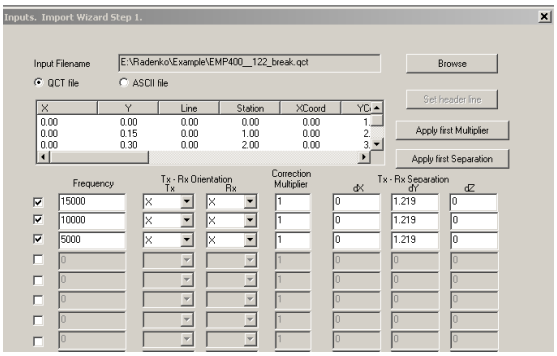
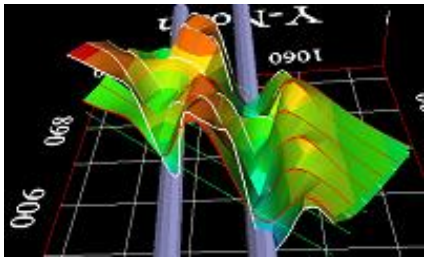
EMIGMA for Ground FEM

The FEM software package supports Ground and Borehole (add-on) FEM and is available as an add-on to other licenses.

Ground FEM allows for various geophysical survey configurations. Coil pairs can be horizontal coplanar (EM31/34/38,GSSI, Commander, Gem2, AEM, Max-Min), vertical coplanar (EM31/34/38,Gem2), horizontal co-axial (AEM), broadside co-axial (fixed-wing AEM, EM38), null-coupled (DualEM), vertical co-axial plus virtually any configuration that you may desire. The transmitter and receiver can be housed in the same case or separated by 10s to 100s of meters. Depending on the system, single or multiple frequencies are sampled. The software also support both inductive and grounded fixed sources.



Borehole FEM includes both fixed and moving configurations. The transmitter is either a large loop set on the surface ground with the receiver moved in the borehole or a dipole moved along with a 3-component receiver in the same borehole at a constant separation. The cross-hole configuration is also available.



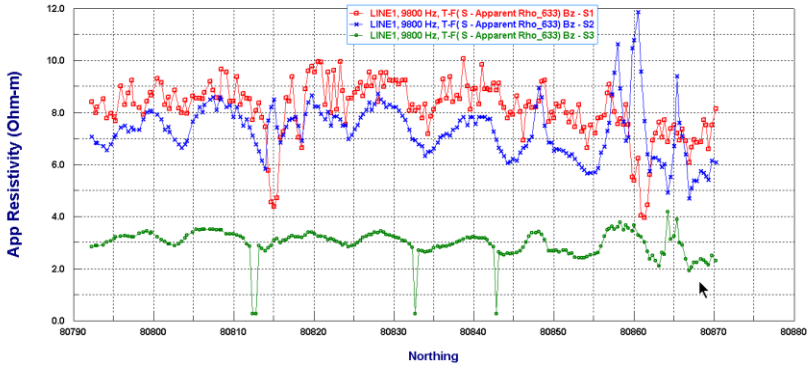
Click image to enlarge
3D Modelling

Data Import

- Data imports from ASCII files or manufacturers format or import to QCTool then process data for export to EMIGMA.

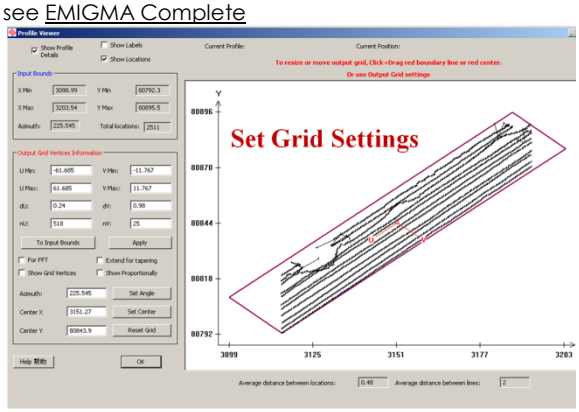
Data Processing and Correction

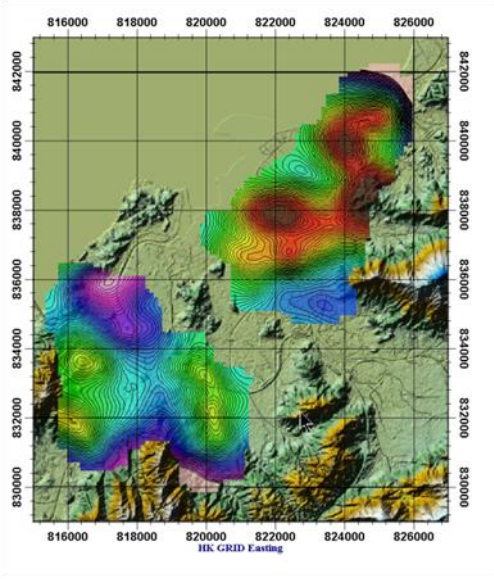
- 1D digital and spatial filters, 2D spatial filters
- Data interpolation, Decimation
- Simple and weighted averaging decimation
- Data Corrector tool combining dynamic spreadsheets and line plotter for data cleaning, missing data interpolation and simultaneous plotting of different data channels for fast cross-analysis
- ProfileModifier for analyzing and cleaning up your survey points and quick data overlays



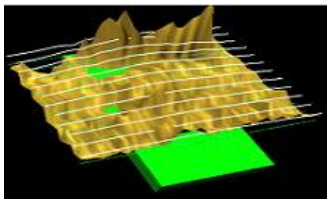
Data Display and Analyses

- Grids: Natural Neighbor, Delauney Triangulation, Shepard, Minimum Curvature and Thin-Plate-Splines
- Rectangular grid cells to maintain along profile resolution
- Display of Apparent Resistivity as a surface or spatial contour
- Display of 3D inversion models sliced and diced in the 3D Visualizer
- PEXShow tool - 2D representation of geoelectric sections
- Contours: 2D and 3D surfaces
- Extensive Profile, Decay, Spectral, Separation plotting capabilities
- Easy comparison of inversion to data or model to data
- Residual plots
- Model removal from data for enhanced anomaly imaging
- For more detailed data display capabilities, see EMIGMA Complete





3D Modeling



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Plume model

- Fast and accurate 3D simulations: model suite generation and batch mode
- Multiple prism, thin-plate, sphere and polyhedra targets

Polyhedra: pipes (hollow cylinders with or without lids), ellipsoids, shells, bullets, landmines, drums, spheres, general polyhedra...

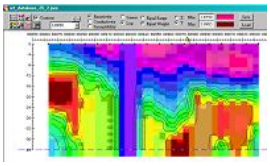
- *2 thin-sheet algorithms, high accuracy sphere w*
- Multiple body interactions

Modeling of topography effects

- Geophysical modeling of ALL magnetic effects in EM data
- Ability to handle full contrast between host and bodies
- Interactive 3D visual model building tool

1D Inversion

- Multi-Component and/or Multi-Frequency inversions,
- Inphase/Quadrature or Quadrature only or selectable
- Two algorithms to choose from
- Smooth Occam joint susceptibility/resistivity inversion with fixed layer thickness with user defined starting models
- Underparametrized Trust Region Inversions - invert for thickness and/or resistivity
- User defined starting models
- User defined parameters for inversion
- Full resistivity and thickness constraints
- Spatial smoothing capabilities
- Incorporation of GPS_Z information



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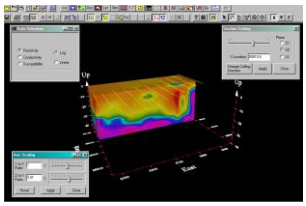
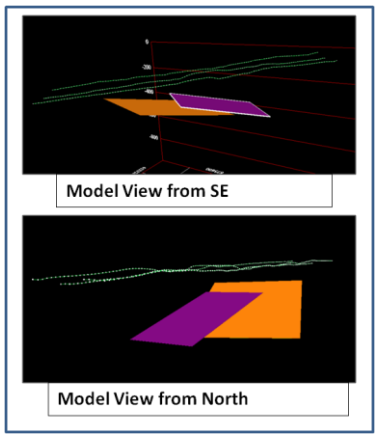
Inversion section



3D Inversion

- 3D Thin Sheet Inversions for conductors
- Multi-parameters, multi-frequency
- Constraints, starting model
- Inphase/Quadrature or Quadrature only or selectable



CDI MAP

- Apparent Resistivity Tool –
  a half-space mapping technique for generating apparent resistivities as a function of frequency
  Not LIN approxition but an inversion approach
- Sengpiel Depth-Sections –
  a resistivity pseudosection technique for generating resistivities as a function of pseudo-depths (only airborne)

Exports

- Export of images to pdf, GeoTIFF , AutoCad formats
- Export of modeled, inverted, processed data or grids to standard formats