

Boosting cooperation in Earth Science via the EVER-EST Virtual Research Environment

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The EVER-EST VRE is the first platform integrating the innovative concept of Research Objects (ROs) into an Earth Science (ES) collaborative framework. The platform is built on more than 15 years of research into technologies for ES data search, access and exploitation. By integrating those technologies with the Research Object concept and the underlying Research Object management platform ROHub (www.rohub.org), the EVER-EST consortium has built an e-research infrastructure allowing sharing, re-using, re-purposing of ES research with the goal of fostering cooperation and cross-fertilization among researchers. The design of the platform has been driven by close interaction with end users to create an environment with scientists at its centre. Four different Virtual Research Communities (VRC) are participating in the project, providing scenarios for testing EVER-EST tools and technologies relating to natural hazards, land monitoring, supersites and sea monitoring. Each VRC has specific individual requirements but are all seeking solutions for collaborative working including sharing of resources, expertise and outcomes. This paper describes how two of the communities are participating in the project to improve collaborative working and resource sharing.

The Natural Hazards Partnership (NHP) is a group of 17 collaborating public-sector organisations providing co-ordinated advice to government and agencies responsible for emergency response during natural hazard events. Within the NHP, the Hazard Impact Model (HIM) group is tasked with modelling the impact of a range of UK hazards. HIM partners share scientific expertise and data between organisations including hydrological modelling, meteorology, engineering geology and socio-economic impact modelling. EVER-EST, through the application of ROs to the development of surface water flooding HIMs, is allowing the HIM group to cooperate more effectively across geographical, cultural and organisational boundaries. The ability to share large geographic data sets and automate model workflows between HIM partners has resulted in much more efficient model development and enhanced collaboration such that each partner can instantly share and re-use the work of other partners.

The Sea Monitoring VRC (SM) focuses on finding the best criteria and indicators for defining the Good Environmental Status (GES) of the European Seas within the Marine Strategy Directive (MSFD). The VRC is multi-disciplinary and heterogeneous involving scientists, agencies, authorities. The SM is using EVER-EST for preserving and searching MSFD documents through the bibliographic RO, overcoming documents fragmentation, and for data discovery, re-using all available data for the MSFD purposes. EVER-EST is allowing SM to reproduce the same methodology for GES assessment in different areas thanks to the creation of complex workflows executable within the platform and sharable through the RO. Furthermore EVER-EST provides cloud processing using community customized Virtual Machine.

The SM VRC also exploits the EVER-EST platform for cross-fertilization and cross validation of ROs produced by different VRCs, e.g for the evaluation of how human activities can cause posidonia meadows regression.

EVER-EST is a 3 year H2020 project which started in 2016. The platform is available for testing and the consortium is willing to involve new scientific communities to improve and enhance its services encouraging the virtual community grow.