



EMIGMA V11.x Premium Series

EMIGMA COMPLETE –

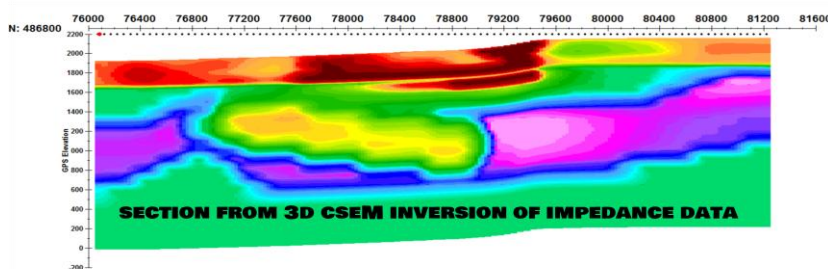
2025

***Magnetics, FDEM, TDEM, Gravity, IP, Resistivity, CSEM/CSAMT, MMR,
Marine and sea bottom EM, VLF/VLF-R
including Airborne FDEM and TDEM capabilities
(does not include MT/AMT/AFMAG, ZTEM)***

for Windows W7/W8/W10/W11

Data Imports

- **Large Loop TEM Imports** (Zonge, SMARTem, UTEM, GEONICS, CRONE)
- Fixed loop & Moving loop surveys, for ground, airborne, borehole configurations
- **Small loop systems** (e.g. Loupe, TerraTEM, EM47, Phoenix, FASTEM, WTEM)
- **FDEM Imports** (any dipole-dipole configuration, ground or airborne)
- **AirborneTDEM** (VTEM, Xcite, SkyTEM, Tempest, Genesis, Geotem/Megatem, HeliTEM, AeroTEM)
- **AMIRA TEM** (SMARTem, Loupe, Geonics, Crone, Sirotem, DigiAtlantis)
- **DC Magnetic, DC Magnetic Gradients** (XYZ format; Scintrex Smartmag, Envi-Mag, Envi-Cs, NavMag; GEM instruments, Geometrics instruments)
- **Airborne Magnetics** - helicopter stringer and towed bird, drone, UAV and fixed wing
- **Magnetic Gradient and vector imports**
- **Time Domain IP**
(IRIS, CGG, IPR10/11/12, ASCII text format, Zonge .avg)
- **Frequency Domain IP** (ASCII text format, Zonge .avg)
- **Resistivity Data** (Generic ASCII text file, SysCal, Zonge .avg)
- **Gravity Data** (Scintrex, Micro-G, XYZ format, .gdb) including full tensor gradients



Data Management

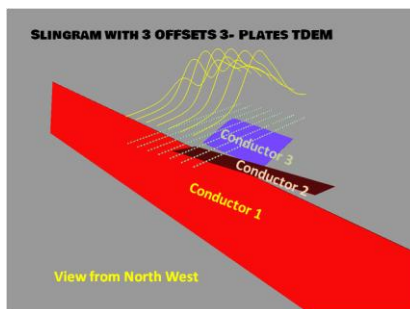
- Database backbone
- Data, grids, models, inversions all directly linked in the database
- Allows multiple surveys in a single database
- Large data set handling: three levels of data organization inside a database
- Merging, export, import of data sets and their customization for further use

Data Processing and Correction (a partial list)

- 1D and 2D digital and spatial filters, sizes specifiable by the user
- Simple and weighted statistical decimation
- FFT/DFT tools for gravity and magnetic data
- Graphical data extraction, profile editing and modification
- Profile Modification tool – survey editing with map underlays
- Full suite of magnetic and gravity correction processing algorithms
- Magnetic base station correction, Tie Line corrections
- Latitude/Longitude projections including polar projections
- And more

3D Modeling

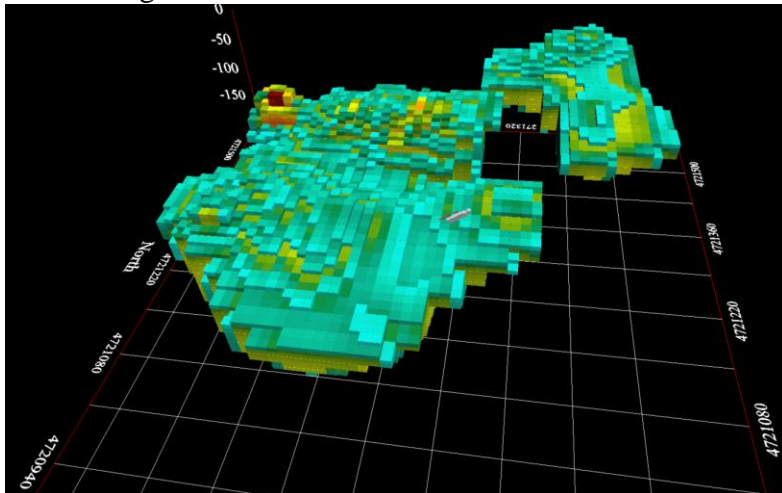
- Easy model building: large data sets, flexible profile generation and manipulation, multiple system geometries, large loop modeling, etc.
- Unlimited plate, prism and polyhedra anomalies suitable for EM, Gravity, Magnetism, IP, Resistivity data
- Multiple target shapes: pipes (hollow cylinders with or without lids), ellipsoids, shells, bullets, landmines, drums, spheres, prisms, plates, general polyhedra...
- Multiple scattering modeling: Simple Superposition, Far- and Near-Field Interaction, Automated Mode
- Synthetic Topography-Poly Generator for modeling complex geological anomalies and topography
- Modeling conductors with volume ILN prisms - Volumetric Induction Modeling
- Model suite generation for rapid building of layered earth and plate model suites with varying resistivity, thickness, strike, strike length, dip, dip extent, plunge and conductance
- 3D forward simulation in batch mode: multiple sources, any number of profiles or boreholes, any number of data components
- Import/Export of geological models from CAD applications
- Model building tool in 3D space
- New inductive plate algorithm with layered background



- New high accuracy, extreme contrast, high frequency SPHERE model including all effects of magnetic susceptibility. Loop and Bipole sources, moving and fixed source surveys, frequency and time domain. Suitable for most EM surveys.

Data Inversion

- Stacked Occam and Trust Region constrained 1D inversions for EM & Resistivity
- 3D inversion for Magnetics ground or airborne including gradients and vector components
- joint inversion of magnetic ground and airborne data
- 3D inversion for Ground and Borehole gravity
- utilization of drill core results for constraint
- Cross Section and Depth Slices with visualization
- 2D representation of geoelectric sections
- 3D Resistivity inversion including surface to borehole
- 3D CSEM/CSAMT inversion for fields and impedances, multi-source inversions
- Magnetization vector inversions



3D Extended Euler Deconvolution

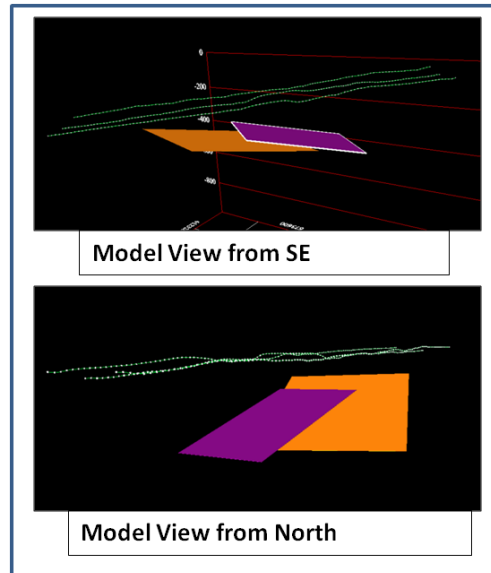
- Statistical and Rodin spatial post-processing
- 2D and 3D visualization of solutions
- Magnetization inversion for angle and position

CDI MAP

- Apparent Resistivity Tool frequency domain – halfspace inversion tool
- Sengpiel Depth-Sections - a resistivity pseudo-section technique for generating resistivities as a function of pseudo-depths
- Decay constants for TEM (quasi-animation) on grids, on lines or at each point
- CDI for ground or airborne TDEM

2D and 3D Visualization

- Data visualization in 3D space, as profiles, vectors, true 3D surfaces or contoured surface along with the 3D structure display
- View model data in conjunction with model
- Move through data components with ease
- 3D modeling tools: easy object manipulation and adjustment,
- 2D and 3D visualization of Euler solutions
- 3D visualization of 3D inversions



Plotting

- Comprehensive XY Plotter for plotting data, decays and positions
- Multi-channel and multi-profile plotting
- Flipping between apparent resistivity and conductivity
- Toggling between channels, profiles and models
- Plot multiple channels for analyses
- Residual plotting
- Saving plotting defaults for rapid plotting of model suites
- Decay rate calculation

Gridding

- User defined rectangular grids
- Multi-channel grids for quick and fluid data analyses
- Incorporate calculated potential field derivatives in a single grid with data
- Five gridding algorithms: Natural Neighbor, Delauney Triangulation, Shepard & True-to-Data, Minimum Curvature and Thin-Plate-Splines
- Quick setting of your grid geometry with graphic tools
- Residual grids, grid exporting

Grid Presentation and Analyses

- With multi-component grids - switch between channels and components without need to load new grids
- Joint display of profile data, grid and contours
- Rectangular grid cells gives high inline resolution without crossline artifacts
- Information tool to show data and grid details
- Equal Weight and Equal Range display
- Algorithms for displaying associated data transforms
- Euler solution overlays
- Decay rate/Amplitude mapping and export
- Superposition on raster maps and annotation – export/import Geotiffs
- MultiGrid tool - viewing and comparing up to 4 grids at a time

Contouring and Mapping

- User control of contouring without additional local gridding
- 2D/3D surfaces, 3D volumes
- Multi-component contours – switching between components and channels
- Contour lines and their customization
- Range of pseudo-depth and pseudo-section displays
- 3D volume interpolation of inversion results – section/depth cutting
- Use of UTM calibrated maps , production of UTM calibrated maps

Data/Model Exports

- 3D Model Exports to CAD formats
- Inversion Exports to XYZ ASCII and .qct format for use in other applications
- Model/processed data export to multiple formats
- Export portions of database to other licensed users or for EMIGMA viewer
- 2D Geotiff , AutoCAD, .pdf and Google Earth exports

QCTool

All EMIGMA licenses include QCTool which provides a range of initial processing tools including data correction and quality control. Also included are a full range of very accurate gravity corrections plus base station, IGRF, drift and tie line corrections for magnetic data.