

CRUSTAL STRUCTURE AND DEFORMATION OF THE SEISMOGENIC ZONES OF THE GULFS OF CORINTH AND SARONIS, GREECE, DEDUCED FROM ACTIVE SEISMIC OBSERVATIONS

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The high seismic activity in the Gulf of Corinth and the crustal structure of both, the Gulf of Corinth and that of Saronis, have been poorly understood, since the geophysical information in both Gulfs is very poor. Particularly, the fact that no crustal studies exist in these areas made it very difficult to constrain the geological concepts and understand the complex seismicity pattern as delineated by local operating seismic arrays and the National Seismological Network of Greece. In autumn 2000 we deployed 35 OBS (Ocean Bottom Seismograph) and 5 landstations along the two Gulfs and observed along a northwest-southeast oriented line shots fired from the research vessel R/V AEGAEON at 125 meters intervals. We used a tuned airgun array of 52 l volume in order to generate the seismic energy required to observe seismic signals in offsets exceeding 100 km. The energy propagated very efficiently and produced wide angle reflections from the crust-mantle boundary and the intracrustal discontinuity. We evaluated the seismic observations in common station gathers and produced travel time plots applying a linear move-out, and using 6 km/s as reduction velocity. Preliminary evaluation indicates that the crustal thickness in the Saronic Bay is of the order of 25 km while in the Gulf of Corinth is more stretched and thinned due to the intense crustal extension. The sediments and geometry of the basement demonstrate the intense tectonization of both areas and indicate that crustal fragmentation is due to very recent active stretching.