PHYTOSCOPE

PHYToplankton biOdiversity multiScale Characterization using advanced OPtical technologiEs

Better understanding of **phytoplankton biodiversity** is essential in evaluating the role of each algal group in the marine ecosystem and biogeochemical cycles, both at global and local scales. The aim of Phytoscope is to investigate the usefulness of high-resolved oceanographic data (in the 3 domains: spatial, temporal and taxonomical) for better discrimination of phytoplankton composition and dynamics, related to small and large scale processes.

In order to overcome this challenge, different methodologies based on advanced observational technologies (i.e., hyperspectral optical sensors and high spatial-temporal resolution platforms) will be optimized by exploring two different approaches:

- A **global-scale approach** will be devoted to establish biogeochemical regions based on hyperspectral optical satellite data and retrievals of distribution of four major phytoplankton groups.
- A **local-scale approach** will investigate the short time-space scale variability of phytoplankton taxonomy, in particular in regions such as the Alfacs Bay (Ebro Delta, NW Mediterranean Sea), where the occurrence of toxic phytoplankton blooms have a critical environmental and socio-economical impact.

The use of these new technologies to their full potential will allow a better assessment of the variability of phytoplankton in coastal and open ocean.

PROJECT INFO

Principal Investigators:

Jaume Piera
Institute of Marine Sciences (ICM)
Spanish National Research Council (CSIC)

Astrid Bracher
Phytooptics group
Alfred-Wegener Institute for Polar and Marine Research (AWI)

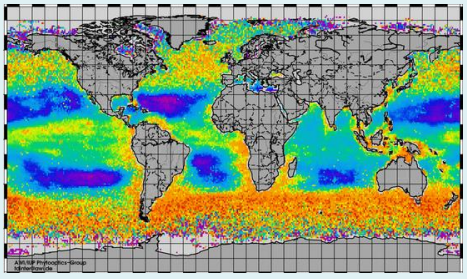
Website:

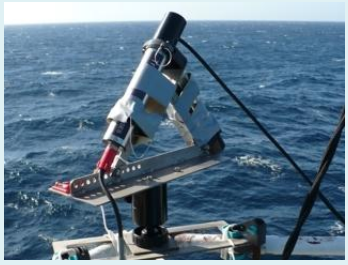
http://phytoscope-project.icm.csic.es

Duration: 2012 – 2014

Funding: TOTAL CORPORATE FOUNDATION

During the project, the use of ***new ocean observing platforms*** *such as Autonomous Underwater Vehicles (AUVs) and Unmanned Aerial Vehicles (UAVs) will improve our capabilities to more accurately characterize complex environments and phytoplankton distribution from large scale patterns to small scale structures.*





Another key factor for the project regarding increase optical measurement capabilities is the use of ***hyperspectral sensors****, mounted on different observing platforms (i.e., profilers, satellites). High spectral resolution measurements will provide the opportunity for improvements in the extraction of information about the phytoplankton community composition and other optically significant constituents in seawater.*

Institute of Marine Sciences ICM CSIC AWI ALFRED-WEGENER-INSTITUT HELMHOLTZ-ZENTRUM FÜR POLAR- UND MEERESFORSCHUNG