CRUST AND UPPER MANTLE STRUCTURE IN GREECE: A REVIEW OF CONVENTIONAL AND MODERN METHODS

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The study of the earth's interior is one of the main interests of Seismology. Especially, the crustal and upper mantle structure of the Eastern Mediterranean region has been studied intensively, due to its high seismicity and active tectonics. The "conventional" models (refraction and reflaction of body waves and dispersion of surface waves) consider only vertical variation of the velocity. Nowdays, the development of Seismic Tomography allowed the "mapping" of the earth's interior and of three dimensional velocity models, where the velocity is not only a function of depth but also a function of lateral variations. Both conventional and modern methods used for the study of the crust and upper mantle in Greece, suggest almost the same major features. The region of the Aegean Sea and the surrounding areas lies on the boundary zone between the Eurasian and the African plates and consists of the Aegean and same small plates. The Eurasian and African plates are converging at a rate of about 1 cm/y in a approximately N-S direction.

Therefore, the region is a zone of widespread deformation, within which complex relationships exist between extensional, compressional and strike slip deformations.

The comparison of conventional and tomographic methods shows that the recent development in solid earth geophysics, such as plate tectonics, earthquake prediction and exploration for geothermal energy, demand increasingly detailed information on the three-dimensional structure of the earth's interior.

PLATINUM, PALLADIUM AND GOLD CONTENT IN THE PORPHYRY COPPER SYSTEMS OF THE SERBOMACEDONIAN MASSIF

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The studied porphyry copper systems, namely Gerakario, Pontokerasia, Fissoka and Skouries are integral parts of the Vertiskos Formation of the Serbomacedonian massif. Samples of altered mineralized porphyries, amphibolites close to the porphyries

and strongly oxidezed altered amphibolite from a fault zoze, OP-65 (Fissoka) were analyzed for platinum, palladium, gold, tellurium, arsenic and base metals.

Although Fissoka and Skouries intrusions have some common geochemical features the former differ in having lower Cu and Pd content, in both porphyry and amphibolite basement, even in the local Au-bearing mineralization. Also, the Gerakario and Pontokerasia, with a relatively weak silicifiacation and small proportion of amphibolites among country rocks, compared to Skouries and Fissoka (OP-65), are accompanied by much lower precious metal content.

Mineralogical and geochemical data from the studied porphyry systems suggest a similar behavior of precious metals during their transportation and deposition and a relationship with silicification. The presence of merenskyite (Pd-telluride) and sylvanite at Skouries, and limited fluid inclusions data from Fissoka may provide evidence for a higher temperature during the deposition of metals in the former than in latter. In addition, the low Pd content and lack a positive correlation with other precious metals at OP-65 may, reflect conditions not favorable for its mobilization rather than its deposition.

PRODUCTS OF RECENT VOLCANISM TRANSPORTED FROM NISYROS ISLAND TO ANATOLIAN PENINSULA

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Nisyros Island is one of the three recently active centers of island-arc volcanism in the Aegean Sea (the other two are in Milos and Santorini), and represents the eastern-most extremity of the island-arc chain emerged in this area. Volcanism in Nisyros Island probably started under submarine conditions, approximately some hundred thousand years ago and has continued with several eruptions. Most probably, very intensive explosive eruptions have taken place a few thousand years ago and abundant lavas together with volcanic products such as pumice fragments, volcanic bombs, lapilli, tuff and volcanic ash flows have been blown out to the surface and spread over hundreds of kilometers away from the center of eruption. These volcanic ejecta were transported in the air and deposited in Datça Peninsula of Turkey which is located 18 km east of Nisyros Island and formed 30 to 40 meters thick tuff layers. Although the western part of Datça Peninsula was covered with these volcanic products at the beginning, the majority of the transported material was eroded away by the activity of streams with time. Some of them, however, were well preserved in the depressions