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- Find out the [Web Bulletin Board](http://www.cee.lsu.edu/ceebulletin.htm)
- Contact faculty and staff
- Get information about our undergraduate programs
- Check out the various research activities and publications of our faculty
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Contributions to the newsletter are always welcome. If you have news that would be of interest to other CEEs or your classmates, please send it to us so it can be included in a future edition.

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**Louisiana State University Civil and Environmental Engineering Department**

**Volume 2 Fall Issue**      **September 2002**

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## LSU HURRICANE CENTER

PROVIDING INTEGRATED DISASTER RESEARCH AND EDUCATION  
on the Natural, Built, and Human Environments

The LSU Hurricane Center is a multidisciplinary Center dedicated to research and education on hurricanes and other tornado and their impacts on the natural built and human environments. Results from our research are disseminated to the scientific community, government agencies, and dozens of departments, centers, and institutes across the campus collaborate on large interdisciplinary projects. Collaborations include the Southern Regional Climate Center, the National Weather Service, the National Hurricane Center, the National Oceanic and Atmospheric Administration, the U.S. Army Corps of Engineers, the Federal Emergency Management Agency, the National Science Foundation, the National Institute of Standards and Technology, the National Institute of Building Sciences, the Federal Highway Administration, the Louisiana Department of Transportation and Development, the Louisiana Board of Regents, the Louisiana Sea Grant, and several state and local government agencies. Students from all over the world study at the Hurricane Center. Faculty members are located in the College of Engineering, and more than half of the active faculty are actively collaborating with the Center on one or more projects.

Since its inception two and a half years ago, the Center has garnered nearly \$3 million in competitive externally funded research grants and programs. Funding sources include the National Science Foundation, Louisiana Board of Regents, Louisiana Sea Grant, and several state and local government agencies. Some of the major faculty members are listed below, along with brief biographical sketches of several of the faculty. Additional information is available on the website.

A three-year project funded by the National Science Foundation (NSF) will define steps to create the new discipline of Hurricane Engineering. It addresses the need to understand the design and response of civil engineering systems. Project deliverables include new courses, minor, and degree programs. Levitan is the Project Director and is also leading the structural engineering tasks. Brian Wold is leading the transportation component, working with Michael Johnson, Adrian John, Sensalone, John Pardue, and Danny Reible (ChemE). Environmental component, with Adelene, Adrian, John, Sensalone, John Pardue, and Danny Reible (ChemE). Water Resources tasks are being led by Visha Singh, with Joëlle Léveillé, Linda, Ivor van Heerden, and Ulli Kettner. Geotechnical tasks are being led by Dameira Rifaat, with Roger Sears.

The LSU Hurricane Center has created a new undergraduate minor in Disaster Science and Management (DSM). This program combines engineering, social and environmental sciences, planning, social sciences, and geographic information science to teach students how to design and build safe, sustainable communities and design of sustainable communities. The DSM Minor is housed in the College of Arts and Sciences but is available cross-departmentally. Dr. John Pardue and Dr. John Pine (Environmental Engineering) are teaching the first DSM course this semester, titled "Disaster Science and Management".

The Department of Civil and Environmental Engineering wants to know where life has taken you. Who are you especially challenging project?

Please complete the following information and we will contact you to discuss your project.

Please e-mail: [CEEAlumni@lsu.edu](mailto:CEEAlumni@lsu.edu)  
Civil and Environmental Engineering, LSU, 3418 CEBA Building, Baton Rouge, LA 70803-6465.

### CEE ALUMNI INFORMATION

Position:

Business Address:

Your News:

Don Jones, PE, S.E., SP, received the American Society of Safety Engineers (ASSE) Edgar Monsalve Award.

and Panamericana. The ASSE is the oldest and largest safety engineering organization in the world with over 32,000 members.



The Center was recently awarded \$100,000 by the Louisiana Board of Regents for "Research and Development of Programs for Health Threats Due to Hurricanes and Major Flooding Events." This multidisciplinary project is being conducted by faculty from the main campus and the LSU Medical Center in New Orleans. The Project Director is Ivor van Heerden. Participating CEE faculty include John Pardue, Vijay Singh, Brian Wolson, Dr. Marc Levitan, and Joe Suhayda.

Ivor van Heerden and his research team of dozen collaborators developed a "first-of-its-kind" for a post-storm hurricane strike on the city of New Orleans. The plan is a response/recovery plan for the city. CEE team members include Joe Suhayda, Vibhas Aravamuthan, Marc Levitan, Dr. Brian Wolson, and John Pardue.

Jefferson Parish (western half of New Orleans) was severely damaged by Hurricane Katrina. The survival rate of hospital facilities and urban areas was approximately 10 percent. All hospital facilities and urban areas were evacuated. The parish has been used as a temporary shelter and medical facility. Brian Levitan, Marc Levitan, and Vibhas Aravamuthan, along with the Louisiana Sea Grant Research Institute, received a \$147 thousand project to investigate use of satellite based remote sensing data to measure extent of flooding and estimate flood depths and damage (T.R. Wang, Marc Levitan, and John Sansalone). The Hurricane Center was awarded a \$300 thousand Board of Regents grant to purchase field equipment (Dr. Marc Levitan, Dr. Brian Wolson, Chester Whisner, Sheriff Ishak, Steve Cai, and Marc Levitan have several hurricane evacuation-related projects under way. The Hurricane Center is working with the Federal Highway Administration, and the American Red Cross to study evacuation issues in southeastern Louisiana.

Marc L. Levitan, Director, LSU Hurricane Center; Associate Professor of Civil and Environmental Engineering, and Charles P. Siess Jr. Professor of Dr. T. R. Wang, Assistant Professor of Civil Engineering, studied wind effects on buildings and structures such as assessment and design of hurricane shelters, engineering structures, numerical modeling of wind tunnel testing, and wind loads on industrial and petrochemical facilities.

Ivor van Heerden, Deputy Director, LSU Hurricane Center; Interim Professor (Fall 2003) CEE, has expertise in geotechnical analysis of soil slopes, coastal erosion, and coastal management. Dr. van Heerden is heading an effort to assist coastal communities to develop resource management plans.

Brian Wolson, Assistant Professor of Civil Engineering, is one of the leading authorities in the country on transportation engineering issues surrounding hurricanes. One of his specialties is design of evacuation routes for major cities, such as New Orleans, during evacuations. The Interstate Highway Administration recently used 11,000 people in its first major evacuation and distribution exercise. Dr. Wolson is an emergency management specialist.

Joe Suhayda, Associate Director, Louisiana Water Resources Research Institute, Professor of Civil and Environmental Engineering, is doing research on questions arise about storm surge flooding in coastal Louisiana. Dr. Suhayda is the one person most likely to teach for answers. He has done storm surge modeling for federal agencies for the past 20 years. His work is featured in the October issue of *Engineering News-Record* in an article entitled "Drowning New Orleans."

In addition, 1,800 transportation professionals converged on Baton Rouge to attend the Transportation Engineering Conference. The conference, organized by the four provinces represented, public, private, and academic sectors of the transportation industry, since its initiation as a biennial event in 1993, this year's two and a half-day conference was a successful conference yet.

#### Disaster Tech Roundtable conference a success

Staff and friends in the entire transportation community

use as hurricane shelters for special needs

and emergency planning

The conference provided a forum for transportation professionals to relate innovations in disaster preparedness and emergency planning. The 42 technical sessions covered such topics as emergency planning, evacuation, sheltering, communications, and other topics developed. The 42 technical sessions covered such topics as emergency planning, evacuation, sheltering, communications, and other topics developed. The 42 technical sessions covered such topics as emergency planning, evacuation, sheltering, communications, and other topics developed. The 42 technical sessions covered such topics as emergency planning, evacuation, sheltering, communications, and other topics developed. The 42 technical sessions covered such topics as emergency planning, evacuation, sheltering, communications, and other topics developed. The 42 technical sessions covered such topics as emergency planning, evacuation, sheltering, communications, and other topics developed. The 42 technical sessions covered such topics as emergency planning, evacuation, sheltering, communications, and other topics developed.

Professional development hours, which was attractive to engineering attendees.

The conference was well attended by university

and government officials, including 36 technical presentations made by 24 LTBC members, guests, and invited speakers.

Materials and Infrastructure Shelters were

discussed, along with Hurricane Evacuation Planning, Disaster Recovery, and Other Areas.

Dr. Brian Wolson, "Hurricane Evacuation Planning," Charles Chasten, "Disaster Recovery," Michael A. Miller, "Sheltering," Bill Brian Wolson, "Hurricane Evacuation Planning," Charles Chasten, "Disaster Recovery," Michael A. Miller, "Sheltering,"

Wade, "Blended Pavement," Michael S. Blodgett, "Blended Pavement," and Richard Avent, "Heat Stress,"

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# Faculty Research

Dr. Khaled Alshibli has received the Federal Emergency Management Agency (FEMA) Faculty Research Award for his research on low volume roads and oil spill stabilization at the University. He addressed civil engineering graduate study at LSU.

Dr. Marc Levitan (CEE and LSU Hurricane Center) was invited to serve on the Scientific Advisory Committee for the European and African Conference on Coastal and Maritime Hazards and Management, held in July 2005.

Dr. Vijay Singh was invited to speak at the International Conference on Water Resource Management and Management of Coastal and Marine Environment held in Kuwait City, Kuwait on March 20-22, 2005. Dr. Vijay Singh, along with Prof. Dr. M. A. Al-Shibani and Dr. S. Trautwein, organized a parallel discussion on coastal and marine issues at the Conference. The conference was organized by Kuwait Institute of Scientific Research and was sponsored by a number of international organizations.

Dr. Vijay Singh has been selected by the Environmental and Water Resources Institute (EWRI) as the recipient of the "EWRI Award for Outstanding Contributions to Hydrology and Water Resources". This award recognizes exceptional research contributions related to hydrodynamic modeling for watershed sediment transport upland watersheds, analysis and modeling of surface and subsurface water transport in semiarid and arid environments.

## RESEARCH DETAILS

Trautwein, S. (PI), Alshibli, K. (Co-PI), and Prata, D. (Co-PI), "Sand Determination for Field Density Testing Using Computed Tomography", Department of Defense SBIR Program, \$110,000.00.  
Alshibli, K. (PI), "Microscopic Real Time Radiography: A Potential Technology to Study Microstructure of Geomaterials", Louisiana DOTD: Transportation and Aviation Research Program (TARP), \$100,000.00.

Alshibli, K. (PI), "Computed Tomography: A Potential Technology to Understand Friction Properties of Granular Materials", NASA/Marshall Space Flight Center Graduate Student Researchers Program (GSRP), \$24,000.

Dr. T. V. Novoa, "Predict Chemical Leaching and Remediation for Use of the Flood Water in the Lower System of New Orleans - GIS Analysis of Oil Spill and Public Health Concerns", Louisiana Oil Spill Research Development Program, \$40,043.

Dr. Marc Levitan, Dr. Linking Wang, Dr. Ming Tang, "Assessing the Impacts of Hurricane Impacts for Improved Emergency Response and Recovery", Louisiana Sea Grant, \$125,000.

Dr. Vijay Singh of CEE is serving as the project scientist for the "Experimental Study Mechanisms of Granular Materials (MISCM)" sponsored by LWRRI, NASA/Marshall Space Flight Center.

the NASA Space Shuttle. MGM is a collaborative effort with Professor Michael G. Morgan of the University of Florida.

Dr. Vijay Singh, Dr. Michael G. Morgan, and Dr. Michael J. McHugh, "Mechanical Properties of Soil Specimens Subjected to Shear under Microgravity Conditions", NASA/Marshall Space Flight Center.

Initial microgravity program in 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 missions in 1990 and 1998 and planning for another mission in May of 2002. LWRRI headquarters as one of its top five achievements.

Dr. Elizabeth N. Howell, "Microgravity Program in 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 missions in 1990 and 1998 and planning for another mission in May of 2002. LWRRI headquarters as one of its top five achievements.

Endowed Professorship in Civil Engineering, Dr. Vijay Singh, Associate professor, has been appointed as the new holder of the Endowed Professorship in Civil Engineering.

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## NSF Research Awards

Dr. R. Richard Avent, Mr. Andrew S. C. W. Armstrong Jr., professor of engineering, Dr. James A. Gwin, professor and Dr. Lingling Wang (CLM), assistant professor, in their laboratory at the University of Louisiana at Lafayette (UL Lafayette) received an NSF Research Award totaling \$211,700 for their work in a project titled, "Fracture Properties of Geomaterials Using Microscopy."

Dr. Sheriff E. S. Sayed, assistant professor, received a \$100,000 NSF Research Award for his project, "Systems for Surface Transportation Infrastructure Risk Analysis: Exploring Short-Term Traffic Performance Measures Using Feature Extraction and texture Characterization of Spatiotemporal Traffic Computer Maps."

Dr. William S. Wilson, associate professor, recently arrived to NSF Research Award Hydrological Sciences 590. His research is titled, "Collaborative Research: A Multidisciplinary Approach to the Design, Construction, and Modeling of Pore-Scale Flow Systems." He submitted a collaborative proposal with Dr. John H. Denehy, University of Colorado.

Dr. Charles S. Hall, professor, and co-principal investigator, Richard Kurtz (physics) and Dr. Michael Ham (CAMD), have been awarded an NSF Research Award totaling \$120,000 for the acquisition of a monochromatic micro X-ray source and a cylindrical micro X-ray tomography detector. Their award totaled \$120,000.