



## **The European Plate Observing System (EPOS): Integrating Thematic Services for Solid Earth Science**

Kuvvet Atakan (1), Daniele Bailo (2), and Epos Consortium (3)

(1) University of Bergen, Department of Earth Science, Bergen, Norway, (2) Istituto Nazionale di Geofisica e Vulcanologia, Rome, Italy, (3) EPOS [www.epos-eu.org](http://www.epos-eu.org)

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. 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, during its Implementation Phase (EPOS-IP), will integrate 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.

Currently a comprehensive requirements and use cases elicitation process is started through interactions with the ten different Thematic Core Service work packages. The results of this will be used to harmonize the DDSS elements and prepare for interoperability across the various disciplines. For this purpose a dedicated workshop is planned where the representatives of all the TCS communities will jointly discuss and agree upon the harmonization process. The technical integration of the DDSS elements to a metadata structure adopting CERIF (Common European Research Information Format) standards will start after the harmonization process is completed. Various levels of maturity in the handling and availability of TCS specific DDSS elements among the different TCS groups, is one of the most challenging aspects of this integration. For this reason a roadmap for integration is being prepared where most mature DDSS elements will be implemented during the next 2 years after a community driven testing and validation process. Integration of the remaining DDSS elements will be a continuously evolving process in the coming years.