Environmental Monitoring Using Landsat-8 Data for Water Quality of Upper Mississippi River Basin and Hydrodynamic in the Louisiana Coastal Zone

*Yuki Uchida[1], Nonaka Takashi[2], Kenji Hasegawa[3], Keishi Iwashita[2]

1.Department of Civil Engineering College of Industrial Technorogy,Nihon University, 2.College of Industrial Technorogy,Nihon University, 3.KANSEI Company

For thousands of years the Mississippi River flowed freely in the heart of North America, draining 41% of the continental U.S. and parts of Canada. The Mississippi River is much cleaner today than it was 20 years ago, yet concerns remain over the status of water quality. Nutrient and herbicide problems should continue to be investigated and managed and salinity impacts addressed where diversions are operated. However, these concerns must be weighed against Louisiana’s ongoing problem of coastal land loss and the threatened acceleration of this loss with the recent Brown Marsh crisis.
The "dead zone" off the coast of Louisiana forms every year summer and is the second largest hypoxic zone in the world. Since 2000, as apart of the EPA sponsored Star Grant Research Program, several college based research organization in USA and Nihon University remote sensing research unit have contributed closely with the EPA Gulf Breeze Laboratory to develop a coupled hydrodynamic and biogeochemical model for the northern Gulf of Mexico hypoxia region. In this research, we are integrating satellite ocean color remote sensing imagery, hydrodynamic-water quality-sediment diagnosis modeling, and in situ measurements to assess and predict coastal ocean processes (such as nutrient-enhanced primary production) that regulate the development and size of hypoxic bottom waters in the region. The frequency, extent, and severity of coastal hypoxic events are increasing worldwide due to increasing eutrophication.
As a result, satellite-derived optical water mass classification procedures were well-combine with New Orleans land-use model and a model-derived stratification index to estimate the areal extent of coastal hypoxia in the northern Gulf of Mexico.

©2016. Japan Geoscience Union. All Right Reserved.