



A re-look into the structure and tectonics of northeast Indian Ocean using Satellite derived high-resolution gravity and magnetic data

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The Bengal fan in the northeast Indian Ocean bounded by the east coast of India, Bangladesh and Burma, having a sediment load of approximately 22 km, is one region where large amount of geophysical work has been carried out to decipher the sub-surface structures. These studies have raised many more questions than they have answered. Some of the conspicuous features in the Bay of Bengal and adjoining regions in the northeast Indian Ocean are the 85E and 90E ridge, Andaman-Nicobar ridge, Sumatra trench etc., whose tectonic setting and evolutionary history has yet to be resolved unambiguously. The recent Sumatran earthquake and the associated Tsunami have increased the importance of understanding the geodynamics of this region. Hence it is necessary to integrate data from different sources to develop a meaningful interpretation and to model the evolutionary history of Bay of Bengal. It is in this regard that the now available high resolution satellite gravity and magnetic in conjunction with ship borne data help play an important role in deciphering the subsurface structures. Combined inversion of gravity and magnetic data are carried out along several profiles across the different structural units of Bay of Bengal and adjoining regions to throw light on the tectonics and geodynamics of the region. The crustal model generated from potential field data depicts a very strong reverse magnetization with thickening of the crust along 85E ridge while part of 90E ridge appears to be thin. Further the magnetic data is inverted to get information about the Curie isotherm depth from which the associated heat flow is calculated to throw light on the geothermal structure of Bay of Bengal. A 3D evolutionary model of the Bay of Bengal and adjoining regions using all available geological and geophysical data will

be presented.