

Release 5 Height Data

There have been major changes so that the horizontal and vertical resolution of height data is centimetres. In addition negative values of height can now be used. There is a test that a height is not less than -500m and the bad data value defaults to -999 .

When data is converted the grid location and spacing will show 2 decimal places if appropriate. After converting a file open it in the Grid Viewer. The altitude shown in the status bar will have 3 decimal places if appropriate.

Using Raster and Vector Height Data

Examples are the UK Ordnance Survey Terrain 50 and Panorama height data, but the same principles apply to data from other parts of the World.

First of all what is meant by "raster" and "vector" (this terminology has been used elsewhere). The Panorama SD60 20km tile supplied with WindFarm is a vector file. Across the 20km region there are 401 height points at 0m, 50m, 100m to 20000m from the origin. Therefore the whole tile is defined by the height data. The Terrain 50 data, supplied in 10km tiles, is a raster data set, and there are 200 cells across the 10km region, with the height specified at the centre of each cell. The 200 height points are therefore at 25m 75m 125m to 9975m from the origin. This means that the edge of the 10km region is not defined.

So basically if there is a 50m grid covering a 10km region, the height data points are at the corners of the grid cells for a vector data set and at the centre of each grid cell for a raster data set.

Why does this matter? If there is one data set, covering the whole region that is needed, then it does not matter much which is used, except that for the raster data there are no height data points extending to the edge of the region – they stop half a cell short.

Problems may arise when there is a group of data sets covering a region. With most vector data sets there is usually no problem because interpolation across the whole region specified in the tile is possible. There is usually a one-point overlay at each edge with an adjacent tile. However, if the height at the edge of a raster tile is needed it is necessary to find and examine the adjacent tile in order to interpolate an accurate height value.

How does this affect WindFarm? The effect is different for Release 4 and 5 and worth explaining here.

Release 4

If a group of Terrain 50 (raster) tiles are specified for a region and the map region is set to a multiple of 50m the line of points between the tiles will not be interpolated and will be set to zero. As an example 4 tiles (SD60, SD61, SD70 and SD71) are needed to cover the 20km region of the Panorama 20km SD60 tile. Setting a 20km wind farm site map region to 360000, 400000 origin with a 50m grid spacing means that the South / North line of points at 370000 East and the West / East line at 410000 North will not be defined in addition to all the points around the edge. A warning of missing points will be shown if this is done.

The best solution to this problem is to join the raster tiles using the Grid Viewer. Having converted the raster tiles (usually Arc/Info ASCII grid format *.asc) to GTH files use the File / New menu option and specify all the tiles needed to cover the region. When the Initialise button is clicked the region will be correctly set to the centre of cell values. The resulting height data file can be used directly in the project.

Release 5

When converting raster data (e.g. OS Terrain 5 or Terrain 50) make sure that the new "Raster" flag is set in the Output Data page. The converted GTH file then recognises that the region covered is bigger than the region defined by the grid points. Use the File / File Information menu option to check the conversion is correct.

If the raster data flag is set when converting files to GTH format, Release 5 will be aware of this and should not leave gaps between tiles when creating working data. Therefore they should not need to be joined. It will be worth checking the working data in the Grid Viewer if there is any doubt about the gaps. The main Designer working data set is projectnameSIT.GTH (also used in the Photomontage). For ZVI it is projectnameZVI.GTH. Shadow Flicker and Wind Flow are similarly named ...FLK.GTH and ...FLO.GTH.

Map Regions

The general specification of map regions has been retained as 1m resolution. This means that if you are using raster data and you specify a map region to the nominal limits of your data, there will be no cover for the points around the edge. You will get a warning about the number of missing points if it is not flagged as raster data.

Batch Converter

The Batch Converter for OS NTF height data has been available for some time. It is now listed near the bottom of the Tools menu in the Designer. It has been updated to include Arc/Info ASCII grid files (*.asc) and generic grid data in the form of XYZ files. For these two new formats there is a "Set as Raster" option. The data used below can be obtained from www.ordnancesurvey.co.uk/opendatadownload/products.html.

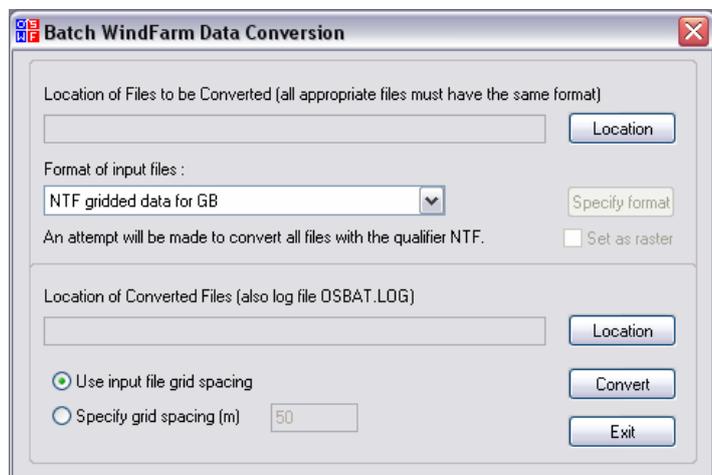
Download Terrain 50 data in the ASCII Grid and GML (Grid) format. The whole of Great Britain is available and in the example below the tiles used are SD60.asc, SD61.asc, SD70.asc and SD71.asc.

Select Batch Converter from the Tools menu and the conversion dialog will display.

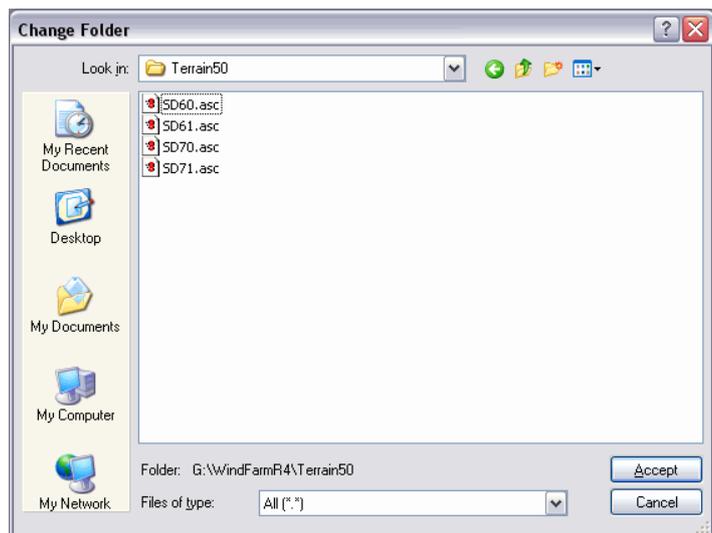
The choice of format is OS NTF height data files (*.NTF) Arc/Info ASCII grid files (*.asc) and generic grid data in the form of XYZ files.

All the files to be converted must be in the same folder and no other files of the same type must be present. By selecting that folder and one to receive the converted files all the files of a given type will be converted.

Click on the Location button near the top



The Change Folder dialog will be displayed. After browsing to select the appropriate folder click on Accept.



Back in the Converter select the format of the files from the dropdown box.

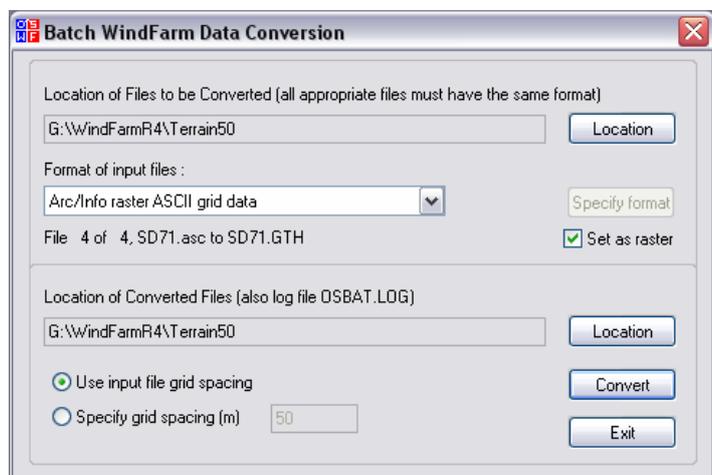
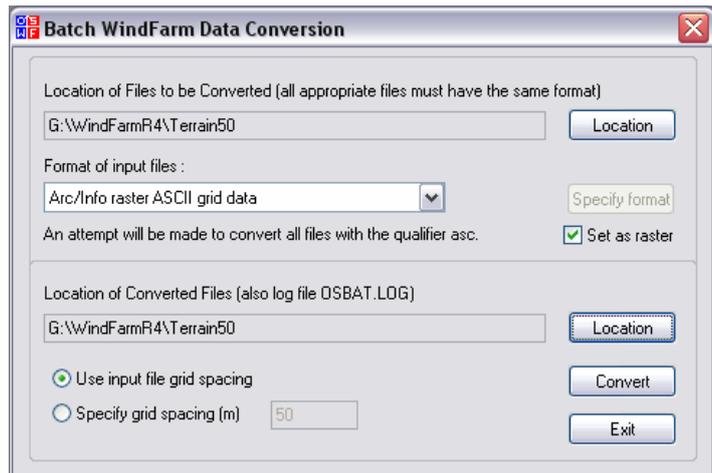
Select the Arc/Info ASCII grid format and switch on the raster check box. As noted above it is important to set this whenever raster data is being used. This format is usually raster.

Use the bottom Location button to select the target folder for the converted files. This will default to the location selected for the input files.

Generally leave the grid spacing set to use each input file's spacing.

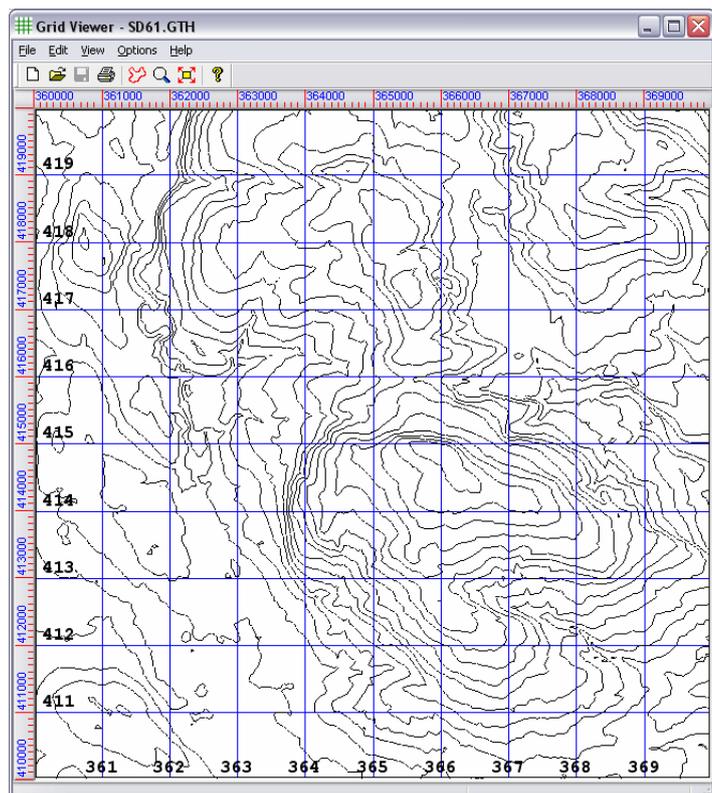
Click on Convert.

A progress box will display during the conversion and when finished the last file's conversion text will be shown below the file input format box.



Use the Grid Viewer to check files. SD61.GTH has been opened.

Select File Information from the File menu.



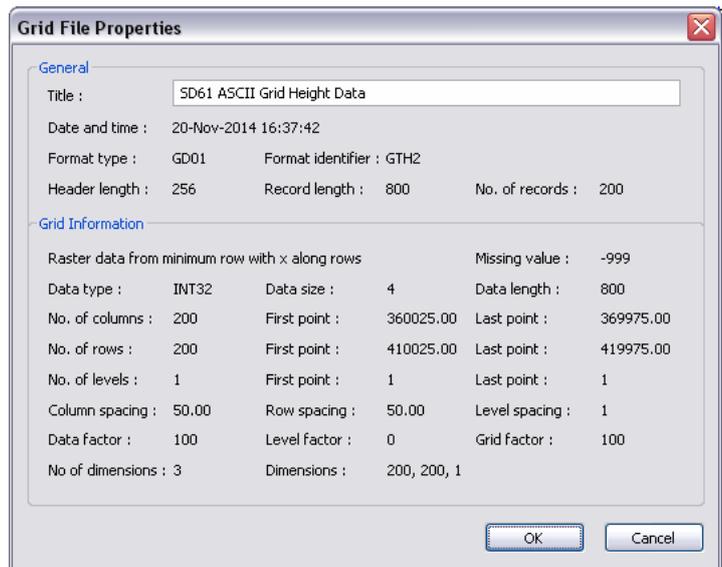
The Grid File Properties dialog is shown.

Note that the 1st line of the Grid Information specifies raster data.

The 10km boundary of the file has 200 cells at 50m and the height point is at the centre of the cell. This is indicated by the first and last points being at ...25.00 and ...75.00.

The data is stored as 200x200 points at this centre of cell locations.

Also the Data and Grid factors are both set to 100, which means that the height data and the grid coordinates are stored to centimetre resolution.



File Joiner

The File Joining program has also been available for some time. It is now listed near the bottom of the Tools menu in the Designer.

Select File Joiner from the Tools menu and the joining dialog will display.

This used to concatenate or join a set of text files. They can be simply joined or when there is a set of header lines they can be ignored and if selected the header from the first file can be included.

Typical uses of this program are to join wind data logger files or WindFarm contour data files (where the header comprises 7 lines).

There is no example shown but the controls are generally self-explanatory.

You can use wild cards to add a group of files to the list. All files from the selected folder can be added or individual files can be selected for addition.

