on every line.
//
//     If the channels already exist in the database, the channel
//     parameters are ignored.
//
//------------------------------------------------------------------
//
// Example:
//
//     Hex values are in <hex>, other binary values are in (value,
//     value,...).
//
//     The binary type of each value can be determined from the
record
//     structures.  For example, a channel data record
(1,5,4610.0,0.1,
//     42150) in binary would be:
//
//                     lChanNumber   = 1;       // long, 4 bytes
//                     lBinaryType   = 5;       // long, 4 bytes
//                     dFidStart     = 4610.0;  // double, 8 bytes
//                     dFidIncrement = 0.1;     // double, 8 bytes
//                     lLength       = 42150;   // long, 4 bytes
//
//     In this example, 42150 double (8-byte) values must
immediately
//     follow the channel data record.
//
//     A carriage-return line-feed <0D0A> is assumed at the end of
each
//     comment header line for the purpose of calculating offsets.
//
//     Channel names are null terminated in a 64 character field.
//
//  byte
// offset  data
comments
// ------ [---------------------------------------]-------------
//      0 [Oasis BINARY DATA                       ]
required
//     19 [                                        ]
//     21 [ This is a sample Oasis montaj binary data file which
]
//     69 [ contains two lines, 100 and 110, from flight 10 flown]
//    119 [ on January 19, 1995.  The data includes X, Y, GPS    ]
comments
//    170 [ time and 256-channel spectrometer sampled once a     ]
//    222 [ second and in-phase (EM-I) and quadrature (EM-Q)     ]
//    272 [ data sampled 10 times per second.                    ]
//    315 [                                                       ]
//    317 [<1A>                                                   ]
end comments
//    318 [<01> ("Time",4,2,10,1)                                 ]
Time channel
//    399 [<01> ("X",5,0,12,1)                                    ]
X channel
//    480 [<01> ("Y",5,0,12,1)                                    ]
Y channel
//    561 [<01> ("Mag",4,0,10,1)                                  ]
Mag channel
```

```
//     642 [<01> ("EM_I",4,0,10,0)                              ]
EM inphase
//     723 [<01> ("EM_Q",4,0,10,0)                              ]
EM quadrature
//     808 [<04> ("Spec",1,256,0,6,0)                           ]
256-channel spec.
//     804 [<02> (100,0,0,10,1995,1,19)                         ]
line 100
//     889 [<03> (0,4,1000.0,1.0,3610)    (data,data, 3610 times)  ]
Time data
//   15358 [<03> (1,5,1000.0,1.0,3610)    (data,data, 3610 times)  ]
X data
//   44267 [<03> (2,5,1000.0,1.0,3610)    (data,data, 3610 times)  ]
Y data
//   73176 [<03> (3,4,1000.0,0.1,36100)   (data,data, 36100 times) ]
Mag data
//  217605 [<03> (4,4,1000.0,0.1,36100)   (data,data, 36100 times) ]
EM I data
//  362034 [<03> (5,4,1000.0,0.1,36100)   (data,data, 36100 times) ]
EM Q data
//  506463 [<03> (5,1,1000.0,1.0,924160) (data,data, 924160 times)]
spectrometer
//2354812 [<02> (110,0,0,10,1995,1,19)                         ]
line 110
//   etc. [<03> (0,4,4610.0,1.0,4215)    (data,data, 4215 times)  ]
Time data
//        [<03> (1,5,4610.0,1.0,4215)    (data,data, 4215 times)  ]
X data
//        [<03> (2,5,4610.0,1.0,4215)    (data,data, 4215 times)  ]
Y data
//        [<03> (3,4,4610.0,0.1,42150)   (data,data, 42150 times) ]
Mag data
//        [<03> (4,4,4610.0,0.1,42150)   (data,data, 42150 times) ]
EM I data
//        [<03> (4,4,4610.0,0.1,42150)   (data,data, 42150 times) ]
EM Q data
//        [<03> (5,1,1000.0,1.0,924160) (data,data, 924160 times)]
spectrometer
//        [<00>                                                 ]
end of data
//-------------------------------------------------------------
#ifndef GBN_FH
#define GBN_FH
// --- record byte headers ---
#define GBN_CHAN_REC       1
#define GBN_LINE_REC       2
#define GBN_DATA_REC       3
#define GBN_ARRAYCHAN_REC 4
#define GBN_PARAMETER_REC 5
#define GBN_EOF_REC        0
// --- establish Geosoft defines if not already set ---
#ifndef LINE_NORMAL
// --- line type defines ---
#define LINE_NORMAL       0
#define LINE_BASE         1
#define LINE_TIE          2
#define LINE_TEST         3
#define LINE_TREND        4
#define LINE_SPECIAL      5
#define LINE_RANDOM       6
// --- data types ---
#define GS_BYTE      0     // signed byte
#define GS_USHORT    1     // unsigned 2-byte integer
#define GS_SHORT     2     // signed 2-byte integer
```

```
#define GS_LONG     3     // signed 4-byte integer
#define GS_FLOAT    4     // 4-byte floating point
#define GS_DOUBLE   5     // 8-byte floating point
// A string type is indicated by the negative string length.  For
example,
// a 10 byte string would be type -10.  String data should be NULL
// terminated.
// --- dummy values ---
#define GS_U1DM  (char          )   255U
#define GS_S1DM  (signed char   )  -127
#define GS_U2DM  (unsigned short)   65535U
#define GS_S2DM  (short         )  -32767
#define GS_S4DM  (long          )  -2147483647L
#define GS_R8DM  (double        )  -1.0E32
// --- 4-byte float dummies require a variable to prevent compiler
problems ---
#ifndef GS_R4DM
float GBN_r4dm = (float) GS_R8DM
#define GS_R4DM  (GBN_r4dum)
#endif
// --- display formats ---
#define GSF_NORMAL  0        // Normal decimal number format
#define GSF_EXP     1        // Exponential floating point
(1.2E+23)
#define GSF_TIME    2        // Time (HH:MM:SS.SSSS)
#define GSF_DATE    3        // Date (YYYY/MM/DD)
#define GSF_GGRAPH  4        // Geographical (DEG.MM.SS.SSS)
// --- end of defines ---

#endif
// --- simple channel record ---
typedef struct {char     szName[64];          // channel name,
case tolerant,
// NULL terminated
/ ----------------------------------------------------------------
/ If the channel does not already exist, the following 4
parameters
// are used to create the Oasis montaj channel structure.  If the
channel
// exists, this information is ignored.
// ----------------------------------------------------------------
long    lChannelType;      // channel data type, one of GS_?
long    lDisplayFormat;    // one of GSF_?
long    lDisplayWidth;     // display width in characters
long    lDisplayDecimals;  // digits after decimal place
} GBN_ChanRec;   // record type <01>
// --- Array channel record for array elements ---
typedef struct {
   char     szName[64];           // channel name, case tolerant,
                                  // NULL terminated
// ----------------------------------------------------------------
// If the channel does not already exist, the following 5
parameters
// are used to create the Oasis montaj channel structure.  If the
channel
// exists, this information is ignored.
// ----------------------------------------------------------------
long    lChannelType;      // channel data type, one of GS_?
long    lArrayDepth;       // number of samples per element
long    lDisplayFormat;    // one of GSF_?
long    lDisplayWidth;     // display width in characters
long    lDisplayDecimals;  // digits after decimal place
} GBN_ArrayChanRec;   // record type <04>
// --- line record ---
```

```
typedef struct {
long    lLineNumber;
long    lLineVersion;
long    lLineType;              // one of LINE_?
long    lFlight;
long    lYear;
long    lMonth;
long    lDay;
} GBN_LineRec;   // record type <02>
// --- data record ---
typedef struct {
long    lChanNumber;           // number from channel list, 0 is
first
long    lBinaryType;           // incoming binary data type, one of
GS_?
double  dFidStart;             // start fiducial number
double  dFidIncrement;         // fiducial increment
long    lLength;               // number of data elements that
follow
                                // For type 2 channel records,
lLength
                                // will be the number of elements
times
                                // the lArrayDepth, and data must
be
                                // row ordered.
} GBN_Data;    // record type <03>
// ---
// Named parameters.
//
// Database lines and channels may have associated named
information
// which is stored as named parameters and their text string
values.
// Any number of these records may immediately follow the <01>,
<02>
// or <04> records.
//
// ---
//
// Projection information.
//
// Coordinate map projections may be defined using named
parameters as
// follows:
//
//  Name                       Usage
//
//  "_PJ_x"                name of the X channel
//  "_PJ_y"                name of the Y channel
//  "_PJ_name"                 POSC projection name
//  "_PJ_ellipsoid"            ellipsoid name, major axis,
eccen., prime meridian
//  "_PJ_projection"           projection type, parameters (see
GXF rev. 3)
//  "_PJ_datum_transform"      transform name,
dX,dY,dZ,rX,rY,rZ,Scale.  If not
//                         defined, no local datum is assumed.
// ---
typedef struct {
   char szParm[64];                // parameter name, NULL
terminated
   char szValue[128];              // parameter value, NULL
terminated
```

```
        } GBN_ParameterRec;   // record type <05>
        //------------------------------------------------------------
        // BINARY TYPES
        //
        // Some of the data types in a GBN file have special usage in
        Oasis
        // montaj. These are:
        //
        //      GSF_TIME    2        // Time (HH:MM:SS.SSSS)
        //      GSF_DATE    3        // Date (YYYY/MM/DD)
        //      GSF_GGRAPH  4        // Geographical (DEG.MM.SS.SSS)
        //
        // They are stored as either GS_FLOAT or GS_DOUBLE in a channel
        and can
        // be display in Oasis montaj as a number of as their special
        format (Time,Date).
        //
        // The following C functions can be used to create GEOSOFT dates
        and times.
        // Note that the GGRAPH format is just a TIME format with hours
        between -360 and 360.
        //
        //
        //------------------------------------------------------------
        //
        //
        // long RoundLong(double a)
        // {
        //    if (a > 0.0)
        //      return((long) (a + 0.5));
        //    else
        //      return((long) (a - 0.5));
        // }
        //
        //
        // void
        // BreakTime(double dVal,       // Value to break
        //           long   *plHour,     // Hours
        //           short  *psMin,      // Minutes
        //           short  *psSec,      // Seconds
        //           double *pdFrac)     // Fraction
        // {
        //    double dI,dF;
        //    short  sNeg = 0;
        //
        //    // --- Take out the negative ---
        //
        //    if (dVal < 0.0) { sNeg = 1; dVal = -dVal; }
        //
        //
        //    // --- Break into Fractional Components ---
        //
        //    dF = modf(dVal,&dI);
        //
        //
        //    // --- Determine the Hour ---
        //
        //    *plHour = (long) dI;
        //
        //
        //    // --- Determine the Minutes And Seconds/Frac ---
        //
        //    *pdFrac = modf(dF * 3600.0,&dI);
        //    *psSec  = (short) RoundLong(dI);
```

```
//     *psMin  = (short) (*psSec / 60);
//     *psSec  = (short) (*psSec % 60);
//
//     // --- Negative ? ---
//
//     return(sNeg);
// }
//
// -------------------------------------------------------------
//
// static const short  DateNGS[12] =
{31,28,31,30,31,30,31,31,30,31,30,31};
// static const short  DateLGS[12] =
{31,29,31,30,31,30,31,31,30,31,30,31};
//
// #define NORMAL_YEAR   365
// #define LEAP_YEAR     366
//
// void
// sBreakDate(double dVal,        // Value to break
//            short  *psYear,     // Year
//            short  *psMonth,    // Month
//            short  *psDay)      // Day
// {
//     double dF,dI;
//     short  sDays;
//     const short *psMonths;
//
//     short sDay;
//     short sMonth;
//     short sYear;
//
//     // --- Break in the Integer and Fractional Components ---
//
//     if (dVal < 0.0) dVal = 0.0;
//     dF = modf(dVal,&dI);
//
//
//     // --- Compute the Year ---
//
//     sYear = (short) dI;
//     if ( (sYear % 4) == 0)
//     {
//       psMonths = DateLGS;
//       sDays    = LEAP_YEAR;
//     } else {
//       psMonths = DateNGS;
//       sDays    = NORMAL_YEAR;
//     }
//     // --- Compute the Day ---
//
//     sDay = (short) RoundLong(dF * (double) sDays);
//
//
//     // --- Compute the Month ---
//
//     sMonth = 0;
//     while (sDay >= psMonths[sMonth]) { sDay-= psMonths[sMonth];
sMonth++; }
//
//
//     // --- Ok ---
//
//     *psYear  = sYear;
```

```
//      *psMonth = sMonth+1;
//      *psDay   = sDay+1;
// }
//
// ----------------------------------------------------------------
//
// double
// dMakeTime(long   lHour,              // Hour Value
//           long   lMin,               // Minute
//           double dSec)               // Second
// {
//    double dVal;
//
//    // --- Limit the Information ---
//
//    if (dSec > 30000000.0) dSec = 0.0;
//    else {
//       while (dSec >= 60.0)  {lMin++; dSec -= 60.0;}
//       if (dSec < 0.0) dSec = 0.0;
//    }
//    if (lMin > 500000L) lMin = 0L;
//    else   {
//       while (lMin >= 60L)  {
//           if (lHour >= 0L) lHour++;
//           else lHour--;
//           lMin -= 60;
//       }
//       if (lMin < 0L)  lMin = 0L;
//    }
//
//    // --- Compute fractional hour ---
//
//    dVal = (dSec + (double) (lMin * 60L)) / 3600.0;
//    if (lHour < 0) dVal = -dVal;
//
//    // --- Compute final value ---
//
//    return(dVal + (double) lHour);
// }
//
// //----------------------------------------------------------------
//
// double
// dMakeDate(short  sYear,              // Year
//           short  sMonth,             // Month
//           short  sDay)               // Day of the Month
// {
//    short  sDays;
//    const short  *psMonths;
//    short  i;
//
//    // --- Validate the Date ---
//
//    if (sYear < 0) sYear = 0;
//    if ((sYear%4) == 0)
//    {
//      psMonths = DateLGS;
//      sDays    = LEAP_YEAR;
//    } else {
//      psMonths = DateNGS;
//      sDays    = NORMAL_YEAR;
//    }
//
//
```

```
//     // --- Get the Month ---
//
//     sMonth--;
//     if (sMonth < 0)  sMonth = 0;
//     if (sMonth > 11) sMonth = 11;
//
//
//     // --- Get the Day ---
//
//     sDay--;
//     if (sDay < 0)    sDay = 0;
//     if (sDay >= psMonths[sMonth]) sDay = (short)
(psMonths[sMonth]-1);
//
//
//     // --- Add days in the previous months ---
//
//     i=0;
//     while (i < sMonth) sDay += psMonths[i++];
//
//
//     // --- Compute the Value ---
//
//     return((double) sYear + ((double) sDay / (double) sDays));
// }
#endif
```