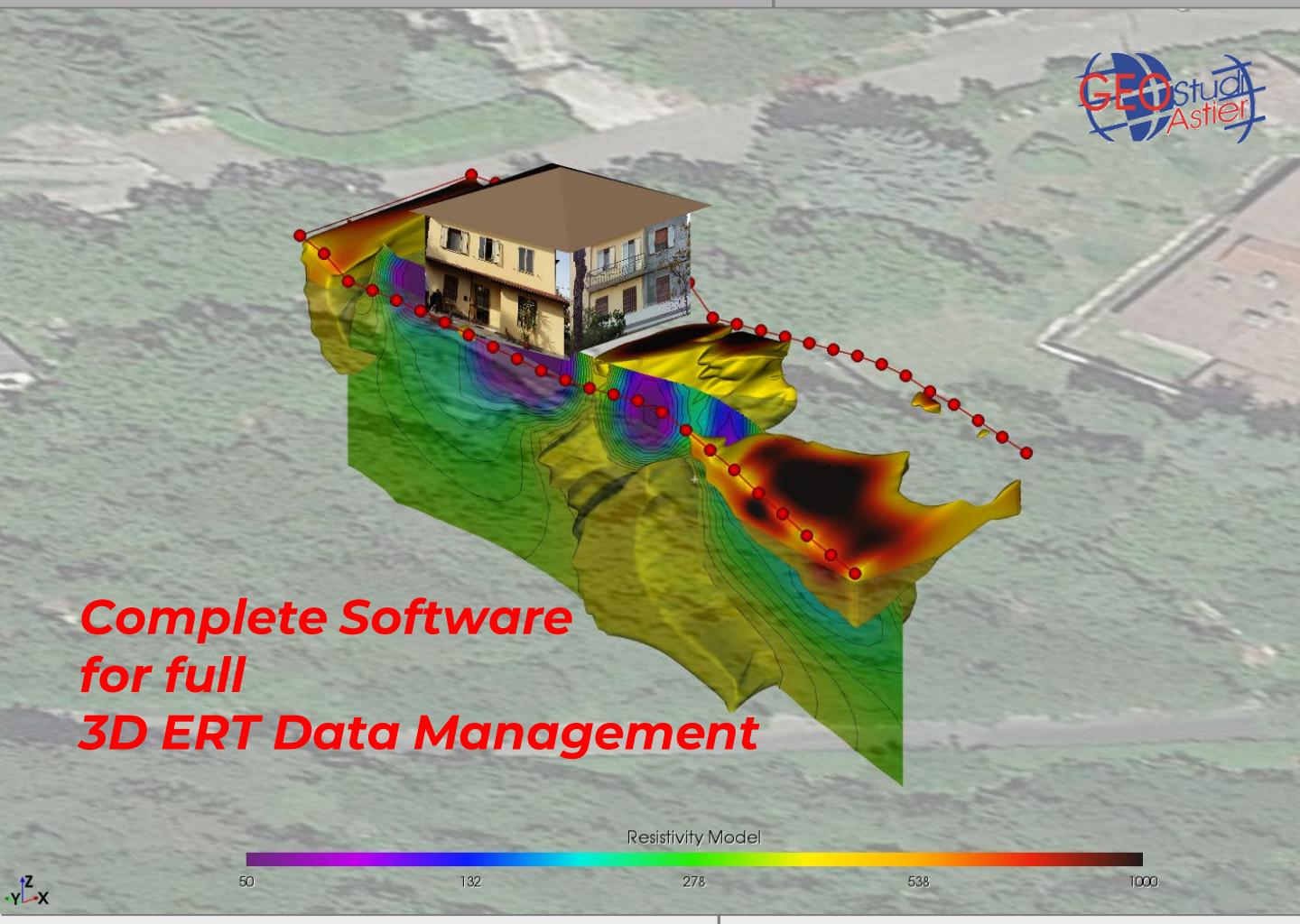
ERT Lab Studio

MPT IRIS



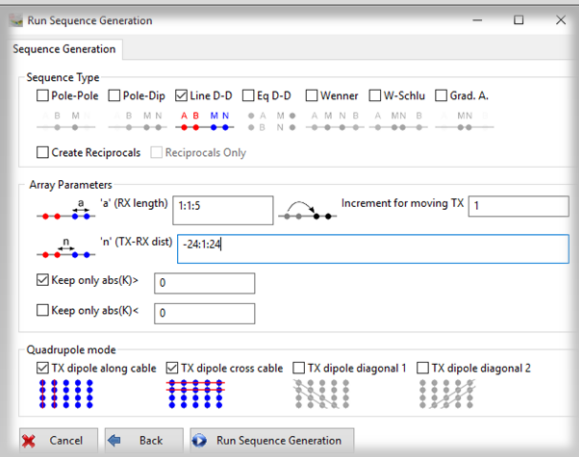
Modeling and Inversion Software for 3D Resistivity and Chargeability ERT Data

MPT-IRIS Inc. | ERT Equipment and Software
www.mpt3d.com | +1 775-356-7844

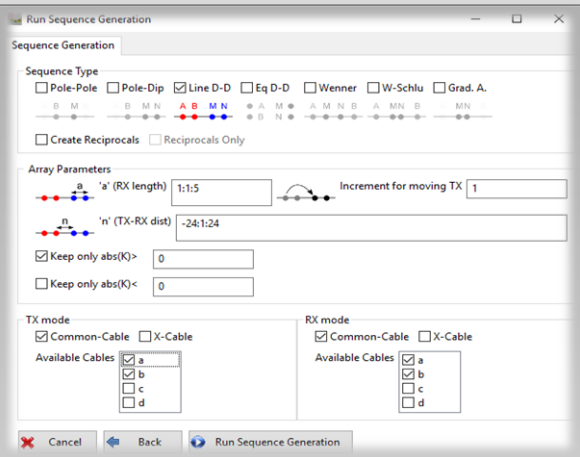
V1.0

ERT Lab Studio

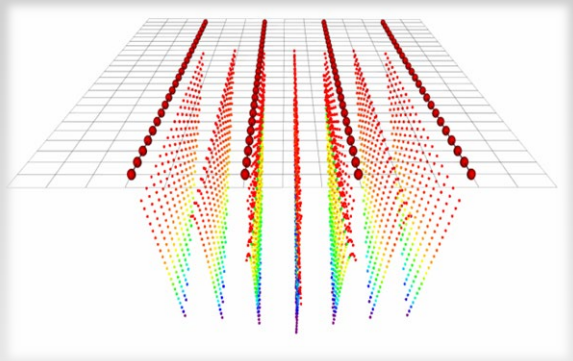
User-friendly Module for the Creation of 2D & 3D Electrode Arrays and Schedules of Surface and Borehole Electrical Resistivity Measurements

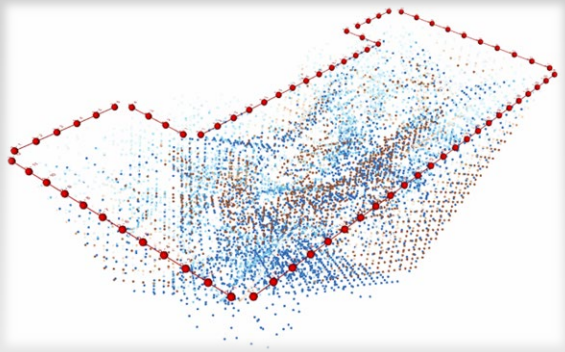


«Grid» mode interface for sequence generation



«Cross cable» mode interface for sequence generation





Geometric arrangements of electrodes on the surface and in the borehole for 3D ERT acquisitions

Cable/electrode definition

- Mouse selection of the electrodes to be skipped or to be used in *roll-along* mode
- User-friendly interface to insert electrodes and cables
- Practical 3D visualization and management of setup

Sequence generation

- Sequence generator for 2D & 3D surface, borehole, or surface-to-borehole surveys (Linear Dipole-Dipole, Parallel Dipole-Dipole, Pole-Dipole, Pole-Pole, Wenner, Wenner-Schlumberger)
- Special environment for Multi-Borehole sequence creation
- Option to create mixed arrays by appending multiple sequences
- Multi-channel receiver optimization
- Geometric factor constraining
- Reciprocal quadrupoles generation
- Different Import/Export formats (ElectreII, ErtLab Solver, text)
- Conventional pseudo-plots for displaying measurement coverage

MPT IRIS

MPT-IRIS Inc. | ERT Equipment and Software
www.mpt3d.com | +1 775-356-7844

V1.0

Software for 3D Finite-Element Inversion of Electrical Resistivity and Chargeability Measurements

MAIN FEATURES

- Tetrahedral finite elements modeling
- Data quality control Q / A and data filtering based on threshold values or interactive histograms
- Free definition and modification of topographic coordinates of the measuring points
- Able to manage any surface and downhole measurements with any electrode geometry
- Free to define your *mesh* parameters
- Inclusion of topographic models
- Define targets or resistivity models
- Manual or automatic definition of the starting model
- Export and data management via easy-to-handle ASCII file

IN DETAIL

Data quality control

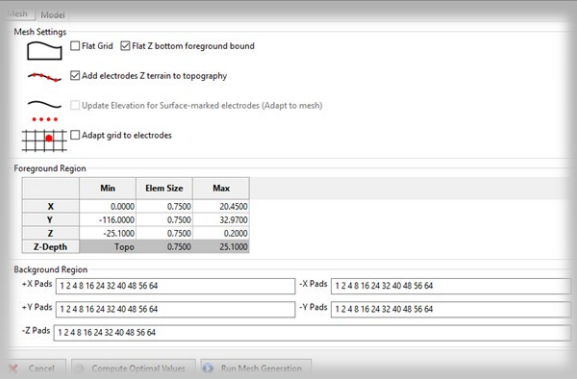
- Data visualization using pseudo-three-dimensional maps
- Graphical and numerical filtering of inaccurate measurements
- Reciprocals check function

Inversion

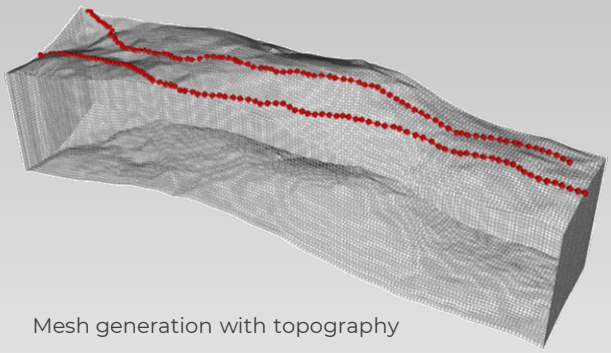
- Automatic quick inversion function for 2D profiles
- Least Squares Inversion algorithm with regularity constraints (*smoothness constrained*)
- Robust inversion, data variance iterative reweighting
- Full control of all Inversion settings
- Direct solver (accuracy *solver*, n iterations, *preconditioning*)
- Boundary conditions (*Neumann, Dirichlet, mixed*)
- Regularization factors
- Roughness function weights
- Noise estimation
- *Time-lapse* processing

Mesh generation

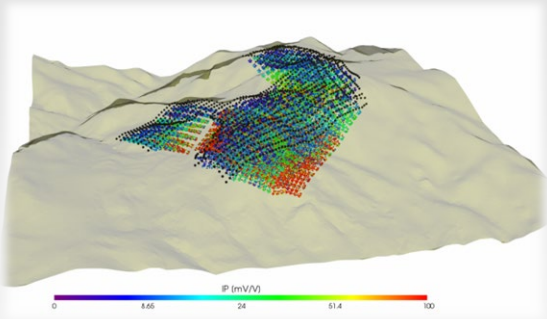
- Manual or automatic mesh generation for complex 3D topographic surfaces
- Special tools for customized user defined *mesh* generation
- Mesh and model import/export tools



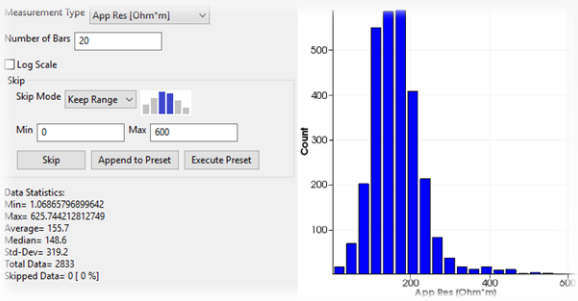
Mesh settings



Mesh generation with topography



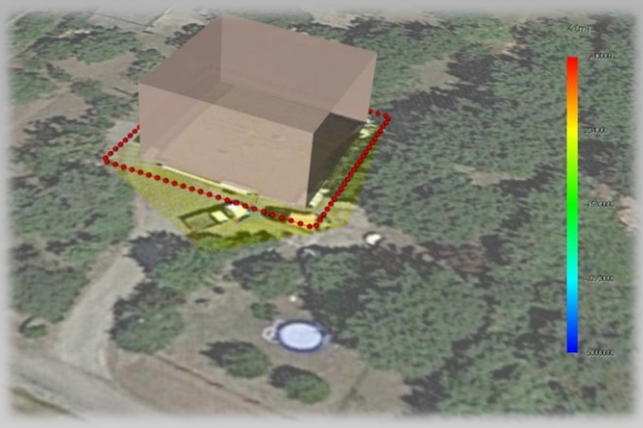
Display of campaign data on DTM topography

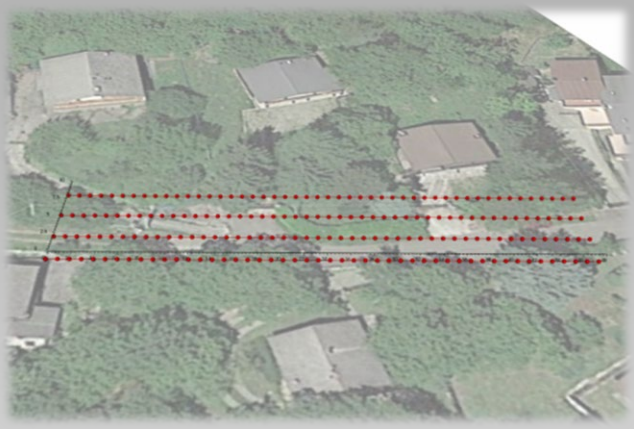


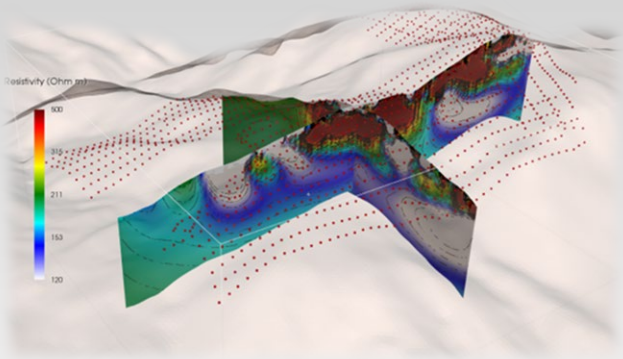
Statistical analysis and interactive data filtering

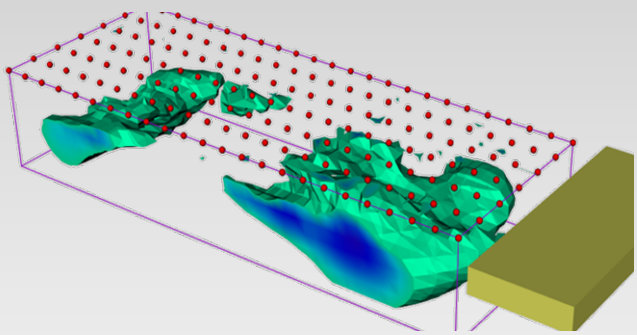
ERT Lab Studio

New Generation Module for 3D Visualization of Inverted Resistivity and Chargeability Models



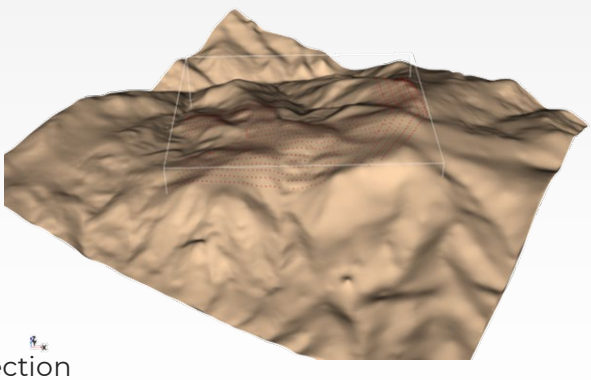






MAIN FEATURES

- Import and creation of graphical objects such as .dxf files, aerial pictures, volumes
- Visualize different models in the same 3D window
- Automatic generation of 2D sections from 3D model
- Transparency function for graphical object
- Resistivity volumes generation
- Several color scales available
- Iso-surface user-defined setup
- Plumes extraction (volumes)
- Switch between orthographic & perspective view
- Axes properties definition, labels editing
- Display sections in XY, YZ, XY planes or any generic direction



MPT IRIS

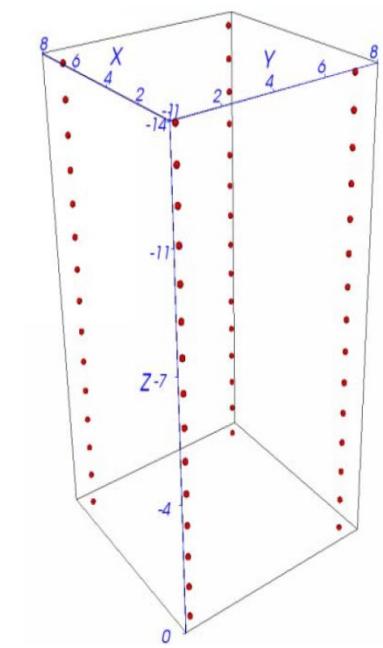
MPT-IRIS Inc. | ERT Equipment and Software
www.mpt3d.com | +1 775-356-7844

V1.0

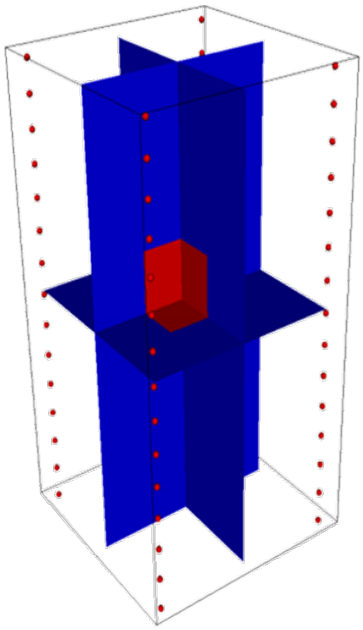
ERT Lab Studio

Forward Modeling (Survey Design)

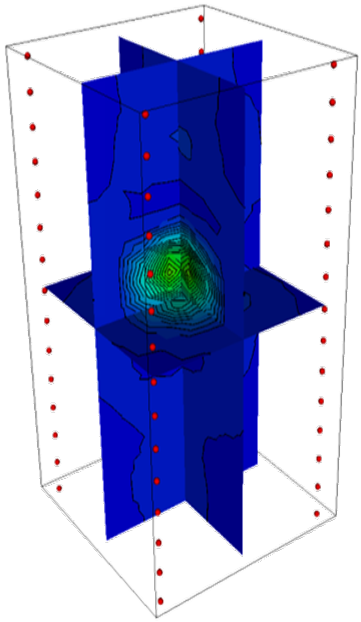
Dedicated Module to Simulate 2D/3D ERT Measurements



Electrode Arrays



Synthetic model



Inverted model

Survey Design

The Forward Modeling Module can do:

- 3D Resistivity/IP forward modeling from generic sequences
- analysis and display of sensitivity functions
- interactive definition of the starting model

Forward modeling is a very powerful tool to evaluate the capacity of implemented models and their measurement predictions to detect predefined targets.

The knowledge of these parameters are essential for a correct field survey design, providing the user with important information about the right position of the electrodes and the correct choice of the electrode array to be used (Wenner, pole-dipole, etc.) in order to achieve the requested objective.