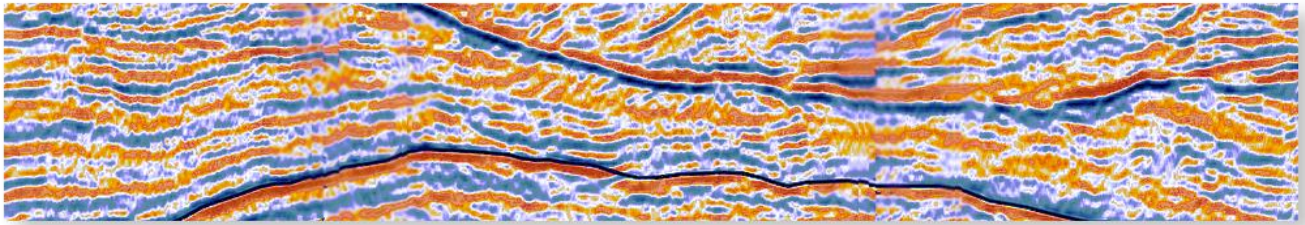


Get Reliable Velocity Volumes with Isatis Geostatistics Software



Data Reconciliation

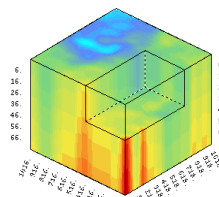
Integration of 2D and 3D data sets (2D or 3D seismic data, well logs, faults, grids).

Data Quality Control

- In-depth **data analysis** and QC of **any seismic scatter or gridded dataset**.
- Data **outlier identification**.
- Analysis of the **spatial correlations** between variables.
- **Spatial behaviour characterization** of large scatter data sets (variography and modeling).
- **Misties identification** and correction in 2D intersecting lines.
- **Average and Dix velocities computation** from RMS velocity.

Optimal Gridding through kriging

- **Coherent 3D velocity cube** estimation from 2D or 3D seismic velocities.
- **Attribute extraction** from a velocity cube along interpreted time horizons.
- **Optimal mapping** of any seismic attribute.
- Computation of **new attributes** through various arithmetical and morphological operators (ex. synthetic noise cubes).
- Estimation of **incidence angles and fold map** to validate balance between sub-stacks and for AVO / AVA analysis.
- Application of non-stationary geostatistical algorithms to better account for **velocity or impedance trends**.

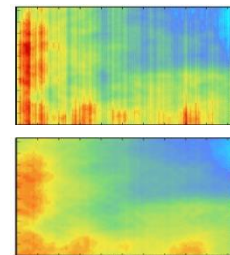


Kriging of a 3D scattered volume of stacking velocity: creation of an optimal 3D velocity cube

Geostatistical Filtering through factorial kriging

- **Removal** of acquisition footprints, patterns due to oriented picking, white or coherent noise on velocities or amplitudes.

- **Merge** of several data sets (different acquisition techniques or vintages) in a **single coherent velocity cube** using multivariate kriging techniques.



Noise Removal
Top: Raw Seismic information
Bottom: Filtered seismic information using Geostatistics

- **Calibration of velocity functions and models**, taking into account well and seismic data as well as geological features and velocity trends.
- **Automatic extraction** of common/different components from **4D surveys** using Multi Acquisition Automatic Factorial Kriging workflow.
- **Filtering of time picking errors** and assessment of the attached uncertainty.
- **Multiple Acquisition Automatic Factorial Kriging** used to extract the common part of two redundant datasets.

Quantification of Uncertainties

- Generation of multiple realisations (through stochastic simulations) for GRV computation and to assess velocity uncertainty.
- **Statistical post-processing** of the simulations.
- Interpretation of the parameters in probabilistic terms to attach a **probability of occurrence to possible scenarios**.
- **Spill point analysis**.

Isatis Overview

Data Integration

- Import and export interfaces with most Oil & Gas market formats (ASCII, Arcview Shapefile and grids, CMG, DXF-Autocad, Eclipse, Excel, Geoshare, LAS, ODBC, NetCDF, SEG-Y, VIP, Z-Map Plus) and professional packages (Irap Classic, Roxar RMS).
- Direct link from/to ISATIS database in Gocad®, the RML®, Petrel® and DecisionSpace® Geosciences.

Data Management

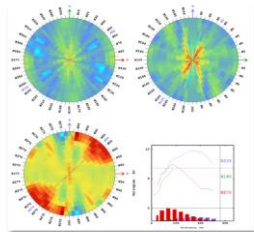
- Integrated database to save data and derived properties reusable later in the workflow.
- Parameter files and journaling file system for automatic procedures using batch.

Data Quality Control and Spatial Analysis

- Unique ability of interactive and dynamically linked basemaps, histograms, scatter diagrams, H-scatter plots, QQ-plots and PP-plots, variogram clouds, experimental variograms and related functions in any direction of space. Boxplots, swathplots. Experimental variograms on large grids.
- Unique ability of picking data in the linked graphic windows for identifying possible outliers or anomalous data.
- Unfolding/Folding.

Variography

- 2D/3D isotropic/directional variogram, identification of directions and scales of continuity through unique 3D interactive variogram map. Variogram modelling on large grids using FFT.
- Simple and cross-variogram automatic fitting. Exhaustive set of models with no limitation in the choice of nested variograms.



Full Range of Estimation Methods

- Ordinary/simple kriging/IRF-k. Punctual/block estimation. Drift estimation. Collocated co-kriging. Kriging with external drift. Kriging with bayesian drift. Stationary/non stationary models.
- Univariate/multivariate kriging.
- Global Trend Modeling. Universal Kriging.
- Kriging with local parameters.
- Powerful search neighborhood control.
- Automatic factorial kriging (MAAFK) for extracting common/different components from two grid datasets.
- Possible use of 2D or 3D faults in estimation procedures.

Stochastic Simulations

- Conditional/non-conditional simulations.

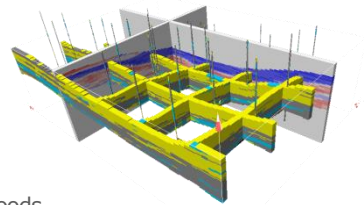
- Surface and properties modeling: turning bands, collocated co-simulations, simulations with external drift, Sequential Gaussian Simulations (SGS). Cloud Transform simulations.
- Facies modeling: Sequential Indicator Simulations (SIS), Truncated Gaussian Simulations (TGS), Plurigaussian Simulations (PGS), Boolean simulations, Multiple-point simulations, Flumy, reservoir model for meandering channelized systems.
- Possible use of 2D or 3D faults in estimation procedures.

Quantification of Uncertainties

- Probability maps, quantile maps, risk curves.
- Volumetrics. Spill Points calculation.

3D Viewer

- Representation of 3D punctual data, wells/boreholes data, 3D models, 2D surfaces, 2D/3D polygons, 2D/3D faults, 3D wireframes.
- Visualization of 3D neighbourhoods.
- Many features such as clipping, slicing, zooming, filtering, database inquiry.
- Easy export of any graphic page in standard image formats.



System Requirements

Operating system

Available on PC Intel/AMD Windows 7 or 8 32-bit or 64-bit (recommended) or Linux Red Hat Enterprise 5 (or 6) or equivalent (64-bit). Isatis on Windows OS requires the PC X server Exceed V14+.

Hardware

- Processor: Pentium ~1Ghz (Windows, Linux).
- Memory: 512 MB required.
- Hard Drive: 200 MB of disk space.

License

Reprise Manager licensing system (by Reprise Software) allowing flexible use on any system. Single-user or site license system. Dongle-based license. License borrowing enabling temporary check out of a license for working offline.

Consulting Training

Our highly experienced consultants provide a wide range of top quality services for beginners and specialists in Geostatistics: one-to-one technical support, mentoring, training workshops, consulting.