

Figure 1 Model grid with extended model grid enabled.

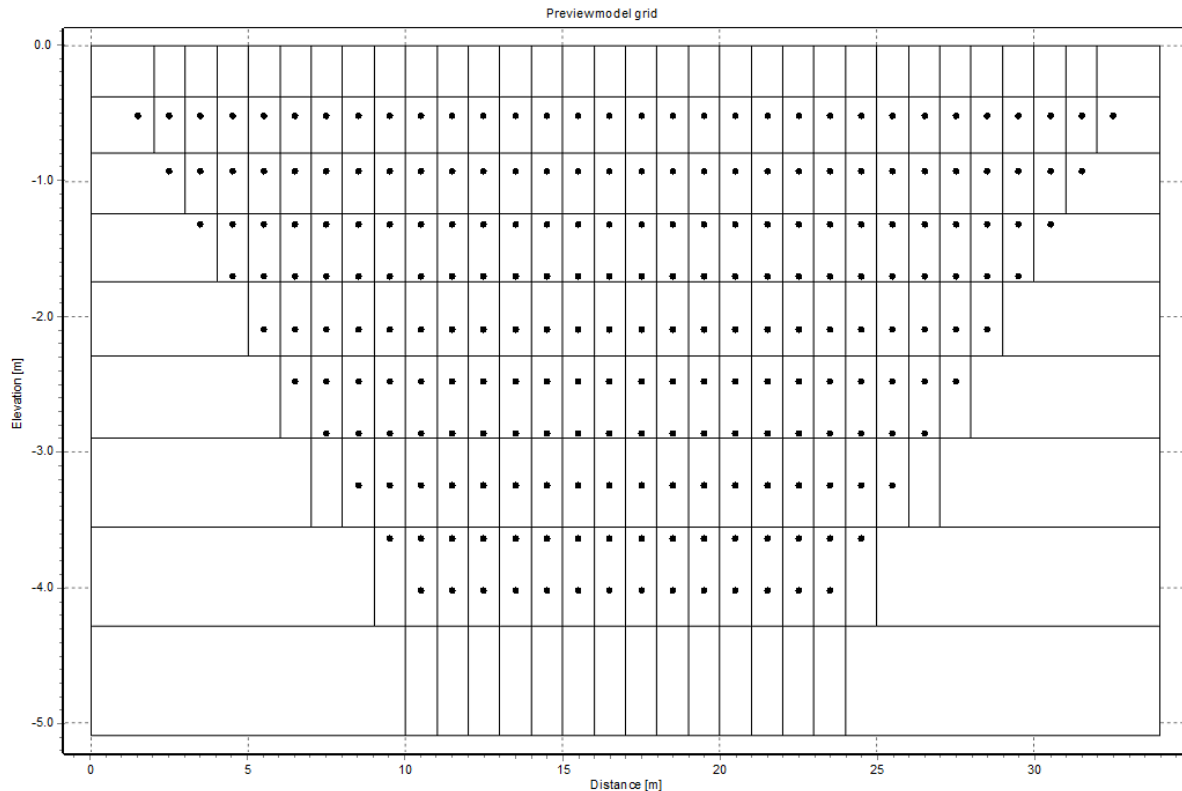


Figure 2 Model grid with extended model grid enabled.

For the non-extended case, the size of the side blocks will depend on the position of the focus points positions of each measurement, so that their limit away from the vertical mode boundary is approximately formed by the envelope of the focus points.

The non-extended setting was originally set as default in Res2DInv. This was to save computational resources back in the days, when it could take a long time to run 2D inversions, and since sensitivity model sensitivity to data generally decays away from the focus points, it was a sound approximation to assign larger blocks with constant resistivity in such regions that cannot be as well-resolved as regions closer to most of the focus points.

However, since sensitivity of a given apparent resistivity measurement is not restricted to single point, but is rather a somewhat complicated function with non-zero values (both positive and negative) that extend beyond the involved electrodes, it cannot be assumed that resistivities away from focus points have no effect on the associated apparent resistivity measurements. By using large model blocks at the sides (the non-extended case), such sensitivity may not be adequately employed, and the inversion routine might be forced to result in a resistivity structure that is too coarse to be explained by the data.

For this reason, having a finer discretisation away from the focus points, as in the extended model-case, may be useful in many cases. This will result in model blocks with very little data-sensitivity, especially those far away from focus points. Such blocks will largely have their resulting resistivity values dictated by regularisation/smoothing constraints.

To assess how well a given model resolves the resistivity structure at certain regions, sensitivity associated with a given model can be displayed when loading the model in the compare tab.

Note that when displaying model results in Res2DInv, the default display uses a contour display of model block resistivities. It is also possible to display the individual model blocks with colours representing their respective resistivities:

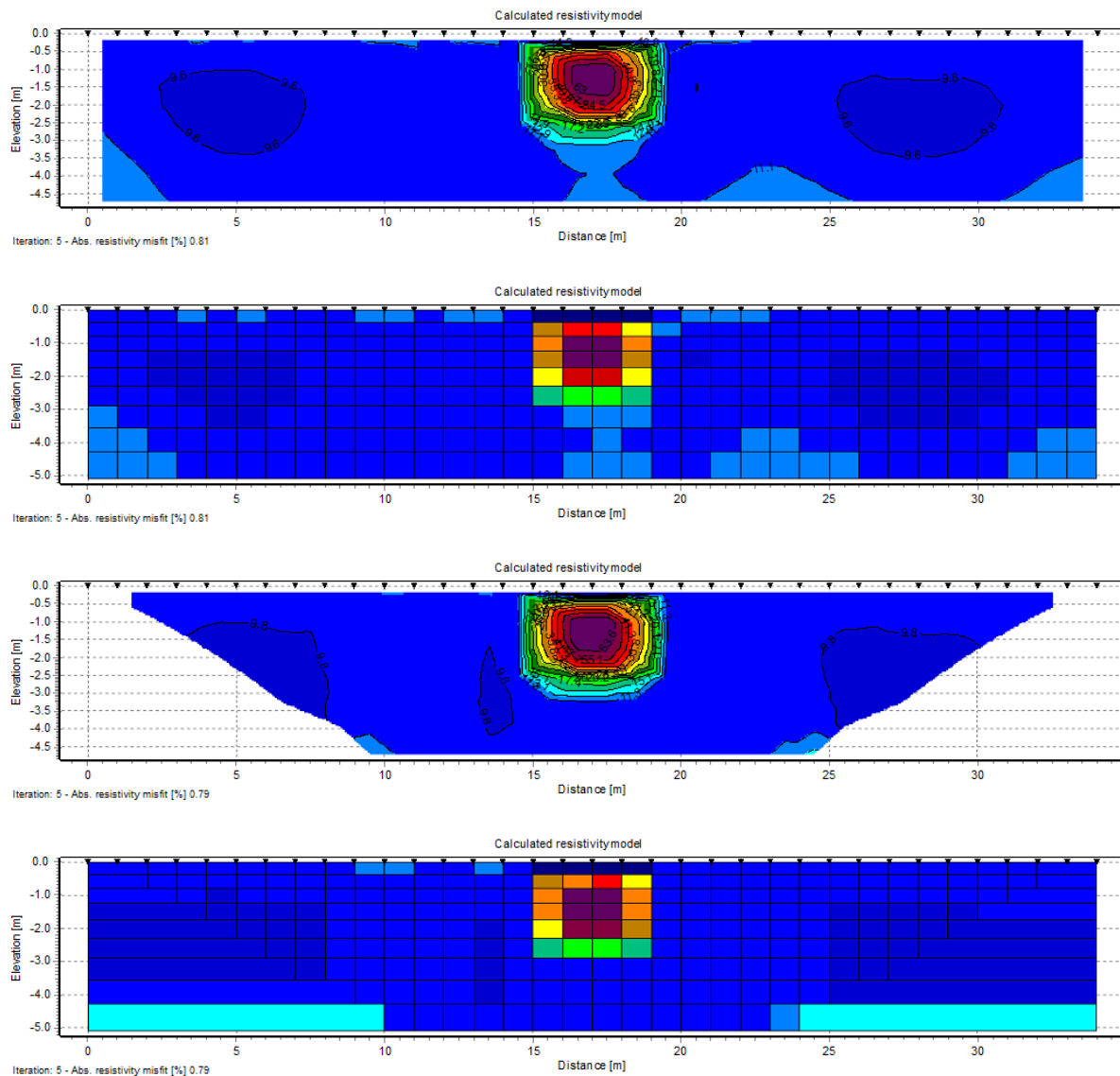


Figure 3 Contour plots and block plots of models with and without the extended model setting. Two above plots show a model with the setting enabled, and the below two plots show a model without this setting.

For historical and practical reasons, the model contour plots of Res2DInv are cropped such that the side blocks are not shown. This often gives the impression that models with the extended model setting disabled are trapezoid-like, whereas extended models are rectangular (ignoring

topography). This is however not the case – the outline of the models are the same in either cases – the trapezoidal shape is exclusively an effect of the contour plot being cropped.