



The ERT method to investigate tectonically active areas: examples from Agri and Ufita Basin (Southern Italy) and Kastelli Region (Crete island, Greece)

1Giocoli, A., 2Burrato, P., 3Ferranti, L., 1Lapenna, V., 1Piscitelli, S., 1Rizzo, E.,
1Romano, G., 4Siniscalchi, A., 5Soupios, P., 5Vallianatos, F., 6Vannoli, P.
1Istituto di Metodologie per l'Analisi Ambientale – CNR – Tito (PZ), Italy.

2Istituto Nazionale di Geofisica e Vulcanologia – Rome, Italy.

3Dipartimento di Scienze della Terra, Università di Napoli 'Federico II', Napoli, Italy.

4Dipartimento di Geologia e Geofisica, Università di Bari, Bari, Italy.

5Department of Natural Resources and Environment, Technological Educational Institute of Crete, Chania, Crete, Greece.

6Istituto Nazionale di Geofisica e Vulcanologia – Grottaminarda (AV), Italy.

Electrical Resistivity Tomography (ERT) method was used to study the tectonically active Agri and Ufita basin (Southern Italy) and Kastelli Region (Crete island, Greece). The principal aim was to improve the structural knowledge of the investigated areas, resolving particular problems still unexplained by superficial surveys, such as the exact position of active faults and their geometrical characterization. In particular, in Agri Valley and Kastelli Region, a georesistivimeter Syscal R2 (Iris Instruments), equipped with a multielectrode system, was used to obtain high resolution ERT across suspected fault scarps, using different arrays with electrode spacing varying from 1 to 10 m and penetration depth from about 5 to 80 m. The results highlighted fault zones with moderate resistivity contrasts in Agri Valley and with high resistivity contrast in Kastelli Region. The obtained resistivity models allowed us to image the fault plane at shallow depth, in order to determine the best emplacement of trenches for subsequent paleoseismological studies.

In Ufita Valley, a 3560 m long ERT (179 electrodes) was carried out transversally to the basin, with a roll-along technique and with an electrode spacing of 20m reaching an investigation depth of about 170 m. The ERT allowed to reconstruct the geometry and maximum thickness of the Quaternary deposits, filling the Ufita Valley. Part of this activity research has been founded by the seismological projects S2, by the Italian Dipartimento della Protezione Civile and Istituto Nazionale di Geofisica e Vulcanologia, and SE-Risk (Advanced techniques for SEismic RISK reduction in Mediterranean Archipelago Regions – Programme Interreg III).