



## EMIGMA V9.x Premium Series

### EMIGMA for Airborne FEM

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The Airborne FEM package also includes Ground FEM capabilities as well as airborne. It is available as an add-on to other EMIGMA Complete licenses or as a standalone product. In the airborne FEM method, the transmitter and receiver coils are generally housed in a single case and are towed by a helicopter. Airborne FEM offers the advantage of collecting large amounts of data over a relatively short period of time. Without being limited by the survey size, EMIGMA allows rapid airborne FEM modeling and inversion. EMIGMA is an excellent tool for survey design as well as for interpreting measured data.

The Airborne FEM license is suitable for processing and interpreting any of the standard airborne FEM systems as well as any of the GTK fixed-wing systems and SGFEM from Sanders Geophysics.

The package offers very good routines for calculating apparent resistivity as well as an adaptation of the Sengpiel section techniques. EMIGMA also allows you to process your FEM data (ground and airborne) through several 1D inversions tools and then produce these as conductivity depth sections relative both to ground level and to actual GPS elevation.

**Unlimited Survey Size!**

## DATA IMPORT

- Calibrated data imports from ASCII files or manufacturer's formats, such as CGG (formerly Fugro) DIGHEM and Resolve, Aeroquest Impulse, Fixed-wing systems e.g. GTK, Hummingbird and SIAL airborne systems and ground Geonics EM31/34/34R/38, Max-Min, Geophex GEM3 and GEM2 and GSSI systems. Generally any dipole-dipole type system can be imported.
- QCTool can import .gdb files and from there directly into EMIGMA after any processing you might require.

## DATA PROCESSING AND CORRECTION

- 1D digital and spatial filters, 2D spatial filters
- Simple and weighted averaging decimation
- Data Correction tool combining dynamic spreadsheets and line plotter for data cleaning, missing data interpolation and simultaneous plotting of different data channels for fast cross-analysis
- Survey Editor Tool – a truly remarkable tool! Access your data from a survey perspective, edit your survey, create maps, clean your data and export view to raster, GeoTIFF and vector formats

## 3D MODELING

- Fast and accurate 3D simulations: model suite generation and batch mode
- Unlimited prism, plate and polyhedra targets
  - *Polyhedra: pipes (hollow cylinders with or without lids), ellipsoids, shells, bullets, landmines, drums, spheres, general polyhedra...*
- Multiple body interactions
- Modeling of topography effects
- Modeling of magnetic effects in EM data
- Ability to handle full contrast between host and bodies
- Incorporation of altitude information
- Interactive 3D model building tool
- 3D CAD model imports and exports

## 1D INVERSION

- Multi-Component and/or Multi-Frequency inversions, Inphase/Quadrature or Quadrature only
- Three algorithms to choose from
- Smooth Occam resistivity inversion with fixed layer thickness
- Smooth Occam joint susceptibility/resistivity inversion with fixed layer thickness and user-defined starting models
- Underparametrized Marquardt inversions – invert for thickness and/or resistivity
- User-defined starting models and parameters for inversion
- Full resistivity and thickness constraints
- Spatial smoothing capabilities
- Suite of minimization techniques
- Incorporation of GPS\_Z information

## CDIMAP

- Apparent Resistivity Tool – a half-space mapping technique for generating apparent resistivities as a function of frequency
- Sengpiel Depth-Sections – modified technique to produce resistivity pseudosections for generating resistivities as a function of pseudo-depths

## DATA DISPLAY AND ANALYSES

- Display of data over flight altitude variations, GPS positions
- Display of Apparent Resistivity as a surface or spatial contour
- PEXShow tool - 2D representation of geoelectric sections
- Display of 3D volumes of 1D inversions sliced and diced in the 3D Visualizer
- Grids: Natural Neighbor, Delaunay Triangulation, Shepard & True-to-Data, Minimum Curvature and Thin-Plate-Splines
- Contours: 2D and 3D surfaces
- Line plots
- Residual plots

## DATA EXPORT

- Export to postscript files, raster or GeoTIFF formats
- Export of 1D inversions to XYZ ASCII file (containing station, position, depth and apparent resistivity) to allow for the geoelectric sections to be utilized in other plotting or printing applications such as Geosoft or Surfer
- Export of 3D models to DXF (AutoCAD), ASC (Vulcan) or STR (Surpac) formats

