

Top Ten?

1999-2000 research expenditures among public and private Civil Engineering Departments around the nation.

Source: National Science Foundation.

Rank Institution Expenditures(\$M)

1	Texas A&M	40.3
2	UC Berkeley	31.8
3	M.I.T.	15.2
4	UT Austin	14.5
5	U. of Illinois	13.9
6	U. of Michigan	11.8
7	Georgia Tech	11.2
8	NC State	10.5
9	Purdue University	10.3
10	University of Florida	10.3

Winter 2002 Civil & Coastal Engineering

Message from the Department Chair

Civil & Coastal Engineers at Florida are responding to the challenges of renewing, securing, and broadening the capabilities of our nation's infrastructure. You will see in this newsletter several examples of the work our faculty, staff, and students are doing that provide tangible benefits for residents of Florida and the Nation. I am proud of the many achievements of our faculty and students in attracting sustained research funding that places us among the top Civil Engineering programs in the country. But I am even more proud that we are able to translate our research to practice, making a difference for our sponsors and providing relevant education to our students (who remain among the most sought after graduates in the College of Engineering!). Please enjoy this newsletter. We invite your participation in and support of our activities.

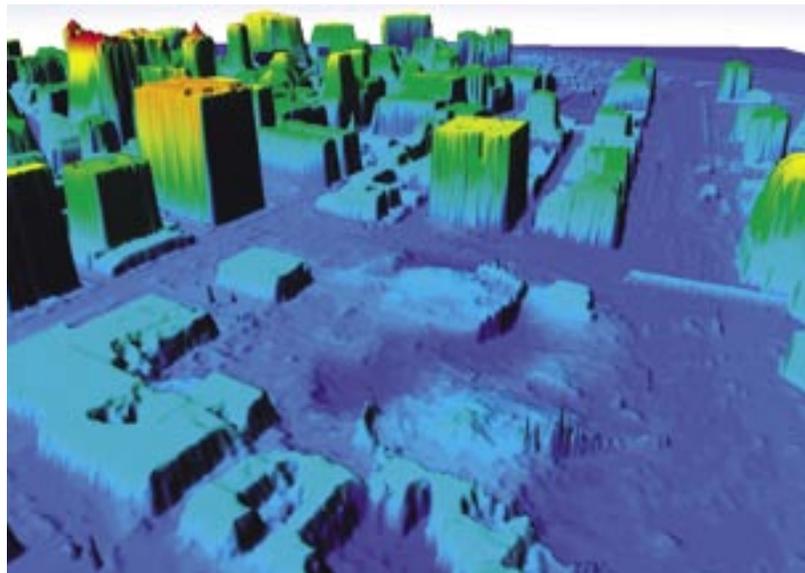
As always, it is great to be a Florida Gator!

Joe Tedesco, Chair

Civil Engineers aid in response to terrorist attacks

Civil & Coastal faculty, staff and students are participating in a multi-agency collaborative effort to precisely map the damage done by the recent terrorist attacks on the World Trade Center and the Pentagon. Using a combination of airborne laser swath mapping (ALSM), and ground based scanning laser technology, the researchers are collecting and analyzing hundreds of millions of laser range measurements of the precise three dimensional positions of points covering the surface of the ground, buildings, and rubble in and around ground zero. The ALSM data points provide broad area coverage with points spaced at one to two feet. The ground based scanning laser measurements provide high resolution coverage, with points spaced at the one to two inch level. When the airborne and ground based observations are combined, they will provide the information to make three dimensional models of the disaster sites far more detailed and accurate than has ever before been available to

recovery workers and planners. A preliminary three-dimensional representation of the WTC site, based on ALSM data only, is shown below. Additional images are available for viewing on the UF web site: <http://www.alsm.ufl.edu>



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CCE Faculty Activities

William Carter, Adjunct Professor, was named Corresponding Editor for the History of Geophysics for the American Geophysical Union (AGU). Dr. Carter will promote the publication of history articles in AGU's publication Eos and raise awareness of the history of geophysics in all of the AGU's sections.

Kirk Hatfield, Associate Professor, and co-inventors Mike Annable, Suresh Rao, and Tim Campbell, were awarded a patent for a device that measures fluid and solute flux in porous flow systems, providing critical contaminant data for assessing and optimizing remediation activities.

Marc Hoit, Professor, was appointed Interim Associate Dean for Research and Administration in the College of Engineering.



Zohar Herbsman, Professor, was invited to become a member of the Association Of European Civil Engineering Faculties. He is one of only five faculty members in the United States that are members of this prestigious organization.

Jennifer Jacobs, Assistant Professor, received a NASA New Investigator Program Award.

William O'Brien, Assistant Professor, was appointed Chair of the Supply Chain & Scalable Enterprise Systems Task Group of the ASCE Committee on Intelligent Computing. He was also appointed Champion for the Supply Chain Management thrust area of the International Group for Lean Construction.

Reynaldo Roque, Professor, was elected to the Board of Directors of the Association of Asphalt Paving Technologists. The Association acts as the international focal point for the dissemination of asphalt pavement related research.

Charles Wallace, Director of the Transportation Research Center, and Mr. Burt Stephens, Adjunct Scientist with the TRC, became Certified Instructors by the National Highway Institute of the U.S. DOT.

Making a difference through service to the professional community

While you were at the University of Florida, you probably were unaware of the many services and outreach activities undertaken by the Department of Civil and Coastal Engineering. We profile three service programs below.



Construction Training/Qualification Program Nearly fifty years after the University of Florida helped the Florida Department of Transportation (then the State Road Department) develop its engineering training program, FDOT has engaged the University to provide the training to support its new QC 2000 construction program. The Construction Training/Qualification Program (CTQP) trains technicians engaged in construction of Florida's highways. This training includes courses in earthwork, asphalt, concrete, and aggregates. Approximately 5,000 students, employees of FDOT, other agencies, and industry, participate in these classes each year. Beginning in 2002, CTQP will expand to include courses for the inspection of drilled shafts, driven piles, and grouting of tendons in prestressed concrete segmental bridges. CTQP will also assume responsibility for conducting FDOT's Project Engineers School. Several of the courses meet the continuing education requirements for contractors' license renewal. CTQP has also initiated the process to become a Continuing Education Provider for professional engineers. The CTQP web site at <http://ctqp.ufl.edu> provides details about the program.



Florida Technology Transfer Center The Florida Technology Transfer (T2) Center is charged with hastening professional acceptance and shortening the implementation period of delivered research. Established in 1984, the T2 Center, leveraging student and alumni expertise, has earned an international

reputation as the benchmark program for implementing training and research related to all aspects of traffic safety, road and bridge construction and maintenance, and highway transportation. Since 1998, Center programs are directly responsible for the implementation of more than \$50 million of new research in Florida. Our extensive delivery formats range from providing on-site training and technical assistance to local public works agencies to coordinating national High Performance Concrete in Bridges Showcases. The T2 Center maintains a professional Media Center containing more than 9,000 research reports and publications and over 900 videos, all available for loan. The T2 Center's quarterly newsletter, with an in-state circulation of 19,957, is distributed internationally by the Federal Highway Administration and is an essential element of our professional outreach. For more information on specific programs or to receive our newsletter visit our web site: <http://t2.ce.ufl.edu>.

McTrans Center Did you know there



is a resource at the University of Florida that distributes and supports over 500 software packages for transportation applications to a membership of over 25,000 worldwide? The McTrans Center serves as an international resource for computer software, expert technical advice, information exchange, and training. The Center distributes software in areas of construction management, environment, highway design, pavements, bridges and hydraulics, maintenance, safety, surveying, traffic engineering, transit, and urban transportation planning. These programs come from many sources, including the Federal Highway Administration, state DOTs, universities, local transportation agencies and private individuals, as well as many private and commercial developers. The software is supported at various levels of technical assistance, and in some cases is maintained, ensuring users of timely updates and user tips. McTrans offer users a variety of services including a comprehensive web site, quarterly newsletters, periodic catalogs, toll-free technical assistance hotline, on-line ordering, and training courses. More information can be found at the McTrans web-site: <http://mctrans.ce.ufl.edu>

UF research in sustainable water supplies



Dr. Jacobs and students Andres Lopera and Shannon Mergelsberg gather data at Paynes Prairie Preserve. Photo by D. Myers

The historic Suwannee River was made famous nationally by Stephen Foster's "Old Folks at Home". Dr. Jennifer Jacobs is working hard to protect the treasured Suwannee River and other precious Florida water sources while providing for the needs of a growing population. Dr. Jacobs and graduate students Gerard Ripo and Jingjun Luo are working with Suwannee River Water Management District to develop a minimum flows and level criteria for the Suwannee River watershed. Their goal is to optimize the amount of water available to a thirsty and growing Florida while preventing significant harm to the region's ecology. Dr. Jacobs and students are using ecological indicators such as the salinity transition from the Gulf's salt water estuaries to the upstream freshwater reaches, the amount of woody debris available for fish habitat and the riparian wetlands inundation to identify the timing and quantity of streamflow available for withdrawal.

Closer to the University of Florida, Dr. Jacobs, graduate student Brent Whitfield, and undergraduates Shannon Mergelsberg, David Myers and Andres Lopera, have been studying the Paynes Prairie Preserve's hydrology. Alongside the Preserve's native American bison, wild horses and alligators, these UF gators are conducting a field experiment to develop predictive models of wetland communities' evapotranspiration. Their approach of coupling atmospheric turbulence measurements and remotely sensed imagery provides information at

larger spatial scales and smaller time scales than previously available.

Dr. Jacobs' goal is to parlay technical theories and synthesize large resources of environmental data into information accessible to policy makers. A prevalent aspect of her projects is that they include links between theory and practicality. For the Suwannee River project, she's developing a user-friendly software program to simulate the relationships among ecological indicators and streamflow changes. Jacobs and graduate student Sudheer Satti are also linking hydrological sciences and policy. Their ongoing St. Johns River WMD project links a crop water use model to a Geographical Information System (GIS) and ultimately a population growth model. The model will predict the region's future water demand during drought conditions and be used in WMD water supply planning. NASA has also recognized Dr. Jacobs' ability to facilitate access to emerging technologies. Jacobs was awarded a 2001 NASA New Investigator Program grant to study the application of remotely surface soil moisture hydrologic fields to rainfall-runoff processes. The remotely sensed data will be assimilated in a landsurface model to quantify the land surface wetness conditions prior to a storm event and improve flood predictions.



CCE develops leading computer facilities

The department has recently installed a parallel-architecture computer system from Silicon Graphics, Inc. worth \$460,000. (Thanks to SGI for their matching donation.) The system consists of two linked components: a primary computational server having sixteen high-performance processors simultaneously operating in parallel, and a smaller two-processor interactive system for handling software development and job scheduling. By exploiting the parallel computing capabilities of the system, researchers will be able to conduct very large-scale numeric simulations that require prohibitive amounts of time on single processor systems. Applications currently being run include the simulation of barge impacts on bridge structures, vehicle impact simulation, and large-scale simulations of coastal processes.



Dr. Perry Green and steel design students on class field trip.

Byron Spangler Professorship update

Thanks to the many Civil & Coastal Alumni and friends who made possible the Byron Spangler Professorship, a rotating professorship open to Associate and Full Professors in the Department.

As the first holder of the Spangler Professorship, Dr. Frank Townsend has endeavored to uphold the tradition of team spirit and service to the ASCE and Civil Engineering community demonstrated by Byron Spangler during his time at the University. Dr. Townsend's activities as Spangler Professor include:

- Conferred two "Spangler Leadership Awards" in recognition of the long hours put in by student leaders. Last year recipients were: the ASCE student chapter president, (Sergio Quevedo) and ASCE steel bridge team leader (Sonya Govantes).
- The First Spangler Lecture, given by Dr. Dan Turner, University of Alabama, and former National President of ASCE.
- Organization of a "Faculty / Staff New Member Buffet" using the "olde" Peggy and Jim Schaub model to welcome new

members of the CCE community and to praise the accomplishments of our faculty, staff, and students.

Dr. Townsend sends his personal thanks to all who contributed to the Spangler fund. It has made a difference, as Byron would have wished!

Faculty Endowment Plan Continues to Attract Strong Support

The Civil & Coastal Engineering Department Faculty Endowment Plan has gotten off to a fast start towards meeting its goal of 15 endowed professorships. The first four endowments of \$100,000 each have been established through the Barbara Goldsby Memorial Fund. Once the state contributions of \$50,000 per endowment are awarded, the 4 professorships will become effective. A fifth endowment initiated by Kimely-Horn and Associates is in the early maturation stage. Deliberations for the establishment of two more endowments are currently underway.

The Faculty Endowment Plan is crucial to the CCE Department for the realization of its newly defined vision of excellence.

We invite all interested friends and alumni to support this program and join the department as we progress toward a top ten ranking. For more information on how to participate in this exciting opportunity, contact Dr. Joseph W. Tedesco, P.E., CCE Department Chairman: jtede@ce.ufl.edu.



Steel teaching sculpture, created by Dr. Duane Ellifritt, University of Florida. Now in use by Civil Engineering departments across the nation.

CCE Needs Your Support

In this time of receding support from the State Government, we need the help of our loyal alumni and friends. Any donations you can make to the Department will help to sustain the vitality and quality of our education programs. Thank you in advance, Joseph Tedesco!

Yes, I want to donate to the University of Florida Department of Civil & Coastal Engineering. My donation is:

\$50 \$100 \$250 \$500 \$1000 Other _____

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