

Information Transfer Symposia: Mitigation of Storm Surge using Vegetation (Spring, 2007) and Resilient Environmental Infrastructure for Coastal Communities (Fall, 2007)

Basic Information

Title:	Information Transfer Symposia: Mitigation of Storm Surge using Vegetation (Spring, 2007) and Resilient Environmental Infrastructure for Coastal Communities (Fall, 2007)
Project Number:	2007LA52B
Start Date:	3/1/2007
End Date:	2/29/2008
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Research Category:	Not Applicable
Focus Category:	Education, Management and Planning, Methods
Descriptors:	None
Principal Investigators:	John Pardue, Nedra Davis Korevec

Publication

Title. Information Transfer Symposia: *Mitigation of Storm Surge using Vegetation* (Spring, 2007) and *Resilient Environmental Infrastructure for Coastal Communities* (Fall, 2007).

Problem and Research Objectives

The Louisiana Water Resources Research Institute made a concerted effort in the 2007/2008 funding cycle to improve and expand outreach efforts to increase visibility in the Louisiana water/environmental community. In Louisiana, limited opportunities exist for exchange between university water scientists, state and federal agencies over water issues. A state “water” conference or summit has not been organized and only the state environmental agency, the Louisiana Department of Environmental Quality, sponsors a scientific/policy conference on environmental issues, some of which involve water. After discussions with the advisory board, the Institute thought this could best be accomplished by sponsoring 2, 1 –day symposia/workshops to focus on a specific science/engineering issue important to the state. The initial proposal included one symposium that would be conducted in the Spring and one in the Fall to different target audiences on different topics. The 2 topics selected for this funding cycles were: *Mitigation of Storm Surge using Vegetation* (Spring, 2007) and *Resilient Environmental Infrastructure for Coastal Communities* (Fall, 2007).

The Spring symposium held April 13, 2007 addressed an important issue to state and federal coastal planners. Following the Hurricane season of 2005, Louisiana’s coastal restoration focus was altered to consider the effect of wetlands on hurricane storm surge. This was modeled around a similar conference organized by the Maryland Water Resources Research Institute that the Louisiana director participated in during 2006. The Spring symposium addressed Louisiana’s coastal restoration and the effect of wetlands on hurricane storm surge. Wetland vegetation can help protect coastal communities by dampening waves and by the frictional resistance of the plants, themselves, reducing the energy and depth of the water. Hydraulic engineers have studied the flow through vegetation for many years, in the context of overbank flooding, but connecting these approaches with coastal restoration scientists is needed. Key scientific questions include: What are the appropriate quantitative procedures for frictional resistance and wave dampening of different wetland types? What types of wetlands provide ability to mitigate surge?

The Fall symposium was scheduled to address resilient water and wastewater infrastructure for coastal communities but a few key speakers were not available and it was decided to delay the symposium until they could be present. Instead, LWRRRI had the opportunity to be a main sponsor for an international water meeting (*Transatlantic Water Symposium: Water, Friend or Foe*) between US scientists and those from the Ruhr area of Germany under the umbrella of an organization which pools University resources in the region, ConRuhr. A scientist group from this region traveled to LSU and a formal symposium was held in addition to wide ranging talks on water issues between the 2 countries. The Rhien-Ruhr region shares features with areas of our state in that water resources are developed and managed against a backdrop of a heavy industrialized corridor with competing needs for the water. Both areas also have extensive flooding issues and accompanying flood control issues.

Methodology

The format of each symposia was different. For the Spring vegetation symposia, nationally recognized experts to speak and interact with university, state agency and federal agency scientists. A round-table discussion was conducted. Because of lack of availability of on-campus conference venues, the Spring Symposium was held off-campus at a conference facility. Participants were asked to register via the LWRRI website. The URL was and is still available for viewing the tech transfer material <http://www.lwrri.lsu.edu/MSSV07.htm>. For the transatlantic symposium a group of invited German and US scientists gather at LSU for the conference.

Principal Findings and Significance

Conference 1 “Mitigating Storm Surge with Vegetation”. April, 2007.

LWRRI was the lead sponsor, "Mitigating Storm Surge with Vegetation Symposium" Hilton Baton Rouge Capitol Center Hotel, April 2007. LWRRI presented two keynote speakers, Heidi Nepf from MIT, and Robert Kadlec from the University of Michigan. The symposium was moderated by our Director, John Pardue. In addition, LWRRI provided administrative support for the coordination and production of the two-day symposium. The symposium was co-sponsored with URS, The LSU Department of Civil & Environmental Engineering, and the LSU Center for the Study of Public Health Impacts of Hurricanes. The symposium was attended by 125 people and generated discussion, post-conference feedback and generated substantial impetus to the science of understanding natural methods of mitigating storm surge. Details of the agenda and links to many of the presentations are presented below.

Invited Speakers:

Dr. Heidi Nepf, Professor, Department of Civil & Environmental Engineering, MIT

Dr. Robert Kadlec, Emeritus Professor, University of Michigan

Agenda: Mitigating Storm Surge with Vegetation Symposium Agenda [[PDF](#)].

Location: Hilton Baton Rouge Capitol Center Hotel, April 13, 2007, 8:00 AM-3:00 PM

Technical Transfer from Symposium: Download presentation files below.

Keynote Speaker, **Heidi Nepf**, MIT

Drag Associated with Emergent and Submerged Vegetation

Download full presentation: [[PDF](#)] 22MB

Keynote Speaker, **Robert Kadlec**, University of Michigan

Overland Flow in Treatment Wetlands

Ty Wamsley, USACE, ERDC

Modeling Storm Surge Propagation over Vegetated Landscape Features

Jim Chen, LSU

Wave Dampening by Vegetation

Bob Jacobsen, URS,

Incorporating friction resistance into diversion modeling

Download full presentation: [\[PPT\]](#) 104MB

Hassan Mashriqui, LSU

Incorporating vegetation effects into ADCIRC surge modeling

Joe Suhayda, LSU

Integrating science into Louisiana's Coastal

Download full presentation: [\[PPT\]](#) 4MB

Due to scheduling conflicts, the second symposium, **Resilient Environmental Infrastructure for Coastal Communities (Fall 2007)** is being rescheduled for the Fall 2008. LWRRI was subsequently co-sponsored another equally beneficial symposium with ConRuhr: March 31-April 1, 2008 at Louisiana State University, Baton Rouge after obtaining permission from USGS. The **TransAtlantic Water Symposium** was a 2-day Symposium organized by ConRuhr, the Center for Microscale Ecosystems, University of Duisburg-Essen, Germany, and Louisiana State University (LWRRI, LSU Department of Geography & Anthropology and the LSU School of the Coast). In addition, LWRRI provided administrative support for the coordination and production of the two-day symposium. It gathered leading thinkers from both sides of the Atlantic to exchange research and develop new initiatives.

On this website [\[http://www.uni-due.de/zmu/watersymposium/\]](http://www.uni-due.de/zmu/watersymposium/) you can download information and the talks which were presented at the conference. ConRuhr will add more to this site soon and extend it to an information platform for transatlantic research exchange.

Technical Transfer from TransAtlantic Water Symposium: Download presentation files below.

» [Session 1](#)

Fate of Organics during Soil Aquifer Treatment

*David M. Quanrud, Jianmin Zhang, Matt Tomanek,
Robert G. Arnold, Wendell P. Ela, A. Eduardo Sáez*

The University of Arizona

Download full presentation: [presentation \(pdf, 1.1mb\)](#)

Biological hydrogen production as a new source of energy for waste water treatment plants

T. Mietzel, R. Widmann

Universität Duisburg-Essen

Download full presentation: [presentation \(pdf, 750kb\)](#)

Wastewater treatment: Status and future in America, from environmental protection to resource recovery

Eberhard Morgenroth

Department of Civil and Environmental Engineering and Department of Animal Sciences

University of Illinois at Urbana-Champaign

Download full presentation: [presentation \(pdf, 3.6mb\)](#)

» [Session 2](#)

Chemical indicators of water quality

Torsten C. Schmidt^{1,2} and *Ulrich Borchers*²

1 University Duisburg-Essen

2 IWW Water Centre, Moritzstr. 26, D-45476 Muelheim, Germany

Download full presentation: [presentation \(pdf, 450kb\)](#)

Investigations of occurrence and elimination of hazardous compounds in waste water treatment plants

Michael Spiteller, *Sebastian Zuehlke*

Christoph B. Hannich, *Thomas Ries*²

1 Technical University of Dortmund

2 Deutsche Projekt Union GmbH, Cologne, Germany

Download full presentation: [presentation \(pdf, 2.1mb\)](#)

Emerging Contaminants in the Environment

*Dana W. Kolpin*¹, *Edward T. Furlong*², *Michael T. Meyer*³, *Larry, B. Barber*⁴, *Mark R. Burkhardt*², *Steven D. Zaugg*², *Vicki Blazer*⁵

1 U.S. Geological Survey, Iowa City, IA 52244

2 U.S. Geological Survey, National Water Quality Lab, Denver, CO 80225

3 U.S. Geological Survey, Lawrence, KS 66049

4 U.S. Geological Survey, Boulder, CO 80303

5 U.S. Geological Survey, National Fish Health Research Lab, Kearneysville, WV 25430

. Download full presentation: [presentation \(pdf, 3.5mb\)](#)

Environmental Impacts of Chemicals in Urban Floods: Katrina's lessons for other coastal cities

John H Pardue

Louisiana State University, Baton Rouge Louisiana.

Download full presentation: [presentation \(pdf, 3.6mb\)](#)

» [Session 3](#)

Water and biofilms

Hans-Curt Flemming

University of Duisburg-Essen

Download full presentation: [presentation \(pdf, 2.5mb\)](#)

Challenges of Membrane Treatment Processes: Biofouling and Other Issues

Harry F. Ridgway

AquaMem Scientific Consultants, Rodeo, New Mexico, USA
Dept. of Civil & Environmental Engineering, Stanford University
Download full presentation: [presentation \(pdf, 6.1mb\)](#)

EPS: An Elusive Refuge for Bacteria in Water Systems

Alan W. Decho,

University of South Carolina

Download full presentation: [presentation \(pdf, 1.4mb\)](#)

[» Session 4](#)

Parasites as bioindicators in aquatic ecosystems

Bernd Sures

University of Duisburg-Essen

Download full presentation: [\(pdf, 1.7mb\)](#)

Effects of a hurricane on fish parasites

Robin M. Overstreet

The University of Southern Mississippi

Download full presentation: [presentation \(pdf, 4.6mb\)](#)

Challenges of Using Unconventional Water Resources in the Arid West

Tzahi Y. Cath and Jörg E. Drewes

Colorado School of Mines

Division of Environmental Science and Engineering

Download full presentation: [presentation \(pdf, 6.1mb\)](#)

[» Keynote speeches](#)

Opening remarks by *Dr. Rolf Kinne,*

Director of ConRuhr USA

[Introduction \(pdf, 85kb\)](#)

Europe's challenge; A transition towards an ecosystem based water management- learning how to enjoy the river ("Freude am Fluss").

Toine Smits

Radboud University of Nijmegen, NL

Download full presentation: [presentation \(pdf, 6.4mb\)](#)

America's Challenge: Two Hundred Years of River Management

Craig E. Colten

Louisiana State University

Download full presentation: [presentation \(pdf, 7mb\)](#)

USGS Summer Intern Program

None.

Notable Awards and Achievements

External Activities. LWRRI has been involved in several external activities directed at improving the Institute's presence.

- LWRRI has been active with NIWR in the yearly efforts to maintain the 104 funding within USGS's budget. Under the current administration, the President's budget has allocated no funding for the water institute's program. Every year, however, the Institutes' have been able to restore funding by working with their congressional delegations. We have been active informing the Louisiana delegation about the benefits of the program and we have obtained legislative support for our efforts. This culminated in the passage of the Water Resources Research Act Amendments of 2004 ([S. 1017](#)) in the Senate in Fall, 2005. The bill was cosponsored by Senator Vitter and it continues the state's institutes program for the next 5 years and plans to double the funds allocated to each institute. Both Sen. Vitter and Landrieu signed the recent "Dear Colleague" letter supporting restoration of funding to the program.
- ◇ The Director, Dr. John Pardue, was invited by the LSU Hurricane Center to participate and lead a breakout group in the preliminary program development for the Louisiana Levee School. In addition, LWRRI provided administrative support for the coordination and production of the two-day LA Levee School Planning meeting. LWRRI will continue to work with the LSU Hurricane Center on this important effort to establish a world class Center of Excellence for flood protection and coastal restoration. DNR and DOTD's support for the program showcased the State's dedication to coastal protection and restoration.
- ◇ LWRRI was the lead sponsor, "Mitigating Storm Surge with Vegetation Symposium" Hilton Baton Rouge Capitol Center Hotel, April 2007. LWRRI presented two keynote speakers, Heidi Nepf from MIT, and Robert Kadlec from the University of Michigan. The symposium was moderated by our Director, John Pardue. In addition, LWRRI provided administrative support for the coordination and production of the two-day symposium. The symposium was co-sponsored with URS, The LSU Department of Civil & Environmental Engineering, and the LSU Center for the Study of Public Health Impacts of Hurricanes. LWRRI will continue to work to integrate science into Louisiana's Coastal Plan.
- ◇ LWRRI was the co-sponsor for the "LSRC Training One Day Workshop" held in Baton Rouge, Metairie, Lake Charles, Houma, Covington, & Lafayette, March April 2007. LWRRI provided administrative support for the coordination and production of the six one-day workshops. The primary sponsor was the LSU Center for GeoInformatics.
- ◇ The Director, Dr. John Pardue, was invited by the ConRuhr, , the Center for Microscale Ecosystems, University of Duisburg-Essen, Germany, LSU Department of Geography & Anthropology and the LSU School of the Coast to co-sponsor and lead a session in the 2-day Symposium: TransAtlantic Water Symposium. In addition, LWRRI provided administrative support for the coordination and production of the two-day symposium. It has gathered leading thinkers from both sides of the Atlantic to exchange research and develop new initiatives at the LSU Lod Cook Alumni Center March 31- April 1, 2008.

- ◇ The Director, John Pardue led an effort as PI at LSU to develop a proposal for a Department of Homeland Security Center of Excellence in the area of natural hazards, coastal infrastructure and emergency management. This built upon LWRRRI's leadership in storm surge modeling, hurricane response and the environmental impacts of hurricanes. The proposal was selected as a finalist and ultimately the public policy and evacuation projects within the LSU-led Center proposal were selected for funding in the new DHS Center co-lead by University of North Carolina and Jackson State. LSU will be a full partner in the Center and LWRRRI's contribution to that funding was invaluable.
- ◇ The Director, John Pardue, has led the formation of a Coastal and Ecological Engineering degree program at LSU. The letter of intent was submitted this cycle and a proposal is in preparation.
- ◇ Dr. Pardue was named one of LSU's Distinguished Faculty members in 2006–2007 for his contributions in research, teaching and service.
- ◇ Project 2007LA51B – Dr. Sarah Fearnley reports that the most notable achievement accomplished through this work, besides the scientific contribution, is that Mr. Carl Bohling has decided to use the data collected and analyzed through this project as subject matter for his thesis to complete an MS degree in Geology from UNO.
- ◇ Follow-on funding for project 2006LA47B was garnered by Dr. Zhiqiang Deng. Title: Characterization of Nitrogen Retention in Louisiana Coastal Rivers (under review)

PI: Zhiqiang Deng

Agency: Louisiana Sea Grant

Program: Louisiana Sea Grant College Program

Duration: 02/2008 – 01/2010

Amount: \$139,495

- ◇ Follow-on funding for project 2007LA50B was garnered by Dr. Zhiqiang Deng.

Title: Development of Ex-situ Sensor System for Water Quality Monitoring

PI: Zhi-Qiang Deng

Agency: Louisiana Board of Regents

Duration: 08/2008 – 07/2012

Amount: \$100,000

Dr. Pardue's funded grants as a result of his work in the water resources area:

1. "Assessment & Remediation of public health impacts due to Hurricanes and major flooding events" Louisiana Millennium Health Excellence Fund; 2001–2007. I. Van Heerden, PI; Pardue and Reible, water modeling group, \$120,000.
2. "Molecular methods in Environmental Engineering" Governor's Biotech Initiative.
3. "SGER: Hydrological, Chemical and Microbial Data Related to the Hurricane Katrina Flooding in New Orleans, LA". National Science Foundation, SUGR, C.

- Willson, J. Pardue, W. Moe and R. Dokka, 35K, 2005–2007.
4. “Phytoremediation of wetlands and CDFs” Hazardous Substance Research Center S/SW; 2001 – 2007. J. Pardue. \$354,649.