



Magnetic study in the conjugate corridors of India and Antarctica

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Conjugate corridors of India and Antarctica are defined using several plate reconstruction models. Magnetic data in two conjugate corridors of the Bay of Bengal (Eastern continental margin of India) and Enderby Basin (East Antarctica) was compared under the constraints of bathymetry and satellite derived free-air gravity data. An excellent correlation in the magnetic anomaly pattern is observed along two pairs of profiles in these corridors. This similarity implies that the underlying crust in both the corridors has evolved continuously from the same spreading center. Seafloor spreading model studies revealed that this crust has evolved with a half spreading rate of about 3.0 cm/yr. Further, the synthetic model facilitated the identification of M11 as the oldest magnetic anomaly, and the entire Mesozoic sequence up to M0.

Multichannel seismic reflection data in the Bay of Bengal revealed that the continental crust is followed by a narrow zone of transitional crust. The continent ocean boundary is inferred using the strong Moho reflection (~ 10 s TWT). This boundary lies around 3000m water depth and is characterized by a steep gravity gradient. The inferred magnetic anomaly M11 occurs seaward to this boundary.

The present study unequivocally confirms the presence of Early Cretaceous crust, west of the 85oE Ridge in the Bay of Bengal. Further, the study rules out the presence of any extinct spreading ridge in these two conjugate corridors of Bay of Bengal and Enderby Basin.