



## **LITHOSPHERE MECHANICAL BEHAVIOR INFERRED FROM TIDAL GRAVITY ANOMALIES: A COMPARISON OF AFRICA AND SOUTH AMERICA**

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Earlier studies have shown that the amplitude difference of the M2 gravity tidal component (TGA) between the measured and calculated response for a viscoelastic Earth is significantly correlates to the effective elastic thickness ( $T_e$ ) of the lithosphere. Using a regression equation obtained from a global distribution, data from TGA were integrated with those obtained by other methods (gravity-topography coherence and thermomechanical analysis) providing a spatial coverage sufficient to establish regional  $T_e$  patterns for South America and Africa. A comparison and association between the  $T_e$  distribution for both continents indicates that for the African plate, the effective elastic thickness map clearly shows the dichotomy of the Neo-Proterozoic rock assemblages and structures and Pre-NeoProterozoic reworked basement. But in the case of South America, fast moving plate relatively to the African plate, lower  $T_e$  values are observed only for areas where extensive tectonics with intense volcanism occurred, suggesting that a colder mantle underlies this continental plate, while a hotter asthenosphere developed beneath the African plate due to its relative slow motion.