Contribution ID : **79** Type : **Oral**

The Future of Coastal Hypoxia Under Scenarios of River Management

Thursday, 6 September 2018 15:15 (15)

River systems worldwide are increasingly influenced by flood control measures and river diversion operations. Yet, surprisingly little is known about the effects of river management on coastal hydrodynamics, nutrient transport pathways, and hypoxia. Freshwater diversions on the Lower Mississippi River play a central role in the proposed 50-billion, 50-year strategy for restoring the Louisiana's coast. Under the proposed 2017 Coastal Master Plan, four large-scale river diversion projects are being considered that would divert a third of the Lower Mississippi River into deltaic Louisiana estuaries. The effects of existing and proposed river diversions on nutrient transport pathways and hypoxia were investigated using a high-resolution, three-dimensional, coupled hydrodynamic-biogeochemical model (FVCOM-LATEX). The numerical model domain covers most of the Alabama-Mississippi-Louisiana-Texas continental shelf and includes high resolution (on the order of 20 meters) nested grids in Barataria and Breton Sound estuaries. The model was driven by tidal and subtidal forcing at the open Gulf of Mexico boundary, freshwater and nutrient loads from rivers and river diversions, and surface wind stress. A number of different diversion scenarios were assessed, including a concurrent operation of six river diversions with a combined flow of 6,500 cubic meters per second. Numerical modeling results indicate that, depending on the scenario considered, the proposed large-scale river diversions would have the potential to strongly influence hydrodynamics and estuarine-shelf exchanges, which in turn could profoundly affect nutrient transport pathways and hypoxia in the northern Gulf of Mexico.

Position

Professor

Affiliation

Louisiana State University

Email Address

djusti1@lsu.edu

Are you a SFB 754 / Future Ocean member?

No

Primary author(s) : Prof. JUSTIC, Dubravko (Louisiana State University); Ms WANG, Lixia (Louisiana State University)

Presenter(s) : Prof. JUSTIC, Dubravko (Louisiana State University)

Session Classification : 08 Coastal Systems: From Understanding to Management

Track Classification : 08 Coastal Systems: From Understanding to Management