

The Satellite Data Thematic Core Service within the EPOS Research Infrastructure

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EPOS, the European Plate Observing System, is a long-term plan to facilitate the integrated use of data, data products, software and services, available from distributed Research Infrastructures (RI), for solid Earth science in Europe. Indeed, EPOS integrates a large number of existing European RIs belonging to several fields of the Earth science, from seismology to geodesy, near fault and volcanic observatories as well as anthropogenic hazards. The EPOS vision is that the integration of the existing national and trans-national research infrastructures will increase access and use of the multidisciplinary data recorded by the solid Earth monitoring networks, acquired in laboratory experiments and/or produced by computational simulations. The establishment of EPOS will foster the interoperability of products and services in the Earth science field to a worldwide community of users.

Accordingly, the EPOS aim is to integrate the diverse and advanced European Research Infrastructures for solid Earth science, and build on new e-science opportunities to monitor and understand the dynamic and complex solid-Earth System.

One of the EPOS Thematic Core Services (TCS), referred to as Satellite Data, aims at developing, implementing and deploying advanced satellite data products and services, mainly based on Copernicus data (namely Sentinel acquisitions), for the Earth science community.

This work intends to present the technological enhancements, fostered by EPOS, to deploy effective satellite services in a harmonized and integrated way. In particular, the Satellite Data TCS will deploy five services, EPOSAR, GDM, COMET, 3D-Def and MOD, which are mainly based on the exploitation of SAR data acquired by the Sentinel-1 constellation and designed to provide information on Earth surface displacements. In particular, the planned services will provide both advanced DInSAR products (deformation maps, velocity maps, deformation time series) and value-added measurements (source model, 3D displacement maps, seismic hazard maps). Moreover, the services will release both on-demand and systematic products. The latter will be generated and made available to the users on a continuous basis, by processing each Sentinel-1 data once acquired, over a defined number of areas of interest; while the former will allow users to select data, areas, and time period to carry out their own analyses via an on-line platform.

The satellite components will be integrated within the EPOS infrastructure through a common and harmonized interface that will allow users to search, process and share remote sensing images and results. This gateway to the satellite services will be represented by the ESA- Geohazards Exploitation Platform (GEP), a new cloud-based platform for the satellite Earth Observations designed to support the scientific community in the understanding of high impact natural disasters. Satellite Data TCS will use GEP as the common interface toward the main EPOS portal to provide EPOS users not only with data products but also with relevant processing and visualisation software, thus allowing users to gather and process on a cloud-computing infrastructure large datasets without any need to download them locally.