

Case Study



Maui

The Maui field belongs to the Taranaki basin, a proven oil and gas province and the only hydrocarbon producing basin in New Zealand. An innovative 3D stratigraphic framework emphasizes its multi-story architecture, and offers new perspectives of development.

Location:
Taranaki Basin

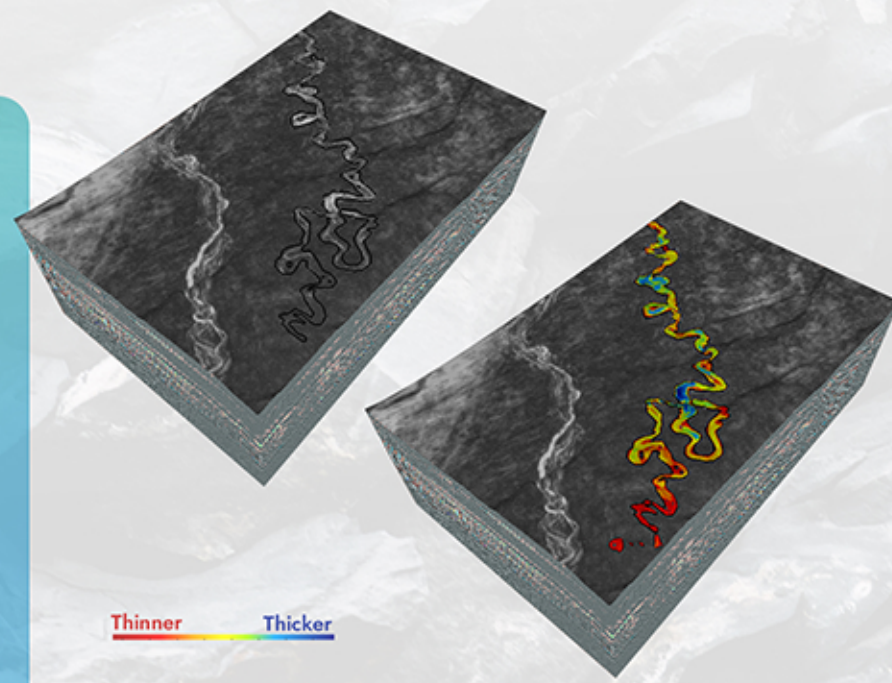
Surface area:
680 km²

Age of sediment:
Late Cretaceous to Miocene

Geological context:
Low-relief fault bounded anticlinal structure, multi-directional rifting

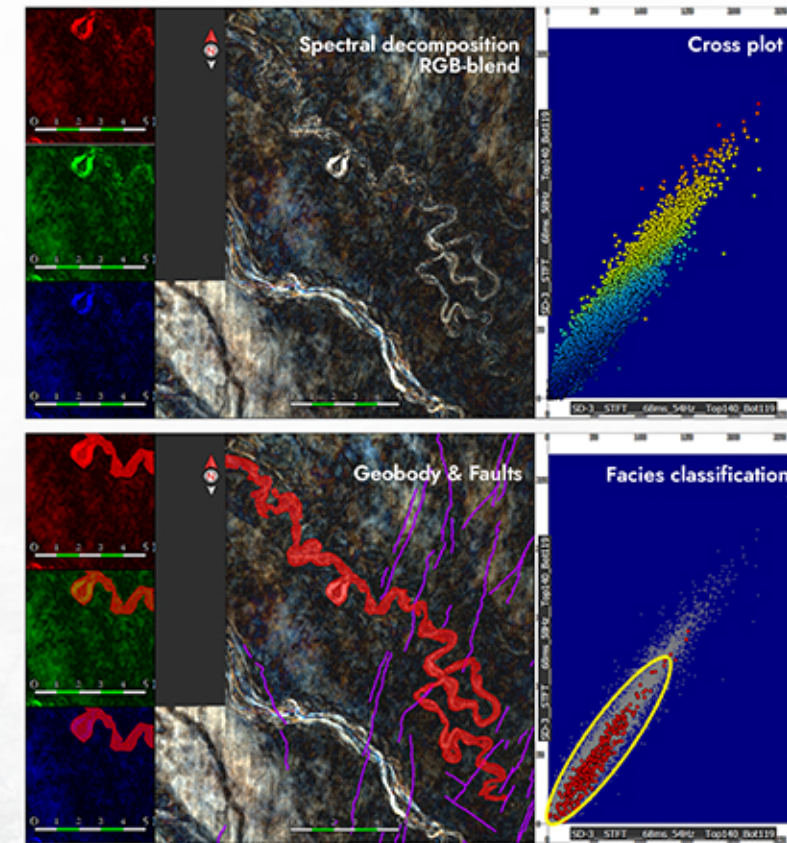
Depositional environment:
Stacked fluvial to deep marine channel systems

Main challenges:
Multi-story, multi-source and multi-directional sedimentary supply & flow



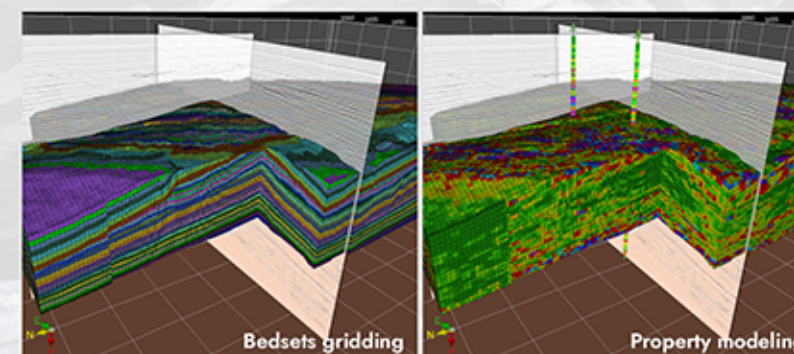
Seismic expression of a turbidite channel and subsequent geobody isochore.

Seismic data sculpted with a key stratigraphic surface. The seismic traces envelope is mapped to enhance the seismic expression of a turbidite channel. The isochore data is eventually computed from the 3D-modeled geobody.



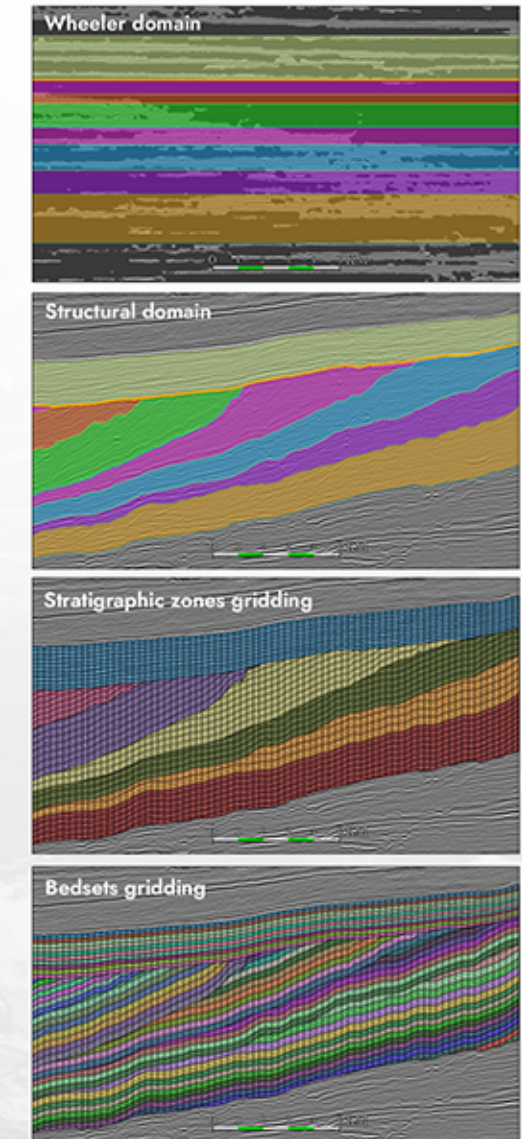
Geobody identification based on a 3-frequency classification

Stratal slice showing a turbidite system of which the seismic expression is emphasized by a Spectral Decomposition process and an RGB-blend visualization. A cross plot of the 3 discrete frequencies combined with the creation of classes allow mapping encompassed data points toward modeling a geobody.



Stratigraphic grid filled with well log properties

Rock properties are propagated from well logs to populate the RGT model at a seismic sample precision. Several geostatistics methods are applicable for each stratigraphic unit, with a settable anisotropy. The grid cells are finally filled with the corresponding rock physics samples



Stratigraphic grid derived from seismic signal-driven RGT model

The key stratigraphic surfaces are delineated at a sub-sample precision, both in structural and Wheeler domains. Stacking patterns & bedset terminations are managed within each systems tract. Bedset dimensions are tied to log peaks and markers, and the spatial resolution is fully controlled thanks to an up/down scaling.

Data courtesy of New Zealand Petroleum & Minerals.