# Transgressions in the Gambier Limestone, Gambier Basin, S.A.

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# ABSTRACT

A detailed foraminiferal profile of the Late Eocene-Early Oligocene boundary in the Gambier Limestone was investigated by local and regional biostratigraphic correlations together with foraminiferal biofacies analysis. Occurrences of important planktonic species were used to produce chronostratigraphic charts to interpret the duration of the unconformable Eocene/Oligocene boundary.

Deposition of the Early Oligocene basal Gambier Limestone is coeval with the Aldinga Transgression and is characteristic of an isochronous flooding event at sequence boundary Pr4/Ru1. The Late Eocene Narrawaturk Marl, where present, correlates to the Tuit regional biofacies member, and the Late/Middle Eocene sand unit is coeval to the Tortachilla unit.

Hiatuses are represented by erosional surfaces at sequence boundaries. The maximum estimated duration of the hiatus ranges from Pr1 to Pr4/Ru1 indicating an age gap of approximately 3 Ma, with the majority of samples showing a hiatus between Pr3 to Pr4/Ru4, representing a time slice of approximately 2 Ma. The unconformable Eocene/Oligocene contact therefore parallels the Chinaman Gully downcut in the St Vincent Basin, indicating a regional event coeval with and in response to the oceanic-oxygen isotopic glaciation.