



## NERA NA5: NETWORKING OF NEAR-FAULT OBSERVATORIES IN EUROPE

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Six European near-fault observatories (NFO) are networked in the FP7 infrastructure project NERA (Network of European Research Infrastructures for Earthquake Risk Assessment and Mitigation). The observatories are in different tectonic regimes and their emphasis varies according to the dominant hazard. The fault zones include the South Iceland Seismic Zone (SISZ) in Iceland, the Marmara Sea in Turkey, the Corinth Rift in Greece, the Alto Tiberina and Irpinia faults in the Apennine mountain range of Italy and the Valais Region in the Swiss Alps. The SISZ, the Marmara Sea and the Corinth Rift are at plate boundaries, with strike-slip faulting characterizing the SISZ and the Marmara Sea, while normal faulting dominates in the Corinth Rift. The Alto Tiberina and Irpinia faults are dominated by low- and medium-angle normal faulting, respectively, while the Valais Region is characterized by both strike-slip and normal faulting. The fault structures range from well-developed long faults, such as in the Marmara Sea, to more complex networks of smaller, book-shelf faults such as in the SISZ.

All the fault zones can generate large earthquakes ( $M \geq 6$ ) posing substantial earthquake hazard and two of them, Marmara and SISZ have experienced earthquakes of  $M > 7$ . Two of the zones, Marmara Sea and Corinth, are under ocean causing additional tsunami hazard and steep slopes and sediment-filled valleys in the Valais give rise to hazards from landslides and liquefaction. Induced seismicity has repeatedly occurred in connection with geothermal drilling and water injection in the SISZ and active volcanoes flanking the SISZ also bring the added dimension of volcano-tectonic interaction.

Each of the NFOs operates multidisciplinary observational networks and monitoring systems and some have also developed and implemented earthquake early warning systems. The aim of the networking is to establish collaboration between the NFOs to support further developments in observatory operations and research. This has been achieved through workshops focussed on the infrastructures and analysis systems, databases and data quality control, integration of multidisciplinary data and earthquake early warning systems.

Drawing on the work achieved in NERA NA5, the NFOs have acquired status as a working group in the ESFRI project EPOS (European Plate Observing System), establishing grounds for sustained networking and continued developments in research into the faulting process and resulting hazards.

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