RES2DINV - What's New

Version 3.00
Major upgrade to Windows 3.1 and 95. Maximum number of electrodes increased to 500.Multi-tasking support for Windows 95. Support for any Windows compatible graphics card and printer.

Version 3.01
Improvements to finite-difference subroutine to calculate the Jacobian matrix which is now about twice as fast as the earlier versions.

Version 3.10
Support for underwater surveys. Direct incorporation of topography into inversion model using a distorted finite-element grid.

Version 3.11
The time taken by the finite-element subroutine to calculate the Jacobian matrix is reduced. An option to use a finer mesh for the finite-difference or finite-element forward modelling method is added.

Version 3.12
Non-integer values for the "n" factor for the dipole-dipole, pole-dipole and Wenner-Schlumberger arrays supported (please refer to Appendix A). The maximum limits for the number of data levels and model layers increased to 52 and 17 respectively.

Version 3.13
The ratio of the largest electrode spacing to unit electrode spacing for the Wenner and pole-pole array was increased from 32 to 64. The maximum number of data levels is now 64. The maximum number of model layers was also increased to 18.

Version 3.20
Support for IP data added.

Version 3.21
The maximum number of electrodes was increased to 650. Improvements has been made to the disk-memory swapping subroutines so that for a given amount of RAM the number of datum points the program can handle is increased. For computer systems with more than one hard-disk drive, the program will automatically select the drive with the most free disk space to store the temporary disk swap files.

Version 3.22
Slight improvements to the use of memory in the IP inversion section. The size of the IP data set that can be handled for a given amount of memory was increased. An option to optimise the damping factor automatically during the inversion process was added. Support for the "reverse" pole-dipole array added (see Appendix A). Support for a command line batch mode included (see Appendix I). An option to plot the model section in the form of rectangular blocks was also added.

Version 3.30
Support for cross-borehole surveys added. An option to allow the number of model parameters to exceed the number of datum points was also added.

Version 3.31
An option for a used defined model added. In this model, the user specifies the thickness of the first layer and the factor to increase the thickness for each subsequent deeper layer. The program will also automatically update the directory used for the input data files and the output inversion files listed in the RES2DINV.INI file.

Version 3.32
An option to extend the subdivision of the subsurface into blocks to the edges of the survey line was added. Option to display the uncertainty in the model resistivity values was also added.

Version 3.33
An option to incorporate the effects of the remote electrodes used in surface resistivity surveys with the pole-pole and pole-dipole arrays was added.

Version 3.34
A few bug fixes. The user can now scale the depths of the model layers so that the depth to the last layer can be much greater than the default limit allowed by the program. When the program saves the model values in the XYZ format, it will now also save the coordinates of the corners of the blocks in the model. An option to use a very fine mesh in the vertical direction for resistivity contrasts of greater than 250:1 was added, as well as an option for 6 nodes in the horizontal direction between adjacent electrodes.

Version 3.35
The user can now set the maximum number of electrodes, from 150 to 1500, via the JACOBWIN.EXE program. Drawing of colour contour sections is now significantly faster on most computers.

Version 3.36
A robust least-squares inversion option was added. For very noisy data with 'outliers', the resulting model will be less sensitive to such datum points when the robust data inversion method is selected. For areas where the subsurface geology has sharp interfaces, the robust model inversion method will give better results.

Version 3.40
Support for non-conventional arrays for resistivity surveys.

Version 3.41
Two new methods for topographic modelling using a damped distorted grid and the inverse Schwartz-Christoffel transformation added.

Version 3.42
Support for remote electrodes for I.P. surveys.

Version 3.43
Support for the Wenner Gamma array, and underwater surveys with non-conventional arrays. Maximum number of electrodes increased to 2000. The program has also been optimised for data sets where the unit electrode spacing has been reduced by half of the actual value so as to get a model where the width of the blocks is half the usual size. This helps in cases where there are very large lateral

resistivity variations near the surface.

Version 3.44
Support for I.P. surveys with non-conventional arrays. This feature is useful in some cases where data from a series of overlapping collinear 1D sounding survey lines can be combined into a single 2D data set to obtain a 2D model.

Version 3.45 - Option to save results in SURFER format added. Also support for surveys with some electrodes underwater and some electrodes above the water surface level added.

Version 3.46 - Minor additions for data in general array format. Option to use a model with half the unit electrode spacing for data in general array format is added. It is now possible to carry out the inversion of data in the general array format with the demo version, but the results will only be displayed temporarily on the screen during the inversion. The damped distorted grid finite-element method is set as the default method for topographic modelling.

Version 3.47 -- An option to carry out the inversion of IP data sequentially was added. Slight changes in the menu structure.

Version 3.48 - Support for up to 4 boreholes in cross-borehole option.

Version 3.49 - Incomplete Gauss-Newton inversion option added. Maximum number of electrodes increased to 4000, and maximum number of data points to 20000. Option to combine a number of 2-D data files in RES2DINV format into a single 3-D data file in RES3DINV format added.

Version 3.50 - Bedrock edge detection and time-lapse options added.

Version 3.51 - Option to include data noise estimates included.

Version 3.52 - Option for constrained inversion of data from surveys with floating electrodes added. Support for topography in cross-borehole surveys included.

Version 3.53 - Sparse inversion option for very long survey lines (2000 to 16000 electrode positions) added. This method inverts the entire data set and model at a single time to produce a continuous and seamless model. New format for batch mode option script file which makes use of the files containing the inversion parameters produced by the RES2DINV program.

Version 3.54 - Option to include boundaries of layers from seismic or borehole surveys added.