Community Specific Visualization tools in the GENESI-DEC envrionment

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Different Earth Science and Environmental Communities usually have their specific needs in terms of data and product visualization. The fact that in real scenarios there is the strong need of jointly visualizing data that are heterogeneous in terms of format, metadata content, spatial properties, and physical measure represented, makes even more complex the development of effective user-friendly and interactive visualization tools.

This paper will present a number of different community specific visualization clients that build on the top of the GENESI-DR and GENESI-DEC projects achievements. The successfully concluded GENESI-DR project has established a Research Infrastructure providing transparent access to a network of (mainly European) Digital Repositories. The project has delivered a multi-disciplinary platform, providing discovery and access capabilities of scattered and heterogeneous data, allowing for on demand computing and making easier the dissemination of newly generated results. GENESI-DEC aims at extending the infrastructure established by the predecessor to a large scale worldwide Research Infrastructure serving research communities interested in Planet Earth information of heterogeneous nature, from marine to atmospheric, to seismological and volcanological etc. The challenge of GENESI-DEC is in fact to encompass the wider and multidisciplinary Earth Science user communities, the so-called Digital Earth Communities (Seafloor and Ocean, Global Change, Global Atmosphere, Agricultural Monitoring, Volcanology are only some of them), by responding to their needs for data, facilities and multidisciplinary collaboration. The development of community specific clients able to visualize heterogeneous data is one of the outcomes expected by GENESI-DEC.

The first visualization tool that will be described is the response to the needs of the Global Atmosphere Observation community by providing the scientists with a web-based tool that allows (1) the discovery of and access to (research) aircraft data; (2) the discovery of and access to associated satellite data; and (3) the visualization as maps of both aircraft and satellite data. The tool will allow for example the joint visualization of aircraft routes, acquired measures, and related (i.e. acquired in similar time and covering the same geographical area) satellite data. The tool will thus be useful for quickly putting in-situ measurements by aircraft into a broader context of related satellite observations and to compare both types of measurements.

The second visualization tool that will be described allows visualizing data coming from the European Multidisciplinary Seafloor Observatory and the SeaDataNet infrastructures. This will fulfil the need of the oceanographic community to have an integrated system allowing to visualize different parameters coming from different supply centres.

In both cases, the client will exploit the discovery and access services provided by GENESI-DEC and based on OpenSearch, for identifying and locating complementary data needed by the users. The clients will make use as much as possible of OGC WMS and WFS protocols, and will exploit GENESI-DEC WPS services for data pre-processing whenever needed (e.g. for converting satellite data from their native format to maps in standard format).