

Abstract

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Title

PrimeWater Project: Exploring the cross-cutting potential of remote sensing and hydro-ecological modelling for multidisciplinary applications of inland waters

Description

PrimeWater is an EU-funded H2020 project that builds upon international cooperation – PrimeWater brings together academic institutions, research organisations, and SMEs from EU, USA, and Australia – to design Earth Observation (EO) downstream applications for the detection and prediction of harmful algae blooms (HABs).

PrimeWater aims to increase the situational intelligence of water regulators, emergency planners, and water-related industry professionals for HAB outbreaks. To this end, PrimeWater maximizes the potential of EO data by enhancing the information base for inland water quality attributes, through process-based and data-oriented hydro-ecological models that leverage multi- and hyper-spectral imagery from satellite, airborne and ground-based sensors.

PrimeWater explores the cross-cutting potential of EO and hydro-ecological modeling in two ways.

First, PrimeWater develops EO-derived products that support near-real time monitoring of HAB-related events. The project explores: (a) how imaging spectrometry data can describe primary producers in terms of pigments, size classes, and functional traits, and (b) the appropriate resolutions for efficient HAB-related monitoring, assessing concurrent measurements from in situ, airborne and satellite sensors.

Second, the project adds value to EO-derived products through cross-cutting research in two topics: (a) the assimilation of EO data into process-based models, aiming at improving the skill of hydro-ecological forecasts, and (b) development of data-driven algorithms for the prediction of HAB-related hazards for short-to-medium term time horizons.

From these two scientific domains, nine scientific experiments have emerged. They are accommodated by the projects EO Science Virtual Lab, which is a research webspace that aspires to (a) augment transparency, (b) facilitate reuse and intercomparison of experimental findings, (c) solicit reviews and feedback, and (d) host new ideas and methods.

Ultimately, PrimeWater aspires to establish a complete value chain linking its scientific component with the water business sector, developing operational services that integrate ecological, financial, social and institutional perspectives at a technical level to facilitate decision-making.