ALFRED-WEGENER-INSTITUT
HELMHOLTZ-ZENTRUM FÜR POLAR- UND MEERESFORSCHUNG

SynSenPFT

Synergistic Exploitation of Hyper-and Multispectral Sentinel-Measurements to Determine Phytoplankton Functional Types (PFT) at Best Spatial and Temporal Resolution

To overcome the short-comings of current multi-spectral PFT products (supplying either knowledge on dominant groups or size fractions only, data products with strong linkage to a-priori-information) and PhytoDOAS data products (with only low temporal and spatial coverage), the project's objective is a substantial improvement of retrieving phytoplankton groups with defined accuracy and good spatial and temporal coverage. This shall be done by developing a synergistic product which contains the Chl-a (biomass) of several PFT by using complementary information from multi- and hyper-spectral satellite ocean colour data. This algorithm can be later applied to produce a synergistic PFT product from TROPOMI (on Sentinel-5-Precursor, Sentinel-4, Sentinel-5) and OLCI (on Sentinel-3).

To enlarge the coverage and to reduce the uncertainty of the PFTs and total Chl-a satellite products, as a Sentinel for SCIence Synergy Research and Development (SY-4SCI Synergy R & D) study focusing on PFTs, we

- review available PFT algorithms based on hyper- and multi-spectral datasets;
- develop an improved PFT algorithm by the synergistic use of low spatial resolution hyper-spectral data (i.e. SCIAMACHY) with high spatial multi-spectral data (i.e. MERIS).
- perform a sensitivity study, based on radiative transfer calculations, to determine the band-set needed by multi-spectral instruments (e.g. OLCI) to retrieve PFTs based on hyper-spectral data (now SCIAMACHY, future TROPOMI) PFT algorithms
- provide a scientific roadmap for future Chl-a and PFT retrievals from ocean colour (multi- and / or hyper-spectral) data

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Public project's documents: Deliverables, presentations, publications

Short German description of the outcome of SynSenPFT:

Losa S., Bracher A. (2017) SynSenPFT: ein globaler Datensatz zur Verteilung von funktionalen Gruppen von Phytoplankton im Ozean. REKLIM News und Forschungsthema des Monats November 2017. Pages 3-5

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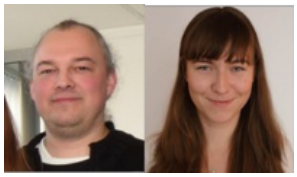

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