



New ensemble-variational data assimilation system for marine biogeochemistry on the North-West European Shelf

We developed biogeochemical ensembles within the research and development (R&D) version of the coupled physical-biogeochemical operational system on the North-West European Shelf (NWES). We compare the system's performance with the current variational (NEMOVAR) system. Based on the ensembles we analyse the uncertainty of a selected set of target ecosystem indicators appearing in the system's reanalyses, or forecasts, such as net primary production, phytoplankton phenology and community structure, near-bottom oxygen, particulate organic carbon (POC) fluxes, trophic efficiency and pH. Performing data assimilation experiments with a newly developed ensemble-3DVar system we determine how observable are these target indicators with the standard set of observations for surface total chlorophyll derived from the ocean color satellite data. Some conclusions for observing network design are being discussed.

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