TEMPORARY SEISMIC ARRAY INVESTIGATIONS IN THE CORINTH OBSERVATORY (GREECE) IN THE FRAMEWORK OF THE REAKT PROJECT

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The Gulf of Corinth is considered to be one of the most active tectonic rifts around the world. The high level of seismicity, the quaternary local faulting and the 10 to 15 mm/year approximately N-S extension rate, imply that the Gulf of Corinth is a key place in Europe for the study of various physical processes related to the origin of earthquakes, leading to the development of the Corinth Rift Laboratory (CRL). Within the framework of this effort, a local seismological network was installed since 2000 at the western part of the Corinth Gulf, around the city of Aigion, and at the northern coast of the Gulf, around the Trizonia islands. The collected data allowed to monitor the local seismicity and to accurately locate it. The network has been significantly upgraded recently, covering the whole area between Rio-Antirio and Aigion, contributing to the understanding of the tectonics and seismic activity distribution in time and space.

In 2011 the REAKT project was initiated including the Corinth Observatory as a test site to study the physics of short term seismic changes and their use for large earthquake predictability. Within the framework of this effort the installation and operation of a seismic array was planned to improve earthquake detection threshold and location accuracy. As a first step and in order to optimize array geometry and siting, two experimental small-aperture arrays were installed and operated for a period of four months during which two events of magnitude larger than 4.5 and a seismic crisis occurred in early 2012. Both four-element arrays were located in the northwestern margin of the Gulf, in the Efpalio area, in the form of almost equilateral triangles with the reference station in the center. The transfer functions calculated for both arrays indicate good azimuthal coverage. However, the existence of side-lobes and a rather wide main lobe is characteristic of spatial aliasing and low resolution in the two-dimensional wavenumber domain.

During the operation period more than 1500 events were recorded and located in association with the CRL network. The preliminary results obtained by the analysis of the data recorded during the operation of the two experimental arrays are presented and discussed, within the context of the definition of the optimum geometry and siting of the permanent seismic array which will be installed in the area.