ΓΕΩΦΥΣΙΚΗ - GEOPHYSICS

ΣΕΙΣΜΟΛΟΓΙΑ - SEISMOLOGY

ESTIMATED THERMAL STATE AND THICKNESS OF THE AEGEAN LITHOSPHERE

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The geotherms of the lithosphere are estimated at three areas in the Aegean plate. Three alternetive models for the distribution of the radiogenic heat sources in the crust are used es follows: a) constent heat production in the upper enriched crust and uniformly poor intermediate crust, b) exponential heat production in the upper crust and poor intermediete crust and c) constant heat production in the enriched crust end uniformly rich intermediate crust.

The lithospheric thickness is estimated as the depth et which the geotherm intersects the mixed volatile mantle solidus. The lithosphere is significantly thinned in the Cretan Sea, where a thickness close to 50 Km is estimated.

It gets thicker in the Prinos graben elthough it remains thin in comparison to the global everage. By contrast, thick lithospheric roots are inferred below Crete.

THE KALAMATA 13.9.1986 EARTHQUAKE: GRAVITY CORRELATION AND AFTERSHOCK SEQUENCE

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After the destructive Kalamata earthquake (13.9.86, Ms = 6.2) gravity measurements along profiles were carried out to the north and east of the city. The profiles show high gravity gradients to the north and north-east of Kalamata. The high grevity gradient near the Nedon River confirms the existence of the fault striking along the river, which forms the western boundary of both the Perivolakia graben and the extent of the severe damages from the earthquekes. High gradients along two smell N-S and one of the NE-SW profiles suggest also the existence within the graben and under the Pleistocene-Holocene sediment cover of fault(s) of probable E-W to NS-SE direction exhibiting a throw to the S-SE.

The distribution of the aftershock epicentres around Kalamata city has shown two distinct clusters separated by a narrow zone of no seismic activity. The two clusters differ substantially in a number of characteristics: (a) the southern cluster, in contrast to the northern one, shows a uniform behaviour in their analysis with the principal parameters method; (b) the southern cluster is activated later than the northern one in the aftershock sequence; (c) the mean hypocenter depth is 7 ± 2 Km for the northen cluater and 5 ± 2 Km