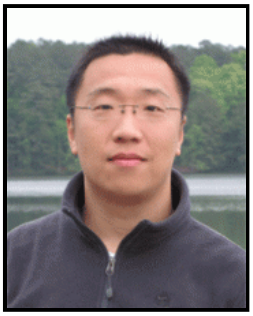

Other - Joint Coastal Faculty Position with the Department of Oceanography and Coastal Studies

An Integrated Ocean Circulation, Wave, Atmosphere and Marine Ecosystem Nowcast/Forecast System for the South Atlantic Bight and Gulf of Mexico

George Xue, North Carolina State University
Research Assistant Professor

Digital Media Center 1034
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Abstract:

An Integrated Nowcast/Forecast Modeling System covering the South Atlantic Bight and Gulf of Mexico (SABGOM) is in operation utilizing sophisticated model coupling and MPI parallel computing technique. This 3-Dimensional high resolution modeling system is driven by realistic meteorological forcing, tides, rivers, and deep ocean boundary conditions provided by a data assimilative global ocean model. The SABGOM system runs 24/7 providing both nowcast and 84-hr forecast of ocean weather (WRF model), wave (SWAN model), circulation and water quality (ROMS model) conditions to the public via a Google map interface. It also supports user-defined inquiry such as vertical profiling, transect plotting, and a 84-hr particle trajectory prediction. The SABGOM system has been continuously evolving since 2007 with advances in the Coupled-Ocean-Atmospheric-Wave-Sediment Transport Modeling System (COAWST), which demonstrates a great potential in sediment transport, ecosystem, oil spill, and hurricane studies.

Speaker's Bio:

Dr. Xue started his Ph.D. study at NCSU in fall 2005 to pursue a better understanding of the transport and deposition dynamics of Mekong River (the largest river in Southeast Asia) sediments. Being the first ever U.S. marine science student working on the Vietnamese coast, Dr. Xue's Ph.D. dissertation research dealt with geological processes of both contemporary (sediment transport modeling) and post-Last Glacial Maximum (LGM) time scales (acoustic profiling and coring). Upon receiving his Ph.D. degree in Marine Sciences in 2010, Dr. Xue joined the Ocean Observing and Modeling Group as a postdoctoral research associate and has been exposed to a number of interdisciplinary oceanographic studies including coupled ocean-wave- sediment transport modeling, operational Nowcast/Forecast system development, tracer simulation for oil spill, storm surges assessment, and ocean glider deployment. Dr. Xue is now working on a coupled physical-biogeochemical model trying to qualify impacts of land use and climate changes on riverine inputs, mainly the Mississippi/Atchafalaya, and the structure and productivity of marine ecosystem in the Gulf of Mexico. Being a Research Assistant Professor, Dr. Xue also serves on the graduate student advisory committee in the Department of Marine, Earth, and Atmospheric Sciences at NCSU and gives lectures to both undergraduate and graduate level courses.

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