Ocean Surface Heterogeneity Mapping

Proof of Concept – Programming modules for novices

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Background

- Co-ReSyF Userboard and Summer School students highlighted the need to be able to upload their python programmes into the cloud, align the different steps, and process huge volumes of EO data.
- Co-ReSyF has developed a proof of concept using the Ocean-surface Heterogeneity Mapping Algorithm (OHMA) research application.
- The developer building the OHMA application is an ecologist and EO-scientist by trade with no experience of programming before Co-ReSyF.

The Algorithm

Adapted Landscape Heterogeneity Mapping (LaHMA) approach - de Bie et al., 2012;
Generates ocean surface heterogeneity maps from SST data;
Single workflow = linked standard EO tools.
Red step = case example 2 programmes

Example: Separability steps

- This example determines the number of clusters to optimally represent the variability in the EO hyper-temporal data
- Module 1 calculates the various separability measures, Module 2 assesses them
- Modules have been programmed in python as stand-alone programmes that work on a desktop
- They have then been adapted and uploaded into the Co-ReSyF workflow (Wings), tested, and integrated

Take home message

- Demonstrates the potential for novices to create multiple programmed modules, uploaded and integrated to perform multiple steps of an algorithm
- Demonstrates the capability for standard EO-tools to be made available on the platform
- Expert review needed during upload to aid with bug fixing for novices (Collaboration is essential)

Learning curve for the novice programmer to understand Git, GitHub and the difference between their local and remote directories.
- Chain of actions, and learning required is recorded
- Remaining actions is to integrate the workflow element into the Co-ReSyF suite of system tools
- Work for post-H2020 Co-ReSyF

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