

MAGNETIC ANOMALY LINEATION AND FRACTURE ZONE
IN ENDERBY BASIN DEDUCED FROM GEOMAGNETIC
ANOMALY FIELD VECTOR (ABSTRACT)

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The formation of magnetic anomaly lineations and fracture zones in Enderby Basin (10°E–80°E), Southern Indian Ocean, are vital to understanding process of the Gondwana breakup. Vector anomalies of the geomagnetic field were obtained during the 30th, 31st, 32nd, and 33rd Japanese Antarctic Research Expeditions. The strikes of the magnetic anomaly lineations and fracture zones were deduced from vector geomagnetic anomaly field data as well as seasurface and satellite gravity anomalies. We surmise two stages of the seafloor spreading history based on the formation of magnetic anomaly lineations and fracture zones. Initial breakup in Enderby Basin occurred during Mesozoic sequence magnetic polarity time, possibly prior to M9 time. In the first stage, during the initial breakup time, NNW-SSE and NW-SE direction of seafloor spreading occurred to the east of Gunnerus Ridge until the breakup evolved over the northern end of Gunnerus Ridge. On the other hand, to the west of Gunnerus Ridge, NNE-SSW seafloor spreading proceeded during the same time. In the second stage, major reorganization of the mid-ocean ridge system occurred to the east of Gunnerus Ridge. The direction of the seafloor spreading turned to NNE-SSW after the breakup evolved over the northern end of Gunnerus Ridge. To the west of Gunnerus Ridge, the direction of the seafloor spreading remained unchanged. These suggest the significant role of Gunnerus Ridge in the initial breakup time of Gondwana.

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