

Wednesday, October 10

Oral Session 7

11:10–12:30

11:50–12:10

SPECTRAL PROPERTIES OF SARGASSUM REFLECTANCE SPECTRA: RELATIONSHIPS WITH SARGASSUM FRACTIONAL COVERAGE AND DEPTH

Since 2011, holopelagic *Sargassum* spp. algae, commonly found in the Sargasso Sea, repeatedly stranded on Caribbean and African coasts causing large ecological, societal and economical damages. Their sources and the causes of their arrival in the North tropical Atlantic are still unknown. With their high spatial and temporal resolutions, ocean color satellite sensors are powerful tools to study *Sargassum* distribution. *Sargassum* detection is made using specific spectral indexes (e.g. MCI for MERIS/OLCI and FAI/AFAI for MODIS/VIIRS), but the relationships between these index values and the corresponding *Sargassum* coverage and biomass is still poorly constrained. In 2017, a large dataset of above-water reflectance spectra of *Sargassum* rafts were acquired during two campaigns in the North Tropical Atlantic using TriOS RAMSES hyperspectral radiometer (350 to 950 nm). A camera was coupled to TriOS radiometers to take simultaneous pictures of the sampling area. For each spectra, the corresponding *Sargassum* fractional coverage as well as an indicator of the *Sargassum* depth (surface/sub-surface), were then extracted from these pictures. Here we present the relationships obtained between these two parameters and several algae indexes, such as AFAI and MCI. First results indicate a good linear correlation between these indexes and the *Sargassum* fractional coverage. Classification and functional PCA methods on spectral data were also used to better understand the variability in magnitude and shape of reflectance spectra with the *Sargassum* fractional coverage and depth. Results of this study allow to develop new algae indexes and algorithms to identify and estimate *Sargassum* coverage from remote sensing reflectance.

Danielle Teixeira Alves Da Silva, Mediterranean Institut of Oceanography (MIO), danielle.teixeira@mio.osupytheas.fr

Anouck Ody, Mediterranean Institut of Oceanography (MIO)–IRD, anouck.ody@mio.osupytheas.fr,

<https://orcid.org/0000-0003-3539-1059>

David Nerini, Mediterranean Institut of Oceanography (MIO), david.nerini@univ-amu.fr

Anne Petrenko, Mediterranean Institut of Oceanography (MIO), anne.petrenko@mio.osupytheas.fr

Audrey Minghelli, LSIS Laboratory–University of South Toulon Var, minghelli@univ-tln.fr

Jean-Michel André, Mediterranean Institut of Oceanography (MIO), Jean-Michel.Andre@mio.osupytheas.fr

Léo Berline, Mediterranean Institut of Oceanography (MIO), leo.berline@mio.osupytheas.fr

Thomas Changeux, Mediterranean Institut of Oceanography (MIO), thomas.changeux@ird.fr

Thierry Thibaut, Mediterranean Institut of Oceanography (MIO), thierry.thibaut@univ-amu.fr