

UNC RESEARCHERS ADVOCATE FOR BETTER PLANNING TO REDUCE IMPACT OF NATURAL DISASTERS

Several major research projects at UNC-Chapel Hill are helping to improve our nation's ability to be more resilient and bounce back after natural disasters.

Phil Berke, deputy director for the UNC Institute for the Environment and director of IE's Center for Sustainable Community Design, is a land use planner with more than three decades of experience in community resiliency and planning. He has teamed up with other UNC researchers on several studies to improve resiliency of communities besieged by disasters such as hurricanes, flooding, sea level rise and other increasingly intense weather events that are expected to proliferate due to climate change.

"In the U.S. in particular, we keep building levees and seawalls and strengthening buildings along the coast, but what we really need to do is not build in dangerous places," Berke counseled. "But as long as there are financial incentives for coastal communities to build along our beaches – incentives like subsidized insurance and federal funds to rebuild after a disaster – people will keep building there. Our current federal policy de-incentivizes the risk elimination/land use planning approach, and we need to change that to be prepared for the inevitable hazards linked to climate change."

In one study funded by the Department of Homeland Security, Berke and Gavin Smith, executive director of the UNC Coastal Hazards Center, have evaluated how well the Federal Disaster Mitigation Act of 2000 is being carried out at the state and local levels. The results of the study, now in its final year, could have a major impact both on national policy and on its application by state and local officials.

"Congress did a wonderful job of saying that we need to be anticipating and addressing future risks so we can become a more resilient nation," Berke explained. "But in our study, we found that while the law on paper is really good,



Phil Berke and graduate students

we need to improve the way local and state governments are implementing it. Communities are using the law as more of an emergency management tool, when we really need them to think more broadly in terms of how to eliminate risk."

Another UNC study has already led the Federal Emergency Management Agency (FEMA) to improve how it encourages communities to plan their floodplain management. Under the National Flood Insurance Program's Community Rating System, homeowners in communities that have adopted a floodplain management plan are eligible for reduced insurance premiums. But the UNC researchers found that most communities' plans did not emphasize risk reduction efforts through land use planning, often investing in structural protection projects (seawalls and levees) and stronger building standards over avoiding rebuilding in dangerous locations. As a result of UNC's findings and recommendations, FEMA has increased incentives for communities to develop stronger plans to reduce their vulnerability to flood hazards. Ward Lyles, a former doctoral student in city & regional planning and currently a post-doc researcher at IE's Center for Sustainable Community Design, also co-authored the study.

But how can we tell whether our efforts to improve community resiliency are successful? The UNC team is working with FEMA on another project to develop a set of indicators that can be applied by state and local governments to track their resiliency after a disaster strikes. "This will give us a way to determine the degree to which communities are reducing their risk, as well as areas where we need to improve," said Berke, who is working with Smith as well as principal investigator Jen Horney, director of research at UNC's North Carolina Institute for Public Health.

Several other National Science Foundation-funded studies have also been launched as a result of this work.



UNC SHARES EXPERTISE IN ENVIRONMENTAL MODELING GLOBALLY

IE'S CENTER FOR ENVIRONMENTAL MODELING FOR POLICY DEVELOPMENT CO-HOSTS INTERNATIONAL CONFERENCE, TRAINING IN BRAZIL

Each fall for the last 12 years, IE's Center for Environmental Modeling for Policy Development (CEMPD) has hosted an annual Community Modeling and Analysis System (CMAS) conference and training program in Chapel Hill that draws hundreds of scientists and policy-makers to learn about best practices in air quality and emission modeling. Participants travel from around the world to take part in this premier event. CMAS, hosted by IE's CEMPD, was established in 2001 as a U.S. EPA initiative to provide a centralized organization to support various segments of the air quality modeling community through research, training and outreach.

continued on page 2

Environmental Modeling, continued from page 1

In February 2013, for the first time, scientists and policymakers in South America had the opportunity to gain the modeling knowledge and skills right in their own region, when CEMPD teamed up with the Department of Atmospheric Sciences at the University of São Paulo, Brazil to host the 1st CMAS South America conference and training on emissions modeling and air quality.

“Several South American countries were interested in having us hold a regional conference and training, where many institutions could benefit from our programs without having to travel all the way to the United States,” said CEMPD Director and UNC Research Professor Adel Hanna. “We already do international training by request, and we had done a similar conference in Seoul, Korea in 2011, so we knew this could be a great way to help our South American colleagues catch up on the latest developments in modeling so they can use the most sophisticated models available to prepare their countries’ emissions inventories.”

Like the annual programs in Chapel Hill, the South American event combined a week of training with a three-day conference. For the inaugural event, 23 scientists attended the training on emissions and atmospheric chemistry modeling, which was led by CMAS coordinators Zac Adelman, Sarav Arunachalam and Uma Shankar. Fifty-five participants who model air pollution and atmospheric chemistry participated in the conference, including scientists from several Latin American countries and technicians from Brazil’s State Environmental Agencies. The four UNC researchers presented on a variety of topics at the conference, including details of their studies on air quality modeling and environmental and health impacts at the Institute for the Environment. Modeling experts from the University of Sao Paulo and other regional institutions, as well as a colleague from the U.S. EPA, also presented to the attending scientists and policymakers.

Dr. Maria de Fatima Andrade, head of the Department of Atmospheric Sciences at the University of São Paulo, and Dr. Taciana Toledo de Almeida Albuquerque co-led the program with their CEMPD colleagues. “We had a very fruitful conference because of the participation of Dr. Hanna and his UNC team. Everyone agreed that it was a success and that it should become a regular event,” said Toledo.

Hanna said the CMAS South America program also provided an opportunity to identify ways that the CMAS Center at UNC can help those regional partners. Plans are underway for a second annual conference in South America, as well as a CMAS training and workshop in Hong Kong later this year.



Uma Shankar, left, with teachers

NASA-SPONSORED PROGRAM LEADS TO NEW OPPORTUNITIES FOR NC TEACHERS

NC CLIMATE Fellows, a professional development program for North Carolina high school science teachers administered by IE’s Environmental Resource Program (ERP), has enhanced the ERP’s capacity to offer science, technology, engineering, and math (STEM)-focused professional development to promote climate literacy.

NC CLIMATE Fellows, now in its second year, started in 2011 with funding from NASA’s Innovations in Climate Education Program. Designed to bring current climate science to teachers and to promote the use of NASA resources to study the Earth’s climate, this year-long program introduces participants to global, regional and North Carolina-specific data on climate and impacts of climate change, and gives them tools to share this knowledge in their classrooms.

“One goal of this program is to increase teacher confidence at incorporating technology, in particular NASA data and imagery, into climate science instruction,” said Dana Haine, the ERP’s K-12 science education manager and principal investigator on the project. Indeed, many participants are reporting an increased use of NASA resources in their teaching. For example, a 2011 participant said that she “was able to introduce [her] students to real-time NASA data for their area and then help them make comparisons to what was going on globally.”

Teachers who have successfully completed this program also cite an increased confidence in their ability to teach climate science in an accurate and applicable way through the program’s access to scientists and real data. The program takes advantage of the expertise of many IE and other environmental

faculty at Carolina. For instance, IE Director Larry Band contributed to programming by discussing climate change impacts on the water cycle, and Uma Shankar discussed the impacts of emissions on climate. During weekend retreats at the IE’s Highlands and Outer Banks Field Sites, Jim Costa, Robert Perry and Lindsay Dubbs interacted extensively with participants, educating them about these unique regions and emphasizing how scientists are monitoring local climate change impacts.

Thanks to the program, the ERP staff has established deeper connections with faculty across UNC. “Increasingly, investigators are seeking us out to help with the education and outreach components of their research grants,” Haine noted. “We have the skills and expertise to assist with translating their research into lessons and activities that are STEM-focused and that address the realities of the science classroom.”

For example, Assistant Professor of geological sciences Tamlin Pavelsky recently was awarded a NASA New Investigator Program grant to use satellite data to understand global water dynamics. Pavelsky turned to the ERP to help develop his outreach plan. ERP Project Coordinator Michele Drostin is now collaborating with Pavelsky to develop a lesson plan for North Carolina high school teachers based on his research. She will feature this lesson during a two-day teacher workshop, “Observing regional and global water resources: Using remote sensing and field data to better understand the hydrologic cycle” this July. This workshop will be facilitated by the ERP and will highlight the research of Pavelsky and others at UNC who are studying water resources, including IE Director Larry Band.

PERRY RETIRES AFTER LEADING COASTAL FIELD SITE THROUGH TRANSITION

Robert Perry, who directed the UNC Institute for the Environment's Albemarle Ecological Field Site in Manteo for six years and led the site through a transition in curriculum focus and oversight, stepped down as director and retired from UNC in December.

Perry took over the field site in 2007 from founding Director William Stott. Under Perry's leadership, the curriculum for the fall semester program for Carolina undergraduates evolved from a broad interdisciplinary focus on coastal issues related to science, culture and natural history, to a more specialized focus on coastal management and policy issues such as coastal community resiliency. This year the site was renamed the Outer Banks Field Site (OBXFS), and the Site has moved to the new Coastal Studies Institute (CSI) Building in Skyco, N.C., as of January 2013. "Over the past six years, Robert has been instrumental in keeping our coastal field site program alive and thriving and keeping our students engaged," said Greg Gangi, IE education director. "For that we are very grateful to him. He has been a wonderful mentor to the students, who have really loved working with him. He also nurtured strong community support for the program, which really benefitted our students by giving them a direct link to the residents of that coastal community."

For Perry, who spent most of his career in environmental education, the opportunity to work with Carolina students was the best part of the experience. "I am, first and foremost, a teacher. I really loved interacting with these very bright, energetic, inquiring minds. I've had great conversations with many students over these past six years, and I think those friendships will endure for quite a long time."

Although he is retiring, Perry has no intention of slowing down. He is planning to write science articles for local publications to translate research



IE's Kathleen Gray and Tony Reevy present Perry with a gift honoring his career at UNC

on coastal issues at UNC's CSI, UNC and elsewhere into concepts that are engaging and easy for the lay community to understand. He also plans to work with high school kids in local environmental clubs. And, as a master gardener, he will spend more time helping cultivate a community garden and teaching neighbors how to grow their own food.

"I really think it's a matter of feeling affection for the things we're teaching about, and for the students themselves. That, to me, is the heart of teaching."

—Robert Perry
Retiring field site director, teacher and mentor

NEW DIRECTOR TAKES HELM OF OBX FIELD SITE, CURRICULUM EVOLVES

Environmental economist Andy Keeler is the new director of the Outer Banks Field Site (OBXFS). Previously known as the Albemarle Ecological Field Site, OBXFS was one of the UNC Institute for the Environment's original field sites and has become an important part of Carolina's undergraduate environmental learning experience.

Keeler is program head for public policy and coastal sustainability at the UNC Coastal Studies Institute (CSI) and professor of economics at East Carolina University. His appointment as OBXFS director completes the field site's transition to a partnership between IE and CSI. OBXFS continues to serve UNC-Chapel Hill undergraduates, including Environmental Studies and Environmental Science majors. Co-leading the site with Keeler is Associate Director Lindsay Dubbs, also a joint IE-UNC CSI faculty member.

Keeler graduated from UNC-Chapel Hill in 1979 and worked for the United Nations on agriculture and nutrition policy in Tanzania in the 1980s. After earning his PhD at UC-Berkeley, he taught at the University of Georgia and The Ohio State University. In the early 2000s, he was appointed senior staff economist for environment for the President's Council of Economic Advisors. He was one of the U.S. negotiators in the international climate change talks,

continued on page 4



Andy Keeler

New Director continued from page 3

and one of the few people to serve on climate change task forces for both Presidents Clinton and Bush. Before coming to North Carolina, Keeler was a public affairs professor at Ohio State. Keeler currently serves as a professor in East Carolina University's Department of Economics, where he studies environmental and natural resource economics, climate change economics, and public policy. The native Chapel Hillian is excited about returning to Carolina, and about the evolution of the OBXFS curriculum and growing interest from students. "In recent years, the curriculum has focused on science and policy and coastal decision-making. Students have really enjoyed the excellent classes, particularly in field ecology for policy and coastal law and policy. We're going to build on that, adding more rigorous social science research and analysis methods, to provide students with a broad education in social and natural sciences, planning and law for coastal decision-making, with a natural resource and environmental focus. This will tie even more closely into what students are studying on campus, and give them a place to

get valuable hands-on experience putting classroom concepts into practice."

As part of this shift, Keeler will teach a new environmental economics class, and Adam Gibson, a PhD in natural resource management at Colorado State University who is an expert in research methods and analysis, will expand his teaching. Dubbs and attorney Lee Leidy will also continue to teach classes at the field site.

Students at OBXFS, and the program as a whole, will benefit greatly from the site's new home on the UNC CSI campus, which just opened in January on the Croatan Sound waterfront in Skyco, NC, between Manteo and Wanchese on Roanoke Island. "This gorgeous, state-of-the-art research and teaching building includes a GIS lab, spectacular ecological lab facilities, beautiful classrooms, and an amazing visualization lab. Just as important, both Lindsay and I are part of the UNC CSI faculty, so students will have ample opportunities to take advantage of the whole range of people and projects in this remarkable research and outreach environment," Keeler said.

WORLD-RENOWNED WATER SCIENTIST SPENDS TIME AT UNC, DUKE



“Water quality and quantity are two of most pressing environmental issues we face today, heightened by climate change.”

—Jeffrey McDonnell

One of North America's most well-regarded watershed hydrologists and ecologists spent the first quarter of 2013 at Duke and UNC-Chapel Hill as the Nannerl Keohane Distinguished Visiting Professor. Jeffrey McDonnell, a faculty member at the Global Institute for Water Security at the University of Saskatchewan and Distinguished Professor at the University of Aberdeen and Oregon State University, came to North Carolina to advance his efforts to address critical issues such as how climate change may affect water supplies around the world.

"Water quality and quantity are two of most pressing environmental issues we face today, heightened by climate change," explained McDonnell, who said he came to North Carolina because of the strength of individual faculty in water at the UNC Institute for the Environment and Duke's Nicholas School of the Environment and the tremendous opportunities for collaborative research. McDonnell worked primarily from IE in Chapel Hill, spending one day a week working with colleagues at Duke.

McDonnell's visit was particularly timely at UNC given the campus-wide water theme, "Water in Our World", said IE Director Larry Band, himself a highly regarded ecologist. Band and McDonnell worked closely together on several projects, including co-leading a two-day research workshop focused on underground water flow networks that launched collaborative research between Duke and UNC faculty.

"Jeff is one of the leading water scientists in the world, and we were very fortunate to have him spend his winter quarter with us," Band said. "His keen insights on the major issues of water science, ability to work very effectively with the range of faculty and students both here and at Duke, and his collaborative approach to research catalyzed a set of new initiatives between the two universities.

We look forward to continued interaction with Jeff and his colleagues at the Global Institute for Water Security, the lead Canadian research group, on critical international water issues."

In addition to fostering collaborative studies, McDonnell presented lectures and research seminars at UNC, Duke and NC State, led a bi-weekly reading group in hillslope hydrology with graduate students at the three Triangle universities, and advised students on future careers in science. Interacting with graduate students and post-docs was one of the highlights of his time in North Carolina, he said. "Their hunger to learn and enthusiasm was inspiring and has led to several exciting research collaborations that are now underway."

On January 16, McDonnell presented the 2013 Keohane Lecture: "Tracking raindrops: Basic science for understanding global change impacts on fresh water." Hosted at UNC by IE and the Provost's Office, the lecture drew campus leaders, faculty, staff, and students from UNC, Duke, and NC State. McDonnell discussed freshwater resource challenges around the world and outlined new research that tracks where water goes after individual rainstorms using stable isotopes. These fingerprints of the water molecule offer new insights into the main processes governing water cycling in watersheds and how these processes herald change in water availability, supply, quality and resulting ecosystem services.

The professorship that brought McDonnell to North Carolina was created in 2004 by then-UNC-Chapel Hill Chancellor James Moeser to honor Keohane, who was stepping down as Duke's president. It is funded by UNC-CH graduate Julian Robertson and his wife, Josie, and by the William R. Kenan, Jr. Charitable Trust. McDonnell worked primarily from IE in Chapel Hill, spending one day a week working with colleagues at Duke.

WHY I GIVE

YOUNG ALUMNI START EARLY IN GIVING BACK TO THE INSTITUTE

Every gift to the UNC Institute for the Environment is vitally important. Many young alumni start the habit of giving to the program early—some even start while still in school. Simply participating in annual giving, even through small gifts, provides crucial support and encouragement for our current students, faculty and programs. We asked these environmental alumni who started giving early why supporting IE is a priority for them.

Fun fact: These young alumni both cited the spring break Coral Reef Ecology field course in the Virgin Islands with Dr. Greg Gangi as one of their favorite experiences at UNC!



ELIZABETH DARDEN

- Environmental Studies major, Entrepreneurship minor, 2009
- Master of City & Regional Planning at UNC, 2011
- Site coordinator and analyst for a start-up company in Raleigh that offers distributed energy management services to commercial customers

Why environment? “It’s always been an interest of mine. My father was also a City & Regional Planning grad from UNC, and his business is best known for environmental remediation. So I’d say I came by it naturally.”

Why do you give to the Institute? “I feel a responsibility to support institutions that have helped shape me as a person, especially at UNC where our education is subsidized by the state. It costs a lot more to go there than what I paid, of course, so I feel a responsibility to support the institution financially.”



KATIE SUE ZELLNER

- Environmental Studies major, Public Policy minor, 2009
- Consultant at an education research and consulting firm in Washington, DC that serves college and university executives

Why environment? “My interest started in high school, but in college I decided to major in environmental studies after taking an honors class in Environment and Society. I found the interdisciplinary nature of the environmental curriculum attractive. I knew that it was a topic that was important to me and I liked having the flexibility to study in a lot of different fields, and tie those together with a common theme.”

Why do you give to the Institute? “I usually divide my gift among three different recipients that each represent something about Carolina that I think is important to the character of the institution and speaks to the value that I got out of UNC. I know that the Institute makes possible experiential learning such as field sites and trips that take students places like the Virgin Islands. In my mind, those experiences are really what I’m giving to, because I know that they are a seminal part of the Environmental Studies curriculum, and they wouldn’t be possible without the organization and the funding provided by the Institute.”



GIFTS &
GRANTS

NEW FUNDING SUPPORTS IE PROJECTS

With a \$5000 grant from **North Carolina State University**, doctoral candidate Sierra Sheggle will lead a study to compare how two communities in coastal N.C. and Maryland are adapting to the impacts of climate change. This study will evaluate the preparation of these communities for sea level rise and determine the importance of state context for sea level rise planning. The study will also assess the role that the community's vulnerability plays in motivating adaptation. IE's Phil Berke serves as advisor to Scheggle, a student in UNC's Curriculum for the Environment and Ecology. With this research, Scheggle hopes to create a model that can be generalized for the use of other communities, and develop recommendations on how to motivate community adaptation action.

Rowan Williams Davies and Irwin, Inc. (RWDI) has provided IE's Zac Adelman, research associate, with a \$33,453 contract to perform emissions and air quality modeling, analysis and reporting support to the regional municipality of Peel in the greater Toronto area of Canada. The results will be used to help the region identify local and regional sources of air pollution and to develop strategies to manage and minimize the impacts of these pollutants on public health. IE research associates Darin Del Vecchio, Liz Adams, and Kevin Talgo will join Adelman on this research team. As the first phase of a multi-year project, this objective of this contract is to help RWDI to build a software framework for performing air quality modeling and analysis for the Region of Peel.

The North Carolina Department of Environment and Natural Resources, with a \$12,000 grant, is providing part of the funding for a teacher professional development program focused on water quality in North Carolina. Environmental Education Coordinator Sarah Yelton and Project Coordinator Michele Drostin will lead the institute, titled "Environment and Health: Making Connections Through Water Quality Investigations". During this three-day program, teachers will explore watersheds and aquatic ecosystems of the North Carolina Piedmont, discover the effects of contaminated water on wildlife, ecosystems and human health, and interact with scientists researching cutting-edge water quality monitoring techniques and health effects of toxic contaminants.

The Center for Sustainable Energy, Environment, and Economic Development (C-SEED) was awarded a \$150,000 grant by **Progress Energy** to create an integrated program of faculty and student research, public and K-12 educational outreach, and an incubator for interdisciplinary collaboration across the UNC campus. The program will be led by C-SEED Director and Research Professor David McNelis and Science Educator Dana Haine. Public Communications Specialist Katie Hall, Research Assistant Kelly Robinson, and Pete Andrews, professor in the Department of Public Policy will also be contributing to the program.

IE collaborated with the Environmental Law Institute (ELI) and the Iowa Natural Heritage Foundation to convene a one-day workshop in Cedar Falls, Iowa that brought together state and local emergency managers, land use planners, wildlife managers and others to discuss how they might work more closely together to mitigate flood hazards and protect or enhance wildlife habitat. The workshop was sponsored by the **McKnight Foundation** in Minneapolis and was based on a successful 2011 workshop, "Wetlands, Wildlife Habitat, and Flood Hazards, held in Wisconsin. David Salvesen, deputy director of IE's Center for Sustainable Community Design, led the work for IE. This is the third collaborative project between IE and ELI.

Under a \$220,000 cooperative agreement with the **National Park Service**, IE will conduct meteorology, emissions, and air quality modeling for the Three-State Air Quality Study (3SAQS). The 3SAQS is focused on understanding the impacts of oil and gas development on air quality in the states of Colorado, Utah, and Wyoming. Along with modeling, IE will work with engineers at Colorado State University to design and develop a data warehouse for storing, analyzing, and transferring large volumes of data. In combination, the modeling results and data warehouse will provide key capacity for local, regional, and federal agencies to conduct environmental impact studies of oil and gas production activities in the 3-state region. IE Research Associate Zac Adelman will lead the study and will be assisted by Jeanne Eichinger, Limei Ran, and Mohammad Omary.

continued on page 7

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New Funding, continued from page 6

The National Oceanic and Atmospheric Administration (NOAA) has provided an \$84,968 grant (part of a larger, two-year award) to improve decision support to emergency managers by studying how social and behavioral influences impact weather-driven decisions. In partnership with Arizona State University, the University of Oklahoma, and East Carolina University, IE Research Associate Jessica Losego will co-lead the study. The project will include the development of recommendations to NOAA's National Weather Service (NWS) to help improve decision support services to more effectively communicate its science in terms of potential impact on life and property. The goal of improving the system is so that decision-makers can make better use of weather information, have increased capacity to mitigate risk and prepare effective responses to events in order to minimize loss of life and property.

The Mid-Atlantic Regional Air Management Association (MARAMA) has provided a \$58,605 grant to develop and update regional emissions inventories from ten states. The development and updating of emissions inventories will support an integrated air quality modeling platform and other needs for air quality management. This study will fill in gaps in inventories in the latest and future emissions from electricity generating units (EGUs). The work will be led by IE Research Associate B.H. Baek, with research team members, research associates Mohammad Omary and Zac Adelman.

IE will provide the **North Carolina Department of Transportation** with information and strategies for planning and project development so the agency may better address transportation needs of disadvantaged populations in rural areas of North Carolina. The project—a joint effort of IE and the North Carolina Institute for Transportation Research and Education at NCSU—is being funded by a grant of \$168,000 from NCDOT. David Salvesen and Elizabeth Shay will lead the project. The research and planning team will study existing transportation services and infrastructure available in five counties (Beaufort, Chatham, Graham, Warren and Wilson) and how they compare with the needs of disadvantaged populations.

Under a \$310,226 grant from the **Federal Aviation Administration (FAA)**, IE Research Associate Professor Sarav Arunachalam, Research Assistant Professor Jared Bowden, and team members Jeanne Eichinger, Mohammad Omary, and Alejandro Valencia Arias, research associates with IE, will continue an existing project to assess air quality impacts of aviation emissions in the U.S. In the latest phase of this project funded under the DOT's Partnership for Air Transportation, Noise and Emissions Reduction (PARTNER) Center of Excellence, the project team will develop a new state-of-the-art modeling system to support air quality and health-based assessments for the FAA's "Destination 2025" goals. A specific performance metric to be achieved by the year 2018 under Destination 2025 is that "aviation emissions contribute 50 percent less to significant health impacts and are on a trajectory for carbon neutral growth using a 2005 baseline", and Dr. Arunachalam and his team will help develop tools and analyses to achieve this goal.

With a \$49,550 grant from **North Carolina's Department of Health and Human Services (DHHS) Division of Public Health**, IE's Environmental Resource Program (ERP) coordinated the NC Healthy Homes Task Force, supported the implementation of the NC Healthy Homes Strategic Plan, and responded to the education and communication needs of local health departments. Under this contract ERP continued its statewide children's environmental health outreach efforts while providing DHHS with much-needed technical assistance and expertise. ERP Director Kathleen Gray and Environmental Health Educator Amy McDonald led this recently concluded work.

PEOPLE NEWS

IE Director **Larry Band** has been awarded a visiting professorship in the Chinese Academy of Sciences (CAS). This summer, Band will conduct collaborative research on location at CAS, a leading academic institution and comprehensive research and development center in natural science, technological science and high-tech innovation in China.

Phil Berke, professor in the Department of City and Regional Planning and IE's deputy director, received a 2013 Faculty Award for Excellence in Doctoral Mentoring from UNC's Graduate School. He has been a member of the UNC-Chapel Hill faculty since 1995. Berke received nominations for the award from both alumni and current doctoral students.

Greg Characklis, professor in the Department of Environmental Sciences and Engineering and director of IE's Center for Watershed Science and Management, received the School of Public Health's 2012 Newton Underwood Award for Excellence in Teaching.

IE's director for education, **Greg Gangi**, was awarded a 2013 National Advising Award along with two other academic advisers in the College of Arts and Sciences. Gangi was recognized for making significant contributions to the advancement of academic advising. The award was presented to Gangi by the National Academic Advising Association (NACADA).

David Greer, IE's director for development, has left IE. Greer spent a year expanding IE's individual giving program. In spring 2013, he joined the Morehead-Cain Foundation as the program's development officer.

IE Research Assistant Professor **Jun Li** is leaving IE this spring. Li joined IE in 2008 as a research associate. In 2011, he became a research assistant professor in the Department of Environmental Sciences and Engineering and at IE. He has accepted a position at AREVA North America, a leader for low-carbon power generation world-wide.

Ward Lyles, postdoctoral research fellow with IE, has accepted a faculty position with the University of Kansas. Lyles will join UK's Department of Urban Planning at the School of Architecture, Design & Planning in August. He will continue his research in land use and environmental aspects of climate change adaptation and natural hazard mitigation as an assistant professor.

IE Senior Associate Director **Tony Reevy** has released a book of poems, "Old North", with Iris Press. "Old North" is a book of poems about the places, history and culture of North Carolina. Reevy's previous publications include poetry, short fiction, and non-fiction, including his recent "O. Winston Link: Life Along the Line" (Abrams), in which he contributes his knowledge as a rail historian to describe and provide context for Link's photos and the way of life that they captured.

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UNC environment

RECENT EVENTS

Keohane Lecture: Dr. Jeff McDonnell, faculty member at the Global Institute for Water Security at the University of Saskatchewan and Distinguished Professor at the University of Aberdeen and Oregon State University and the 2013 Nannerl Keohane Professor, presented the Keohane Lecture at UNC's FedEx Global Education Center on January 16th. The topic was "Tracking raindrops: Basic science for understanding global change impacts on fresh water". McDonnell also gave a seminar with the Curriculum for the Environment and Ecology. He presented "Two water worlds? Isotope evidence shows that trees and streams return different pools of water to the hydrosphere" on January 24th at Wilson Hall on campus.

CMAS South America Conference: For the past 12 years, IE's Community Modeling and Analysis System (CMAS) center has hosted an annual conference and training program in Chapel Hill that draws hundreds of scientists and policymakers to learn about best practices in air quality and emission modeling. In February 2013, for the first time, scientists and policymakers in South America had the opportunity to participate. IE's CMAS center teamed up with the Department of Atmospheric Sciences at the University of São Paulo, Brazil to host the first CMAS South America conference and training sessions on emissions modeling and air quality. The event was held in São Paulo, Brazil.

Chasing Ice Film Screening: In partnership with the UNC Sustainability Office, IE hosted the first screening of "Chasing Ice" in North Carolina on April 2nd. The film, winner of the Excellence in Cinematography Award at the 2012 Sundance Film Festival, follows a team's efforts to show in time-lapse photos the rapid changes occurring in glaciers at high latitudes worldwide. The screening was held in the Nelson Mandela Auditorium on campus, followed by a panel discussion and reception with the director of the film, Jeff Orlowski, and Carolina's Jose Rial, professor of geological sciences and glacier expert.

Environment and the Arts: Jay Erskine Leutze, author of "Stand Up That Mountain", gave a reading from his book and shared his experience helping citizens of a small North Carolina mountain town in Avery County, N.C. save a beloved mountain near the Appalachian Trail from a blast-mining operation. The talk and book signing were held on April 9th at Tate-Turner-Kuralt Auditorium on campus.

UPCOMING

CMAS U.S. Conference: The 13th annual Community Modeling & Analysis System Conference will be held at the William and Idea Friday Center in Chapel Hill from October 28-30, 2013. Each year, the CMAS Conference allows the model user and development communities to share their experiences with air quality models, modeling, and model development.