

# Ocean Prediction at the U.S. Naval Research Laboratory

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*Abstract-* The Oceanography Division of the Naval Research Laboratory conducts a coordinated program of research and development (R&D) supporting Navy operational ocean nowcast and prediction. This R&D program covers domains from global scales down to local surf zone scales. Included in these efforts are sophisticated primitive equation ocean circulation models on global, basin, and regional domains run on high performance computing platforms at the Naval Oceanographic Office (NAVO) and at the Fleet Numerical Meteorology and Oceanography Center (FNMOC). These efforts combine primitive equation models with observations using various assimilation techniques such as optimal interpolation using both in situ and satellite temperature and altimetry data. In addition to large scale and computationally significant models run at the Navy's central sites are the operationally relevant models designed to run on workstations and personal computers at the Navy's regional Meteorology and Oceanography Centers (METOCCEN) as well as on-scene. These latter capabilities can run stand-alone but also are designed to accept initial and boundary conditions available from the central site products. This allows for rapid relocatability to provide local area nowcasts and forecasts of temperature, salinity, currents, tides and surface waves for the METOCCEN and for on-scene applications. This paper provides an overview on the present NRL R&D nowcast and prediction capabilities from global to local scales.