Interpretation of 2D seismic data Carnavon basin, North west Shelf, Australia

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This study, based on marine seismic data (located east and north of Barrow Island) and a few wells, is aimed to define the problematic of the region, and analyze and describe the stratigraphic and tectonic events. The seismic interpretation (approximately 4700 km of seismic, 3800 km of them were interpreted) was done at Lausanne university using Charisma software. A few two way time depth maps and isopach maps were done as well as two subsidence analysis (Candace-1 well and Kybra-1 well).
So, this work consisted on mapping and interpreting the seismic surveys covering part of the Barrow-Dampier sub-basins and the Candace Terrace (Carnavon basin, North Western Australia). Most attention has been given to the Carboniferous to Early Cretaceous events.
The studied zone is divisible into three different structural zones:
The Candace Terrace (Baillie et al., 1997 ; Kirk, 1985) refers in this study to that area generally east of the Flinders Fault System. This zone is delimited to the north and the east by the Sholl Island Fault.
Seismic lines cover only the northeast part of the "Barrow sub-basin". Down-to-the-basin fault blocks characterize it. The Barrow sub-basin is bounded to the east by the Flinders Fault System, Sholl Island and Eliassen Fault system.
The Mermaid Nose lies north of these two zones, separated by a fault block system. It is an anticlinal structure delimited to the west by the Eliassen Fault, and to the east by the Mermaid (or Stag) Fault (east of which lies the Enderby Terrace).
The first signs of tectonic activity observed in the region is carboniferous. It could be a Middle carboniferous inversion due to the Alice Springs orogeny. A hiatus of ~20 mio. Years precedes the deposition of the late carboniferous/Early Permian Lyons Group.
Late Carboniferous and Permian events are well visible in the Candace Terrace and Mermaid Nose. Those events can be related to the rifting of the Neotethys.
Late Permian sediments are truncated and inversion of the sedimentation direction near the Mermaid Fault is observed. It can be interpreted as a Late Permian uplift/inversion shortly after the onset of the thermal subsidence.
The Middle Triassic (or Middle Jurassic?) witnesses what can be interpreted as a transtensive event (Fitzroy movement?) in the Mermaid Nose. Part of this area may have played as an accommodation zone between the Barrow sub-basin and the Dampier sub-basin.
Jurassic events are nearly exclusively restrained to the Barrow sub-basin and along the main faults (Sholl Island and Mermaid fault) and can be related to the departure of Argoland (spreading, break-up and thermal subsidence).
Angular unconformity and erosion of the Dupuy Formation (deep sea-fan system) suppose a Late Jurassic/Early Cretaceous thermal uplift. It is followed by the deposition of a deltaic complex which is prossibly represented by the Barrow Group. A Valanginian erosional surface then took place.
Those two unconformity surfaces can be explained by thermal uplift. The Cuvier "break up" would be in two phases, with a thermic dome prograding from the North

(Argo) to the South-West (Cuvier).
The Birdrong Sandstone covers all those units and most of the faults. It marks the beginning of the passive margin stage of the North West Shelf.