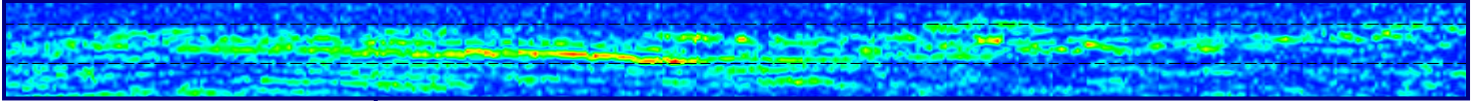




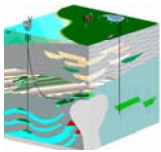
Spectral Decomposition



**PARALLEL
GEOSCIENCE**

<http://www.parallelgeo.com>

SeisCat



KJT Enterprises Inc.
6420 Richmond Ave., Suite 610
Houston, TX, 77057
USA
Tel.: +1.713.532.8144
Fax: +1.832.204.8418
Email:

gang@kmstechnologies.com
info@kmstechnologies.com
<http://www.kitenterprises.net>

SeisCat - KJT Enterprises Inc.

The spectral decomposition of seismic data is the process that transforms seismic amplitudes as a function of space and time to spectral amplitudes as a function of frequency, space and time. The frequency cubes that result from this process can potentially be used to map variations in bed thickness, geologic discontinuities and differentiation of fluids in the reservoir.

The decomposition of the seismic trace data is achieved through an implementation of the Wigner-Ville Distribution (WVD) that was jointly developed by Parallel Geoscience Corporation and Institut Francais du Petrole (IFP). The WVD describes the evolution of a signal's energy distribution as a function of both time and frequency. The frequency cubes that result from this process can potentially be used to map variations in bed thickness, geologic discontinuities and differentiation of fluids in the reservoir.

Application Benefits

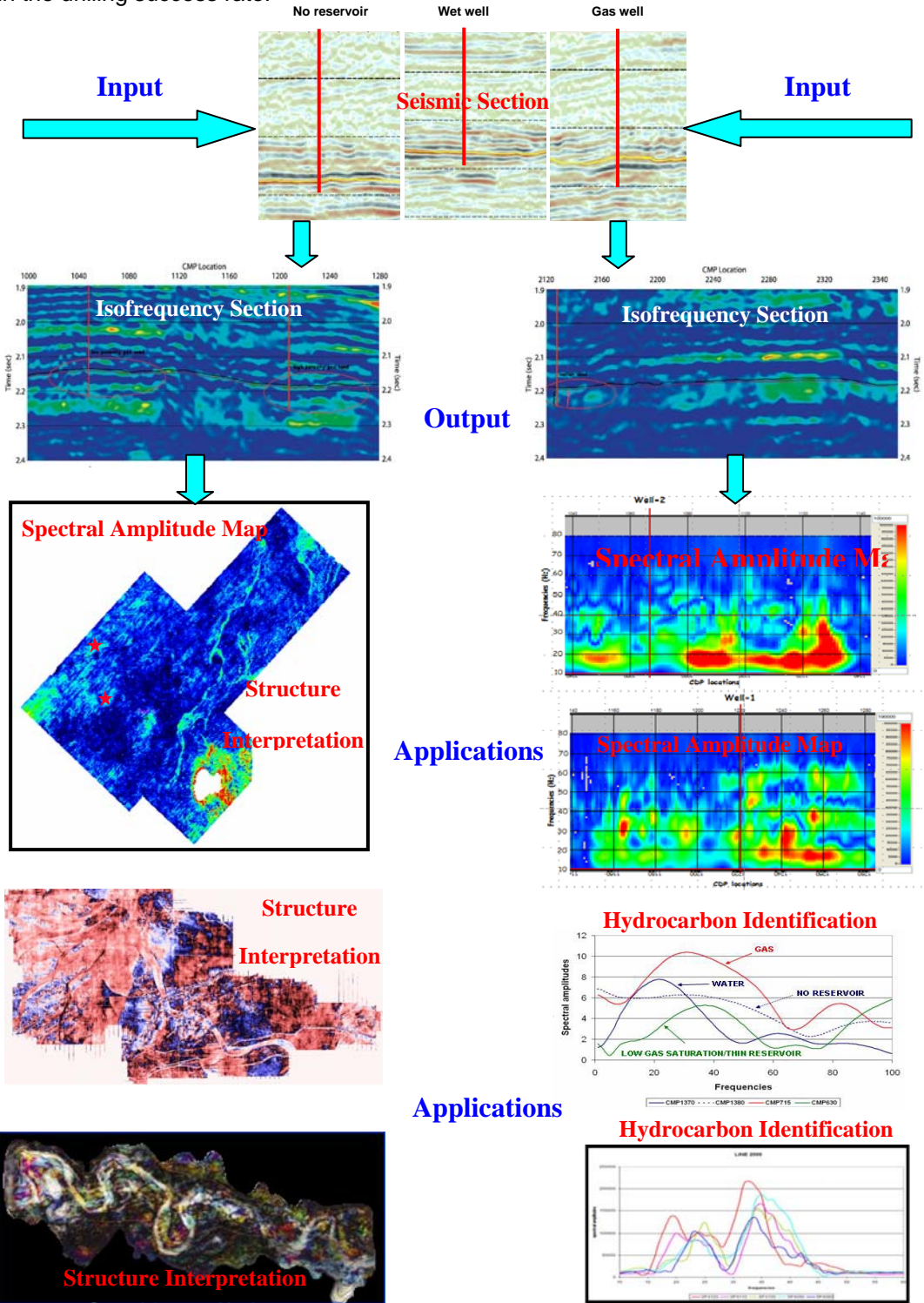
- Sub-seismic reservoir structure interpretation (thin beds, channels, geologic discontinuities, faults, etc.)
- Reservoir fluid distribution prediction, mapping and differentiation
- Direct hydrocarbon Indicator (DHI) / Hydrocarbon typing
- Well locations selection
- Prospects generation

Case study:

- Reservoir Characterization and hydrocarbon identification.

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An investigation of seismic amplitudes at the reservoir level shows negligible differences between low and high porosity gas sands, and a slightly weaker response over the water reservoir. Therefore, seismic amplitudes cannot be used to identify these particular reservoir fluids, or to differentiate between reservoirs of low and high porosity. However, differences can be observed in the spectral amplitude maps between water and gas reservoirs, and additionally between the low and high porosity gas sands. These spectral amplitudes were obtained with SPW's high resolution Spectral Power application. Studies in various parts of the world have shown that spectral decomposition provides meaningful answers for structure interpretation, hydrocarbon identification and contributes to a significant increase in the drilling success rate!



Output

Applications

Applications