

Integration of Seismic Stratigraphy and Seismic Geomorphology for Prediction of Lithology; Applications and Workflows

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As high-quality 3D seismic data has become widely available, stratigraphic interpretation has significantly improved our ability to predict the subsurface distribution of lithologies. Stratigraphic interpretation of seismic data involves the integration of stratigraphy and geomorphology, with integrated section and plan view images yielding robust interpretations of stratigraphic architecture and associated lithology. Key aspects of successful application of seismic stratigraphic analysis are: 1) integrating section and plan views in an iterative workflow, 2) understanding and recognizing geologically-meaningful patterns both in section and plan view, and 3) having efficient and creative workflows to quickly analyze geophysical data.

Seismically-derived geologic interpretations can have significant impact on exploration and production in the following ways:

Geology: 1) prediction of lithology, 2) prediction of compartmentalization, 3) development of depositional analogs, 4) Enhanced understanding of geologic processes.

Geophysics: 1) provides depositional context for geophysical analyses (e.g., DHI analysis, reservoir properties from seismic), and 2) quality control for geophysical processing.

Numerous examples from a variety of different depositional settings will be shown and key workflows will be illustrated.

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