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An alliance of European marine research infrastructure to meet the evolving needs of the research and industrial communities

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Floating University course

Use bio-optical parameters as convenient tool to study marine biogeochemical processes

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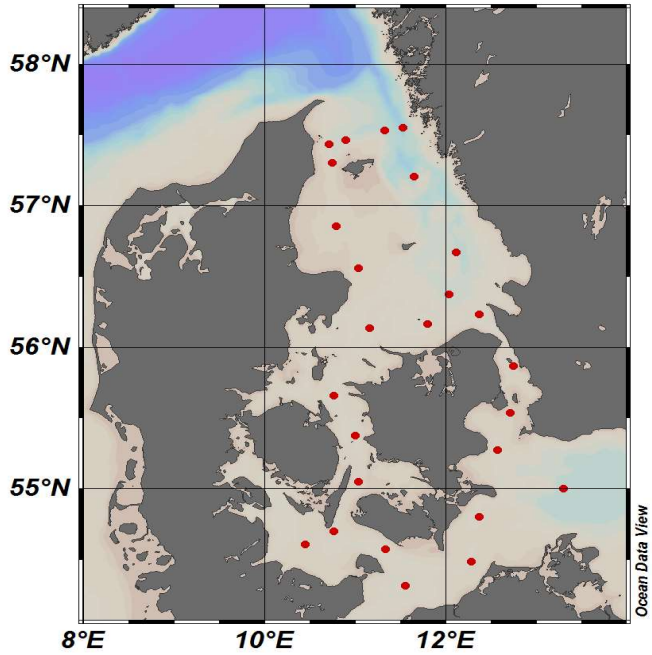
Floating University Course on board r/v Oceania 1 - 8 June 2021 from Gdansk, Poland, passage around Danish Island of Sjælland and return to Gdańsk. Mobilization day 31 May 2021
8 students representing 5 nationalities selected from 5 European countries – Italy -2 students, Greece – 2 students, UK, Denmark and Germany - 1 student each
Gender balance – 5 women, 2 men



EUROFLEETS+ . Ifremer - French Research Institute for Exploitation of the Sea . Technopolis 40 . 155 rue Jean-Jacques Rousseau . 92138 Issy-Les-Moulineaux . France
Phone +33 (0)1 46 48 22 01 . Fax +33 (0)1 46 48 22 76

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Course objectives:

The course is addressed to post-graduates student conducting education and research for development of Master of Science and Ph.D. degree. Student will be taught on basics of Baltic Sea hydrology, and the concept of inherent and apparent optical properties and relationships between those quantities. We will also aim to explain the the concept of the “optical proxies”.

We will demonstrate and train practical skills in:

- *measure inherent and apparent optical properties of sea water using set of state of the art instruments*
- *process acquired instrumental data performing spectral and noise corrections*
- *laboratory routines for spectroscopic measurements of concentrations of optically significant sea water constituents*
- *post processing of acquired instrumental data and developing of data base*

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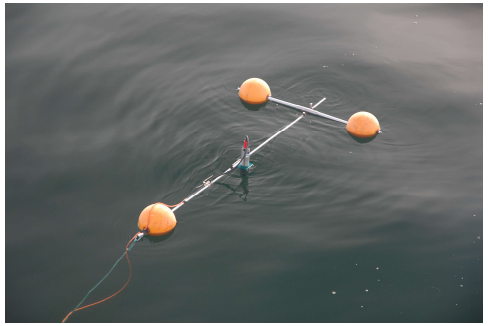
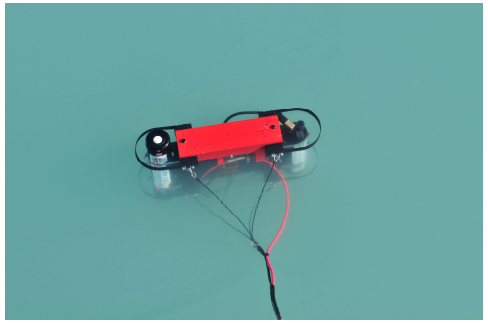
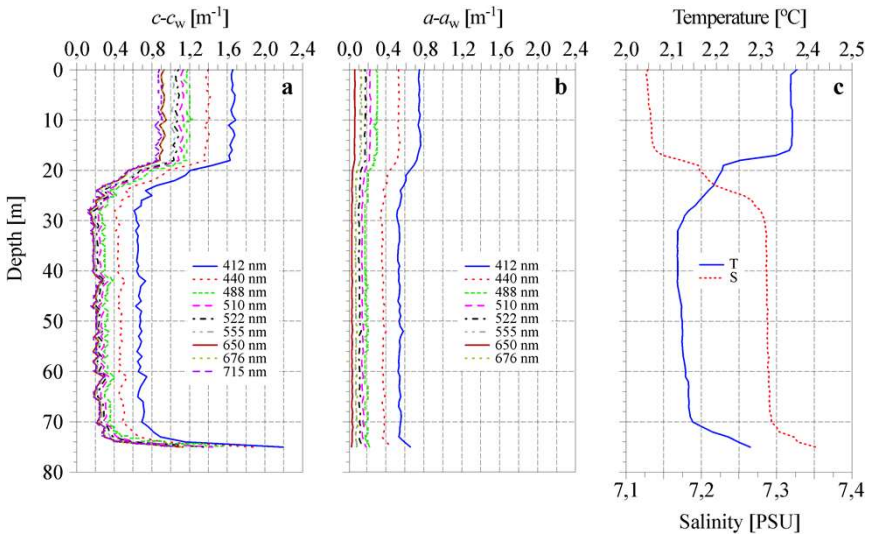
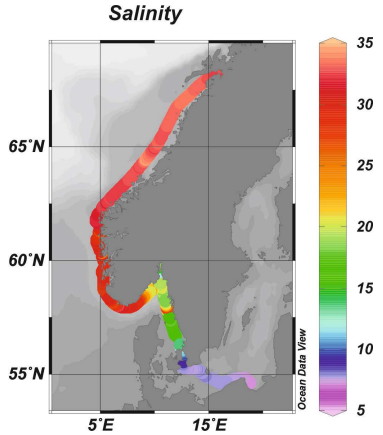
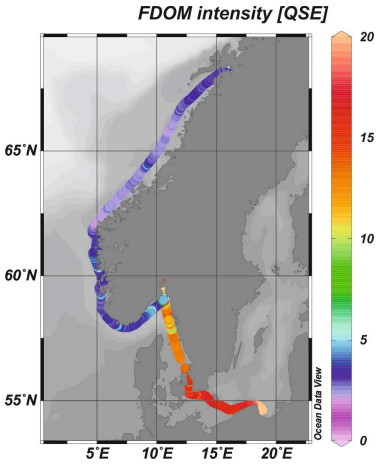




Measurement of physical parameters (T, S) and inherent and apparent optical properties along the ship track and vertical profiling on selected stations at the Danish coastal waters.







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Key words:

- **Biogeochemistry** is the scientific discipline that involves the study of the chemical, physical, geological, and biological processes and reactions that govern the composition of the natural environment. In particular, biogeochemistry is the study of the cycles of chemical elements, such as **carbon** and **nitrogen**, and their interactions with and incorporation into living things transported through earth scale biological systems in space through time.

- **Biooptic** is the scientific discipline that involves studies of the interaction of living organisms with natural light field in the environment e.g. photosynthesis, camouflage

- **Proxy** - a measured variable used to infer the value of a variable of interest

Biooptics objectives

- Constrain the spectral range at which interactions of living organisms with natural light filed occur
- Assess the spectral and energetic modification of the light field by living organisms
- Assess the adaptation of living organism to the energetic level and spectral composition of the natural light field
- Quantify the quantum yields of possible interactions
- Establish relationships between optical properties and biogeochemical variables e.g. biomass, elements concentrations

A text book: Kirk, J.T.O, 1994, Light and photosynthesis in Aquatic Environment