

A Coupled HYCOM/ADCIRC System for the Northern Gulf of Mexico

K. M. Dresback¹, R. L. Kolar¹, C. A. Blain², M.K. Cambazoglu², C. M. Szpilka¹,
A. M. Szpilka¹, and R. A. Luettich³

¹School of Civil Engineering and Environmental Science
202 W. Boyd St., Room 334
University of Oklahoma
Norman, Oklahoma 73019
dresback@ou.edu, kolar@ou.edu, cmszpilka@ou.edu

²Ocean Dynamics and Prediction Branch
Oceanography Division (Code 7322)
Naval Research Laboratory
Stennis Space Center, MS 39529
cheryl.ann.blain@nrlssc.navy.mil, kemal.cambazoglu.ctr.tu@nrlssc.navy.mil

³Institute of Marine Sciences
University of North Carolina – Morehead City
3431 Arendell St.
Morehead City, North Carolina 28557
rick_luettich@unc.edu

In order to accurately resolve the complex fluid dynamics that occurs within topographically complex shallow straits and coastal zones, a significant level of resolution is needed that is not feasible with structured grid regional/global ocean models, such as HYCOM. However, an unstructured coastal model can provide the level of resolution needed within these shallow straits and coastal zones. Thus, recent development efforts have looked to enhance the 3D baroclinic unstructured coastal model, ADCIRC, and couple it to the HYCOM model. Many of the barotropic applications utilize a model domain that encompasses large portion of oceans, which allows for simplification of the ocean boundary conditions. However, due to the computational demands of the 3D baroclinic simulations, we restrict the domain to the region of interest. One consequence of restricting the domain to the shallow water regions is the difficulty in specifying the ocean boundary information for the baroclinic fields. Thus, protocols have been developed to extract information from the structured regional/global ocean model, HYCOM, to ADCIRC in order to obtain initial and boundary conditions. Specifically, this presentation will summarize the procedures as applied to the coupled HYCOM/ADCIRC system in the Northern Gulf of Mexico.

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