

Researcher in ocean remote sensing

Position duration: 1 year and 10 months, starting date: February, 15th 2020

Responsible : Audrey Minghelli, associate professor (minghelli@univ-tln.fr) ; +33.4.94.14.22.29

Partners : Léo Berline (M.I.O), Cristèle Chevalier (M.I.O), Julien Jouanno (LEGOS) and Malik Chami (Sorbonne Université)

Location of the position : Laboratoire Informatique et Systèmes (LIS), group « Signal-Image », University of Toulon, campus of La Garde (Toulon, France)

Description of the position: Since 2011, massive strandings of brown algae (Sargassum) have affected the coasts of the West Caribbean, Brazil and West Africa (figure 1). Their environmental and socio-economical impacts are now considered very significant, leading to growing concern in the scientific community and civil society. The FORESEA Project (supported by the French National Research Agency, 2020-2022) aims at monitoring, modeling and forecasting the Sargassum strandings in the ocean. Satellite Sargassum detection is central to understanding and predicting the phenomenon. Classical methods detect Sargassum with spectral indexes (AFAI, MCI, FLH) and the main objective of the position is to improve the Sargassum detection techniques from space. A special effort will be dedicated to identify rafts when located under a layer of water and to complementary make use of available satellite images (e.g., Sentinel-2 and 3, MODIS, VIIRS...) to monitor Sargassum at different scales (from 10 m to 300 m). From these multiscale observations, we expect to gain understanding on the observability of the Sargassum with high coverage - low resolution sensors such as MODIS, and on the dynamical properties of the Sargassum rafts (organization, aggregation, break-up, drift). To reduce the processing time, deep learning methods can be considered.



Figure 1: Sargassum and Sentinel-3 image

The schedule of the work will consist in (i) gathering the satellite ocean color data of interest for the project, (ii) correcting the satellite data for the atmospheric effects, (iii) applying the current bio-optical algorithms (and improving them if necessary) to identify and to determine the Sargassum abundance from satellite data.

Education and required skills:

PhD in image processing and/or remote sensing; basic knowledge in radiative transfer modelling, Deep learning methods, skills for the redaction and synthesis (oral and writing). Good communication skills (oral and writing). English read, written and spoken.

Knowledge in IDL, Matlab, Python language, ENVI software and Linux operating system is appreciated.

Application (CV and motivation letter) should to be sent by email to Audrey Minghelli (minghelli@univ-tln.fr) by January 8, 2020.