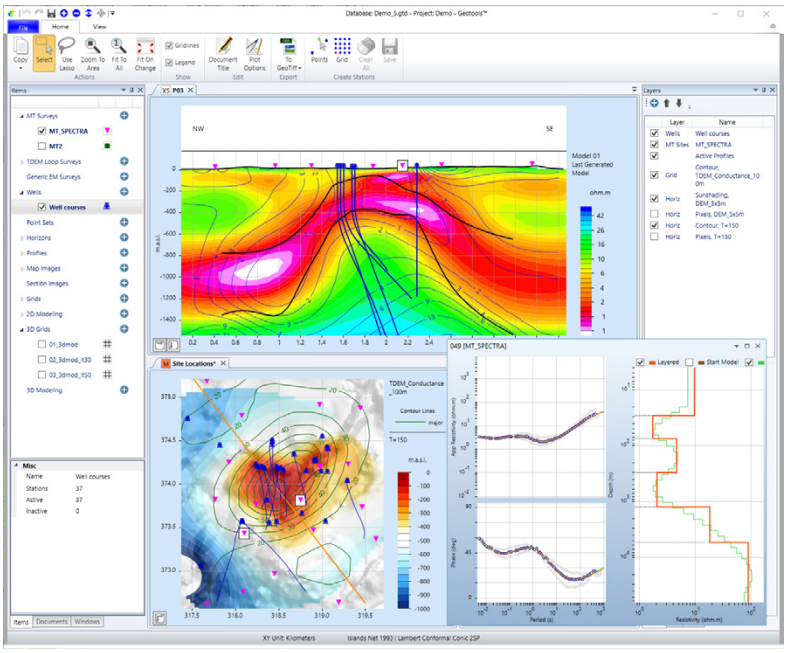
Multiphysics

GEOTOOLS

Professional electromagnetics and potential fields interpretation software

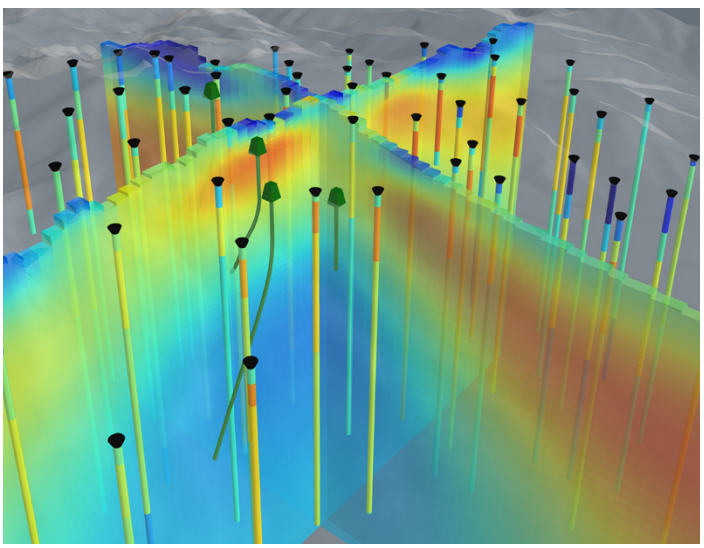
Geotools™ is a modern, interactive interpretation platform for ground, airborne and marine electromagnetic, gravity and magnetic data (MT, AFMAG, CSAMT-CSEM, FEM, TEM, AGG, FTG, etc.). Featuring modeling tools thru 3D, Geotools' multi-scene user interface encourages explorers to efficiently view, interrogate and invert multiple data types, allowing ancillary geoscience intel to be integrated into the data analysis and inversion modeling.



Key features

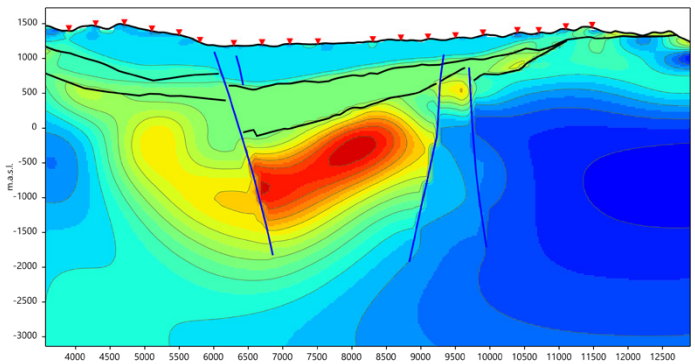
Integrated:

- Import of line and station data, 2D grids, point and line features, georeferenced images, well traces and other ancillary data
- 3D inversion setup to run on the Viridien Cloud, with user-friendly I/O and progress monitoring
- Multi-property 2D and 3D models, with property calculation functions
- Stand-alone and joint 3D inversions
- Geologically constrained inversions
- User-selected multi-property overlays (soundings, maps, sections, 3D scene) allowing quick, customized input / output data and model comparisons



Convenient:

- Designed to run on Windows OS
- I/O compatibility with standard formats such as EDI and USF sounding



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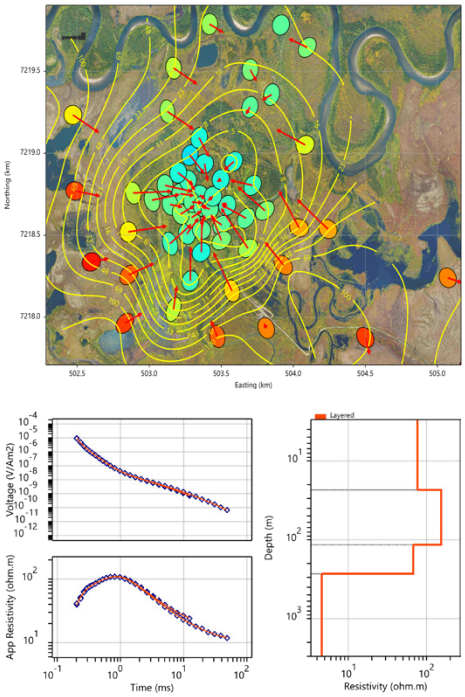


MT and TDEM data analysis and 1D modeling

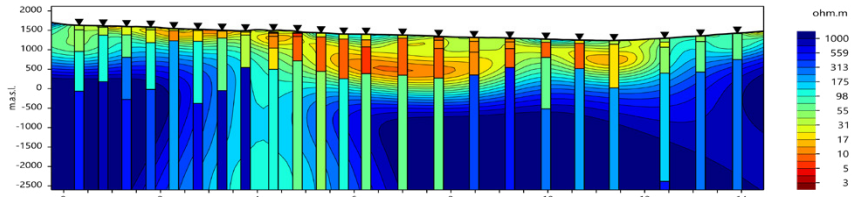
Sounding plots, maps and cross-sections of data and models.

MT

- Multi-dataset concept (observed, 1D/2D/3D synthetic sounding)
- Apparent resistivity, phase, tipper, azimuth, induction arrows, polar diagrams and phase tensor plots
- Non-linear, smooth, multi-layer 1D inversions
- Rotation, masking, static shift correction, re-sampling, Rho+ fit

TDEM

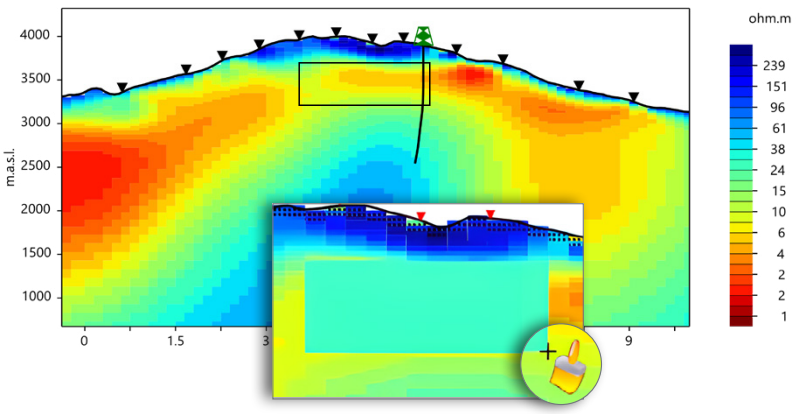
- Interactive, real time 1D forward and inverse modeling for discrete layer models
- Display of pseudo-MT curve derived from co-located TDEM sites for simple MT statics estimation



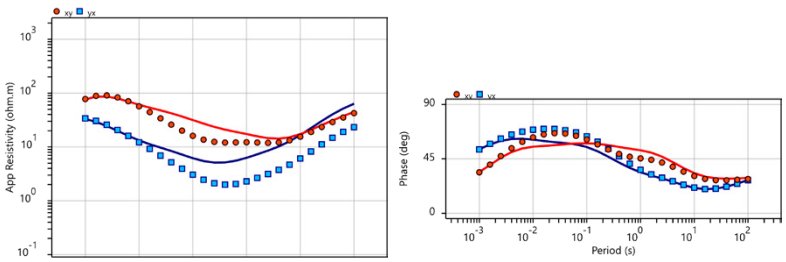
MT 2D real-time inversion modeling

- Multi-threaded 2D smooth inversion code, inversions completed in a few minutes on a laptop
- Easy-to-use mesh builder, property population using horizons and/or existing 2D and 3D resistivity models, editing and painting
- Immediate model view update at each inversion iteration
- Survey design, synthetic 2D sensitivity study
- Storage of resistivity models, synthetic data, inversion parameters and detailed statistics in recallable snap-shots
- Display georeferenced image overlays to compare existing interpretations

2D MT inversion



2D sensitivity study



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3D modeling and inversion modules

- Build detailed 3D property (resistivity, density, etc.) starting models and set up parameters for 3D inversion jobs, run on the Viridien Cloud; proprietary HPC (>700 petaflop) + physics-based RLM-3D and Otze codes
- Guided workflow to create starting 3D models and define inversion parameters in a few clicks
- Model property population based on imported or picked horizons, or manual model painting, optionally starting from existing 3D inversion models
- Real-time visual monitoring of inversions jobs, with easy stop – adjust parameters - re-start facility
- Review of 3D inversion models and data responses, and comparison with measured or other calculated data maps

Geotools

- 3D job setup
- job packet export

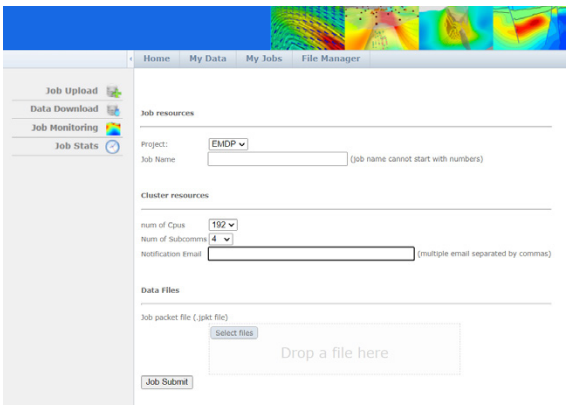
Viridien cloud services

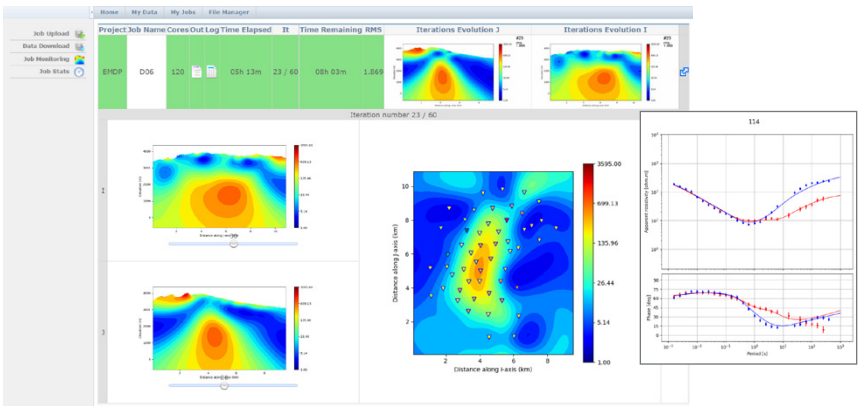
- 3D job submission on secure Viridien Cloud
- interactive monitoring
- downloadable results package
- automated result import: models & responses

Geotools

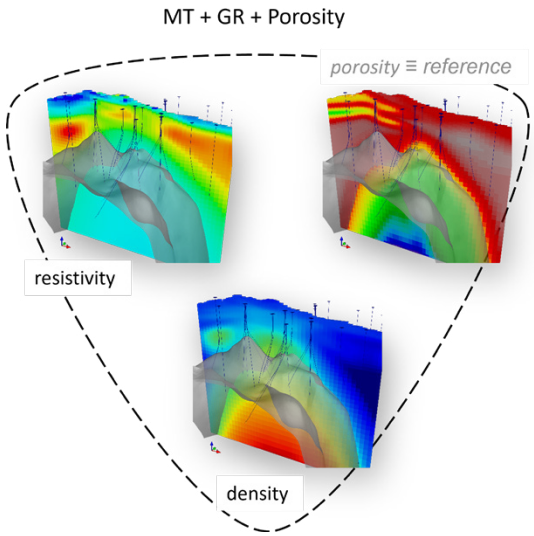
- detailed review of results

RLM-3D on the Viridien Cloud





RLM-3D on the Viridien Cloud



3D Joint Inversion – flexible options

- Diverse input data types jointly inverted on single 3D model; e.g. 3D resistivity from MT + HTEM, or density from AGG+ground gravity
- Cross-gradient joint inversion between diverse domains; e.g. MT-resistivity, Gravity-density, etc.
- Cross-gradient constrained joint inversion (JI), where 3D volume property are used to constrain the structural gradients during the EM depth inversion

Geologically constrained inversion

- Use known geology to populate and constrain non-uniform starting models
- Collaborative inversion, where seismic and geological horizons are incorporated as regularization tear surfaces in the depth inversion

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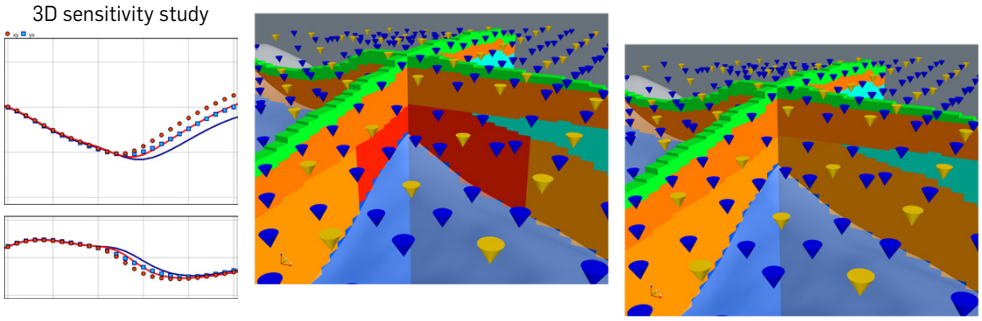
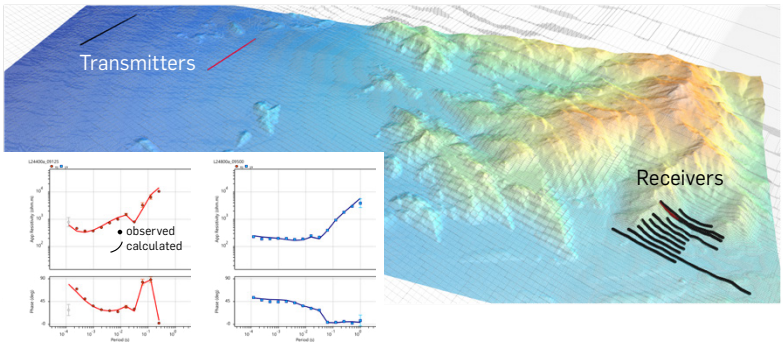
Magnetotellurics

- Inversion for galvanic distortion matrix
- Honors true electric and magnetic channel locations
- Anisotropy options



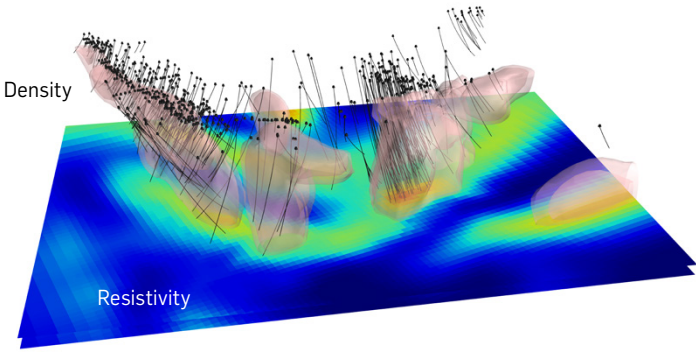


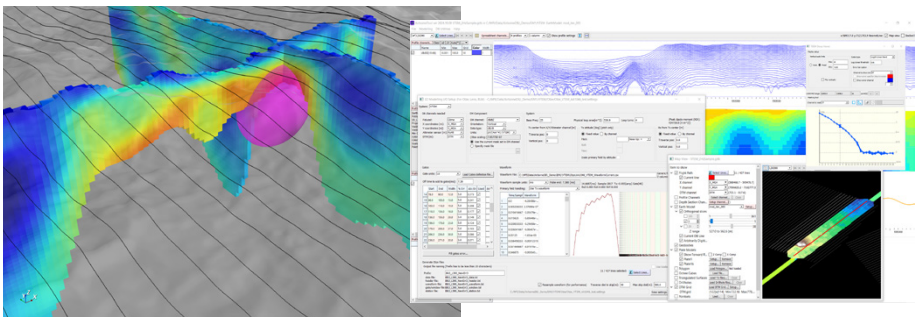
CSAMT and CSEM

- Honors the active source nature of this data type and the full setup configuration including the transmitter layout
- Supports multi-transmitter survey layouts
- 3D mesh definition from complete CSAMT survey geometry, including transmitter(s)
- Anisotropy options

Gravity, Magnetics and Gradiometry

- Ground, airborne, UAV, downhole, seabed, etc.
- True XYZ data locations; no re-projection required
- Magnetic susceptibility and MVI





Airborne EM, including AFMAG

- All known systems are implemented, new / legacy ones are easily implemented
- frequency and time domain
- passive source (AFMAG)
- controlled source (TEM, FEM)
- IP effects modeled in AEM

Contact
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