The Coastal Waters Consortium Presents:

Scientist Spotlight

Dr. Haosheng Huang

What is your role as a scientist for CWC?

I am a co-PI in the oil transport, distribution and fate modeling group in CWC-II. I am mainly in charge of developing numerical models to simulate hydrodynamics, temperature, salinity, wind-wave, and suspended sediment and bedload in Barataria Bay and Breton Sound. The models are being used to investigate the effect of wetting/drying and sedimentation/resuspension dynamics on oil distribution and burial along the marsh edge, and to evaluate the impacts of proposed future river diversions on oil transport and fate within the estuary. We also provide model support for teams working on wetland morphology, biogeochemistry and food webs.

Can you summarize your oil spill research and describe any surprising findings you have come across?

My oil spill research is focused on using numerical models to predict the physical transport pathway of surface oil slick over the northern Gulf of Mexico continental shelf. We also study the effect of freshwater, released from various Mississippi River diversions in order to flush oil offshore, on behavioral change of saltwater fish species due to salinity stress. The most surprising finding we have right now is that, contrary to intuition, freshwater released from Caernarvon Diversion based on current maximum design capacity (~8000 cfs) can only influence oil transport in the Breton Sound estuary proper. Once away from the estuary mouth, the diversion caused ocean current velocity is negligible comparing to the existing tidal and wind-driven current. In other words, the effect of using diversion to combat oil spill is limited.

The Coastal Waters Consortium's mission is to assess the chemical evolution, biological degradation, and environmental stresses of petroleum and dispersant within Gulf of Mexico coastal and shelf ecosystems.

What is your educational background?

I received a BS in Applied Mechanics from Fudan University and a M.S. in Physical Oceanography from First Institute of Oceanography both in China. I received my Ph.D. in Physical Oceanography at Florida State University. Before coming to Louisiana State University, I was a post-doctoral scholar at University of Massachusetts – Dartmouth.

What inspired you to become a scientist?

When I was a kid, China was still an underdeveloped country. At that time there was a slogan "Science and Technology make your mother land modernized". So I always had the desire to become a scientist or engineer someday. Initially I wanted to be a biology major in college, but I was assigned to applied mechanics which belongs to math department. I learned solid mechanics and fluid mechanics during my undergraduate years.

Can you describe what you enjoy the most about conducting scientific research?

I enjoy studying physical oceanography and numerical modeling of marine environment because of two reasons. First, the scientific research is relevant to our everyday life. For example, by simulating tidal, wind-driven, and buoyancy-driven circulations we can estimate and explain why the sea level observed at tidal gauges along the coast behaves like what they are. By simulating the sediment suspension, deposition, and transport processes, we have the ability to predict the effect of proposed sediment diversions on geomorphology change and coastal restoration. Second, conducting scientific research is intellectually satisfying. I am always amazed how the changes of marine physical environment can be elegantly predicted by using 'simple' mathematics and electronic computers.

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