Validation and Application of the Global Navy Coastal Ocean Model

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A global implementation of the Navy Coastal Ocean Model (NCOM) has recently been developed for transition into operations at the Naval Oceanographic Office (NAVO). The operational roles of global NCOM include providing standalone data where the resolution of the global product is sufficient for guidance, a quick overview of local circulation where refined products are operationally unavailable, and boundary conditions for regional or relocatable models that may be more specialized for a particular task or domain. Some global NCOM results of particular interest include sea surface temperature, mixed layer depth, current profiles and shelf circulation. Global NCOM is designed to be suitable for inclusion in a coupled ocean-atmosphere modeling system, and it also serves as the host for an embedded ice model, PIPS3, which is in development for transition.

Validation of global NCOM against unassimilated observations or climatologies provides a basis for estimating the accuracy of its nowcasts and forecast products and indicates directions for further model refinement and development. Representative results selected from evaluations performed during the model development and operational test phases include eddy kinetic energy, transports, vertical sections of temperature and velocity, sea surface temperature, mixed-layer depth, sea-surface height and event comparisons. These results are used to assess present operational capabilities and indicate directions for future research and development.