## **Import Grid Formats**

Due to the ever-increasing usage of binary and ASCII-based grid files in desktop mapping environments, *Vertical Mapper* imports a number of formats that represent some of the more commonly distributed grid types. The majority of these file types are grids that represent the elevation of a land surface, more commonly referred to as Digital Terrain Models (DTMs) or Digital Elevation Models (DEMs).

The Vertical Mapper grid import utility is able to auto-detect and convert the following formats:

- ASCII Grid MONA
- ASCII Classified Grid
  UK Ordnance Survey Grid
- CRC-500
- Geological Survey of Canada Grid
- USGS DEM

SDTS - Spatial Data Transfer Standard Grid

- DTED MIG Grid
- GeoSoft

The command is accessed from the *Vertical Mapper* main pull-down menu using *Create Grid* > *Import Grid*. A brief description of each file format is presented.

**ASCII Grid** is a simple text-based format consisting of five lines of header information followed by rows of space-delimited float point values. Due to the simple and relatively compact nature of this format, users who wish to import their own grid data into *Vertical Mapper* should consider writing their data in this format and then importing it. When this file format is detected, a dialogue box is displayed allowing the user to set the projection, Z-unit type, and a number used as a special flag indicating null value grid cells. The default null value is 0.0 but, if the data includes 0.0 as valid numeric value, a new null can be assigned to grid cells with no value.

The following is a sample grid file to illustrate the manner in which an ASCII grid file can easily be constructed (do not include comments).

ncols 10	// number of columns					
nrows 10	// number of rows					
xllcenter 15200	xllcenter 1520000.0 //X Pos. of the center of the lower left node					
yllcenter 6490000.0 //Y Pos. of the center of the lower left node						
cellsize 50.0	//Cell spacing					
42.7 41.4 39.7	7 41.3 38.3 38.6 39.9 38.1 37.8 37.2					
41.4 39.7 41.3	3 38.3 38.6 39.9 38.1 37.8 37.2 36.6					
41.3 38.3 42.7	7 41.4 39.7 38.6 37.8 37.2 39.9 38.1					
39.9 38.1 37.8	8 37.2 42.7 41.4 39.7 41.3 38.3 38.6					
42.7 38.6 39.9	9 38.1 41.4 39.7 41.3 38.3 37.8 37.2					
42.7 41.4 39.7	7 41.3 38.3 38.6 39.9 38.1 37.8 37.2					
41.4 39.7 41.3	3 38.3 38.6 39.9 38.1 37.8 37.2 36.6					
41.3 38.3 42.7	7 41.4 39.7 38.6 37.8 37.2 39.9 38.1					

39.9 38.1 37.8 37	7.2 42.7 41.4 39.7 41.3 38.3 38.6	
42.7 38.6 39.9 38	3.1 41.4 39.7 41.3 38.3 37.8 37.2	

**ASCII Classified Grid** is a simple text-based format consisting of general grid information in the file header followed by rows of space-delimited integer values. In the header of the file there is a look-up-table of class values defining which integer will represent which class name. The value 0 is used to define the null cell (a cell that is not defined in the look-up table). The look-up table should always being sequentially with the value 1.

The following is an example of a simple classified import file (do not include comments).

ncols 9	// number of columns		
nrows 5	// number of rows		
xllcenter 1.0	// X Pos. of the centre of the lower left node		
yllcenter 1.0	// Y Pos. of the centre of the lower left node		
cellsize 50.0	// Cell spacing		
nClasses 4	// number of different classes found in this file		
1 "Forest" 255 255 0	// the Forest class is represented by 1 and the RGB colour		
2 "Open" 0 255 0	// value for yellow		
3 "Urban" 255 0 127			
4 "Water" 0 0 255			
1 1 1 1 4 4 1 1 1			
121114113			
1 2 2 1 1 1 4 3 1			
1 1 1 2 1 4 3 3 1			
1 1 1 1 0 4 1 1 1			

*CRC-500* is a binary DEM for RF propagation modeling supported by the Communications Research Centre. The grid cell resolution is 500 metres in a UTM projection using the NAD 27 datum for Canada.

**DTED** is a binary DEM originally supported by the U.S. Defence Mapping Agency (now NIMA). The *Vertical Mapper* import filter recognizes both Level 1 (3 arc-second) and Level 2 (1 arc-second) in the Latitude/Longitude coordinate system.

*Geological Survey of Canada Grid* is a text-based, delimited format grid file that is supported by the Survey for a number of geophysical data themes at a variety of grid cell resolutions and projections.

*GeoSoft* is a proprietary binary grid format supported by GeoSoft Inc. for their suite of industry-standard geochemical and geophysical data interpretation applications. The format is extremely flexible but does not support any projection information in the header. The *Vertical Mapper* import interface prompts the user to enter a MapInfo-recognized coordinate system class.

**MONA** is an X,Y,Z text-based, comma-delimited format that contains no header information. The data must be regularly spaced and sorted by row. The import projection is set to *French Lambert II* 

Carto. The format is supported by the French government for European DEM coverage.

*UK Ordnance Survey Grid* is an ASCII non-delimited format supported by the Ordnance Survey with DEM coverage throughout the United Kingdom. It comprises a diverse series of format variations in which *Vertical Mapper* handles the grid-based DEM Panorama and Profile products. A variety of resolutions are supported.

**USGS DEM** is an ASCII format DEM that is supported by USGS with coverage throughout the entire United States. The *Vertical Mapper* import utility automatically recognizes a variety of DEM coverages including the 7.5 minute, 30 arc-second and 3 arc-second Latitude/Longitude grids, as well as UTM-projected orthogonal 30-metre grids.

*SDTS* is designed to store several different forms of spatial data such as vector and raster information. Developed by the USGS, the import utility extracts only the grid information from the file.

*MIG* the native format of is MapInfo Corporation.

## Using the Grid Import Utility

To use the *Grid Import* command, from the *Vertical Mapper* pull-down menu, choose the command *Create Grid > Import Grid*.

🏐 Grid Impa	nt				
Filename			Туре		
30.2.1.1021853.tar.gz					
,	Add	Remove			
General	Projection Extents	Meta Data			
Pathname:	Pathname: \\Chris\shared\30.2.1.1021853.tar.gz				
Cell Size	30	Dimensions	359 x 469		
Filename:	Filename: \\Chris\shared\30.2.1.1021853.tar.tab				
🔽 Open All (	àrids after Import				
<u>H</u> elp	<u>0</u> k	<u>C</u> ancel			

The dialogue box is divided into two sections. The top section lists all the files currently selected for importing along with their file formats. The bottom section of the dialogue presents four Tabs containing information about the highlighted grid.

1. The *Add* / *Remove* buttons add or remove files from the import list. When a file is selected and added to the list, the *Grid Import* dialogue will attempt to identify the file type which will be displayed next to the file name in the list.

- 2. The *General* Tab identifies the full path name to the import file, the cell size and estimated dimensions of the new grid file.
- 3. The *Projection* section identifies the coordinate system string that will be used. If this information is not available in the import file, you will be prompted to pick a projection. The *Pick Projection* button is only enabled when the user must pick a projection to import the file.
- 4. The *Extents* Tab provides information concerning the bounding area of the new grid.
- 5. The *Meta Data* Tab allows the user to enter a description (up to 31 characters) for the grid. Should the import file not contain a Z-unit description, the user will be prompted on opening the file for import to select an appropriate Z-unit. The user may change this at any point until selecting the OK button. The *Null Data Value* is a special value that will be used to indicate "no data". If this value is not provided by the import file, the user will be prompted to enter it.
- 6. The *Open All Grids* check box provides the ability to open either the all imported file(s) in MapInfo or to leave them closed.

A default file name will be created for each import file. If this filename conflicts with an existing one, the user will be prompted to supply a new one. In order not to accidentally overwrite an import file, it is impossible to overwrite existing files while importing grids.