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Integration of Ocean Data Assimilation System in the NOAA-UFS R2O Project

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NOAA's current operational ocean forecast and monitoring systems are based on various models and analysis systems. Real-time Ocean Forecasting system (RTOFSv2.0) is based on 1/12 degree HYCOM-CICE4 with Navy Coupled Ocean Data Assimilation (NCODA) and operational Global Ocean Data Assimilation System (GODAS) uses an older generation ocean model of MOM3 with 1 degree resolution for ocean monitoring and climate prediction. In perspective of NOAA's forecasting system modernization effort, we provide an overview of the scope of the NOAA Unified-Forecasting-System-Research-to-Operation (UFS-R2O) project with a focus on the integration of the ocean data assimilation systems through the Joint Effort for Data Assimilation Integration (JEDI). MOM6 and CICE6 models form the core of the NOAA-NCEP Next Generation Global Ocean Data Assimilation System (NG-GODAS). We plan to apply the JEDI-based NG-GODAS for NOAA's future operational versions of the Global Forecast system (GFS) and the Global Ensemble Forecast system (GEFS). In this presentation, an assessment of the JEDI-based development is discussed with interim 40 year reanalysis experiment results for the MOM6-CICE6 global 1-degree model configuration. The software compatibility of the prototype version of the NG-GODAS system is also demonstrated with various model configurations and data assimilation applications. Latest updates and key milestone progresses of other JEDI-based NOAA NCEP ocean data assimilation projects are summarized including the UFS sub-seasonal-to-seasonal (S2S) initialization for ¼ degree MOM6 and CICE6 model configurations, development of near surface sea temperature analysis, biogeochemical data assimilation of satellite ocean color product, and high resolution MOM6 regional data assimilation activity to support forecasting extreme weather events.

Which theme does your abstract refer to?

Recent assimilation infrastructure developments (e.g. OOPS, JEDI, future HPCs, etc)

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