1135-76-2195 **Manuel A Valera*** (mvalera@mail.sdsu.edu), 5500 Campanile Drive, San Diego, CA 92182-1245, **Mariangel Garcia**, San Diego, CA 92182-1245, and **Paul Choboter**, **Ryan Walter** and **Jose Castillo**. *Modeling nearshore internal bores and waves in Monterey Bay using the General Curvilinear Coastal Ocean Model (GCCOM).*

Internal waves are ubiquitous features in the coastal ocean. The breaking and eventual transformation into higher-frequency waves and bores, play a significant role in the energy mixing across scales in the coastal environment. The numerical modeling of these waves is especially difficult due to the non-hydrostaticity, nonlinearity and large range of scales involved. Additionally, the interaction of eddies with critically sloped bathymetry is crucial in the simulation of dominant coastal dynamics features. Using finer resolution preserves more structures on the terrain but increases the slope interaction, giving rise to nonlinearity in the form of turbulent flows. In this work a 3D case study for the Monterey Bay is validated to demonstrate the capabilities of the GCCOM model for simulating field-scale experiments including nonhydrostatic, stratified flows, internal bores formations and strongly nonlinear wave processes of generation and propagation, as well as the capabilities of handling abrupt bathymetry through the implementation of a fully 3D curvilinear mesh. An speedup analysis is also presented, based in the recent inclusion of the PETSc libraries to parallelize the model, evaluating the efficiency of the code using up to 32 processors. (Received September 25, 2017)