

A Geodynamic model of the Eastern Mediterranean deduced from geophysical data

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By considering all geophysical information available from the area of the Eastern Mediterranean and particularly of Greece that is seismicity, the deep seismic soundings, the gravity and the seismotectonics a model of the geodynamic behavior of this region was developed. The Hellenic Arc is tectonically controlled by a lithothermal system which is ascending from the asthenosphere into the lithosphere. This forces the crust to an upwards movement of several kilometers vertical displacement. The sedimentary cover is partly eroded and through gravitative sliding removed from its original position. The crust is thickened at the outer zones of the Hellenides, due to the great amount of sialic material compressed in this area. The hot upper-mantle material moves outwards to the SW, S and SE overriding the crust of the Ionian and the Levantine Seas. This partly causes the subduction of the thinner crust of the seas below the continental Aegean crust and initiates intermediate depth earthquakes. The downbuckled light crust in the miogeosynclinal zone is isostatically undercompensated. The downfolding-process stops at the moment the buoyancy of the light material gets too large to permit further subsidence. The process gets shifted further out and initiates a new mountain-building phase to start.

This is the case occurring presently at the Mediterranean Ridge which shows increase of crustal thickness, accumulation of light material and also deeper earthquakes than normal.

