

New global vertical distribution of gridded particulate organic carbon and chlorophyll-a concentration using machine learning for CMEMS

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As part of the Copernicus Marine Environmental Monitoring Service (CMEMS), the multi-observations thematic assembly center (MOBTAC) aims to provide global qualified ocean products based on observations (satellite and *in situ*) and data fusion techniques. Sauzede et al. (2016) have already demonstrated the potential of using merged hydrological measurements and ocean color satellite observations to infer the vertical distribution of particulate backscattering coefficient, a bio-optical proxy of the stock of particulate organic carbon (POC). The SOCA method, for Satellite Ocean-Color merged with Argo data to infer bio-optical properties to depth, is a neural network-based method that is trained using the Biogeochemical-Argo floats database. SOCA has been recently upgraded to improve the retrieval of POC and to additionally retrieve the chlorophyll-a concentration (Chl). Using the upgraded SOCA method with CMEMS hydrological and satellite products, weekly 4-dimensional fields of POC and associated uncertainty were retrieved for the 1998-2018 period and made publicly available from the CMEMS online portal this year. The 4-dimensional products of Chl retrieved from SOCA will be made available from CMEMS next year. Both of these products will be updated every year as new input data become available. These new CMEMS products available from the MOBTAC represent an important source of information for the quality control of Biogeochemical-Argo float observations, data assimilation and initialization/validation of biogeochemical models.