

PESA ACT Technical Seminar:

The Permian and Carboniferous extensional history of the Northern Carnarvon Basin, Western Australia: Insights from 3D seismic interpretation and structural restorations.

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3.30pm, Tuesday Sept 5, 2017

Sir Harold Raggatt Theatre, Geoscience Australia

Abstract:

Permian-Carboniferous structures along the North-West Shelf of Australia have long been recognised as fundamental events responsible for the formation of the offshore basins that comprise the prolific hydrocarbon producing region. However, the tectonic setting in which this rifting occurred remains unclear.

Detailed mapping of the geometry of Permian and Carboniferous structures on the inboard margin of the Northern Carnarvon Basin is possible using regional scale interpretation of publically available 2D and 3D seismic data. Seismic interpretation, combined with 2D structural reconstruction of the Scholl Island and Mermaid Faults reveals two distinct orientations of structures. NNE trending faults were initiated in the Carboniferous or Devonian but were underfilled, resulting in erosion of the fault block crest and filling of the remnant rift-related topography by conformable sequences of later Permian and Triassic sediments. By contrast, NE-SW oriented faults experienced a distinct phase of Permian activity and are unconformably overlain by Triassic sediments.

Reactivation of the eroded fault block crests results in complex fault geometries and significant deformation of hanging wall strata during Mesozoic extension. Interpretation of the older rift architecture is important for understanding the geodynamic evolution of the margin, the en-echelon style of fault geometry in the subsequent Upper Triassic to Middle Jurassic rift event as well as the anomalous thicknesses of Triassic sediments that occur over much of the Northern Carnarvon Basin.



Biography:

Amy l'Anson graduated from The University of Sydney in 2013 with First Class Honours and the University Medal. She then worked for AGL Energy as a Graduate Geologist before returning to undertake a PhD at The University of Sydney in 2016 within the North-West Shelf research stream of the Basin Genesis Hub. Her project is focused on the Permo-Carboniferous structural evolution of the Northern Carnarvon Basin and is co-supervised by Chris Elders (Curtin University) and Patrice Rey (The University of Sydney).

RSVP: If you would like to join us for wine and cheese after the talk, please RSVP to PESA-ACT@ga.gov.au, by COB Monday September 4 (for PESA members only).