

Effects of Atmospheric Forcing Frequencies on Ocean Data Assimilation and Coupled Forecasts on NWP Time Scales

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Abstract

Uncoupled ocean data assimilation system uses atmospheric forcings to drive ocean model for generating trajectories, e.g. in a variational data assimilation system. Recent atmospheric reanalysis systems like ERA5 produces high frequent (hourly) output of these forcing fields.

In this study we have used a prototype version of the ECMWF ORAS6 system to test the impact of various choices in ERA5 forcing update frequency on ocean analysis performance, diurnal cycle and impact on 10-days coupled forecasts from the different ocean analysis experiments. Additionally, we have also tested the impact of changing the atmosphere-ocean coupling frequency in our ECMWF coupled forecasts.

The impact is evaluated by a) comparing diurnal cycle of sea surface temperature of both the ocean assimilation system and the coupled forecasts, b) atmospheric performance coupled forecasts and c) impact on tropical cyclones.