



Water science focus of collaboration between UNL, Chinese university

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With its focus on water science and engineering, Hohai University in Nanjing, China, is a natural partner institution for the University of Nebraska-Lincoln, say scholars who are laying the foundation for long-term collaboration.

In the past year, UNL and Hohai researchers in computer science, water, and public policy have visited each others' campuses, with seed funds from the National Science Foundation in the United States, and its Chinese equivalent, the National Natural Science Foundation of China.

A UNL delegation went to Nanjing in April for a two-week workshop after hosting a team from Hohai in October.

According to the project report, by 2025, as much as two-thirds of the world's population may face water shortages, which can lead to economic crises, disease, famine, and death if people don't take action in time. Policy changes and water management will need to be informed by monitoring and early warning systems that track and model water usage and availability.

"Our long-term goal is to develop a cyber-infrastructure for global water research," said Ashok Samal, a computer scientist at UNL who is one of the principal investigators of the NSF-funded project, "US/China Digital Government Collaboration: Building a Collaboratory in Hydroinformatics and Water Policy."

"The U.S. and China, being two of the world leaders as well as being two of the largest consumers of water, should play leading roles in this endeavor," Samal said. "Hohai has huge breadth. It's a full-service water university."

Many of China's leading civil engineers and water scientists, such as the team that designed and built the Three Gorges Dam, are graduates of Hohai.

Because of Hohai's unique focus on water, "UNL is a natural counterpart," said Xun-Hong Chen, professor of hydrogeology at UNL's School of Natural Resources. "Water is an area of excellence at UNL."

Chen has worked with Hohai previously and helped the UNL group forge connections.

Two of the Hohai team members had been his postdoctoral students.

While in Nanjing, SNR Assistant Professor John Holz, who specializes in water quality, met with about 40 graduate students from Hohai University and described how to apply to UNL. The Chinese government has committed to funding a certain number of Hohai students to study in the United States each year.

“Some have already been in touch,” Holz said. “This gave Hohai students an exposure to UNL and put us in a positive position for recruitment.”

In addition to Samal, Chen and Holz, the UNL delegation included Donald A. Wilhite, director of the School of Natural Resources; Alan Tomkins, director of UNL’s Public Policy Center; Sarah Michaels, professor in the Department of Political Science; Leen-Kiat Soh, associate professor of computer sciences; and Deepti Joshi and Peng Du, UNL graduate students in computer sciences.

Chinese representation at the workshop included many researchers and graduate students from Hohai University, as well as officials and researchers from China’s Ministry of Water Resources, Bureau of Hydrology and Water Survey of Jiangsu Province and non-governmental organizations.

The goals of the April workshop were to catalog hydrological data collection methods; to summarize ground and surface water modeling methods; to discuss decision-making policies related to water resources; and to examine what computational techniques are needed for data mining and fusion.

Future partnership activities are likely to include:

- * Short courses taught at Hohai by UNL and Hohai faculty, giving UNL students a chance to work at Hohai University’s laboratories.
- * Hohai graduate students funded mostly by the Chinese government coming to study water-related topics at UNL.
- * Visiting scholars from China at UNL.
- * Projects focusing on issues of water quality and water supply.
- * New uses of computing technology to enable citizens, scientists and policy makers to incorporate the best available information into decision making.

Samal envisioned applying what are now cutting-edge uses of Web technology, such as “volunteer geographic information computing,” in which people all over the world can add data and information to a central database on water.

It could also incorporate information about water, going back several hundred years. The

question, Samal said, is, “How do we combine information of different qualities, resolutions, and time periods, to answer some interesting questions?”