

Magnetic anomalies in the East Enderby Basin, the Southern Indian Ocean

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Identification of magnetic anomaly lineations and fracture zone trends in the East Enderby Basin, the Southern Indian Ocean, are vital to understanding the geologic processes involved in the breakup of Gondwana. However, opening between India and Antarctica/Australia in the Gondwana reconstruction models has assumed a roughly east-west seafloor spreading center, almost parallel to the Antarctic coast, and the only constraints are from a few identified Mesozoic magnetic anomaly lineation and fracture zone formations in the Indian Ocean. The early history of the separations of India and Antarctica/Australia still remains unresolved, because of sparse geophysical data in the Enderby Basin, the Southern Indian Ocean.

Vector anomalies of the geomagnetic field were obtained along the obvious NW-SE trending lineament from satellite derived gravity anomalies in the East Enderby Basin during the 47th Japanese Antarctic Expedition (2005-2006). The magnetic anomaly profiles show almost symmetrical pattern, suggesting the extinct ridge, and an axis of symmetry coincides with the topographic high. The magnetic chron M1 to M9 are inferred from the magnetic anomaly profiles. The magnetic anomaly lineation trends were also determined from the vector anomaly data. The strikes of ridge axis possibly turn from NE-SW direction to E-W direction around magnetic chron M5. The seafloor spreading evolution in the East Enderby Basin will be discussed based on these results.