

## **LARGE SCALE TECTONIC PATTERN INFERENCE FROM TIDAL GRAVITY ANOMALIES: APPLICATION TO THE AFRICAN PLATE.**

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Autocorrelation analysis of global earth tide gravity data showed that the M2 (principal lunar semidiurnal) tidal gravity anomalies (TGA) exhibit a significant spatial correlation up to a distance of about 500 km, with an approximately exponential autocorrelation decay. The comparatively short range in which this decay occurs establishes that the source of the tidal anomaly spatial variation is located in the lithosphere. Additionally, TGA shows a high and significant linear correlation with the effective elastic thickness of the lithosphere (EET) for a wide range of TGA and EET values over a good global geographic data coverage, which makes the linear regression model a predictor for EET where TGA data exist. The predictor, combined with existing EET estimates by coherence analysis, is applied to Africa. The ensuing large scale EET pattern over the African plate is presented and discussed.