

A NEW GRAVITY MAP OF GREECE : DEDICATION TO DR. AGELLOS STAVROU

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A new gravity map of Greece has been processed by re-evaluating nearly 26,000 stations onshore and from the results of a new gravity survey offshore. The average grid spacing covering the Aegean sea was 3 km while the Ionian sea was less well constrained at an average spacing of 8 to 10 km. The data have been reduced for topographical effects using a constant density of 2.67 g/cm^3 . The resulting Bouguer Map shows strong negative anomalies along the western Hellenides with values ranging between -30 and -130 mgals. The Aegean area is floored by stretched continental crust and deforming mainly by extension. Maximum Bouguer values of 160 mgals occur in the Cretian sea and a series of anomalies ranging from zero to 100 mgals cover the central and northern parts of the Aegean sea. The Ionian area has strong Bouguer anomalies of nearly 200 mgals south-west of Cephalonia and Zakynthos, while offshore Corfu and Paxos Island, gravity ranges between 10 and 40 mgals. By separating the regional trends of the field from the observed, we plotted residual anomalies that clearly mark the deformational style of the sedimentary basins associated with the western Hellenides, and the deformational front associated with compression between the South Aegean arc and the Libian sea. Isostasy is strongly disturbed at the external compressional front of the Hellenides while the Aegean sea, controlled mainly by extension, is in isostatic balance. Crustal geometry and thickness determined by combining deep seismic soundings and gravity picture the tectonic regimes of the various provinces of Greece and their association with seismicity. Density distribution, isostasy, seismicity and tectonic deformation are strongly associated with each other.

