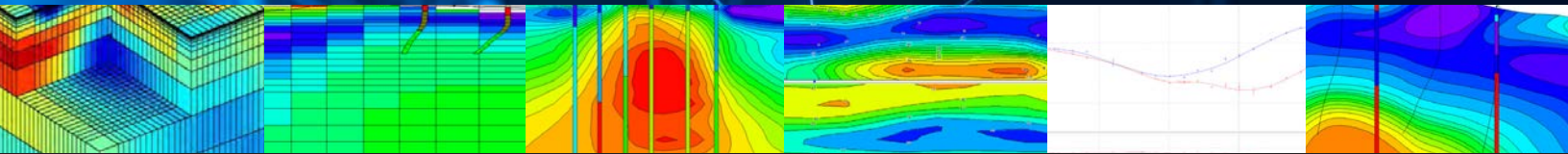


Schlumberger



WinGLink

Geophysical interpretation software

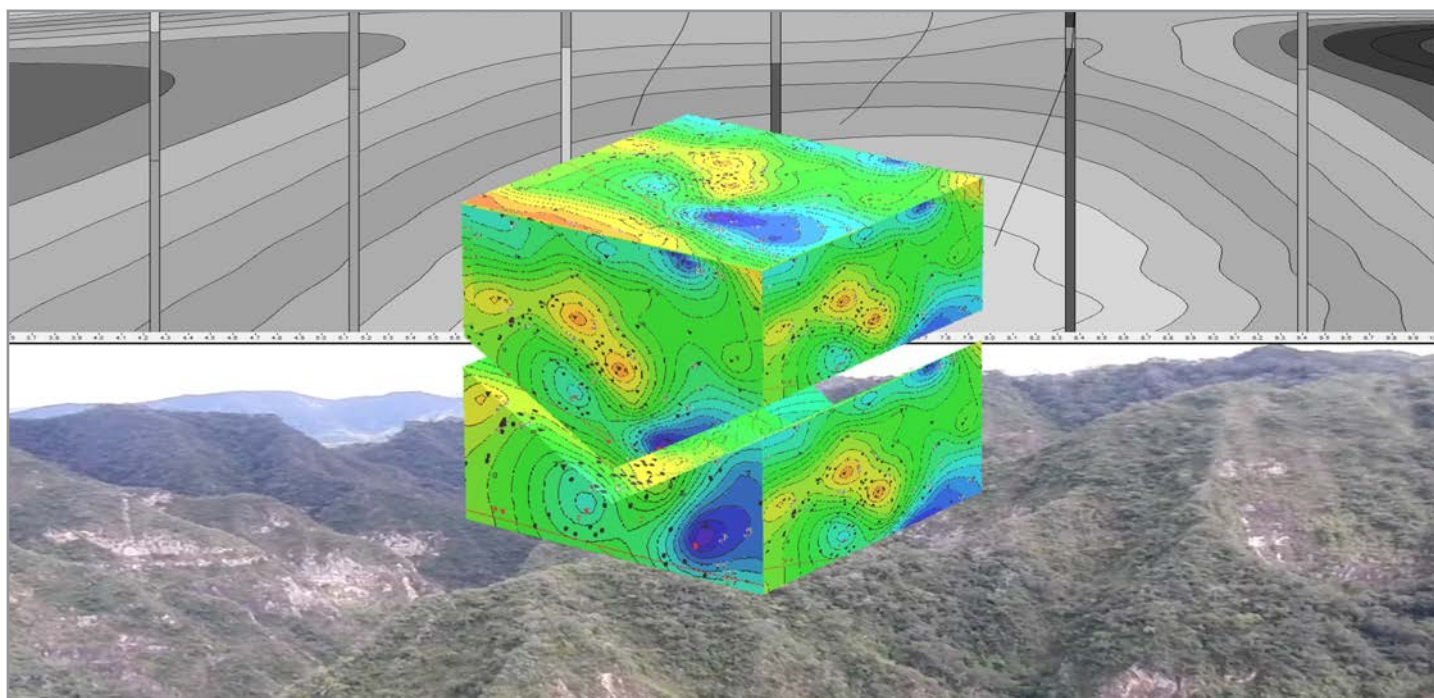
VERSION 2.21.08

# WinGLink

Geophysical interpretation software

## Essential tools for data QC, processing, and modeling across multiple geophysical disciplines

WinGLink software delivers a powerful set of tools for analysis, QC, processing, and modeling of data from multiple geophysical disciplines to produce a fully integrated interpretation model. Recognized by industry as a leading software for data processing and modeling of magnetotelluric data, it also provides specialized features for gravity and magnetic data, well course and stratigraphy, controlled-source electromagnetics (CSEM) (time and frequency), DC resistivity, and time domain electromagnetic (TDEM) soundings. Users can create realistic representations of observed and modeled parameters for the many supported data types within the maps module. WinGLink software is an affordable, portable, stand-alone application with an autonomous database to simplify data management. With its extensive list of editing tools and features, powerful graphical interface and interlinked windows, WinGLink software enables users to confidently constrain modeling variables and perform accurate 1D and 2D inversions and 3D forward modeling.



*WinGLink software uses a common graphic interface for creating databases and projects, converting coordinates, importing and exporting data and models, and launching utilities.*

# WinGLink utilities

## Detailed features for each geophysical utility

- Maps
- Soundings
- 1D modeling
- Pseudosections
- Cross sections
- 2D modeling
- 3D modeling
- Interpreted Views and Montage
- Field tools

# WinGLink software geophysical data disciplines

## Coverage for a wide variety of acquisitions and seismic survey data types

- Magnetotellurics (MT), audio magnetotellurics (AMT), and controlled-source AMT (CSAMT)
- CSEM (time and frequency)
- TDEM
- DC resistivity
- Gravity
- Magnetics
- Well course and stratigraphy

Utility	MT	CSEM	TDEM	DC	Gravity	Magnetics	Wells
Maps	X	X	X	X	X	X	X
Soundings	X	X	X				
1D modeling	X	X	X	X			
Pseudosections	X	X					
Cross sections	X	X					
2D modeling	X				X	X	
3D modeling	X						
Interpreted Views and Montage	X	X	X	X	X	X	X
Field tools	X		X		X		

## Integrated electromagnetic services

### Integration of seismic and nonseismic data, measurements, and methods

- Worldwide land electromagnetic (EM) acquisition support
- EM data processing and interpretation services
- Continuous development and improvement of EM and potential fields

## Easy-to-learn application

### Worldwide software training and support

- Public and private training courses available
- Technical and theory courses available
- Worldwide customer support from dedicated EM and potential fields specialists

## System requirements

### Operating systems

- Windows® operating systems (7, 8.1, and 10)

### Minimum system requirements

- Standard off-the-shelf hardware

## Licensing options

### Versatile licensing options for individual or shared usage

- Portable USB license key

### Flexible license purchase

- Flexible purchase options and annual maintenance
- University donation available

# WinGLink software features

Full suite of QC and analysis tools for raw field data

## Magnetotellurics tools

- Display and editing of time series
- Extraction of time-limited segments
- Channel differences
- Time shifting
- Polarity inversion
- Filtering
- Despiking
- Decimation
- Computation of spectra and spectrograms
- Crosscorrelation
- Robust processing
- Cross power editor
- Data analysis

## Gravity QC and data analysis tools

- Gravity reduction
- Tidal correction

## TDEM tool

- Raw TDEM curves merging

# Soundings

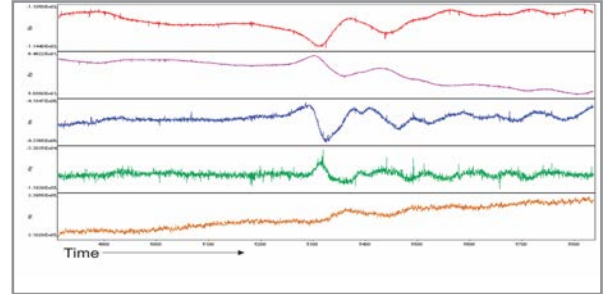
## Condition data for 1D, 2D, and 3D workflows

### MT

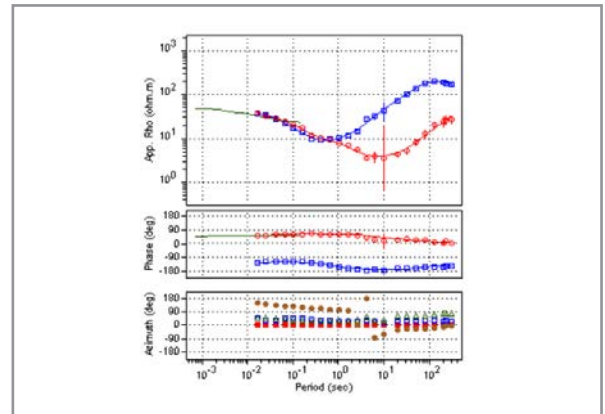
- SEG or EDI format for data import
- Tensor decomposition
- Display view of apparent resistivity, phase, tipper amplitude and phase, induction arrows, and polarization ellipses in a single interface
- Editing (masking, static shifting or stripping, D+ or Hilbert smoothing)
- Quick view of multiple stacked soundings
- 1D smooth or layered inversion
- Synthetic MT soundings from 1D layered TDEM models

## CSEM, TDEM, and DC resistivity

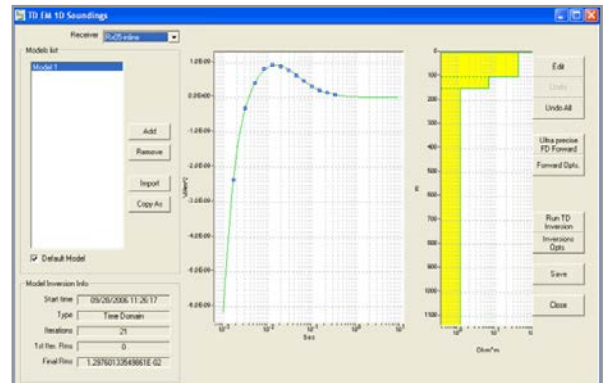
- Display and domain data editing
- CSEM (time or frequency)
- TDEM (voltage or apparent resistivity)
- DC (apparent resistivity)
- ASCII or manufacturer format for data import
- Editing and 1D inversion as above



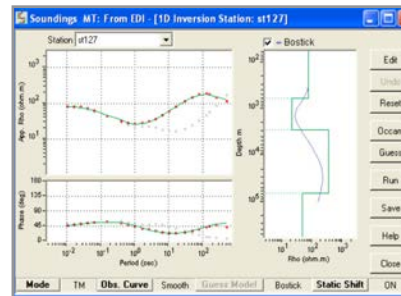
MT time series: Top two channels (electric) are from local site; lower three (magnetic) are from the remote reference site.



Processed MT data imported from an EDI format file.



TDEM 1D layered inversion.



MT 1D smooth and layered inversion.

# WinGLink software features

## Pseudosections

**Display and edit data in the distance along profile (horizontal axis) vs. pseudodepth (vertical axis) space**

### MT

- Transverse electric (TE) and transverse magnetic (TM) modes (apparent resistivity and phase), tipper (amplitude and phase), and induction arrows
- Observed and synthetic data
- Normalization and differencing with respect to synthetic data
- Dialog window for interactive editing
- 2D inversion program that accepts edited curves

### CSEM

- Amplitude, derivative, and phase
- Observed and synthetic data
- Normalization to a background response, single station, or dataset
- Dialog window for interactive model editing

## Maps

### Import and display

- Survey stations, deviated wells, and other relevant reference points
- Data grids (bathymetry and seismic horizons)
- Planimetry (pipelines, reservoir limits, and concession boundaries)
- 3D model meshes
- Profile traces (used for pseudo- or cross sections and 3D modeling)

### Extract, grid, and display as line and color-filled contour maps

- Observed parameters (e.g., MT apparent resistivity at 0.01 Hz)
- Gravity Bouguer anomaly at a given density (terrain corrections [TCs] are automatically computed based on available topography)
- Inversion results (e.g., resistivity from 3D inversion at 2,000-m below sea level)

## Cross sections

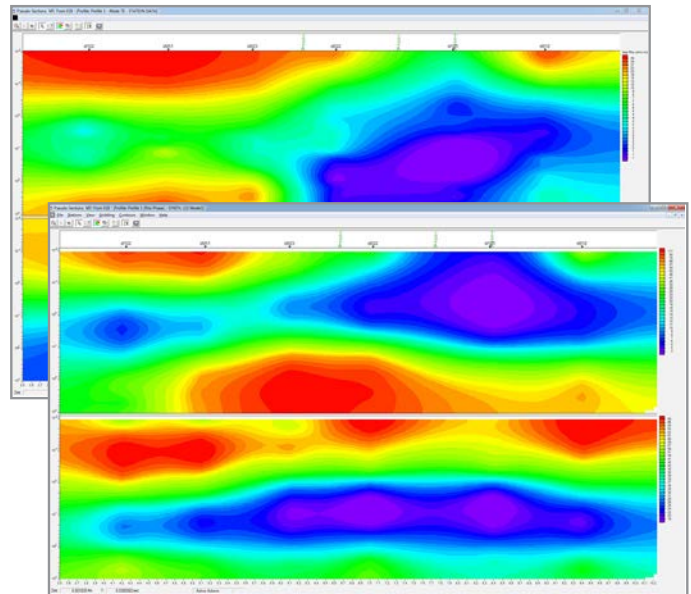
### Display and print

- 1D inversions
- Resistivity from 2D and 3D inversion
- Associated data such as wells
- Crossing lines

## 2D MT inversion

### Integrate gravity and MT models and well traces

- 2D exact finite-difference algorithm
- Smooth- and sharp-boundary MT inversion
- User-friendly interface for creating and editing 2D meshes
- Display of seismic horizons and wells
- Detailed control of inversion parameters: interactively modify and QC model
- Output sensitivity maps



*Apparent resistivity and phase pseudosections of both observed and synthetic data.*

# WinGLink software features

## 3D MT and CSEM forward modeling

### 3D finite-difference code

- Powerful graphical interface to edit the 3D mesh
- Display of seismic horizons, wells, and reservoir limits

### Editing tools

- Rotation, translation, swapping, and expansion of mesh
- Replacement of values or ranges
- Model smoothing
- Removal and checking of isolated or air-filled cells
- Lock of cell resistivity values
- Tears (discontinuities) insertion
- Station status editor utilization
- Copy of resistivity from one place to another
- Ability to interface edit, including vertical and horizontal limits

### Forward computation of MT and CSEM responses

- Synthetic data frequencies
- Convergence accuracy and criteria
- Boundary conditions
- 3D mesh for forward or inverse computations or Linux clusters
- Inversion results import capability
- SEG-Y and ASCII x, y, z value format export capability

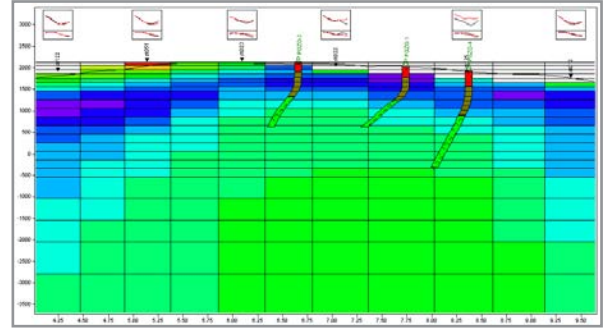
### 2.5D Gravity Modeling

- Integrated modeling of gravity and magnetics data and resistivity from MT inversion

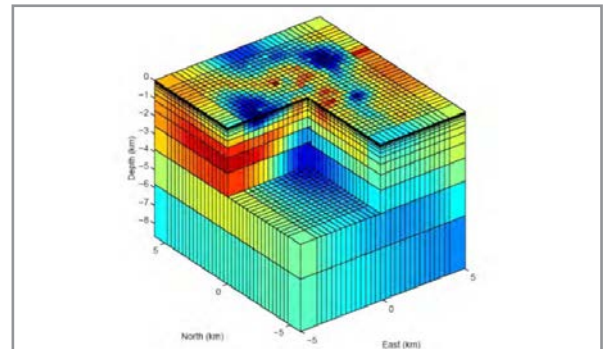
## Interpreted Views and Montage

### Create a montage of maps and cross sections from multiple sources by importing

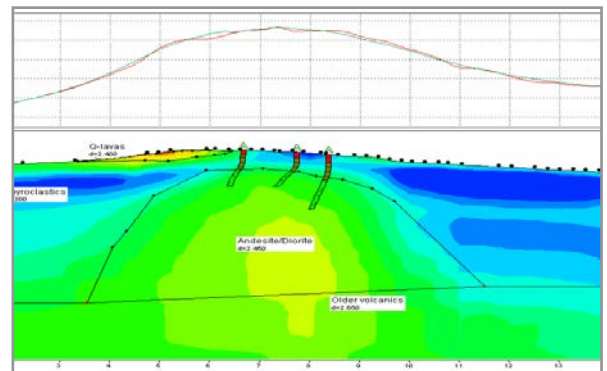
- Gridded maps and sections
- 3D meshes: extrapolated planes or sections
- Profiles
- Polygons
- Stations
- Wells including lithology
- Cultural data including maps
- Seismic horizons
- Seismic sections in bitmap formats



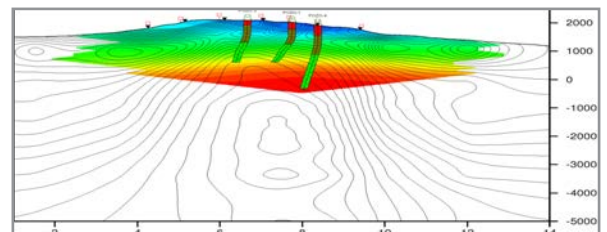
Top window for a quick comparison between observed and calculated data.



3D resistivity distribution model.



Observed and calculated gravity anomalies and polygonal lines of the gravity model on a background showing the gridded 2D MT model.

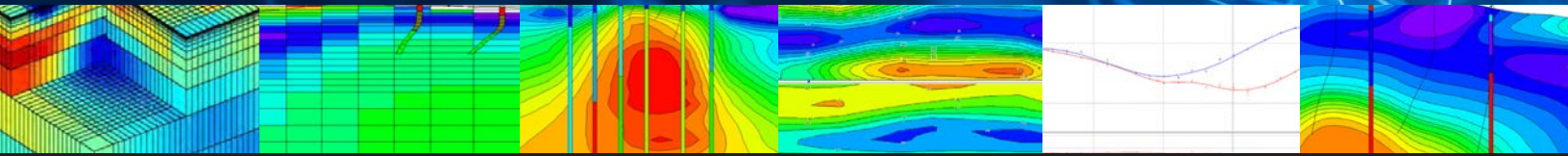


Resistivity contours from 2D MT inversion superimposed on color-fill temperature.



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