The ECMWF coupled ocean-atmosphere assimilation system

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Abstract

The European Centre for Medium Range Weather Forecasts (ECMWF) is currently developing a coupled data assimilation system for reanalysis purposes. This system has been called CERA (Coupled ECMWF ReAnalysis) and uses the ECMWF coupled model where the atmospheric component is the ECMWF Integrated Forecast System and the oceanic component is the NEMO model. The ultimate purpose is to generate a self-consistent atmosphere-ocean state by assimilating both atmospheric and oceanic observations within the coupled model. The CERA system is based on a variational approach where the coupled model is used to compute the misfits with ocean and atmospheric observations in the outer loop. The ocean and the atmosphere share a common 24-hour assimilation window but still run separate inner loops yielding to the computation of two increments. This framework is aimed at being flexible enough to adapt to the coupled initialisation of medium range, monthly and seasonal forecasting activities. This presentation will describe the CERA system and its validation.