

# Operational Implementation of a HYCOM Based Real Time Ocean Forecast System (RTOFS) for the Atlantic Ocean Basin.

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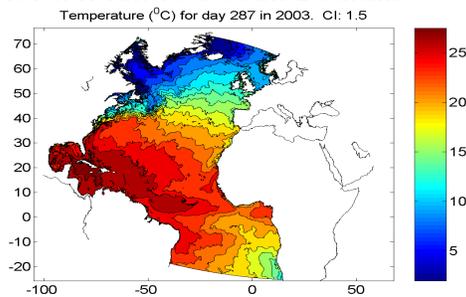
A Real Time Ocean Forecast System (RTOFS) for the Atlantic Ocean Basin has been tested and implemented into the operational suite of NCEP in December 2005. The dynamical engine of the RTOFS is the Hybrid Coordinate Ocean Model (HYCOM). For the Atlantic system HYCOM is configured for higher resolution in the western and northern portions of the basin

and on shelves (3-7 km), in order to provide higher resolution along the U.S. coast rather than toward the east and southeast (7-13km). The model domain is an Atlantic Sector, from 20S to 76N including marginal seas, except for the Mediterranean and Baltic Seas. This system (see the web page <http://polar.ncep.noaa.gov>) provides a nowcast and a five day forecast once every day. The atmospheric momentum, heat and water fluxes are derived from three hourly

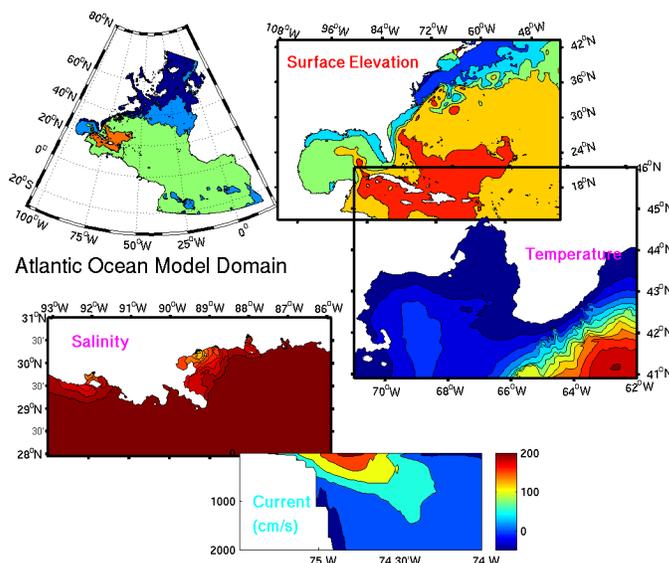
NCEP GDAS fields. River outflows are derived from observations in the US coasts and climatology derived from RIVDIS elsewhere.

The figures to the left show the domain of the Atlantic Basin with SST and some surface ocean variables in selected sectors of the domain as examples.

North Atlantic Ocean Domain

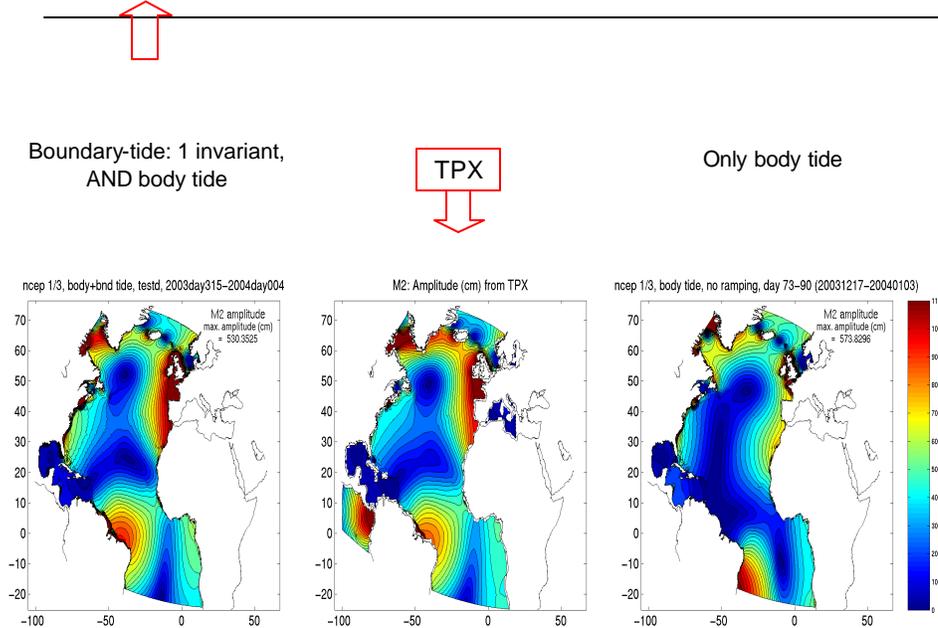


Resolution: 4-5 km US coast, 7km Gulf Stream



Tidal forcing from body and boundary forcing is included in the model. The boundary tide data is taken from OSU TPX06 model. A comparison with the semi-diurnal tidal constituent M2 in the domain is shown in the figure below.

## TIDES and OPEN BOUNDARIES in HYCOM



In the operational version, the model includes assimilation of remotely sensed and in-situ sea surface temperature. Assimilation of remotely sensed seas surface height anomalies and subsurface data will be introduced shortly.

The goals of the NOAA system are a) to provide accurate estimates in the coastal oceans for various applications such as containment of toxic spills, search and rescue missions, ecosystem monitoring and modeling, etc.; b) form part of the backbone for NOAA's and other institutions' regional ocean models by providing initial and boundary conditions; c) coupled circulation-wave-storm-surge models; and e) coupled atmosphere-ocean hurricane forecasts.