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Title: Global Coupled Atmosphere/Ocean Model for Seasonal and Climate Forecast Applications at NOAA/ESRL

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Abstract:

A coupled global model aimed at intra-seasonal and interannual prediction is under development at NOAA's Earth System Research Laboratory. It uses the FIM atmospheric model and an ocean model based on HYCOM("iHYCOM"). Both FIM and iHYCOM are 3-dimensional grid point models, laid out on a common icosahedral horizontal grid and using an adaptive hybrid-isentropic/isopycnic vertical coordinate. The fact that FIM and iHYCOM shares horizontal grid allows us to couple the atmosphere and ocean model directly without the need for an interpolating flux coupler.

The FIM atmospheric model shares column physics with GFS. Initial results showed that regional biases in cloud cover, and hence shortwave radiation flux, are large in both coupled and uncoupled (FIM-only) global simulations, and needed to be reduced in many geographic regions. For this reason, we have developed and tested modifications for shallow and deep convection schemes and vertical discretization and conducted several 1-year AMIP tests on sensitivity to these changes/parameters.

Results of these tests and optimal configuration so far of the FIM-iHYCOM coupled model and its latest simulations compared to CFSv2 and NASA/GEWEX Surface Radiation Budget data will be presented.  
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