



Abstract Details

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Title: A von Karman covariance gravity model

Abstract:

A von Karman covariance model based on the self-affinity nature of the gravity anomalies is suggested for the Bay of Bengal. The covariance is useful for interpolation and extrapolation of the gravity data, particularly in sparsely covered areas like sea. The high resolution satellite gravity and Digital Terrain model (DTM-5) bathymetry data are used for calculating the covariance. The self-affinity nature is established by calculating the Hurst (H) coefficients. The values of H are calculated for 2-D by choosing the 400 blocks of $0.5^\circ \times 0.5^\circ$ using the power spectral method. The values of the H are averaged for the North-South and the East-West directions separately. The calculated values of the H are used for the calculation of von Karman Covariance function. The empirical covariance of the gravity and bathymetry data are compared with existing covariance models and von Karman function suggested in this study. The root mean square error (RMS), coefficient of determination (R^2) and residual sum of square (RSS) are calculated, which show von Karman function is most suitable for the free air gravity data, whereas the exponential model is most suitable for the bathymetry data.

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