



## **Contrasting seismic characterisation styles of methane hydrate on the continental margins of New Zealand.**

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Methane hydrate deposits are readily indicated by their associated seismic characteristics on profiles from New Zealand's active margins. These deposits occur over well-constrained pressure and temperature ranges in the upper 500 m or so of seafloor sediments and in water depths of at least 600 m. Similar temperature / pressure regimes exist in New Zealand's offshore petroleum basins, but few if any classic methane hydrate signatures have been observed in seismic data from these locations.

Recent efforts to quantify the methane hydrate resource on the Fiordland and Hikurangi margins will be presented. This work is primarily based on analysis of several recent industry and government seismic data sets for the occurrence of bottom simulating reflections (BSRs). A BSR is generally produced by seismic energy reflecting from the top of gas-filled sediments lying below the zone of hydrate stability. In active margins such as those presented here, high fluid flux results in the maintenance of a free-gas reservoir under any significant hydrate accumulation. Therefore, regions of high concentrations of hydrate often correspond to zones of significant BSRs.

Contrasting this, analyses of offshore hydrocarbon provinces elsewhere in the world, have shown significant quantities of hydrate without a corresponding BSR. In these cases, hydrates are often detected within strata that are parallel to the seafloor, thereby masking the BSR. In these low-fluid-flux passive margin settings, high concentrations of hydrate are often detected without a corresponding underlying free-gas zone. Ongoing work is analysing seismic data from the Taranaki, Canterbury and Great South Basins to determine the potential of these provinces for hydrate deposits.