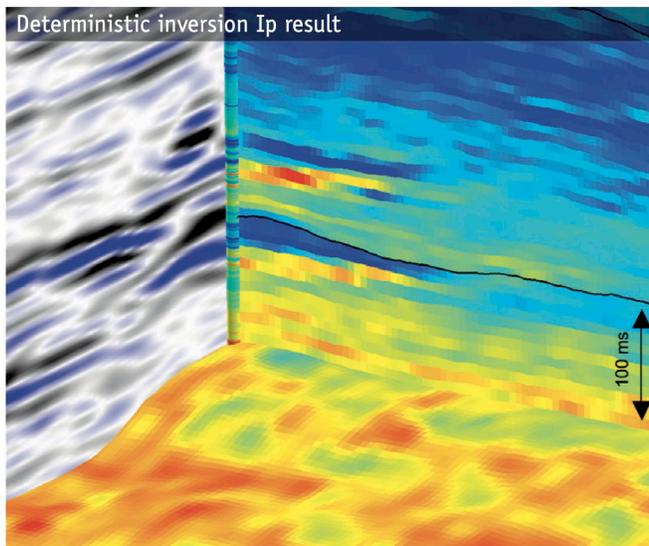
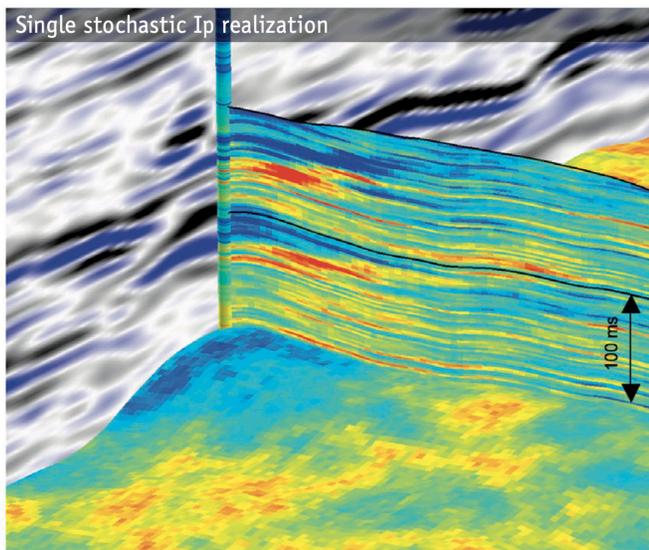


Geostatistical Seismic Inversion

GeoSI is a prestack simultaneous elastic inversion which generates high-frequency stochastic models for high-resolution reservoir characterization and uncertainty analysis. It addresses the band-limited nature of deterministic inversion methods and integrates well data and seismic data at a fine scale within a stratigraphic geo-model framework. **GeoSI** is part of the **Geoview** seismic reservoir characterization platform.



Features

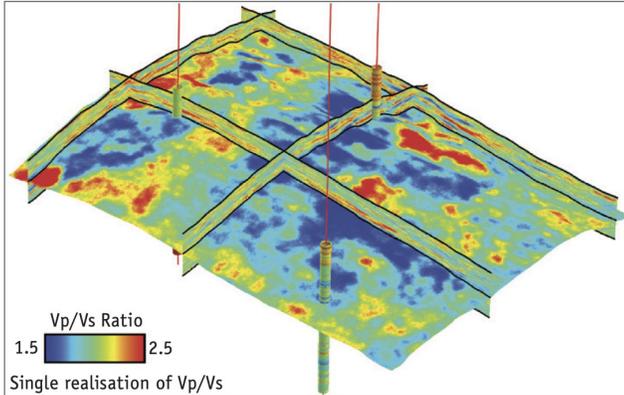
- High-frequency stochastic results
- Multiple realizations for uncertainty analysis
- Extensive conditioning and spatial constraint options:
 - Fine-scale conditioning with well data
 - Layer-dependent anisotropic variograms
 - Spatial signal to noise ratio control
- Scalable, multi-threaded computation for large datasets

Benefits

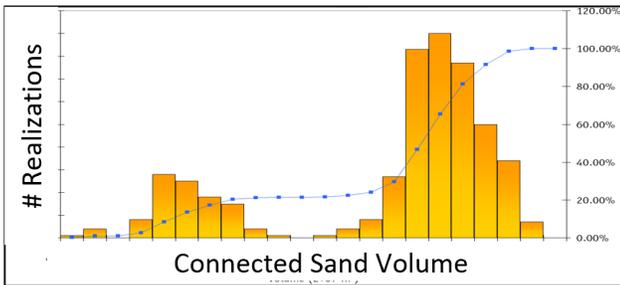
- Increased resolution by integrating well data
- Supports cascaded reservoir property simulation
- Risk/uncertainty analysis using probability cubes
- Stratigraphic framework facilitates interpretation and reservoir simulation

A single stochastic realization of P-Impedance from GeoSI (top) displays resolution approaching that of the well log data. The resolution of the equivalent deterministic inversion (bottom) is limited to the seismic bandwidth.

The seismic near-stack image is shown along with a P-Impedance well log for comparison.



Single realization of elastic property, Vp/Vs ratio.



Ranking of sand geobody volume enables connectivity analysis.

Risk/Uncertainty Analysis

The next step in the workflow is to generate a litho-probability cube from the multiple realizations. This allows the interpreter to analyze the uncertainty associated with the inversion results and examine best and worst case scenarios for the reservoir.

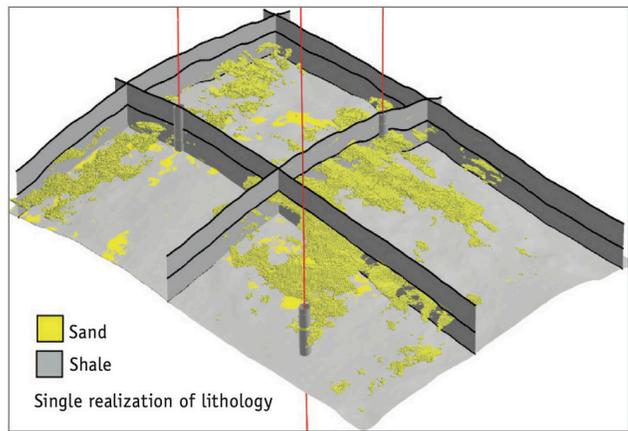
Finally, additional tools for calculating lithology volumes, geobody building and connectivity to wells are available to further enhance interpretation.

This workflow maximizes the full potential of the stochastic inversion approach. It reduces the risk associated with interpretation and leads to more accurate assessment of potential reserves.

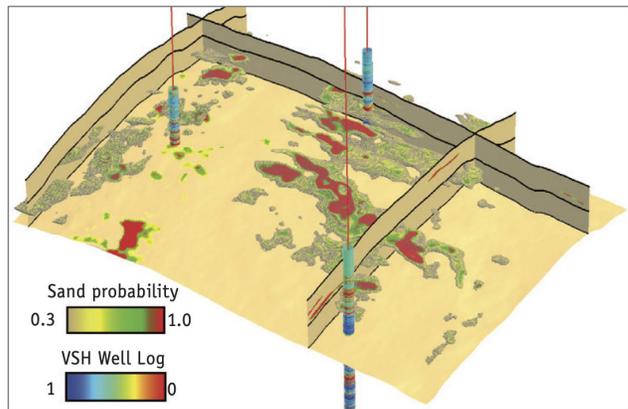
Cascaded Lithology Simulation

The multiple high-resolution realizations generated by GeoSI can be used in a lithology simulation workflow, cascaded from the inversion. The GeoView platform provides seamless integration for cascaded lithology simulation.

A user-defined petro-elastic model is used to convert the elastic reservoir attributes into lithology or other rock properties.



The suite of realizations from the cascaded lithology simulations show the range of possible sand distribution scenarios within the reservoir.



Litho-probability cubes are generated by combining the full suite of realizations.