# Yi Qiang and Nina Lam

As one of the most vulnerable coastal systems in the United States, the Lower Mississippi River Basin in Louisiana is subject to multiple threats, such as hurricane, flood, land subsidence and sea level rise. To better alleviate these threats and enhance the sustainability of the region, a coupled human and natural (CNH) system model is needed to capture the dynamic linkages between the human and natural dimensions. However, conventional computer systems have encountered significant challenges when handle CNH models with large scale, high resolution and multiple components. To overcome these issues, this project will apply cyberGIS techniques to facilitate the CNH modeling research for coastal sustainability at Louisiana State University. This project will use the high-performance, loosely coupled and scalable software components empowered by cyberGIS to model and simulate the dynamics of the CNH system at fine resolution for a large study area. The research aims to identify the key processes and factors that can promote resilience and sustainability. The simulation results can provide useful information for the planning, mitigation and management activities in the study region. Meanwhile, methods and techniques developed through the application of cyberGIS for the research area will be integrated into teaching materials for the classes at LSU. The materials will be designed for a semester-long course on cyberGIS as well as single class topics that can be embedded in other relevant courses. Seminars and workshops will be organized at LSU and local conferences to introduce the concept and applications of cyberGIS to a broader range of potential users.
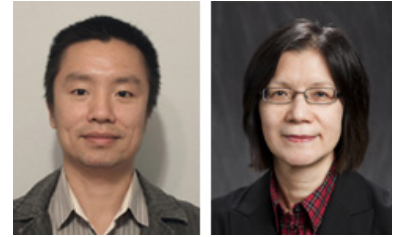
- Module 1 - Qiang and Lam
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