THE DEPOSITIONAL STYLES OF THE CAMPANIAN - MAASTRICHTIAN INTERVAL, BROWSE - BONAPARTE BASINS

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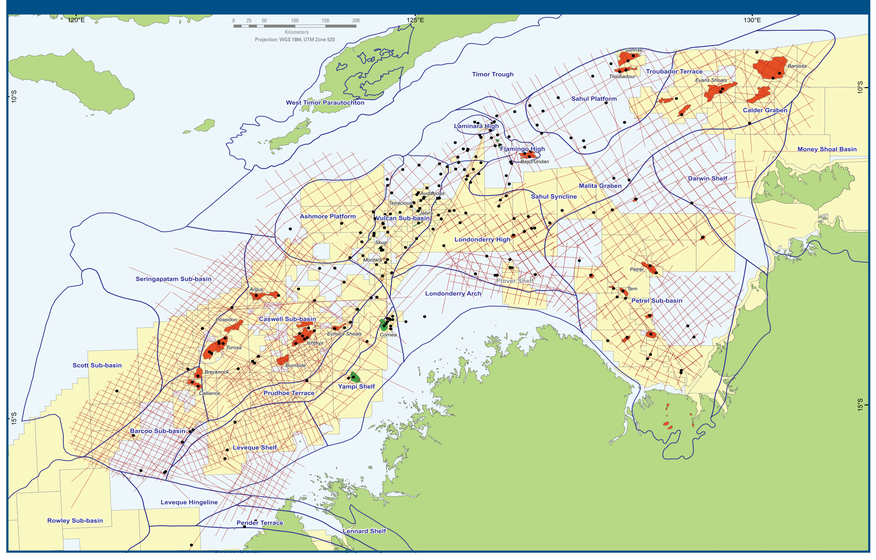
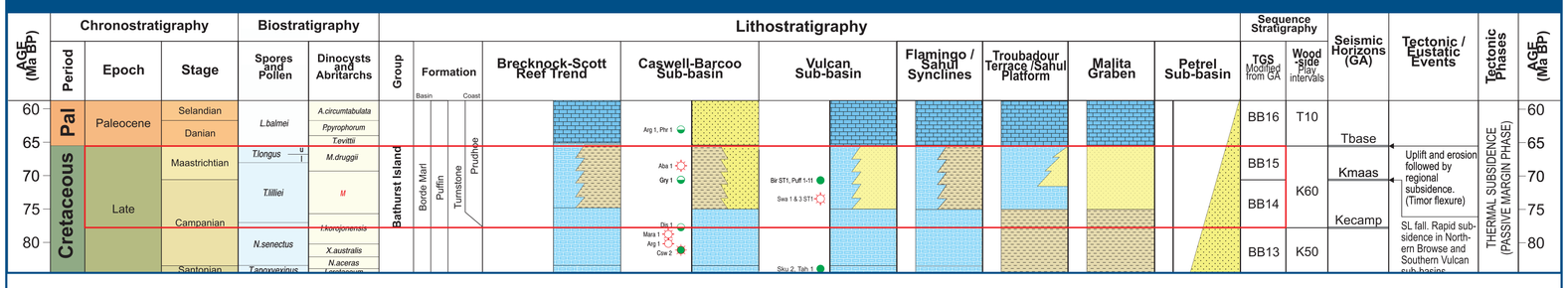
TGS has completed a sequence stratigraphic study of the Browse and Bonaparte Basins on the North West Shelf, Australia. The aim of the study was to create one, consistent interpretation for both basin's depositional history. Interpretations from 265 wells were used to constrain 38 sequences and 32 facies distributions maps. This poster focusses on the Cretaceous, Late Campanian to Maastrichtian interval (81-65Ma). It comprises the Prudhoe, Puffin, Turnstone and Borde Marl Formations of the Bathurst Island Group.

REGIONAL SETTING



UPPER CRETACEOUS STRATIGRAPHY



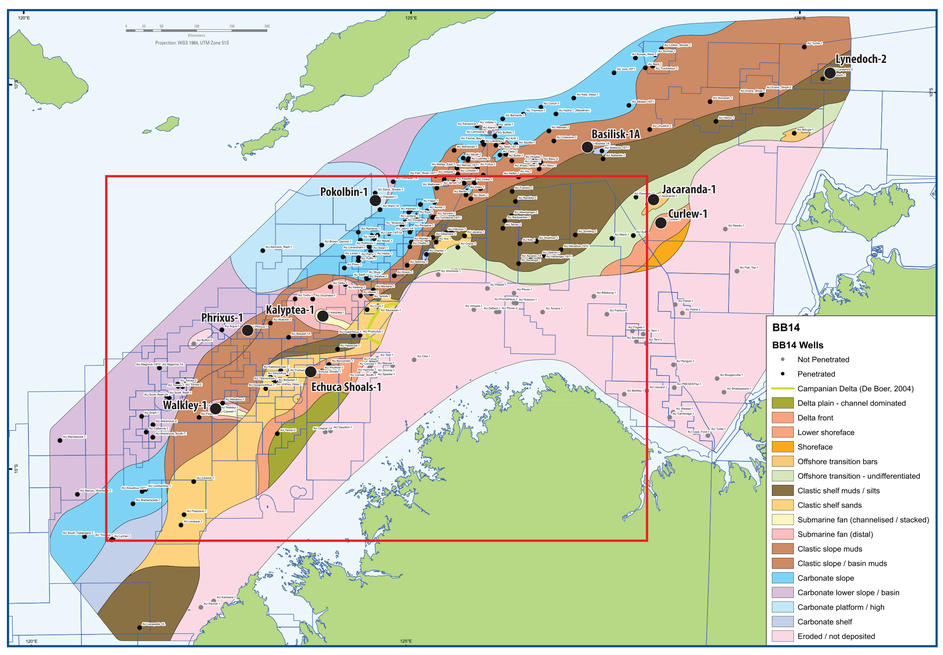
Overview

Sequences were interpreted using well data and 2D seismic and correlated across the various sub-basins and highs. The sequences were based on those defined as part of the BBHR study (Blevin et al 1997).

The varying well log responses, biostratigraphy and lithologies interpreted in the wells were used to determine the changing depositional environments and facies across the region for each sequence. The distributions of these environments and facies could then be mapped for the determination of potential reservoir distribution. The results of the study were delivered using the Facies Map Browser software.

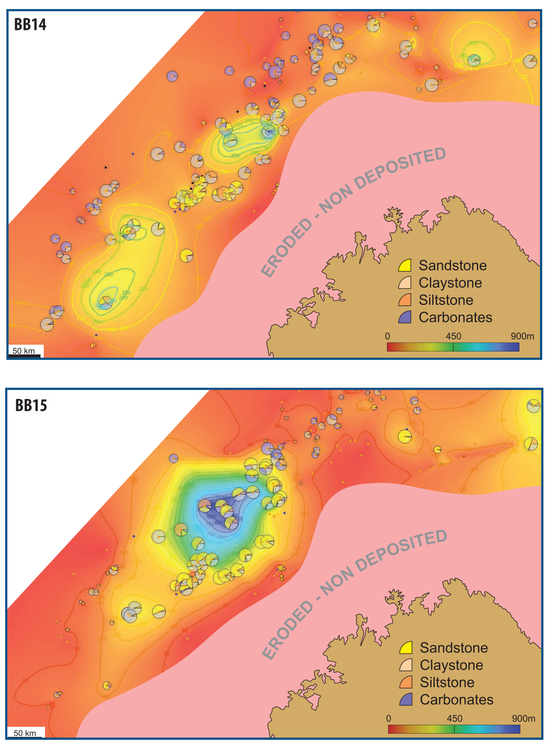
By the Late Cretaceous the North West Shelf had become an established Passive Margin, deposition was largely controlled by eustasy. In both Browse and Bonaparte, the shelf began to prograde North Westwards as sediment supply outpaced accommodation. The BB14 and BB15 sequences are defined by regional second order eustatic sea level falls in the Intra-Campanian and Earliest Maastrictian respectively.

BB14 LATE CAMPANIAN FACIES DISTRIBUTION MAP

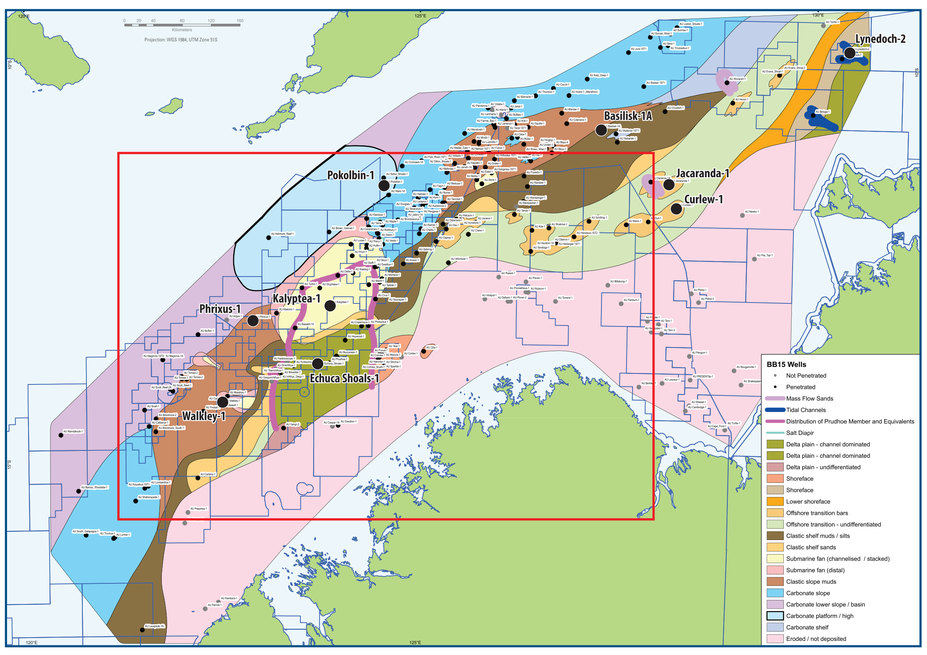


Two distinct depocentres formed in the Caswell Sub-basin during the Campanian, with submarine fan sands and muds deposited. These were likely fed by a delta system on the Yampi Shelf. More distal areas are dominated by finer grained Turnstone Formation shales and Borde Marl carbonates.

SEQUENCE ISOPACH MAPS



BB15 MAASTRICHTIAN FACIES DISTRIBUTION



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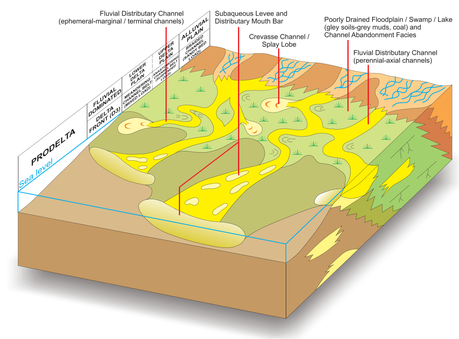
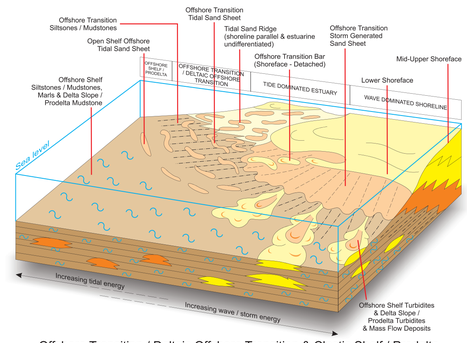
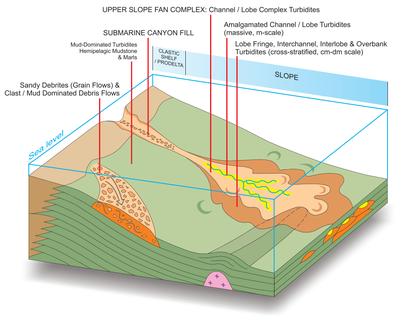
DEPOSITIONAL MODELS



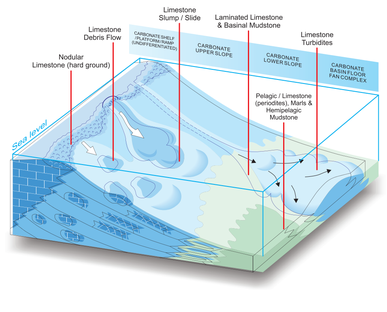
Delta Plain - Delta Front



Offshore Transition / Deltaic Offshore Transition & Clastic Shelf / Prodelta

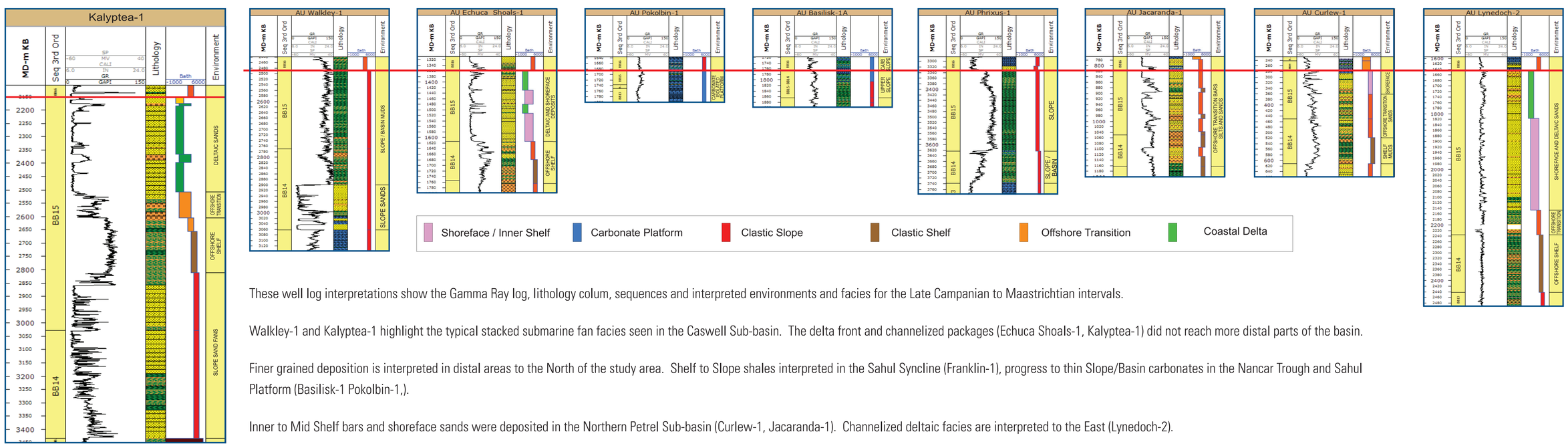


Slope



Carbonate Slope to Basin

DEPOSITIONAL MODELS



These well log interpretations show the Gamma Ray log, lithology colum, sequences and interpreted environments and facies for the Late Campanian to Maastrichtian intervals.

Walkley-1 and Kalyptea-1 highlight the typical stacked submarine fan facies seen in the Caswell Sub-basin. The delta front and channelized packages (Echuca Shoals-1, Kalyptea-1) did not reach more distal parts of the basin.

Finer grained deposition is interpreted in distal areas to the North of the study area. Shelf to Slope shales interpreted in the Sahul Syncline (Franklin-1), progress to thin Slope/Basin carbonates in the Nancar Trough and Sahul Platform (Basilisk-1 Pokolbin-1,).

Inner to Mid Shelf bars and shoreface sands were deposited in the Northern Petrel Sub-basin (Curlew-1, Jacaranda-1). Channelized deltaic facies are interpreted to the East (Lynedoch-2).

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