

MANIFESTATION OF COLLISION TECTONICS ON GEOPOTENTIAL DATA OVER NE INDIA

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The collision of the Indian plate with the Himalayas in the North and Myanmar in the East, at the Eastern Syntaxis, in the seismically active NE region of the Indian subcontinent constitutes a complex and interesting place for geodynamic and tectonic studies. Further the high topography and thick sediments deposited by the Ganges and Brahmaputra rivers, mask the underlying crust and pose severe restrictions in constructing the geodynamical history of the region. Geopotential data offer a unique opportunity for addressing some of these issues. We utilize available/published aero-magnetic maps over Bangladesh, Meghalaya, Chachar, parts of North Assam, Brahmaputra valley, Manipur and Nagaland in the NE region of India together with Grace and Bouguer/isostatic gravity maps for understanding the complexities of the tectonics of the area. We find that the 25 km wide Eocene Hinge Zone in Bangladesh and part of the Dauki fault form a strong divide such that the gravity and aeromagnetic anomalies show high frequency anomalies to the north with most of the magnetic sources being concentrated to the north depicting shallow depths as compared to the deep sources to the south of this divide. Within the Meghalaya plateau most of the high frequency anomalies are found associated with near surface ultramafic intrusions, mineralized zones etc. and appear to be controlled by the Dudhuni and Kulsi faults. The mapped and subsurface extensions of the iron ore and Uranium are also identified. Through an analysis of the aeromagnetic data we identify extensions of the known faults below thick piles of sediments and presence of some hitherto unknown faults that appear to control the geodynamics and mineralization in this region. Results of this analysis integrated with existing MT and seismic data and its interpretation with respect to the collision tectonics of the region will be presented.

Geopotential field, collision tectonics, Asia

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