Technical Information

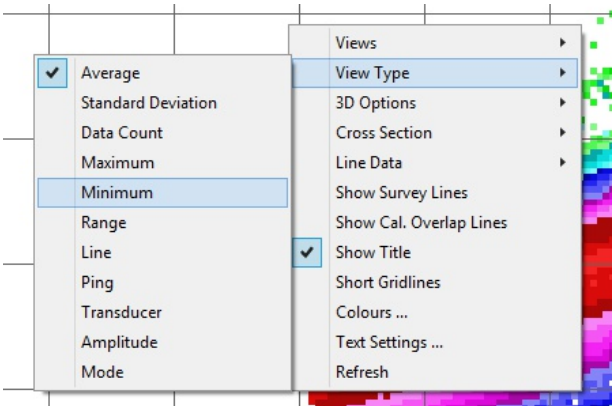
How can I show the shallowest depth in a grid bin?

Solution

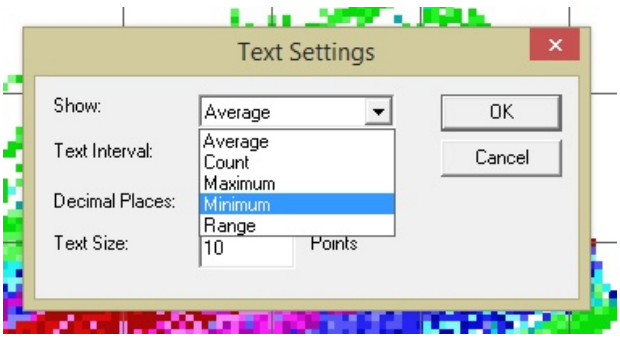
I want to compare a Bathyswath dataset with a single-beam echosounder dataset. The data has been recorded on a rough bottom. The echosounder picks the shallowest point in each beam, but the Bathyswath data shows the average depth in each grid bin. So, the echosounder data appears shallower than the Bathyswath data. Can I pick the shallowest depth from grid bins?

Yes, you can select the shallowest depth in the Grid Processor:

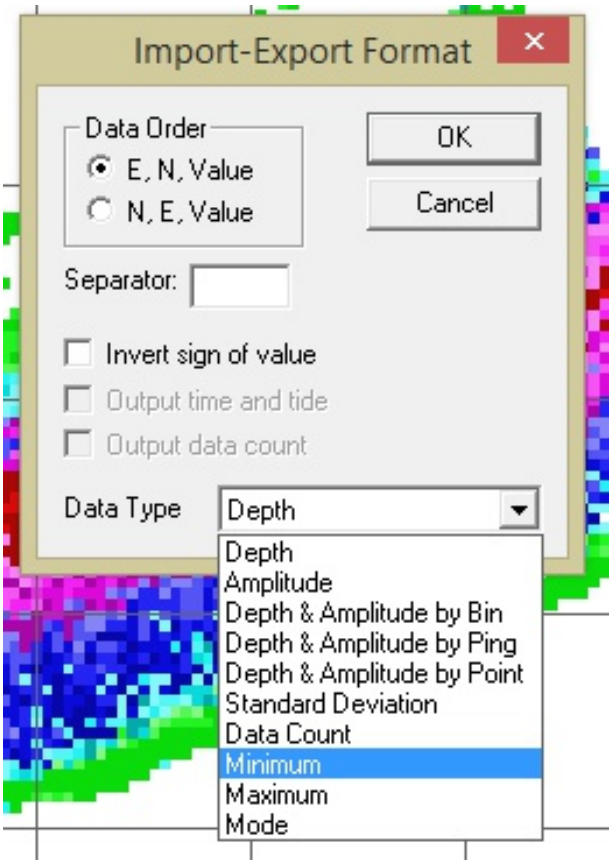
Make a grid in the Grid Processor in the usual way. Both Normal and Detailed modes will work for this. Right click in the display, and select "View Type", then "Minimum":



You can do the same thing with the text shown in the grid view. Right-click, select "Text Settings", then "Minimum" in the "show" box. This is doing something slightly different, though. Usually, a text value in the display covers more than one grid bin, for example if the grid bin size is 1 metre and the text interval is 2 metres, then each text value shown covers (2 x 2 =) four bins. If you select "Minimum" in the Text Settings, then the value shown will be the smallest of the average depth value from the four bins.



You can export to ASCII using the shallowest depths, too. Click "File", then "Import-Export Format", and then "Minimum" in the "Data type" selection box:



One issue that you may have with this technique is that picking Minimum or Maximum in the grid bins is guaranteed always to pick the most "noisy" value in the bin. So, you need to make sure that the data is well filtered before gridding. In the Swath Processor, use the cross-profile view to make sure that the bathymetry filters are removing most of the data "noise" points. Consider using the downsample filter with a bin setting of 0.1m to 0.3m to do some noise reduction, whilst maintaining reasonable spatial resolution, before binning. Alternatively, use a smaller grid bin size in the Grid Processor than usual (e.g. 0.333m), and then show text values at a 1-metre spacing; this will show the minimum of the average values of bins in a 3x3 square. Or, you could run a 3x3 smoothing filter on the 0.333m-bin grid, output to a 1m-bin grid, and then show the minimum.

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BATHYSWATH