

# **Examining the Unhinged Nature of Oligocene-Miocene Carbonate Platform Development, Browse Basin, Northwest Shelf, Australia**

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## **ABSTRACT**

Traditional sequence stratigraphic models of near shore deposition assume relative consistency of stacking patterns along strike. These fail to account for the three-dimensional nature of platform evolution caused by relative sea level changes, sedimentation, and carbonate growth. Models that accommodate for along-strike variability in stacking have redefined the diachronous nature of stratigraphic surfaces. These models rely on the concept of unhinged and hinged depositional systems that are created by uniform and differential progradation, respectively. Seismic characterization of Neogene carbonate strata within a sequence stratigraphic framework provides new characterization of Browse platform development within this context. Variable subsidence rates along the NE-SW strike axis of the margin results in differential progradation that can be described by a multiple hinge model. Understanding the three-dimensional nature of stratigraphic evolution and carbonate development with the hinge model provides a tool for predicting near-shore facies changes, and new controls on relative sea level changes during the Neogene.