Dear Friends of IIHR,

It is an honor for me to share the achievements of the faculty, staff, and students of IIHR—Hydroscience & Engineering for the period of July 1, 2007, through June 30, 2008. In these pages, you’ll find an inclusive list of our completed student research (masters’ theses and PhD dissertations), active sponsored research projects, and faculty, staff, and student publications, conference presentations, service, and awards.

It was a year of many professional and academic accomplishments, some of which were likely overshadowed by a major natural hydrological event: the Iowa flood of 2008. Unrelenting spring rains combined with heavy snowmelt to set up an almost “perfect storm.” By June 11, 2008, river levels were threatening The University of Iowa campus. IIHR found itself in the midst of a significant flooding event.

The C. Maxwell Stanley Hydraulics Laboratory (SHL), on the banks of the Iowa River downstream from the Coralville Dam, offered a front row seat to watch the rising water levels. When forecasts suggested 1993 flood levels would be surpassed, IIHR students, faculty, and staff came together quickly in an impressive sandbagging effort to protect the transformer at the south end of SHL, as well as the top of the towing tank area at the north end. On June 12, the University notified IIHR that SHL must be vacated by 5 p.m. the next day. Heavy rains that night moved the deadline to noon. In addition to the rush to pack and transport everything needed for several weeks of research and work at the Seamans Center, our students, faculty, and staff managed to place additional sandbags on threatened areas of the building. Their efforts and cooperation were simply tremendous.

By mid-morning on June 13, the University announced that all students and most staff would be required to leave campus and stay away for at least a week. At 11 a.m. on June 13, the power supply at SHL was shut off and pumping stopped; the sub-basement began to take on water. To protect vital tow tank equipment, IIHR staff dropped a pump hose into the sub-basement from outside the building to pump water out. A 24/7 effort was required to keep the pumps running for about a week, saving the tow tank equipment and the transformer platform.

IIHR staff moved back into SHL in August, just before classes began. After cleaning and repair work, the building was almost completely back to normal by the end of 2008. I am deeply proud of the efforts of everyone who worked so tirelessly for the well-being of IIHR and the University. Our students, faculty, and staff proved that beyond a doubt, IIHR is a cohesive team whose members are willing and able to cooperate and work hard for the good of the institute. Were they here, I’m sure IIHR’s founders and early leaders, such as Floyd Nagler and Hunter Rouse, would be as proud as I am.

Sincerely,

Larry J. Weber
Director, IIHR—Hydroscience & Engineering
Highlights
IIHR Responds to the Flood of 2008

Floodwaters threaten the Stanley Hydraulic Lab in June 2008.

Volunteer sandbaggers work to secure the transformer at the south end of SHL.

One of IIHR’s quick and efficient sandbag teams.

Graduate Students

Abaci, Ozan  C.E.E.  Mishra, Sadipeta Kumar  C.E.E.
Arenas, Amado Antonio  C.E.E.  Miyawaki, Shinjiro  C.E.E.
Asman, Ryan  C.E.E.  Morales Garcia, Reinaldo  C.E.E.
Barnhart, Bradley  Physics  Mousaviarda, Sayyed Maysam  M.E.
Benson, Jodi  C.E.E.  Mousel, John  M.E.
Billing, Brandon  C.E.E.  Niemeier, James  C.E.E.
Castro, Alejandro  M.E.  Paik, Kwang Jun  M.E.
Choi, Jiwoong  M.E.  Persoon, Carolyn  C.E.E.
Christiansen, Daniel  G.S.  Pettibone, Alicia  Chem&Bio
Clark, Benjamin  C.E.E.  Qiu, Ju  C.E.E.
Cunha, Luciana Kindl Da  C.E.E.  Qiu, Lin  C.E.E.
Darzio, Joseph  C.E.E.  Quaiderer, Nathan  C.E.E.
Dermis, Dimitrios  C.E.E.  Ramirez, Diane  C.E.E.
Domaseczynski, Piotr  C.E.E.  Reins, George  M.E.
Ellis, Philip  C.E.E.  Rogge, Daniel  M.E.
Espinoza Villegas, Claudia O  C.E.E.  Sadat Hosseini, Seyed Hamid  M.E.
Ferrari, Gaston  C.E.E.  Sakamoto, Nobuaki  M.E.
Flokstra, Brittany  C.E.E.  Sambhasivan, Shiv Kumar  M.E.
Frasson, Renato Prata De Moraes  C.E.E.  Seo, Bong Chul  C.E.E.
Ghosh, Surajeeet  M.E.  Sinha, Sumit  C.E.E.
Gorski, Christopher  C.E.E.  Sousan, Sinan Dhia Jameel  Chem&Bio
Habib, Mohamed  C.E.E.  Strain, Adrian  C.E.E.
Handler, Robert  C.E.E.  Thereregoda, Ranjani  C.E.E.
Haque, Md Manjurul  C.E.E.  Tokysy, Talia  C.E.E.
Ho, Hao-Chen  C.E.E.  Tasikiris, Achilleas  C.E.E.
Hutchinson, Kasey  C.E.E.  Vgmostad, Sarah  BioMed
Jeffrey, Brian  M.E.  Wang, Yushi  C.E.E.
Jin, Yang Oh  C.E.E.  Wonnacker, William  C.E.E.
Kapahi, Anil  M.E.  Xia, Qianxin  BioMed
Kim, Dongsu  C.E.E.  Yin, Danting  G.S.
Kirkil, Gokhan  C.E.E.  Yin, Youbing  M.E.
Koken, Mete  C.E.E.  Yoder, Colin  BioMed
Koo, Ben Guk  M.E.  Yoon, Hyun Se  E.C.
Krueh, Catherine  C.E.E.  
Kumar, Haribalan  M.E.  
Latta, Drew  C.E.E.  
Laught, Timothy  C.E.E.  
Lee, Haegeun  C.E.E.  
Lewandowski, Piotr  C.E.E.  
Lim, Deukyong  C.E.E.  
Livermore, Joshua  C.E.E.  
Loperfido, John  C.E.E.  
Mandapaka Venkata, Pradeep  C.E.E.  
Marek, Rachel  C.E.E.  
Marquardt, Matthew  M.E.  
Martinez Araneda, Andres  C.E.E.  
Massi Ferrante, Antonino  G.S.  
Merchie, Katherine  C.E.E.  

BioMed  Biomedical Engineering
C.E.E.  Civil and Environmental Engineering
C.S.  Computer Science
E.C.  Electrical and Computer Engineering
M.E.  Mechanical and Industrial Engineering
Chem&Bio  Chemical and Biochemical Engineering
G.S.  Geoscience
Senior Staff

(Departmental appointments are listed first for faculty members)
Below, Paul: Contracts Administrator
*Bhushan, Shanti: Assistant Research Scientist
Bradley, A. Allen: Associate Professor, C.E.E., Associate Research Engineer
Carra, Pablo: Associate Professor, M.E., Associate Research Engineer
Chandran, K.B.: Professor, Chair, BioMed., Research Engineer
Ciach, Grzegorz: Associate Research Engineer
Constantinescu, George: Assistant Professor, C.E.E., Assistant Research Engineer
Eichinger, William: Professor, C.E.E., Research Engineer
*Elhakeem, Mohamed: Assistant Research Engineer
**Ettema, Robert: Professor, Chair, C.E.E., Research Engineer
Haug, Pete: Engineer III
Holly, Forrest M. Jr.: Professor Emeritus
Hornbuckle, Keri: Professor, C.E.E., Research Engineer
Houser, Douglas: Engineer II
Illman, Walter: Associate Professor, C.E.E. and G.S., Associate Research Engineer
Jain, Subhash C.: Professor Emeritus
Just, Craig: Adjunct Professor, C.E.E., Associate Research Engineer
Kader, Khalid: Assistant Professor, BioMed., Assistant Research Engineer
Krajewski, Witold: Professor, C.E.E., Research Engineer
Kruger, Anton: Associate Professor, C.E., Associate Research Engineer
Langel, Carmen: Program Associate II
**Li, Songheng: Assistant Research Engineer
Lin, Ching-Long: Professor, M.E., Research Engineer
Longo, Joe: Assistant Research Engineer
Macagno, Enzo O.: Professor Emeritus
Macagno, Matilde: Scientist Emeritus
Munte, Mariam: Adjunct Associate Professor, C.E.E., Associate Research Engineer
Mutel, Cornelia: Historian and Archivist
**Nakato, Tatsuaki: Associate Professor, C.E.E., Research Engineer (now Emeritus)
Nixon, Wilfrid A.: Professor, C.E.E., Research Engineer
Odgaard, A. Jacob: Professor, C.E.E., Research Engineer
Papanicolaou, Thanos: Associate Professor, C.E.E., Associate Research Engineer
**Patel, Virendra C.: Professor, M.E., Research Engineer (now Emeritus)
Pellante, Marcela: Adjunct Associate Professor, C.E.E., Associate Research Engineer
*Schnoebelen, Douglas, Research Scientist
Schmoor, Jerald: Professor, C.E.E., Research Engineer
Stanier, Charles: Assistant Professor, C.B.E., Assistant Research Engineer
Stern, Fred: Professor, M.E., Research Engineer
Udaykumar, H.S.: Associate Professor, M.E., Associate Research Engineer
Weber, Larry: Professor, C.E.E., Research Engineer, Director of IIHR
Weirich, Frank: Associate Professor, G.S., Associate Research Engineer
Wilson, Mark A.: Data Systems Coordinator
Xing, Tao: Adjunct Assistant Professor, M.E., Assistant Research Scientist
*Yang, Jianming: Adjunct Assistant Professor, M.E., Assistant Research Engineer
Zhang, You-Kuan: Professor, G.S., Research Engineer

BioMed. Biomedical Engineering C.E.E. Civil and Environmental Engineering
C.B.E. Chemical and Biochemical Engineering C.E. Electrical and Computer Engineering
C.E.E. Civil and Environmental Engineering M.E. Mechanical and Industrial Engineering
G.S. Geosciences
* Begun association with IIHR between 7/1/07 and 6/30/08
** Left IIHR between 7/1/07 and 6/30/08

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Abbreviations

AFOSR  Air Force Office of Scientific Research
AGU  American Geophysical Union
AICME  American Institute of Chemical Engineers
AMS  American Meteorological Society
ASCE  American Society of Civil Engineers
ASME  American Society of Mechanical Engineers
CFD  Computational Fluid Dynamics
CGER  UI Center for Global and Regional Environmental Research
CLEANER  Collaborative Large-Scale Engineering Analysis Network for Environmental Research
CUAHSI  Consortium of Universities for the Advancement of Hydrologic Sciences Inc.
DCPUD  Douglas County Public Utility District
DHHS  Department of Health and Human Services
EPA  Environmental Protection Agency
EWR  Environmental & Water Resources Institute, ASCE
FPL  Federal Highway Administration
FWECC  Foster Wheeler Environmental Corp.
HCA  HungryCanyons Alliance
HEI  Health Effects Institute
HMM  CDM/Hatch Mott MacDonald
IAHR  International Association of Hydraulic Engineering and Research
IDNR  Iowa Department of Natural Resources
IDOT  Iowa Department of Transportation
IEC  International Electrotechnical Commission
IHRB  Iowa Highway Research Board
JS  Johnson Screens
KICT  Korea Institute of Construction Technology
LDB  Lutz, Dally, & Brain, LLC Consulting Engineers
LL&W  Living Lands & Water
M&H  Moad & Hunt Inc.
MWG  Midwest Generation EME LLC
MWH  MWH Americas Inc.
NASA  National Aeronautics and Space Administration
NECRP  National Highway Cooperative Research Program
NIH  National Institutes of Health
NOAA  National Oceanic and Atmospheric Administration
NSF  National Science Foundation
NWS  National Weather Service, NOAA
ONR  Office of Naval Research
PDE  Pacific International Engineering PLLC
PUD-GC  Public Utility District of Grant County
QTT  Quixote Transportation Technologies Inc.
SCE  Silveryth Construction Company
SCI  Stanley Consultants Inc.
SFWMH  South Florida Water Management District
SHE  Shive Hattery Engineers
TTI  Tetra Tech Inc.
UC Berkeley  University of California, Berkeley
UG  University of Guelph, Ontario
UH  University of Houston
UI  The University of Iowa
UI-LOC  The University of Iowa-Obemann Center
URUC  University of Illinois, Urbana-Champaign
USACE  U.S. Army Corps of Engineers
USDA  U.S. Department of Agriculture
USD-A  U.S. Department of Defense, Army
USD-D  U.S. Department of Defense, Army Engineer Research and Development Center
USD-AF  U.S. Department of Defense, Air Force
USDI-F  U.S. Department of Interior, Fish & Wildlife Service
USGS  U.S. Department of Army
USGS  U.S. Geological Survey

Seminar Presentations (cont.)

<table>
<thead>
<tr>
<th>Date</th>
<th>Presenter and Affiliation</th>
<th>Presentation Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/01/08</td>
<td>Peter Hajcay, PhD Research Scientist, Adjunct Assistant Professor, CS and ECE Departments, URIUC Image Spatial Data Analysis Group National Center for Supercomputing</td>
<td>“From Raw Data to Information and to Knowledge”</td>
</tr>
<tr>
<td>2/08/08</td>
<td>Qian Liao, Assistant Professor of Civil Engineering and Mechanics, University of Wisconsin, Milwaukee</td>
<td>“In-situ PIV Measurements of Turbulent Flow Structures Over a Mussel-Covered Bed in Lake Michigan”</td>
</tr>
<tr>
<td>2/19/08</td>
<td>Nandita Basu, Research Associate, Purdue University (now with IIHR)</td>
<td>“Characterization and Remediation of Contaminated Sites: Modeling, Measurement, and Assessment.”</td>
</tr>
<tr>
<td>2/26/08</td>
<td>Ben O’Connor, NRC Postdoctoral Associate, U.S. Geological Survey</td>
<td>“Quantifying the Biogeochemically Active Portion of Aquatic Ecosystems”</td>
</tr>
<tr>
<td>3/04/08</td>
<td>Marcelo Chamecki, Research Scientist, John Hopkins University</td>
<td>“Pollution Dispersion by the Wind: Field Experiments and Numerical Simulations”</td>
</tr>
<tr>
<td>3/11/08</td>
<td>Li Li, Research Scientist, Lawrence Berkeley National Laboratory</td>
<td>“Effects of Natural Porous Medium Heterogeneity on Uranium In Situ Bioremediation and Biogeochemical Reaction Rates”</td>
</tr>
<tr>
<td>4/25/08</td>
<td>Jasmeet Judge, Director, Center for Remote Sensing Agricultural and Biological Engineering, University of Florida</td>
<td>“Microwave Remote Sensing of Hydrologic Fluxes and States Through Coupled Models”</td>
</tr>
<tr>
<td>4/25/08</td>
<td>Winold Krajewski, Research Engineer, IIHR</td>
<td>CUAHSI CyberSeminar: “Hydro-NEXRAD Community Resource for Use of Radar-Rainfall Data”</td>
</tr>
<tr>
<td>4/28/08</td>
<td>Thamus Papaniahou, Associate Research Engineer, IIHR</td>
<td>“The Clear Creek Experimental Watershed”</td>
</tr>
<tr>
<td>5/02/08</td>
<td>Connie Mutel, IIHR</td>
<td>“The Evolving Emerald Horizon … Iowa’s Changing Water Regime”</td>
</tr>
<tr>
<td>5/09/08</td>
<td>Venkatesh M. Merwade, Assistant Professor of Civil Engineering, Purdue University</td>
<td>“GIS Tools and Techniques for Analyzing and Modeling River Channels”</td>
</tr>
</tbody>
</table>
### Seminar Presentations

<table>
<thead>
<tr>
<th>Date</th>
<th>Presenter and Affiliation</th>
<th>Presentation Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>09/04/07</td>
<td>Koen Blankest, Ecole Polytechnique Federale Lausanne, Switzerland, Delft University of Technology</td>
<td>“Hydrodynamics of Open-Channel Bends”</td>
</tr>
<tr>
<td>09/07/07</td>
<td>Ingo Schauder, IGB Berlin</td>
<td>“A Fluid Mechanics Laboratory in the Field: Mixing Layers, Aquatic Vegetation, and Gyrosystem in the Spre River near Berlin, Germany”</td>
</tr>
<tr>
<td>09/21/07</td>
<td>Marian Muste, Associate Research Engineer, IIHR—Hydroscience &amp; Engineering</td>
<td>“International Perspectives in Water Resources Management—A Dauce of International Education”</td>
</tr>
<tr>
<td>10/05/07</td>
<td>Young-Gen Lai, Hydraulic Engineer, Sedimentation and River Hydraulics, Technical Service Center, Bureau of Reclamation</td>
<td>“2D Modelling of Mobile Beds”</td>
</tr>
<tr>
<td>10/10/07</td>
<td>Greg Noe, USGS</td>
<td>“Nutrient Transport and Retention in Wetland and Aquatic Ecosystems”</td>
</tr>
<tr>
<td>10/11/07</td>
<td>Mohamed Elkhazem, Postdoctoral Associate, IIHR—Hydroscience &amp; Engineering</td>
<td>“1,000 Days at IHHR”</td>
</tr>
<tr>
<td>10/19/07</td>
<td>Robert Ettensa, Dean, University of Wroclaw College of Engineering and Applied Science, and Connie Mutel, IIHR Historian and Archivist</td>
<td>“Hunter Rouse—His Hydraulics Work in Retrospect”</td>
</tr>
<tr>
<td>10/26/07</td>
<td>Ximing Cai, Ven Te Chow Hydro-systems Laboratory, Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign</td>
<td>“Effects of Human Interferences on Hydrologic Processes—the Modelling Issues”</td>
</tr>
<tr>
<td>11/01/07</td>
<td>Nigel Crook, Research Associate, Stanford University, School of Earth Sciences, Environmental Geophysics, Department of Geophysics</td>
<td>“Real-Time Self Learning River Basin Management Systems”</td>
</tr>
<tr>
<td>11/02/07</td>
<td>Blake P. Tullis, Assistant Professor, Utah Water Research Laboratory, Civil and Environmental Engineering Dept., Utah State University</td>
<td>“Head-Discharge Relationships for Submerged Labyrinth Weirs”</td>
</tr>
<tr>
<td>11/07/07</td>
<td>Nigel Cook, Research Associate, Stanford University, School of Earth Sciences, Environmental Geophysics, Department of Geophysics</td>
<td>“An Emerging Role for Geophysics in watershed Hydrologic Investigations”</td>
</tr>
<tr>
<td>11/07/07</td>
<td>Ricardo Mantilla, Postdoctoral Research Associate, Department of Earth and Environmental Science, New Mexico Institute of Mining and Technology (now with IHRR)</td>
<td>“The Role of Self-Similar Networks on the Spatial Organization of Floods and Hydraulic Geometric Properties”</td>
</tr>
<tr>
<td>11/13/07</td>
<td>Baijun Gong, Department of Mechanical and Aerospace Engineer- ing, West Virginia University</td>
<td>“Large-Eddy Simulation of the Effects of Debris on Tornado Dynamics Using Two-Fluid Model”</td>
</tr>
<tr>
<td>11/16/07</td>
<td>H.S. Udaykumar, Associate Research Engineer, IIHR</td>
<td>“Toward Multi-Scale Modeling of Flows Through Heart Valves”</td>
</tr>
<tr>
<td>11/11/08</td>
<td>Tatsunari Nakato, Research Engineer, IIHR</td>
<td>“Mussels, Mussels, and Mussels at Lucille A. Carver Mississippi Rivereside Environmental Research Station (LACMRERS)”</td>
</tr>
</tbody>
</table>

### Active Sponsored Research Projects

<table>
<thead>
<tr>
<th>Title</th>
<th>Sponsor</th>
<th>Investigator(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop Efficient Sharp Interface Fixed Grid Techniques for Three-Dimensional Multimaterial Interaction Problems</td>
<td>AFOSR</td>
<td>Udaykumar</td>
</tr>
<tr>
<td>* Integration of National Research Initiatives at the Lucille A. Carver Mississippi Riverside Environmental Research Station</td>
<td>Carver Trust</td>
<td>Weber</td>
</tr>
<tr>
<td>Edit Center for Global and Environmental Research Publications</td>
<td>CGRER</td>
<td>Mutel</td>
</tr>
<tr>
<td>* Computational Fluid Dynamics (CFD) Modeling to Support Development of Surface Passage Alternatives at McNary Dam</td>
<td>CH2M Hill</td>
<td>Weber</td>
</tr>
<tr>
<td>NSF Pass-Through Grant “Clear Creek Environmental Hydrologic Observatory”</td>
<td>CUAHSI</td>
<td>Just, Kruger, Muste</td>
</tr>
<tr>
<td>Bathymetric Survey of Cedar River at Duane Arnold Energy Center</td>
<td>DAEC</td>
<td>Ogdaard</td>
</tr>
<tr>
<td>* TDG Modeling for the Tailrace of Wells Dam</td>
<td>DCPUD</td>
<td>Politano, Weber</td>
</tr>
<tr>
<td>Multiscale Simulation of Gas Flow Distribution in the Human Lung</td>
<td>DHHS</td>
<td>Lin</td>
</tr>
<tr>
<td>Fluid-Structure Simulation for Prosthetic Heart Valves</td>
<td>DHHS</td>
<td>Chandran, Lai</td>
</tr>
<tr>
<td>* Design and Testing of a Point of Use Electrolytic Chlorine Generator for Drinking Water Disinfection in Poor Countries</td>
<td>EPA</td>
<td>Just</td>
</tr>
<tr>
<td>Maintain and Service Thermal Models at Braidwood, Dresden, LaSalle, and the Quad Cities Stations</td>
<td>Exelon</td>
<td>M. Wilson</td>
</tr>
<tr>
<td>** Bathymetric Survey of Cedar River Near Duane Arnold Energy Center</td>
<td>FPL Energy</td>
<td>Ogdgaard</td>
</tr>
<tr>
<td>** Numerical Model Study for McNary Dam Forebay</td>
<td>FWECD</td>
<td>Constantinescu, Weber, Politano</td>
</tr>
<tr>
<td>Model Study of ECT Baffle Drop Structure</td>
<td>HMM</td>
<td>Ogdaard</td>
</tr>
<tr>
<td>Develop Stage-Discharge Relations for Ungauged Bridge Waterways in Western Iowa</td>
<td>HCA / IDOT</td>
<td>Papanicolaou</td>
</tr>
<tr>
<td>* Development and Application of a Personal Exposure Screening Model for Size-Resolved Urban Aerosols</td>
<td>HEI</td>
<td>Stanier</td>
</tr>
<tr>
<td>* Development of a Facility Plan and Advanced Conceptual Design for NASA’s Long-Term Control Plan for Control of Sewer Overflows</td>
<td>HMM</td>
<td>Nakato</td>
</tr>
<tr>
<td>* CFD Hydrodynamic Simulations for the Proposed Cargill Eddyville Intake on the Des Moines River</td>
<td>Howard Green Co.</td>
<td>Weber</td>
</tr>
<tr>
<td>Monitor Subsurface Water Quality with Infrrometer Sensor Technology</td>
<td>IDNR</td>
<td>Muste, Papanicolaou</td>
</tr>
<tr>
<td>Development of Self-Cleaning Box Culvert Designs</td>
<td>IDOT</td>
<td>Hage, Muste</td>
</tr>
<tr>
<td>Improved Method for Determining Wind Loads on Highway Sign and Traffic-Signal Structures</td>
<td>IDOT</td>
<td>Constantinescu</td>
</tr>
<tr>
<td>The Effects of Headcut and Knickpoint Propagation on Bridges in Iowa</td>
<td>IDOT</td>
<td>Papanicolaou</td>
</tr>
<tr>
<td>** Implementation of the Water Quality Control BMPs and Design and Specifications Manuals in the Iowa Stormwater Runoff Control Interactive Manual</td>
<td>IDOT / IIHR</td>
<td>Muste, M. Wilson</td>
</tr>
<tr>
<td>Title</td>
<td>Sponsor</td>
<td>Investigator(s)</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Quantitative Mapping of Waterways Characteristics at Bridge Sites</td>
<td>IDOT</td>
<td>Muste, Nakato, Haug</td>
</tr>
<tr>
<td>Focusing Engineering Students on Practical Design and Alternative Energy with Electric-Assisted Bicycles and “Solarized” Bicycle Designs</td>
<td>IEC</td>
<td>Just</td>
</tr>
<tr>
<td>** Design Procedures and Field Monitoring for Streambank Protection with Submerged Barbs</td>
<td>IHRB</td>
<td>Muste, Papanicolaou</td>
</tr>
<tr>
<td>* Assessment of the Performance of Flow Measurement Instruments and Techniques</td>
<td>KICT</td>
<td>Muste</td>
</tr>
<tr>
<td>** Guidelines for the Laboratory Investigations of Cavitation in Spillways</td>
<td>KICT</td>
<td>Muste</td>
</tr>
<tr>
<td>* New Boston Bay Area of the Mississippi River Near New Boston, Ill.</td>
<td>LL&amp;W</td>
<td>Schnoebelen, Weber</td>
</tr>
<tr>
<td>Hydraulic Model Study for Thomas Hill Power Plant Pump Station</td>
<td>LDB</td>
<td>Odgaard</td>
</tr>
<tr>
<td>CFD Model to Identify the Zone of Influence at the Prairie du Sac Hydroelectric Project</td>
<td>M&amp;H</td>
<td>Lyons, Politano, Weber</td>
</tr>
<tr>
<td>Thermal Model Data Acquisition System Service and Maintenance for Joliet Station</td>
<td>MWG</td>
<td>Bradley, M. Wilson</td>
</tr>
<tr>
<td>** Silver Lake Flood Litigation Retention Agreement</td>
<td>MWH</td>
<td>Weber</td>
</tr>
<tr>
<td>A Prototype Remote Sensing Validation Site: Toward a Multi-Variable Approach to Validating and Scaling Remotely-Sensed Observations of the Water Cycle</td>
<td>NASA</td>
<td>Krajewski</td>
</tr>
<tr>
<td>Propagation of Uncertainty in Rainfall Estimates from Remote Sensors in Spatio-Temporal Hydrologic Models</td>
<td>NASA</td>
<td>Krajewski</td>
</tr>
<tr>
<td>New Paradigm for Statistical Validation of Satellite Precipitation Estimates for Hydrologic Applications</td>
<td>NASA</td>
<td>Ciach, Krajewski, Kruger</td>
</tr>
<tr>
<td>* Aquatic Resource Study for the Red Rock Hydroelectric Project</td>
<td>Nelson Energy</td>
<td>Weber</td>
</tr>
<tr>
<td>* Evaluation of Bridge-Scour Research: Pier Scour Processes and Predictions</td>
<td>NHCRP</td>
<td>Constantinescu, Etterna, Muste</td>
</tr>
<tr>
<td>Semi-Volatile PCBs: Sources, Exposures, Toxicities (Analytical Core)</td>
<td>NIH</td>
<td>Hornbuckle</td>
</tr>
<tr>
<td>Semi-Volatile PCBs: Sources, Exposures, Toxicities (Project 4)</td>
<td>NIH</td>
<td>Hornbuckle</td>
</tr>
<tr>
<td>Semi-Volatile PCBs: Sources, Exposures, Toxicities (Project 5)</td>
<td>NIH</td>
<td>Schnoor</td>
</tr>
<tr>
<td>** Sampling Support and Data Analysis of NOAA Tall Tower and Aircraft Measurements in Iowa</td>
<td>NOAA</td>
<td>Stanier</td>
</tr>
<tr>
<td>* MRI: Acquisition of Mobile Facility for Providing High-Resolution Input to Hydrologic Observatories</td>
<td>NSF</td>
<td>Krajewski, Kruger</td>
</tr>
<tr>
<td>** Collaborative Research: Testing a Dynamical-Hortonian Scaling Theory for Flood Events in the Whitewater Basin, Kansas</td>
<td>NSF</td>
<td>Krajewski, Ciach</td>
</tr>
<tr>
<td>** Development of Empirically Based Methodology for Comprehensive Verification of Radar Rainfall Products</td>
<td>NSF</td>
<td>Ciach</td>
</tr>
<tr>
<td>** Collaborative Research: Small-Scale Variability of Rainfall: Experimental Studies with Implications for Rainfall Estimation</td>
<td>NSF</td>
<td>Krajewski</td>
</tr>
<tr>
<td>DNAPL Source Zone Characterization by the Stochastic Fusion of Information</td>
<td>NSF</td>
<td>Illman</td>
</tr>
<tr>
<td>ITR: Collaborative Research: A Comprehensive Framework for Use of NEXRAD Data in Hydrometeorology and Hydrology</td>
<td>NSF</td>
<td>Bradley, Krajewski, Kruger</td>
</tr>
</tbody>
</table>

State and Local

NEW IN 2007–08

**Research Staff**

Keri Hornbuckle  
Appointed Robert and Virginia Wheeler Faculty Fellow of Engineering

Craig Just  
UI President and Provost Award for Teaching Excellence, 2008  
Named UI’s Favorite Professor, 2008

Marian Muste  
Member, Focus Group on International Programs, June 2007–present

Michelle Scherer  
UI College of Engineering Faculty Excellence Award for Research, 2007–08

Jerry Schnoor  
UI President’s Award for State Outreach and Public Engagement

Thanos Papanicolaou  
Appointed Robert and Virginia Wheeler Faculty Fellow of Engineering

Larry J. Weber  
Member, UI Governmental Relations Committee

**Research Staff**

Marian Muste  
Member, The University of Iowa’s Staff Council, April 2006–May 2009

Promotions

To Professor:

- Larry J. Weber, Professor of Civil and Environmental Engineering, Edwin B. Green Chair in Hydraulics College of Engineering

- Keri Hornbuckle, Professor and Chair of Civil and Environmental Engineering, Robert and Virginia Wheeler Faculty Fellow of Engineering College of Engineering

To Associate Professor:

- Pablo Carrica, Associate Professor of Mechanical and Industrial Engineering

**Research Staff**

Allen Bradley  
Member, Iowa Comprehensive Stormwater Management Committee, 2004–present

Michelle Scherer  
UI Faculty Scholar Award, 2006–09

Member, Executive Board, UI Nanoscience and Nanotechnology Institute
International and National

Wilfrid Nixon
Member, International Steering Committee for Standing International Road Weather Conference, 2002–10
Member, AHD05 Committee on Winter Maintenance, 2004–10
Member, AS401 Conduct Research Committee, 1999–2009
Chair, AH010(T) Task Force on Surface Weather Transportation, 2005–08
Member, AH000 Operations and Maintenance Group, 2004–10

A. Jacob Odgaard
Top Industry Practice (TIP) Award, with FLP Duane Arnold and Stanley Consultants, from the Nuclear Energy Institute, May 24, 2007

Thanos Papanicolaou
Board Member, International Fluvial Hydraulics—River Flow, 2006–present
Honorable Member, Bedload Research International Cooperative (BRIC), 2005–present
Associate Editor, Journal of Hydraulic Engineering, ASCE, 2003–present
Co-Editor, ASCE Monograph on Dam Removal, 2005–present

Michelle Scherer
Member, Editorial Review Board, Geochemical Transactions

A. Jacob Odgaard

[Table of titles, sponsors, and investigators related to research projects involving water-related topics, spanning various years from 2006 to 2018.]
### Active Sponsored Research Projects (cont.)

<table>
<thead>
<tr>
<th>Title</th>
<th>Sponsor</th>
<th>Investigator(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation of a High-Order Methodology to Assess ADCP Measurement Uncertainty in a Graphical User Interface</td>
<td>SFWMD</td>
<td>Muste</td>
</tr>
<tr>
<td>Scour Study of Bridge Piers at the IMU and Hancher Footbridges</td>
<td>SHE</td>
<td>Young</td>
</tr>
<tr>
<td>Computational Fluid Dynamics (CFD) Construction to Evaluate Total Dissolved Gas Within the Tailrace at McNary Dam</td>
<td>TTI</td>
<td>Weber</td>
</tr>
<tr>
<td>Molecular Biological Analyses of RDX-Contaminated Offsite Groundwater Immobilize Radionuclides Through Anaerobic Biooxidation of Fe(II)</td>
<td>TTI</td>
<td>Mattes</td>
</tr>
<tr>
<td>Identifying the Movement Rules Sea Lamprey Use to Navigate Complex Flows</td>
<td>UCBerkeley</td>
<td>Scherer</td>
</tr>
<tr>
<td>Design Tilting Flume for the University of Houston</td>
<td>UI</td>
<td>Haug</td>
</tr>
<tr>
<td>International Programs Curriculum Development Award: International Perspectives in Watershed Science and Management</td>
<td>UI-OC</td>
<td>Muste, Quinn, Popsucu</td>
</tr>
<tr>
<td>Toward the Next Generation of Environmental Observatories: Assessment of Challenges and Needs Through International Exploratory Collaboration Coalition to Create CLEANER Project Office (C3PO)</td>
<td>UIUC</td>
<td>Schnoor</td>
</tr>
<tr>
<td>Large Scale Particle Image Velocimetry Software</td>
<td>USACE</td>
<td>Muste</td>
</tr>
<tr>
<td>Support for the Upper Mississippi River System (UMRS) Navigation and Ecosystem Sustainability Program</td>
<td>USACE</td>
<td>Weber</td>
</tr>
<tr>
<td>Determine Sediment Sources in ARS CEAP Benchmark Watersheds</td>
<td>USDA</td>
<td>Papanicolaou</td>
</tr>
<tr>
<td>Hydropedological Investigations and Training on a Benchmark Catena: Performance of Semi-Automated Measurements of KSAT via Different Hydrologic and Land Management Conditions</td>
<td>USDA</td>
<td>Papanicolaou</td>
</tr>
<tr>
<td>First Estimation of the Runoff Curve Number in the State of Iowa via Direct Rainfall Simulator Measurements</td>
<td>USDA</td>
<td>Elhakeem, Papanicolaou</td>
</tr>
<tr>
<td>Preservation of the Allagash River Ecosystem Study</td>
<td>USDD-A</td>
<td>Weber</td>
</tr>
<tr>
<td>Design of Fish Research Flume for the Engineering Research and Design Center</td>
<td>USDD-AERDC</td>
<td>Weber</td>
</tr>
<tr>
<td>** Rainfield Characterization Study</td>
<td>USDD-AF</td>
<td>Kruger</td>
</tr>
<tr>
<td>High Accuracy, Efficient Eulerian Methodology for Three-Dimensional High Speed Material Response</td>
<td>USDD-AF</td>
<td>Udaykumar</td>
</tr>
<tr>
<td>A Helicopter Observation Platform (HOP) for Measurements of Aerosol Characteristics and Transport</td>
<td>USDOA</td>
<td>Eichinger</td>
</tr>
<tr>
<td>Applicability of Using Q-Liners for ADCP Discharge Measurements Under Various Hydrologic Conditions</td>
<td>USGS</td>
<td>Muste</td>
</tr>
</tbody>
</table>

* Research projects initiated between 7/1/2007 and 6/30/2008
** Research projects completed between 7/1/2007 and 6/30/2008

### International and National

<table>
<thead>
<tr>
<th>Jerald Schnoor</th>
<th>Member, National Research Council Committee on Mississippi River and Clean Water Act, 2005–07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milton P. Gordon Lecturer Founding Award, International Phytotechnology Society, September 2007</td>
<td></td>
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<tr>
<td>Chair, National Research Council (NRC) Water Science and Technology Board, Colloquium on Biofuels and Water Quality, 2007</td>
<td></td>
</tr>
<tr>
<td>Member, Science Advisory Board, U.S. Environmental Protection Agency, 2007–</td>
<td>Co-director, National Science Foundation CLEANER / WATERS Network Project Office, 2005–08</td>
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<tr>
<td>Chair, Iowa Climate Change Advisory Council (IICAC), 2007–09</td>
<td></td>
</tr>
<tr>
<td>Certificate of Appreciation for 25 Years of Service, American Chemical Society, 2008</td>
<td></td>
</tr>
<tr>
<td>The University of Iowa President’s Award for State Outreach and Public Engagement, 2008</td>
<td></td>
</tr>
<tr>
<td>National Advisor, National Institute of Environmental Health Sciences, 2008–</td>
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</tr>
</tbody>
</table>


| Fred Stern | Chair, Executive Organizing Committee, SIMMAN 2008: Workshop on V&V of Ship Maneuvering Simulation Methods, Hosted POTC/EHCR, Copenhagen, Denmark, April 14–16, 2008 |
| Member, Organizing Committee, Gothenburg 2010: Workshop on Ship Hydrodynamics CFD, Gothenburg, Sweden, 2010 |
| Member, NATO AVT, Stability and Control Prediction of Maneuvering Air and Sea Vehicles; Computational Uncertainty; Reliable Prediction of Separated Flow Onset and Progression for Air and Sea Vehicles |
| Member, Editorial Board, Journal of Naval Architecture and Ocean Engineering, 2008–present |

### CARRIED OVER FROM PREVIOUS YEARS

<table>
<thead>
<tr>
<th>Research Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allen Bradley</td>
</tr>
<tr>
<td>Member, GEWEX Americas Prediction Project Science Advisory Group, 2002–present</td>
</tr>
<tr>
<td>Member, National Research Council Committee on USGS Water Research, 2001–07</td>
</tr>
<tr>
<td>Member, AGU Large-Scale Field Experimentation Committee, 1994–present</td>
</tr>
<tr>
<td>Member, AGU Precipitation Committee (1992–93, 2000–)</td>
</tr>
</tbody>
</table>

| K.B. Chandran | ABET Program Evaluator, Bioengineering / Biomedical Engineering Programs Representing Biomedical Engineering Society, 2006–present |

| Ching-Long Lin | Member, Interagency Modeling and Analysis Group Multiscale Modeling Consortium, 2005–present |

| Marian Muste | Member, World Meteorological Organization’s Commission on Hydrology (WMO Chy) working group: Assessment of the Performance of Flow Measurement Instruments and Techniques |
| Member, Fulbright Senior Specialist Review Committee |
| Member, Editorial Board for the International Association of Hydraulic Research and Engineering’s Media Library: http://www.iahmediabulletin.net |
Awards, Activities, and Appointments to Committees and Editorial Boards

International and National

NEW in 2007–08

Students

Dimitrios Dermisis
Awarded the Paul C. and Sara Jane Benedict Fellowship for Study of Alluvial Processes, 2007

Gabriele Villarini
Awarded an Outstanding Student Paper Award from the American Geophysical Union

Dongsu Kim
Awarded Best Poster Award at the Sixth Annual UI College of Engineering Research Open House
Awarded a UI Strategic Initiative Fund (SIF) award to support his dissertation

Research Staff

Marian Muste
Member, Council of International Association for Hydraulic Research and Engineering (IAHR), 2007–present
Member, International Working Group on Data and Models (IWGDM), IWA / IAHR Specialist Group on Urban Drainage, 2007–present
Member, National Advisory Committee on Water Information, Subcommittee of Sedimentation, liaison for Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI), 2007–present
Convenor, XXXII International Association for Hydro-Environment Engineering and Research Congress, Special Session: Field Measurements: New Technologies and Methods, Venice, Italy, July 2007
Co-organizer, Environmental and Water Resources Institute-International Association for Hydro-Environment Engineering and Research Joint Conference: Hydraulic Measurements and Experimental Methods, Lake Placid, N.Y., September 2007

Tatsuaki Nakato
Life Member, American Society of Civil Engineers, ASCE
Certificate of Achievement, Department of the Army, Dec. 20, 2007
Member, organizing committee, ASCE International Conference on Hydraulic Measurements and Experimental Methods 2007, Lake Placid, N.Y., Sept. 9–11, 2007

Thanos Papanicolaou
ASCE Walter L. Huber Civil Engineering Research Prize, 2008
Associate Editor, International Journal for Sediment Research, 2007–present

Marcela Politano
Award Recipient, National Center for Supercomputing Applications, 2007
Session Chair, Ninth International Symposium on Fluid Control, Measurement, and Visualization, September 2007

Technical Reports


Limited Distribution Reports


### Journal Articles

<table>
<thead>
<tr>
<th>Title</th>
<th>Author(s)</th>
<th>Journal</th>
<th>Volume/Issue/Pages</th>
<th>Year</th>
<th>Reprint</th>
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</thead>
</table>

### PhD Dissertations Accepted

<table>
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<tr>
<th>Title</th>
<th>Advisor(s)</th>
<th>Institution</th>
<th>Year</th>
</tr>
</thead>
</table>

### MS Theses Accepted

<table>
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<tr>
<th>Title</th>
<th>Advisor(s)</th>
<th>Institution</th>
<th>Year</th>
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</thead>
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10

31
Other Presentations (cont.)


Mates, T.E., “Evolution of the Vinyl Chloride Biodegradation Pathway—Implications for Bioremediation Applications,” Chemical and Biochemical Engineering Graduate Seminar, University of Iowa, Oct. 18, 2007; and Department of Chemical and Petroleum Engineering Seminar, University of Kansas, April 22, 2008; and Department of Civil and Environmental Engineering Seminar, University of Minnesota, May 1, 2008.


Muelle, C.F., Multiple Readings and Presentations on The Emerald Horizon, including: Iowa Prairie Network annual meeting (Feb. 23, 2008), Prairie Preview (March 11, 2008), University of Iowa Natural History Museum (March 27, 2008), Iowa Academy of Science annual meeting (April 12, 2008), Des Moines Sierra Club (April 16, 2008), and Loess Hills Prairie Seminar (May 31, 2008).
Books

Professor Emeritus Forrest Holly, translation of Water Engineering in Ancient Civilizations: 5,000 Years of History

Cornelia F. Mutel, The Emerald Horizon: The History of Nature in Iowa

Other Publications


Mutel, C.F., Newsletters and Annual Reports for The University of Iowa Center for Global and Regional Environmental Research, 2007, 2008.


Papers Presented at Conferences—No Proceedings (cont.)


Papers Presented at Conferences and Published in Proceedings


Carrica, P.M., Ismail, F., Hyman, M., Bhusan, S., and Stern, F., “Turn and Zigzag Maneuvers of a Surface Combatant Using a URANS Approach with Dynamic Overset Grids,” SIMMAN workshop on Verification and Validation of Ship Maneuvering Simulation Methods, Copenhagen, Denmark, April 14–16, 2008 (Reprint 2363).

Carrica, P.M. and Stern, F., “DES Simulations of KVlc 1 in Turn and Zigzag Maneuvers with Moving Propeller and Rudder,” SIMMAN workshop on Verification and Validation of Ship Maneuvering Simulation Methods, Copenhagen, Denmark, April 14–16, 2008 (Reprint 2364).


Papers Presented at Conferences and Published in Proceedings (cont.)


Nakato, T., Young, N., Schonhoff, B., and Christensen, J., “Physical and Biological Characterization of Mussel Habitat in Pool 16, the Mississippi River (River Mile 471) near Buffalo, Iowa,” Hydraulic Measurements and Experimental Methods Conference, Lake Placid, N.Y., Sept. 10–12, 2007 (Reprint 2181).


