



## **Tectonic evolution of the Perth Abyssal Plain's Quiet Zone, Southeast Indian Ocean**

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During the Late Jurassic period, the Greater-Indian plate was torn away from Australia, dissociating East Gondwanaland. The Perth Abyssal Plain (PAP) is the southernmost rift segment along the western Australian margin, and has an onset age of  $\sim 136$  Ma. New marine magnetic and swath bathymetry data, crossing the entire PAP, were acquired recently on geophysical cruise ss2011v06 aboard the R/V Southern Surveyor. These have led to the outline of conjugate Indian and Australian M-series isochrons in the east and west PAP, respectively [1]. Yet, most of the PAP was created during the Cretaceous Normal Superchron (CNS, 121-83 Ma), a period of no geomagnetic field reversals, hence no comprehensive tectonic model for the PAP exists .

Here we present preliminary findings of an analytic bathymetric and magnetic investigation aimed at elucidating the PAP's quiet zone. Recent discoveries regarding the evolution of the geomagnetic field during the CNS [2] provide new time markers that can be utilized to date the oceanic crust. The magnetic anomaly data exhibit the Q2 anomaly marker ( $\sim 108$  Ma), further constraining the spreading history of the PAP. Together with the ridgelet transform method [3] for automated abyssal hill delineation, we present new constraints on the development of crustal construction processes (spreading location, direction and rates) that took place along the PAP spreading center.

### References:

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- [3] Downey, N. J. and R. W. Clayton (2007), A ridgelet transform method for constraining tectonic models via abyssal-hill morphology, *Geochemistry Geophysics Geosystems*, 8, Q03004, doi: 10.1029/2006GC001440.