



Sand injection in the Great South Basin, New Zealand

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Subsurface sediment remobilizations including soft sediment deformations, sand injections and mud volcanoes have been recognized to be a significant role in petroleum exploration. Seismic-scale sand injections have been identified in the Paleocene sedimentary successions of the Great South Basin, New Zealand. Studies from several different geological settings may reveal local controls on sand injection development that are not appeared from previous studies. These injection structures are evidenced from the 3D seismic data at approximately 2,500 to 2,700 ms TWT (two-way traveltime) beneath the seabed. The geometry and distribution of The Paleocene depositional systems imaged from an RMS amplitude attribute map show channel-shaped amplitude anomalies that cover most of the study area. Seismic sections perpendicular to the depositional systems indicate the development of high amplitude injection anomalies at margins of the submarine channels. The injection anomalies appear as saucer-shaped and incline-shaped. Sand injections occur below the polygonal faulted mud dominated interval of Paleocene to Eocene strata. The trigger is here related to growth of polygonal fault systems which occur above the sand injection interval. This is the first time that seismic-scale sand injections have been described from the Great South Basin. The implication of this study is to use subsurface sand injections into petroleum system in frontier and mature exploration area as they form seal-bypass systems.