



GENESI-DR: Discovery, Access and on-Demand Processing in Federated Repositories

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GENESI-DR (Ground European Network for Earth Science Interoperations - Digital Repositories) is a European Commission (EC)-funded project, kicked-off early 2008 lead by ESA; partners include Space Agencies (DLR, ASI, CNES), both space and no-space data providers such as ENEA (I), Infoterra (UK), K-SAT (N), NILU (N), JRC (EU) and industry as Elsag Datamat (I), CS (F) and TERRADUE (I). GENESI-DR intends to meet the challenge of facilitating "time to science" from different Earth Science disciplines in discovery, access and use (combining, integrating, processing, ...) of historical and recent Earth-related data from space, airborne and in-situ sensors, which are archived in large distributed repositories. In fact, a common dedicated infrastructure such as the GENESI-DR one permits the Earth Science communities to derive objective information and to share knowledge in all environmental sensitive domains over a continuum of time and a variety of geographical scales so addressing urgent challenges such as Global Change. GENESI-DR federates data, information and knowledge for the management of our fragile planet in line with one of the major goals of the many international environmental programmes such as GMES, GEO/GEOSS.

As of today, 12 different Digital Repositories hosting more than 60 heterogeneous dataset series are federated in GENESI-DR. Series include satellite data, in situ data, images acquired by airborne sensors, digital elevation models and model outputs. ESA has started providing access to: Category-1 data systematically available on Internet; level 3 data (e.g., GlobCover map, MERIS Global Vegetation Index); ASAR products available in ESA Virtual Archive and related to the Supersites initiatives. In all cases, existing data policies and security constraints are fully respected. GENESI-DR also gives access to Grid and Cloud computing resources allowing authorized users to run a number of different processing services on the available data.

The GENESI-DR operational platform is currently being validated against several applications from different domains, such as: automatic orthorectification of SPOT data; SAR Interferometry; GlobModel results visualization and verification by comparison with satellite observations; ozone estimation from ERS-GOME products and comparison with in-situ LIDAR measures; access to ocean-related heterogeneous data and on-the-fly generated products. The project is adopting, ISO 19115, ISO 19139 and OGC standards for geospatial metadata discovery and processing, is compliant with the basis of INSPIRE Implementing Rules for Metadata and Discovery, and uses the OpenSearch protocol with Geo extensions for data and services discovery. OpenSearch is now considered by OGC a mass-market standard to provide machine accessible search interface to data repositories.

GENESI-DR is gaining momentum in the Earth Science community thanks to the active participation to the GEO task force "Data Integration and Analysis Systems" and to the several collaborations with EC projects. It is now extending international cooperation agreements specifically with the NASA (Goddard Earth Sciences Data Information Services), with CEODE (the Center of Earth Observation for Digital Earth of Beijing), with the APN (Asia-Pacific Network), with University of Tokyo (Japanese GeoGrid and Data Integration and Analysis System).