Epos TCS Satellite Data

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TCS Satellite Data is devoted to provide Earth Observation (EO) services, transversal with respect to the large EPOS community, suitable to be used in several application scenarios. In particular, the main goal is to contribute with mature services that have already well demonstrated their effectiveness and relevance in investigating the physical processes controlling earthquakes, volcanic eruptions and unrest episodes as well as those driving tectonics and Earth surface dynamics.

The TCS Satellite Data will provide two kinds of services: satellite products/services, and Value-added satellite products/services. The satellite products/services are composed of three (EPOSAR, GDM and COMET) well-identified and partly already operational elements for delivering Level 1 products. Such services will be devoted to the generation of SAR interferograms, DTM and ground displacement maps through the exploitation of different advanced EO techniques for InSAR and optical data analysis.

The Value-added satellite products/services are composed of 4 elements (EPOSAR, 3D-Def, Mod and COMET) of Level 2 and 3 products. Such services integrate satellite and in situ measurements and observations to retrieve information on source mechanism, such as the geometry (spatial location, depth, volume changes) and the physical parameters of the deformation sources, through the exploitation of modelling approaches.

The TCS Satellite Data will provide products in two different processing and delivery modes:

1- surveillance mode - routinely product generation;

2- on demand mode - product generation performed on demand by the user.

Concerning the surveillance mode, the goal is providing continuous satellite measurements in areas of particular interest from a geophysical perspective (supersites). The objective is the detection of displacement patterns changing along time and their geophysical explanation. This is a valid approach for inter-seismic movements and volcanic unrest, post-seismic and post-eruptive displacements, urban subsidence, coastal movements.

The on demand mode will allow users to process available satellite data-stack by selecting the scenes and the area of interest, and properly setting some processing parameters or to perform modelling analyses. This processing mode will guarantee the possibility to analyse areas of interest for the users, thus exploiting as much as possible the global coverage strategy of satellites, as well as performing user-driven processing, benefiting from the knowledge of the characteristics of the particular investigated area and/or deformation phenomenon.