



## **Seismotectonic Study of Central Greece and Hypocenter Relocation using a Double-Difference Algorithm**

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In this study phase data from the Cornet seismological network (local seismological network of the Geophysics-Geothermics Department of the National and Kapodistrian University of Athens) and the permanent networks of the Geodynamic Institute of the National Observatory of Athens and of the Geophysics Department of Thessaloniki (Aristotle University), were merged. The data were jointly used to relocate the earthquakes that occurred in the Corinth Gulf (Central Greece) and surrounding areas. These data were initially processed with a single-event algorithm, where a re-weighting of body waves (P, S) and a re-determination of the one dimensional layered velocity structure were applied. Following, the hypocenters were relocated using a double-difference algorithm. Initially, errors were reduced from 1.5 sec, 15 and 25 km to 0.8 sec, 8 and 12 km (rms, erh, erz, respectively). Following, using a double-difference algorithm, RMS as well as the horizontal and vertical location errors (erh, erz) were minimized by one order of magnitude. After that process, the spatial distribution of the epicenters outlined some major local tectonic features in the study area. Focal mechanisms were also determined and are in agreement with corresponding local active fault characteristics. Moreover, the same methodology was applied to the aftershock sequence of large earthquakes and the results were successfully compared with those obtained by available local networks that were deployed in the study area.