



## **Global ocean simulations by HYCOM on icosahedral and logically rectangular grids**

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iHYCOM, short for "icosahedral HYbrid Coordinate Ocean Model", is being developed at the NOAA Earth System Research Laboratory. The purpose of formulating HYCOM on an icosahedral grid is to allow coupling to an existing icosahedral weather prediction model ("FIM", see <http://fim.noaa.gov>) unencumbered by interpolation problems at the air-sea-ice interface. We have tested the traditional HYCOM, formulated on a Mercator grid augmented by a bipolar pole patch, with iHYCOM for several decades at comparable horizontal mesh sizes in the 0.5-1.0 deg range, employing the same vertical resolution of 26 potential density ( $\sigma_1$ ) layers. These comparison runs were forced by CORE (Common Ocean-Ice Reference Experiment) fields. Several performance measures indicate that formulating HYCOM on an icosahedral mesh is feasible, although a numerically stable barotropic-baroclinic mode splitting scheme is not available yet. We compare the large scale circulations simulated by both model versions and investigate the model sensitivity to different horizontal grids.