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On the use of ABACUS high resolution glider observations for theassessment of phytoplankton ocean biomass from CMEMS model products

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Ocean biomass distribution has a growing importance in the world economy as a global strategic reserve, due to environmental and industrial applications and its variability related to climate change. Satellite imagery allows multi-resolution methodologies to obtain estimation, and hopefully classification, of biomass content over sea surface. This information is largely used in numerical simulations and nowadays represents an important contribute to future projections. Nevertheless, satellite, models and classical in situ monitoring resolution/accuracy sometimes cannot provide data at the finer spatial scales needed to describe the complex threedimensional water column system. On the other hand, glider surveys allow scientists to collect observations of ocean phenomena at very high resolution along the water column, to assess numerical simulations reliability and, eventually, to assimilate these data into ocean models. In this study, we present a quantitative comparison between the glider observations collected in the Algerian Basin (Western Mediterranean Sea) during the ABACUS surveys from 2014 to 2018, and the daily outputs of two co-located CMEMS model products (i.e., GLB and IBI).
The achieved results point out that model products are well correlated with glider potential temperature measurements but they still need improvements to provide a correct representation of the chlorophyll concentration variability in the study area. Generally, IBI daily simulations present higher linear correlation with concurrent glider in situ data than GLB ones. IBI products also reproduce better the pattern of the local maxima of chlorophyll concentration across the Algerian Basin. Nevertheless, they largely underestimate glider chlorophyll measurements and present significant differences that limit their capability to reproduce its upper ocean concentration that is needed for accomplishing advanced ecological studies.