ISOSTATIC STUDIES IN THE HELLENIDES

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A detailed gravity database has been compiled and verified and combined with a new 2 km grid of point topographic heights. Both extend over a region 900 by 700 km, covering Greece, the southernmost part of the Balkan Peninsula, the Aegean and adjacent marine regions. The two dimensional isostatic admittance has been computed for the wavelength range 4 to 900 km. Variation in crustal thickness dominates the longwavelength admittance contributions so that the part of the gravity field which is predictable from the topographic load enables the Moho depth to be mapped. This technique gives estimates of crustal stretching beta factors which, within the Aegean, reach a maximum in an east west trending region of the Sea of Crete. The long wavelenght parts of the gravity components which do not correlate with the load show a simple dipolar anomaly parallel to the Hellenic trench and characterize the arching and subducting slab. The isostatic admittance appears to be remarkably successful in separating contributions form the slab and crustal thinning. A detailed model of crustal thickness is presented, although the model used may be inappropriate in the fore-arc region. There is no evidence for remnants of former subduction zones.

GEOLOGICAL STRUCTURE OF THE BROAD AREA OF FALAKRO MOUNTAIN AND TECTONIC RELATIONSHIPS BETWEEN W. RHODOPE ZONE AND SERBOMACEDONIAN MASSIF

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The broad area of the Falakro mountain is mainly composed of metamorphic and magmatic rocks, covered in part by Neogene and Quaternary sediments. The metamorphic rocks are subdivided into three lithologic units:

I. Unit of orthogneisses with a thicknes >2.000 m. It represents the pre-Alpine basement consisting of leucocratic muscovite gneisses, biotite gneisses - both as augen gneisses - and migmatites.

II. Unit of alternating lithologies with a thickness ranging between 300-600 m. It is subdivided into three series:

(a) Series of alternating gneisses-micaschists-marbles.

(b) Series of alternating gneisses-micaschists-marbles with intercalations of amphibolites.

(c) Series of alternating gneisses-micaschists-amphibolites (eclogite-amphibolites)-marbles with intercalations of serpentinites.

III. Unit of marbles with a thickness of ≈ 1.500 m. It consists of banded cipoline marbles, dolomitic and calcitic marbles.

The protoliths of the units II and III are probably of Mesozoic age. The magmatic rocks are represented by the syn-kinematic granite of the Skaloti area, and the post-kinematic, (Oligocene), granodiorites of Panorama and Granitis areas.

The evolution of the Rhodopian orogenic system took place during Upper Cretaceous-Lower Oligocene, starting with closure of the basin and subduction. At this stage the rocks under-went a high P/T metamorphism. During unloading they were overprinted under medium pressure (in Eocene time) and low pressure conditions. At this stage rocks with a higher grade of metamorphism, overthrust rocks with a lower grade of metamorphism, thus forming two major tectonic units: the upper tectonic unit characterised by middle to upper amphibolite facies conditions, and the lower tectonic unit by upper greenschist facies conditions, referring to the medium pressure metamorphism.

The tectonic evolution of the area produced a variety of ductile and brittle deformation structures. Folding is related to three systems of axial strike representing different deformation stages. The brittle deformation is represented by three systems of meso-to macroscale faults.

During Middle Miocene the Serbomacedonian massif overthrust the West Rhodope. During the Upper Miocene vertical movements formed the grabens of Serrae, Drama, Kavala-Prinos, and the horts of the mountains Falakro, Pangaeo and Lekani.

INVESTIGATION OF THE TECTONIC SUBSIDENCE MECHANISM IN THE NESTOS-PRINOS BASIN: New prospects for oil exploration

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The formation of the Nestos-Prinos basin, previously considered as a typical graben, is ascribed to the Kavala-Xanthi-Komotini strike-slip fault. The origin of the Tertiary Xanthi-Komotini basin is also connected to the initial activation phase of the same fault.

