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Multiplet identification from a large earthquake database in the Western part of the Corinth Gulf

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Since the spring 2000 in the framework of the CRL european project (http://www.corinth-rift-lab.org), a seismic network CRLNET has been installed in the Western part of the Corinth Gulf around the city of Aigion in a area of 30×30 km^2. 7 years of seismicity are now available; this seismicity is characterized by crisis, but also by a significant background seismicity. Having these 7 years of data (about 60 000 events), the aim of this work is to relocate precisely the whole database of earthquakes using the double-difference location approach to study the spatio-temporal patterns of the seismicity in this part of the Corinth Gulf.

For this purpose, we search for all existing multiplets from the whole earthquake database, and built a multiplet basis, which could be upgraded at each time a new event occurred. To identify multiplets, we use time-domain waveform cross-correlation taking a window around the P-wave arrival time, using manual (when available) or automatic phase picks as reference for the window choice. Data are filtered between 3 and 12 Hz.

The construction of the multiplet basis is a preliminary step in the relocation process. Next, for each multiplet, relative arrival time measurements are estimated, and we used the double-difference location approach to relocate the seismicity.

We will present the method used, some results of the multiplet identification and some preliminary results of the seismicity relocation.