MAGNETIC DATA TO PROBE THE TECTONICS OF GUJARAT, INDIA

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The Gujarat State in the northwestern part of India is composed of Kutch-Saurashtra block, Cambay basin and Gujarat Main Land. Most of the region is covered by recent alluvium and Deccan traps. Ground and available aeromagnetic data were utilized for deciphering the nature and source of the magnetic crust. Crustal anomaly map depicts the NE-SW trends representing the continuation of the Precambrian Aravalli trend, E-W trend related to westward extension of the Narmada-Son lineament and NW-SE trends (Saurashtra region) associated with coastal tectonics which is terminated further north by the Gulf of Kutch. Jasdon Plateau and the region to the east, reflects smooth anomalies possibly representing the basement and very thin trap cover. In addition to the signatures of volcanic plugs of Junagad, Barda and Alech within Saurashtra, few new plugs with similar magnetic signature were identified in Kutch and in the northern part of Saurashtra. An elliptical feature was identified within the Gulf of Kutch that can possibly represent a batholith that might have acted as feeder to the dyke swarms towards its east and south. Four major faults were identified in the Saurashtra region; that appears to control the magnetic anomalies. Major magnetic sources are concentrated to the west of F1. The identified NW-SE fault F1 and NE-SW fault F2 are deeper compared to the EW faults F3 and F4. DSS studies, in the Saurashtra region, have interpreted a deep seated fault, going up to the Moho, to the either side of which there is considerable change in the thickness of Moho. This subsurface fault when projected falls on F1. To have a better understanding of the structural and tectonic configuration of Gujarat, the available Gravity, MT, DSS etc. was also utilized. Results of these will be presented in terms of the structure and tectonics of the region.

Magnetic, tectonic, cambay

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