

EMIGMA V11.x Premium Series

EMIGMA for MT/AMT and VLF/VLF-R - January, 2025

For ground surveys

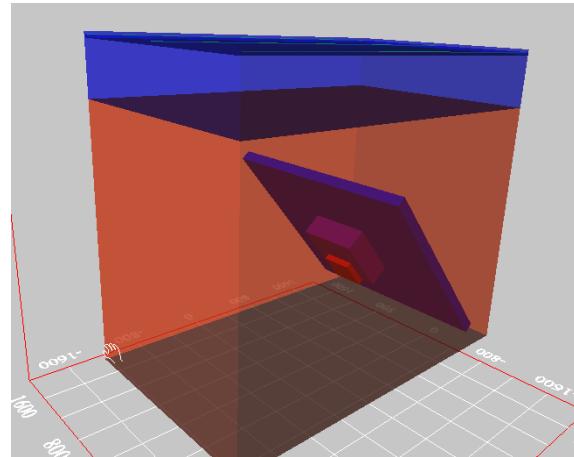
Add-ons are available for both marine and airborne surveys

The natural field interpretation tools are available as an add-on to the EMIGMA Complete package, as a standalone and now as part of our Oil&Gas package.

Our MT license allows easy survey design including coordinate systems, geographic survey directions and true extended electric dipole receivers(bipoles) with actual survey lengths and orientations.

Airborne MT, AFMAG as well as ZTEM is allowed in the airborne extension. Sea-bottom surveys are allowed in the marine extension. Marine and airborne capabilities are part of the Oil&GAS EM package.

Also available, when requested, with this package, is a new version of our GBDECOMP decomposition package including the Groom-Bailey Decomposition. Associated plotting tools are provided for decomposition parameter plotting and fit analyses. The package also has accompanying software to generate synthetic impedances from your model results to allow the decomposition analyses. Data format conversions are provided as well as an additional tool to remove local anisotropy from the GBDECOMP results. The resulting impedances generated by this package can then be exported for import to EMIGMA.



A QCTool license also accompanies any Natural Field license. This allows for a range of imports, QC/QA analyses and editing and then easy import to EMIGMA.

All data imports are for impedance or tipper (induction vectors) data or spectral data. We assume that you have been provided with such processing by the instrument manufacturer. Otherwise, such software is available on MTNET.

Assuming your VLF survey is in the far-field, one can import your VLF data as MT for display, processing and modeling. Also, if desired, one can import your CSAMT data for interpretation as plane wave data. However, we recommend our CSAMT product which uses the 3D nature of the source and modeling and inversion is not limited to the far field.

DATA IMPORT either in EMIGMA or QCTool

- ASCII XYZ data imports as impedance tensors and tippers.
- .tbl format import
- Zonge .avg format import
- Stratagem impedance data formats
- Phoenix .csv format and .avg formats
- .edi format
- Easy to organize QCTool import
- Import for ZTEM via .gdb format or .qct format

DATA PROCESSING AND CORRECTION

- 1D digital and spatial filters, 2D spatial filters
- Data Corrector tool combining dynamic spreadsheets and a line plotter for data cleaning, missing data interpolation and simultaneous plotting of different data channels for fast cross-analysis
- GBDECOMP for decomposition processing
- Auto-2D rotations and Swift 2D estimators
- Skew calculation

3D MODELING - *the strength of our application is with our modeling capabilities*

- Fast and accurate 3D simulations: model suite generation and batch mode
- Electric cable and magnetic dipole receivers
- True electric dipole receivers with actual survey lengths to allow for proper modeling with extended electric receiver dipoles
- 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
- Topography effects
- Magnetic structure effects
- Ability to handle full contrast between host and bodies
- Interactive 3D model building tool
- Capability to specify source polarization

1D MT INVERSION

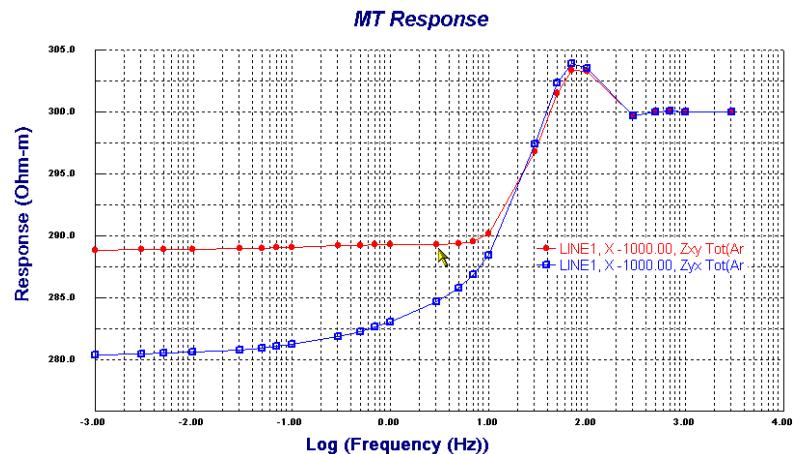
- Resistivity depth inversions, 2D resistivity section plots and 3D inversion volume displays, analyses and export
- Multi-layer inversion for up to 100 layers of uniform or non-uniform thickness
- Under-parameterized constrained Marquardt style
- Smooth Occam style
- Inversion of Principal impedance, Determinant and 1D Average estimator

3D Natural fields INVERSION

- 3D inversion of tipper vectors available for ground, airborne and marine
- 3D impedance inversions

DATA DISPLAY AND ANALYSES

- 3D data display as profiles, vectors, true 3D surfaces or contoured surface with 3D structure representation
- PEXShow tool - 2D representation of 1D inversions
- Pseudo-sections, depth images and Bostick transformations
- Grids: Natural Neighbor, Delauney Triangulation, Minimum Curvature and Thin-Plate-Splines
- Contours: 2D and 3D surfaces
- Line plots
- Residual plots



TOOLS for STATIC CORRECTIONS

GBDECOMP – Groom/Bailey decomposition tools

- Generator of synthetic impedance tensors and noise to be processed with a suite of decomposition algorithms
- 3D constrained or unconstrained GB Decomposition
- Standard 2D Decomposition
- Strike-Constrained 2D Decomposition
- Parameter plotting, Impedance fits
- Post GB Decomposition correction for Local Anisotropy
- Impedance export to QCTool for import to EMIGMA or for ASCII export

TEM or Resistivity for Statics –

- Our Resistivity or TEM module for static corrections
- See our TEM and Resistivity brochures for details