AGS Aarhus GeoSoftware

How to make horizontal resistivity maps to explore the inversion result.

Step by step guide

First of all we need a Model Selection with the inversion results. If one has not already been provided we need to make one either from a database or from an inversion node.

To make one from a database first select the database node in the Database Explorer and then select New (Model Selection) on the Database ribbon.

To make one from an inversion node first select the inversion node in the Workspace Explorer and then select New (Model Selection) on the Inversion ribbon.

Now that we have the Model Selection, simply select it and then select Theme on the Visualization ribbon. Ones all the models have been loaded we get to the wizard where we can select the type of themes we want to make. In this case we want to make Mean Resistivity/Conductivity themes so select that and press next to get to the options for making resistivity maps.

In the top we specify the property to extract. For airborne time domain EM systems horizontal mean resistivity is closest to what is measured so that is the one we will pick here.

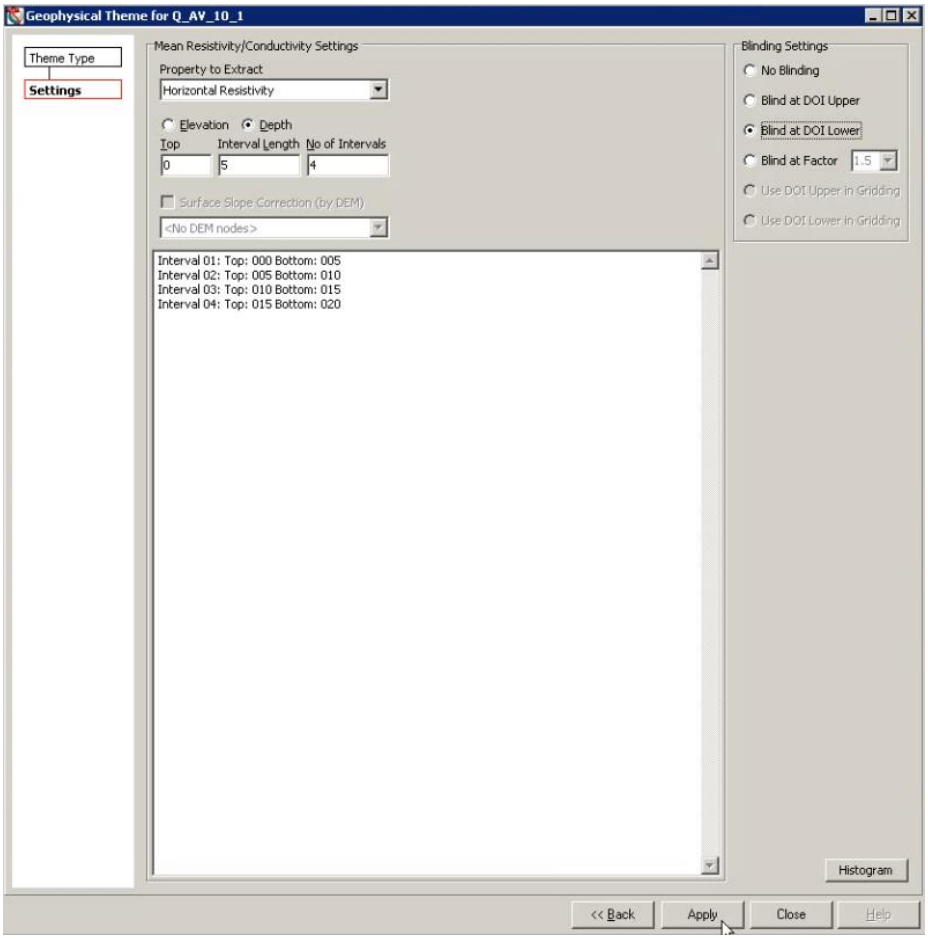

Figure 1. The Mean Resistivity wizard settings.

Then we need to select the intervals we want to make. We can start by making a few depth maps. Starting from the surface we would want the Top to be 0 and should then pick Interval Length and the Number of Intervals as needed. Note how the list of intervals below is updated with each change.

On the top right we have the blinding settings where we can choose not to blind at all, to blind at one of the Depth of Investigation (DOI) values or to blind at a factor of the depth to the last layer boundary of the model. Usually we use blind at DOI Lower.

When pressing apply we get asked for a name. This name will automatically get the intervals added, but it is still a good idea to end the name on D for depth or E for elevation. The themes show up under the Model Selection. We can continue to add more themes with a different Top, Interval Length and Number of Intervals as needed.

For elevation intervals it is practical to use the histogram button in the lower right corner to see the elevation of the topography in the area. When blinding at the DOI, the histogram can also give a limit to how far down it at most makes sense to make elevation intervals.

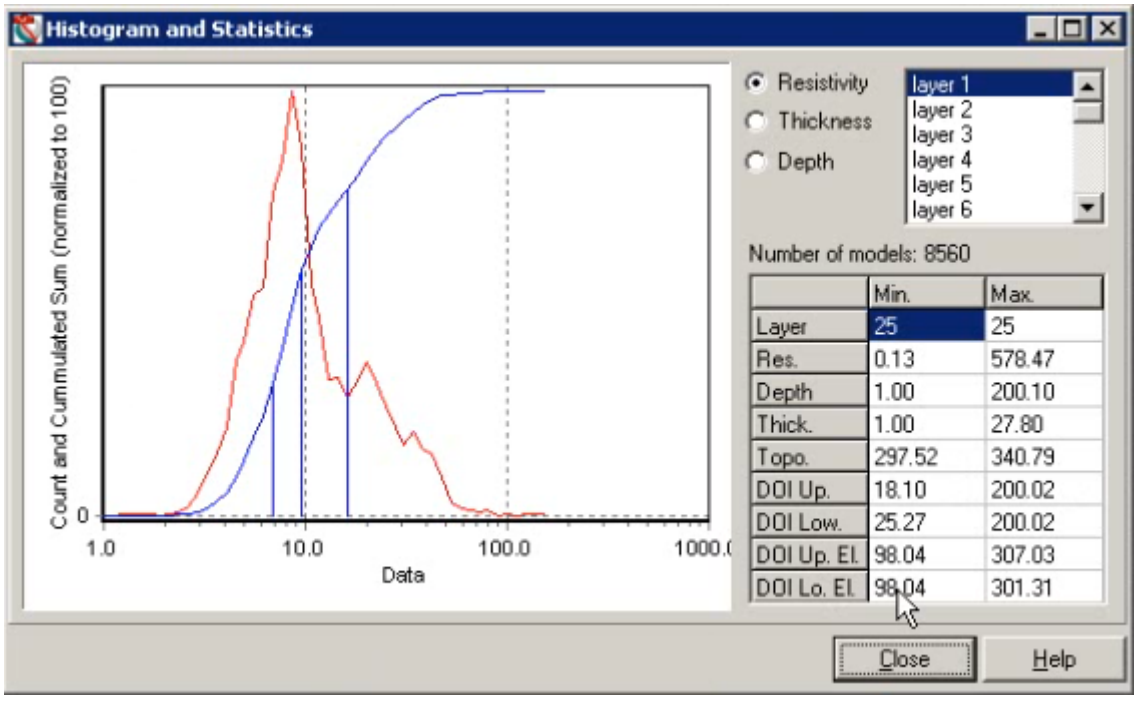

Figure 2. Some useful information for making elevation intervals.

The created themes show the model positions that contribute to that theme. To get grids and images select the Model Selection node again and then select Batch Gridding on the Visualization ribbon.

First we need to select the themes that we want gridded. We can select all, filter on theme names or use shift and control to get the selection we need. We can also adjust the number of processors available for this.

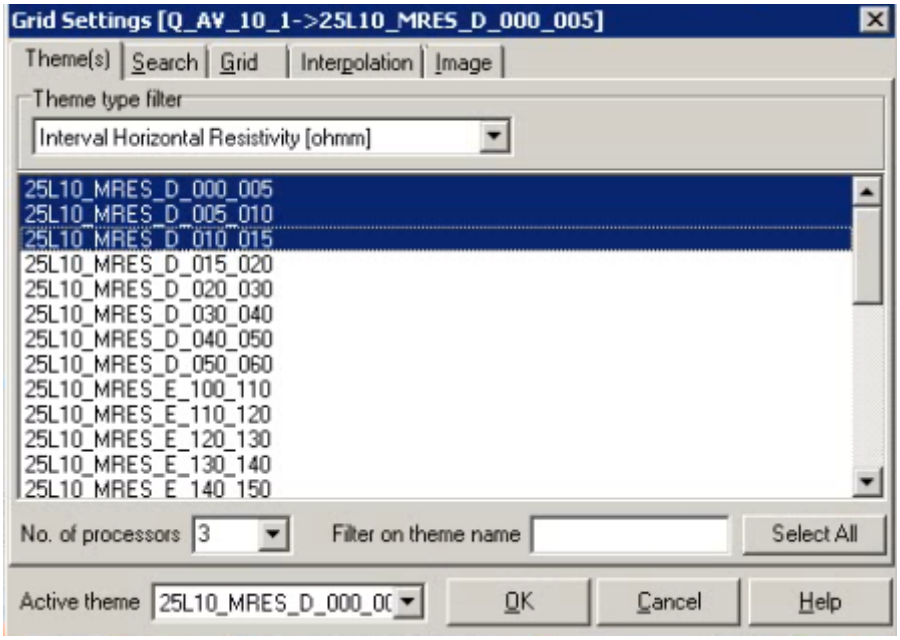

Figure 3. Batch gridding – Themes selection.

On the Search tab we must specify a Search radius.

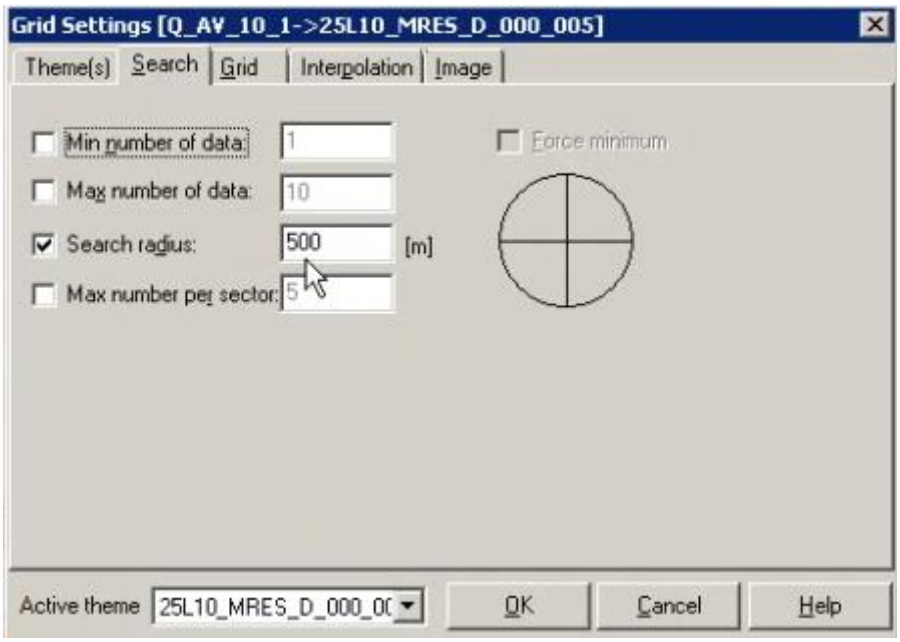

Figure 4. Batch gridding – Search radius.

On the Grid tab we must specify a Node spacing.

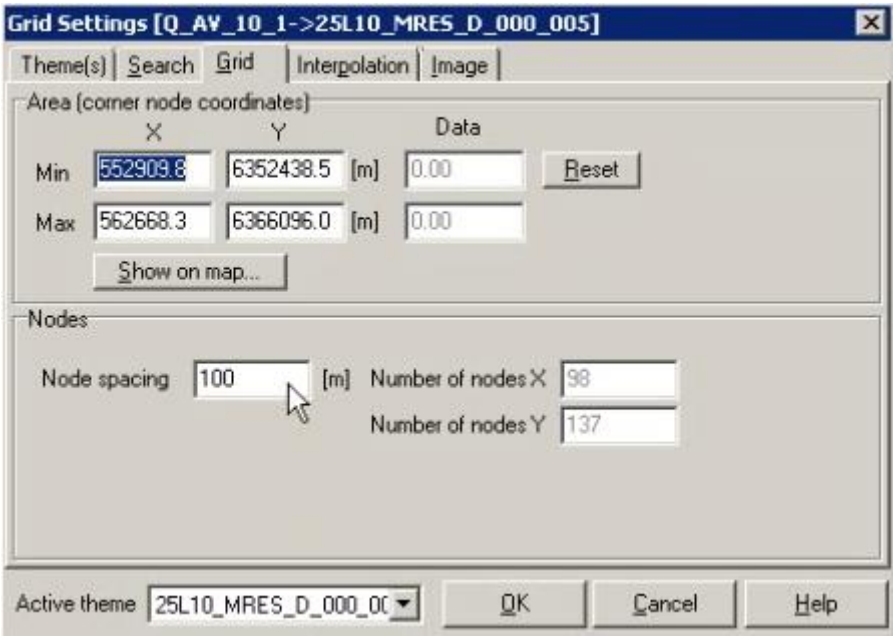

Figure 5. Batch gridding – Grid node spacing.

On the Interpolation tab we can choose either Inverse Distance gridding or Kriging gridding. For resistivities we should make use of the Logarithmic data transform.

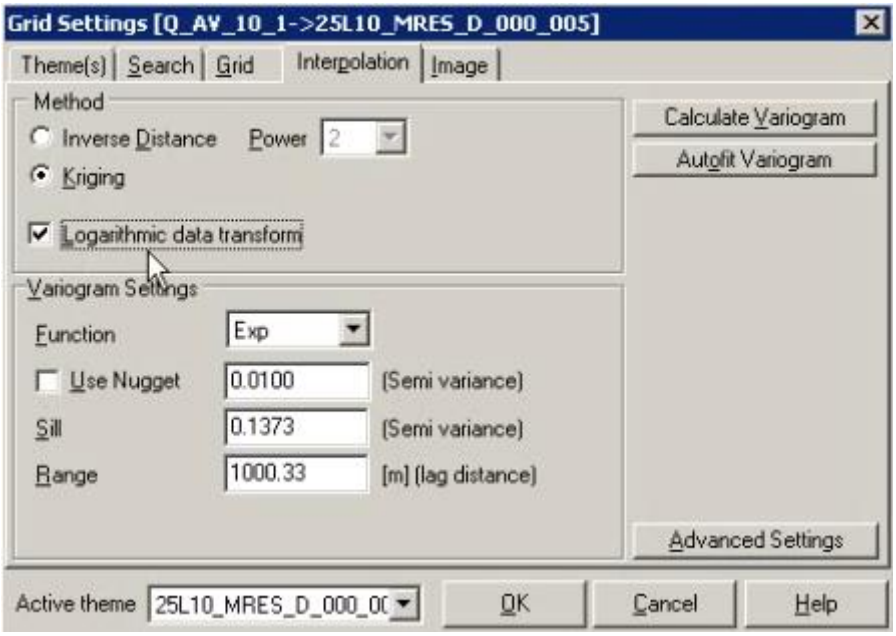

Figure 6. Batch gridding – Interplation.

Finally, on the Image tab we need to select the colour scale to be used. We can choose to interpolate the image by doing grid subdivision on each cell. Since this is interpolation based purely on the image, it is better to use a smaller cell size than doing interpolation, but a factor of 3 can safely be used. We also have the option of making the images more or less translucent so that it becomes possible to see a background image behind the mean res images.

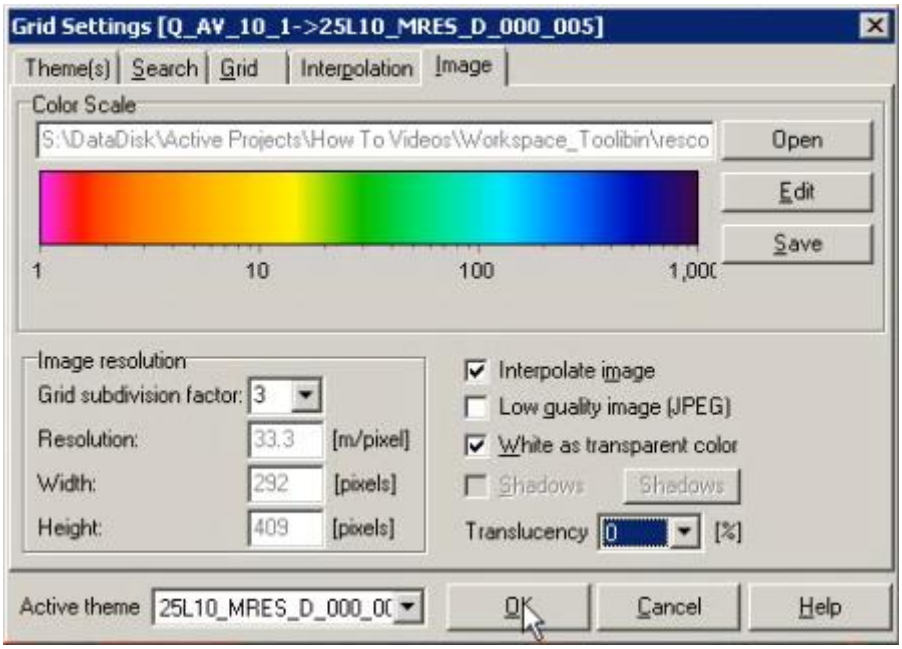

Figure 7. Batch gridding – image interpolation and color scale.

When everything has been selected press ok to start the batch gridding. This can take quite a while for a large survey so depending on what is needed one should keep that in mind when selecting search radius and node spacing.

Ones the gridding is done and closed down, the grids and bitmaps are added in the Workspace Explorer and can be added to the GIS. This again can take a while depending on the number of grids and images that will be added.