

Geomagnetic structure of the Indian Ocean ridges

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Three component magnetic survey was carried out in the Indian ocean, especially across the Southeast Indian Ridge (SEIR) and Southwest Indian Ridge (SWIR) by Japanese research vessels YOKOSUKA, KAIREI, and Icebreaker SHIRASE. Magnetic boundary strike (MBS) was calculated at the peak of the Intensity of the Spatial Differential Vectors (ISDV) obtained from the three-component geomagnetic anomaly to check if the strike is parallel to the formerly identified isochrons (mostly from the observation of magnetic total force anomaly only). In the SEIR, MBSs are almost parallel to the isochrons west of 102E where axial morphology shows domal highs and so is similar to that at fast-spreading ridges. However, MBSs vary randomly east of 102E where axial morphology shows rift valleys and so is similar to that at slow spreading ridges. MBSs vary randomly at the ultra-slow spreading SWIR. In the case of fast spreading ridges, spreading is stable and uniform with almost constant direction. However in the case of the slow and ultraslow spreading ridges, spreading is unstable and episodic. Therefore the spreading direction varies frequently, maybe due to the activity and location of volcanism in the spreading segment.