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Regional Ocean Data Assimilation and Forecast Modeling using NCODA.

The analysis component of the operational ocean nowcast/forecast system at the Naval Oceanographic Office is being upgraded with the NRL Coupled Ocean Data Assimilation (NCODA) system developed for the Coupled Ocean Atmosphere Mesoscale Prediction System (COAMPS). NCODA is a fully 3D multivariate optimum interpolation system that produces simultaneous analyses of temperature, salinity, geopotential, and vector velocity. The ocean data types assimilated include remotely-sensed sea surface temperature, sea surface height, and sea ice concentration, plus in situ surface and sub-surface observations of temperature, salinity and currents from a variety of sources including ships, buoys, XBTs, CTDs and profiling floats. An ocean data quality control (QC) component that is fully integrated with the NCODA analysis is also being implemented, and includes feedback of forecast fields and prediction errors in the QC of new data. We will describe the system and present results of model/analysis assimilation cycles and evaluations of forecast skill for two contrasting ocean domains: the western North Pacific and northern Indian Ocean.