Gravity and Magnetic investigation of Southeast Indian Ridge 70oE-120oE

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The Southeast Indian Ridge (SEIR) 70oE-120oE located between Amsterdam hot spot to the west and Australian-Antarctic Discordance to the east shows changes in ridge axial morphology although the rifted high morphology is common structure in the SEIR which is the most observed along the East Pacific Rise but also axial valley morphology exists in the eastern part of this part of the SEIR as observed along the Mid-Atlantic Ridge. Therefore the study region shows both fast and slow spreading Mid-Oceanic Ridge characteristic.

In this study gravity with bathymetric data were analyzed to investigate the regional isostasy of the area and ridge axial morphology transitions. Several profiles selected across the SEIR have been analyzed using cross-spectral analysis in order to investigate the isostatic compensation of the region. In addition, axial morphology has been investigated to examine their transitions.

The geophysical investigation of the area shows that, the isostatic compensation calculated from the admittance has the best fit for elastic thickness for Plate Model (5 km) than the Airy Model (17 km). In addition, eastern and western parts of the study area have different axial morphology on the ridge topography. Axial high East pacific Rise type exists in the western part which shows the characteristic of fast spreading ridge; and axial valley Mid-Atlantic Ridge type is observed in the central and eastern part which shows the feature of the slow spreading ridge.