

Title: Seismic exploration of seismogenic faults and active volcanoes in Italy

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Research program

Earthquakes and explosive volcanic eruptions are a major natural threat in Italy and a detailed geophysical imaging of the subsurface causative structures is fundamental for their comprehension and for hazard mitigation.

Among the geophysical methods the active seismic method holds the highest resolution available. Its use has experienced an extraordinary development in the last three decades, due to technological innovations for the acquisition, and to the enormous increase in processing and modeling capabilities offered by modern computer systems. Nowadays, the seismic methods allow exploring the subsurface from tens of meters up to the Moho with resolution varying from meter to kilometer, respectively.

Proposal for a PhD position

The Department of Earth, Environmental, and Resources Sciences at the University of Naples, Federico II invites applications for one PhD position in Earth Sciences. The potential PhD research project will be carried out in collaboration with the National Institute of Geophysics and Volcanology (INGV). The INGV holds a high-resolution vibroseis source (MiniVib) and a 168-channel acquisition system that have already been used the context of scientific and institutional activities for research projects aimed at the characterization of surface crustal structures in tectonically active and volcanic areas in Italy. The targets were the Apennine intramountain basins associated with active and seismogenic faults (San Gregorio Magno in Irpinia, Vallo di Diano, Media Valle dell'Aterno, Alta Val Tiberina, Castelluccio di Norcia basin); seismically active sectors of the Apulian foredeep (Piana di Apricena, Valle del Fortore) and the northern Apennines, volcanic areas (Etna, Campi Flegrei, Vulcano). The maximum investigation depth reached was about 1500 m.

The project will involve field data acquisition, processing and interpretation. The candidate expenses for field and other activities related to the PhD project will be covered by the INGV, Earthquake and Volcanoes Departmental funds. The candidate is expected to have solid background in geophysics and a general knowledge of seismic methods. Knowledge of programming techniques, seismic processing and interpretation software is desirable but not necessary.