

Impact of ocean observations on climate signals in ECMWF global ocean reanalysis system

Eric de Boisseson¹, Magdalena Balmaseda¹, Michael Mayer^{1,2}, Hao Zuo¹, Susanna Winkelbauer²

¹*European Centre for Medium Range Forecasts, Reading (UK), Bonn (Germany)*

²*Universität Wien, Vienna (Austria)*

Abstract

As part of the UN Ocean Decade SynObs project, ECMWF global ocean reanalysis system was used to conduct a series of observing system experiments (OSEs) covering the period 2002-2023 in which different ocean observations are withheld from the data assimilation (DA). These OSEs are used to assess the impact of the components of the ocean observing system on a selection of ocean climate indicators. The OSEs not only highlight the value of ocean observations but also the level of uncertainty to be expected in response to major changes in the observing system. Within a single ocean reanalysis system, the OSEs can point towards potential deficiencies or sensitivities that will affect the representation of climate indicators. This presentation will focus on the importance of ocean observations, in terms of spatial and temporal coverage but also quality, not only to constrain but also evaluate climate signals in the ECMWF ocean reanalysis system.