



How can cloud processing enable generation of new knowledge through multidisciplinary research? The case of Co-ReSyF for coastal research

Eirini Politi (1), Rory Scarrott (1), Eimear Tuohy (1), Miguel Terra Homem (2), Hervé Caumont (3), Nuno Grosso (2), Antoine Mangin (4), and Nuno Catarino (2)

(1) MaREI, University College Cork, Cork, Ireland (eirini.politi@ucc.ie), (2) DEIMOS Engenharia S.A., Lisbon, Portugal, (3) TERRADUE, Rome, Italy, (4) ACRI-ST, Sophia-Antipolis, France

According to the United Nations Environment Programme (UNEP), half the world's population lives within 60 km of the sea, and three-quarters of all large cities are located on the coast. Natural hazards and changing coastal processes due to environmental and climate change and intensified human activities, can affect coastal regions in many ways, such as coastal inundation, erosion and marine pollution among others, causing loss of life and degradation of vulnerable coastal and marine habitats. To fully understand how the environment is changing across transitional landscapes, such as the coastal zone, a combination of methods and disciplines is required. Geospatial approaches that harness global and regional datasets, along with new generation remote sensing products and climate variables, can help characterise trajectories of change in coastal systems and improve our knowledge and understanding of complex processes.

However, such approaches often require Big Data and often Real-Time (RT) datasets to ensure timeliness in risk prediction, assessment and management. In addition, the task of identifying suitable datasets from the plethora of data repositories and sources that currently exist can be challenging, even for experienced researchers. As geospatial datasets continue to increase in quantity and quality, processing has become slower and demanding of better, often faster, computing facilities. To address these issues, an EU-funded project is developing an online platform to bring geospatial data, processing and coastal communities together in a collaborative cloud-based environment.

The European Commission (EC) H2020 Coastal Water Research Synergy Framework (Co-ReSyF) project is developing a platform based on cloud computing to maximise processing effort and task orchestration. Users will be able to access, view and process satellite data, and visualise and share their outputs on the platform. This will allow faster processing and innovative data synergies, by advancing collaboration between different scientific communities. With core research applications currently ranging from bathymetry mapping to oil spill detection, sea level change and exploitation of data-rich time series to explore oceanic processes, the Co-ReSyF capabilities will be further enhanced by its users, who will be able to upload their own algorithms and processors onto the system.

Co-ReSyF aims to address gaps and issues faced by remote sensing scientists and researchers, but also target non-remote sensing coastal experts, marine scientists and downstream users, with main focus on enabling Big Data access and processing for coastal and marine applications.