Global Water Initiative

Desert Research Institute - Hohai University

Program Update - December 2015

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Background

This initiative, which builds upon a successful ongoing partnership between Desert Research Institute (DRI), Nevada and Hohai University, Nanjing, China, aims at improving understanding of China’s water scarcity and pollution problems with specific emphasis on developing and demonstrating new technologies for improved water resources and pollution management. Water scarcity and pollution problem in Asia, Africa and other parts of the world offer both DRI and Hohai University a unique opportunity to study this problem on a scale that is unmatched in the Americas or anywhere else in the world. Our initiative creates opportunity to jointly develop and demonstrate solutions that will not only benefit China but also provide technologies for many other countries having similar water situations. The initiative involves a large number of scientists with different disciplines from both DRI and Hohai University.

Key Activities

- Joint International Laboratory of Global Change and Water Cycle MoU signed by DRI and Hohai University Presidents Drs. Wells and Hu in August 15, 2014.

- Dr. Acharya was invited to provide a keynote lecture on water quality challenges and restoration by the Bureau of Hydrology, Jiangshu Province in January 2015. This event was attended by over 200 water technology professionals from the region.

- Governor’s office of Economic Development (GOED) international Director Kris Sanchez visits Hohai University and Ministry of Water Resources with Drs. Wells, Acharya and Yu in March 2015. The main purpose of the visit was to understand opportunities on water and plan Governor’s trade mission around it.
- Hohai President Dr. Hu visits DRI with a delegation and signs Joint Laboratory Operation MoU, on May 1st, 2015. Following signing of the MoD, Dr. Wells hosted a reception for the visiting team which was also attended by DRI Foundation Trustee Mr. Tom Gallagher and Special Assistant to the President Mr. Ken Ladd.

- Governor Brian Sandoval, Nevada and his delegation visits Nanjing. During the trip Governor visits Hohai University, Jiangshu Provincial office (signs MoU between Jiangshu Province and Nevada), Ministry of Water Resources, and Ministry of Environment Protection. The trade mission was attended by the representatives from the Council of State Governments, Dr. Wells, Dr. Acharya and several members from GOED.

- Drs. Wells and Acharya attend Hohai’s 100 years celebration. During the celebration Dr. Wells represented DRI to discuss issues in global water challenges in the Council of Presidents committee. During the visit Drs. Wells, Acharya and Yu meet with Singcorp International representatives who are starting a water hub in Nanjing. Singcorp is an International Company based in Singapore which is involved in building an eco-city near Nanjing.

- Chinese Ministry of Water Resources, Beijing delegation visits DRI (both Reno and Las Vegas campuses) and meets with Drs. Wells, Acharya and others and continues discussion on collaboration in water quality monitoring technologies in China.

**Joint Students/postdocs/young faculty involved in the joint international Lab and being mentored by DRI and Hohai University in 2014/2015**

- Yiping Li (young faculty at Hohai who spent two years at DRI)
- Binquan Li (young faculty who spent two years at DRI)
- Ni Lixiao (young faculty who spent two years at DRI)
- Aili Sun (recently returned to Hohai after spending a year at DRI in 2014/2015)
- Chunyan Tang (just finished PhD, spent a year at DRI in 2014)
- Xiaolu Wei (spent two years at DRI and graduated in 2014)
- Lili Zhao (currently Ph.D. student at Hohai, spent 2 years at DRI)
- Yuan Luo (Currently Ph.D. student at DRI)
- Peng Jiang (Currently postdoc at DRI)
- Du Wei (Ph.D. student at Hohai preparing to visit DRI for one year)
- Qian Zhao (Ph.D. student at preparing to visit DRI for one year)
(15) **Joint Peer Reviewed Scientific Research Publications produced between DRI-Hohai University during years 2014 and 2015**


Senior student Xiaolu Wei of Hohai University went to UNLV for studying the impact of the social economy development on the water environment quality in Tai Lake Basin and joined DRI for graduate study.

Ph.D candidate Lili Zhao and Bingquan Li went to DIR for two years studying as a joint Ph.D student, her main research was the impacts of climate change to the hydrological process and water motive process of shallow lakes at the middle and lower reaches of Yangtze River.

Postdoc Dr. Li Yiping went to DRI for the postdoctoral research about the mechanisation of eutrophication control and database building in Tai Lake. His research results coauthored with Prof. Kumud Achrya and Prof. Hans Paerl have been published in the journal of Ecological Engineering, Lake and Reservoir Management, and so on.

Dr. Peng Jiang, currently holding the position of Postdoctoral Fellow Hydrogeology, Division of Hydrological Sciences at DRI.
DRI EXPANDS INTERNATIONAL PARTNERSHIP TO ADDRESS WATER POLLUTION, MANAGEMENT ISSUES

For more than two decades, Lake Taihu (the largest freshwater lake in the Yangtze Delta Plain near Shanghai, China) has been stricken with toxic bluegreen algae (cyanobacterium) blooms that jeopardize the drinking water supply of more than 10 million people. The once stable watershed is now home to over 51 million people and serves as the literal “canary in the coal mine” related to the environmental impacts of China’s dramatic economic and population growth.

In 2014, DRI launched a unique partnership with Hohai University—China’s foremost water research university — to address global water pollution and supply issues. Building upon a long-standing academic relationship between DRI faculty and Hohai University, the new joint-international laboratory will facilitate faculty and student exchanges; water resources management and training, and water pollution monitoring and mitigation. Initial work is expanding focus on innovative scientific research to rehabilitate and sustain some of China’s most polluted watersheds such as Lake Taihu.

New joint laboratory will facilitate training, build on nearly 10 years of international collaboration

The Desert Research Institute (DRI) and the Nevada Center of Excellence today announced a unique partnership with China’s foremost water research university to address global water pollution and supply issues.

Building upon a long-standing academic relationship between DRI faculty and their colleagues at China's Hohai University, the new collaboration will develop a joint-international laboratory that will facilitate faculty and student exchanges; water resources management and training, and water pollution monitoring and mitigation. The new laboratory will focus on innovative scientific research to rehabilitate and sustain some of China's most polluted watersheds. Hohai University, established in 1915, has more than 30,000 degree seeking students and 3,000 staff members. With campuses in Nanjing, Jiangning and Changzhou, it serves as one of China's leading academic research institutions.

DRI President Dr. Steve Wells and Hohai University President Xu Hui signed a memorandum of understanding outlining the objectives of the expanded partnership in the city of Nanjing, China in August. The DRI delegation to China, headed by Wells, included DRI research professor and the new lab’s co-director.
Kumud Acharya, Ph.D. and Kenneth Ladd, Vice Chairman of the Nevada Center of Excellence. The partnership's main objectives include identifying shared top-level hydrology and water resource research foci of scientific and strategic importance; the application of joint research funding within China and the United States; and the development of a world class research team from Hohai University and the Desert Research Institute. In support of developing a talent exchange and between China and the United States, the partnership includes the annual exchange of three to six academic personnel and the implementation of shared laboratories to facilitate research. The partnership also includes the joint organization of workshops, symposia, international conferences and publications.

"Our initial work will expand the algae bloom research we have done on Lake Taihu, China’s largest freshwater lake, and the Yangtze River Delta," said Acharya, "This heavily polluted region of Eastern China serves as the ideal test-bed for implementation of innovative technologies and water management practices that can then be applied across the globe."

For more than two decades Lake Taihu has been stricken with toxic blue-green algae (cyanobacterium) blooms that have jeopardized the drinking water supply of more than 20 million people. The once stable watershed is now home to over 40 million people and serves as the literal “canary in the coal mine” related to China’s dramatic economic and population growth, Acharya explained.

Through the engagement of a shared laboratory at DRI and Hohai, the research scientists will broaden the impact of their work throughout Southeast Asia and the US, using the joint laboratory to research water management practices for watersheds affected by dramatic population growth and urban development.

"We believe that this collaboration will allow us to build a team of world class researchers from both institutes to solve urgent problems on water pollution and management – not only in China but all over the world," said Hohai University President Xu Hui.

Acharya, who has worked in the Lake Taihu region since 2007 and published more than a dozen scientific reports on the water quality issues affecting the region, added that with the depth of experience and resources provided by the Nevada Center of Excellence the new partnership will also assist private industry with research and development of innovative technologies for tracking and mitigating water pollution in megacities and developing countries.

"This is an opportunity to change the culture of international research and development," said Wells, DRI President and Chair of the Nevada Center of Excellence Board of Directors. "We will be developing intellectual property in both Nevada and China, and sharing our knowledge and expertise to better serve the communities and people accessing these heavily impacted water resources."