



The European Plate Observing System (EPOS) Services for Solid Earth Science

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The European Plate Observing System (EPOS) aims to create a pan-European infrastructure for solid Earth science to support a safe and sustainable society. The main vision of the European Plate Observing System (EPOS) is to address the three basic challenges in Earth Sciences: (i) unravelling the Earth's deformational processes which are part of the Earth system evolution in time, (ii) understanding the geo-hazards and their implications to society, and (iii) contributing to the safe and sustainable use of geo-resources. The mission of EPOS is to monitor and understand the dynamic and complex Earth system by relying on new e-science opportunities and integrating diverse and advanced Research Infrastructures in Europe for solid Earth Science. EPOS will enable innovative multidisciplinary research for a better understanding of the Earth's physical and chemical processes that control earthquakes, volcanic eruptions, ground instability and tsunamis as well as the processes driving tectonics and Earth's surface dynamics. EPOS will improve our ability to better manage the use of the subsurface of the Earth. Through integration of data, models and facilities EPOS will allow the Earth Science community to make a step change in developing new concepts and tools for key answers to scientific and socio-economic questions concerning geo-hazards and geo-resources as well as Earth sciences applications to the environment and to human welfare.

EPOS has now started its Implementation Phase (EPOS-IP). One of the main challenges during the implementation phase is the integration of multidisciplinary data into a single e-infrastructure. Multidisciplinary data are organized and governed by the Thematic Core Services (TCS) and are driven by various scientific communities encompassing a wide spectrum of Earth science disciplines. These include Data, Data-products, Services and Software (DDSS), from seismology, near fault observatories, geodetic observations, volcano observations, satellite observations, geomagnetic observations, as well as data from various anthropogenic hazard episodes, geological information and modelling. In addition, transnational access to multi-scale laboratories and geo-energy test-beds for low-carbon energy will be provided. TCS DDSS will be integrated into Integrated Core Services (ICS), a platform that will ensure their interoperability and access to these services by the scientific community as well as other users within the society. This requires dedicated tasks for interactions with the various TCS-WPs, as well as the various distributed ICS (ICS-Ds), such as High Performance Computing (HPC) facilities, large scale data storage facilities, complex processing and visualization tools etc. Computational Earth Science (CES) services are identified as a transversal activity and is planned to be harmonized and provided within the ICS.

The EPOS Thematic Services will rely in part on strong and sustainable participation by national organisations and international consortia. While this distributed architecture will contribute to ensure pan European involvement in EPOS, it also raises specific challenges: ensuring similar granularity of services, compatibility of technical solutions, homogeneous legal agreements and sustainable financial engagement from the partner institutions and organisations. EPOS is engaging actions to address all of these issues during 2016-2017, after which the services will enter a final validation phase by the EPOS Board of Governmental Representatives.