Sargassum Monitoring – Sargassum Detection in the Tropical Atlantic for Operational and Seasonal Planning

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Unprecedented massive landings of Sargassum are regularly registered since 2011 along the shorelines of the Caribbean Sea, Gulf of Mexico and West Africa. Algae arrive from the open sea as large rafts (tenths of km) after drifting over long distances in the Central Atlantic NERR, and accumulating in consolidation areas in the Brazil retroflexion current and probably the Gulf of Guinea. Washing-ashore has tremendous negative impacts on local populations, coastal marine ecosystems and the economy sector, especially tourism and fisheries that are severely affected.

CLS has been developing a Sargassum algae monitoring and operational forecasting service (SAMTool) based on optical satellite sensors technologies and ocean-surface drift modelling. This service intends to provide support on decision-making to governmental and non-governmental agencies involved in monitoring, evaluating, mitigating or tackling the recurrent Sargassum environmental issue: Meteorological Offices, Coast Guards, Navies, Port Authorities, Marine Park managers, scientists, NGOs, Touristic and Fisheries organisations, etc.

With the support of ESA, a pool of nearly 40 end-users from several Caribbean islands and neighboring countries: Mexico, Belize, Aruba, Curacao, Bonaire, French Antilles, Barbados, Jamaica, Dominican Republic, Sint Maarten, Trinidad & Tobago, Antigua & Barbuda, were able to use the service from April 2019 to October 2020, and gave a general very positive feedback in terms of usefulness, operationality, and forecast quality of the service.

In the frame of the H2020 e-shape project, CLS is testing the deployment of the service on a cloud infrastructure and exploring the DIAS capabilities to enhance the system and allow seasonal prediction. Further works are on-going to implement a new sargassum detection index algorithm to reduce false alarms and to explore the added-value of using SAR satellite data. The use of a cloud infrastructure in e-shape will allowed the computation of a reanalysis of sargassum detection at 300-m resolution on Sentinel-3 data and will extent the computing capacity of the drift model to predict the Sargassum arrival months in advance.

The presentation will focus on the scientific and technical results of the seasonal approach developed in e-shape.