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A review on existing OSSEs and their implications on European marine observation requirements

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Marine observations are essential for understanding marine processes and improving the forecast quality, they are also expensive. It has always been an important issue to optimize sampling schemes of marine observational networks so that the value of marine observations can be maximized and the cost can be lowered. Ocean System Simulation Experiment (OSSE) is an efficient tool in assessing impacts of proposed future sampling schemes on reconstructing and forecasting the ocean and ecosystem conditions. In this study existing OSSE research results from EU projects (such as JERICO, OPEC, SANGOMA, E-AIMS and AtlantOS), institutional studies and review papers are collected and analyzed, according to regions (Arctic, Baltic, N. Atlantic, Mediterranean Sea and Black Sea) and instruments/variables. The preliminary results show that significant gaps for OSSEs in regions and instruments. Among the existing OSSEs, Argo (Bio-Argo and Deep See Argo), gliders and ferrybox are the most often investigated instruments. Although many of the OSSEs are dedicated for very specific monitoring strategies and not sufficiently comprehensive for making solid recommendations for optimizing the existing networks, the detailed findings for future marine observation requirements from the OSSEs will be summarized in the presentation. Recommendations for systematic OSSEs for optimizing European marine observation networks are also given.