



Near Fault Observatories within EPOS-IP: multidisciplinary data, high-level data products and community web services

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The seismic hazard generated by faults slipping in large earthquakes and the need to mitigate the risk for nearby exposed populations and infrastructures require scientists to seek a better understanding of the physics of faulting and the near-surface response to earthquake shaking. Near Fault Observatories (NFOs) are innovative research infrastructures, providing high-quality multidisciplinary data aimed at improving the understanding of multi-scale, physical/chemical processes responsible for earthquakes and faulting (the road of integration). NFOs are based on dense, state of the art networks of multi-parametric sensors (seismic, geodetic, geochemical and geophysical) continuously monitoring the underlying Earth instability processes over a broad time interval.

The NFO thematic core service (TCS) in EPOS-IP presently coordinates the effort in terms of data, data products and services generation, standardisation, implementation and usability as well as community building of the 7 European Near Fault Observatories included so far in the EPOS initiative: the Altotiberina TABOO and the Irpinia (Italy), the Corinth Rift (Greece), the Valais (Switzerland), the Vrancea (Romania), the South Iceland Seismic Zone (Iceland) and the Marmara (Turkey) Observatories. The focus of the observatories varies, ranging from small- to large-scale seismicity and includes the role of different components, such as fluids, playing in rupture initiation, the internal structure of fault systems, site effects and derived processes such as earthquake generated landslides and tsunamis.

The TCS is going toward the establishment of a Consortium Agreement to harmonize and coordinate the community intended as EPOS service providers, data suppliers, current and new NFOs; it will foster high quality open access data, products and tools and improve Europe ability to enhance its economic performance and its capacity to compete through scientific knowledge.

Within the EPOS framework, each NFO will provide raw (standard and specific) data coming from dense near-fault multidisciplinary networks and Multidisciplinary high-level scientific Data Products.

Based on these processes, the TCS has decided the implementation of two main services at European level. FRIDGE (EU - NFO Federated specific data and products gateway and Virtual Laboratory) is a common gateway to all the NFOs where the users will have the opportunity to discover and download the NFO specific data and high-level data products. It will also host simple visualization tools for multidisciplinary data as well as dissemination contents where the stakeholders will have the possibility to learn about the NFO environment and approach in Earth science including state of knowledge in earthquake generation processes. CREW (EU Testing Centre for Early Warning & Source Characterization) is the first NFO testing facility built on real-time and offline high-resolution data, aimed at fostering the development of next generation methodologies and software for real-time monitoring of faulting processes. The initial focus of the testing centre will be on operating and benchmarking various existing Earthquake Early Warning (EEW) methodologies.