A 3-D Seismic Interpretation of the Palaeo-Fluvial Geomorphology of the Offshore Gippsland Basin Utilising Seismic Attributes

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Abstract

The stratigraphy of the offshore Gippsland Basin exhibits extensive channelization features which developed during periods of lowstand that lowered base level causing incision and sediment bypass. These features are well documented at shallow depths but deeper in the stratigraphy the extent and geometry are less well defined. Traditional structural traps in the basin are becoming depleted and these features represent possible new targets. Equally their presence where down-cut into sealing lithologies represent a risk to the seal integrity/capacity overlying potential reservoirs concerned with CO2 storage. Seismic attributes, specifically coherence (variance) and sweetness, are co-rendered and mapped on stratal slices of the Gippsland Megasurvey 3D seismic dataset to enhance seismic images and establish the extent and geometry of channelisation in the offshore Gippsland Basin. These findings may help to identify new targets and determine potential for greenhouse gas storage, as well as helping to account for seismic anomalies that have been responsible for the misplacement of drilling targets in the past.
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