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# UNC environment

NEWS FROM THE INSTITUTE FOR THE ENVIRONMENT AT THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

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## IE'S FIELD SITE NETWORK CELEBRATES 15 YEARS

HIGHLANDS, OUTER BANKS AND THAILAND WERE FIRST SITES TO PROVIDE EXCEPTIONAL IMMERSIVE LEARNING OPPORTUNITIES FOR CAROLINA UNDERGRADUATES IN ENVIRONMENTALLY SIGNIFICANT PLACES AROUND THE STATE AND WORLD



Over the past 15 years, nearly 1,000 Carolina undergraduates have participated in IE's field site programs. While most have been environmental majors, the programs are open to all UNC students, and participants have come from political science, public policy, biology and geography, among other majors.

(Photo: Students at the Highlands Field Site stop for a quick photo while exploring a mountain ecosystem.)

Back in 2000, when the UNC Institute for the Environment was still the Carolina Environmental Program, program leaders were looking for a way to provide Carolina undergraduates with opportunities to dig into more advanced, interdisciplinary coursework in places where they could actually *experience* the environmental challenges and opportunities they were studying in the classroom.

CEP Founding Director Bill Glaze and his successor, CEP/IE Director Doug Crawford-Brown, chose three environmentally significant sites to launch what would become a unique network of field sites where UNC undergraduates can spend a semester living, learning and connecting with the local community to understand how the environment interacts with these people and places.

In 2001, the first three permanent field sites welcomed Carolina students. The Highlands Field Site, based at the Highlands Biological Station, provided perspective on mountain ecosystems, while the Albemarle Ecological Field

Site (now called the Outer Banks Field Site) leveraged local connections to focus on coastal communities and ecosystems. Thailand, a model for energy-environment challenges in developing countries, became the first international field site.

Over the years, the network – which is run by IE in partnership with the Curriculum for the Environment and Ecology and the Study Abroad Office of the College of Arts and Sciences – has grown. Today, in addition to Highlands, OBX and Thailand, UNC students can now spend a semester at programs in Morehead City (NC), Ecuador/Galápagos, and near campus at the Sustainable Triangle Field Site. Together, these sites offer a variety of ecosystem settings ranging from the mountains to the coast to urban settings to tropical rain forests.

Each site focuses on themes specific to that community or region and provides a semester-long opportunity for students to explore real-world

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“The field site experience is transformative for our students. It opens doors, helps them begin to build professional networks and consider what comes next in terms of graduate school or the job market.”

—Greg Gangi

IE Associate Director for Education

# ALUMNI PROFILE

## RUSSELL STURM: AN INNOVATOR IN THE FIELD OF SUSTAINABLE ENERGY MARKET DEVELOPMENT FOR MORE THAN 25 YEARS

Russell Sturm was an undergraduate at Carolina in the late 1970s and early 80s, a time when America’s energy future was at a crossroads. An oil crisis was threatening the U.S. economy and disrupting global stability. Accidents and rising costs at nuclear power plants were calling the wisdom of nuclear energy into question, even as plans to build a new nuclear plant near Chapel Hill were moving forward.

The decisions being made at that time would determine the sustainability of our planet and our lifestyle, and UNC-Chapel Hill was right in the middle of it all. The Carolina faculty had become a nexus for energy activism and expertise, and a core group of students and faculty on campus at the time (Sturm included) would go on to become prominent global leaders in the areas of energy and climate change.

Sturm applied the cross-disciplinary framework of his public policy major to dive into every aspect of energy and the environment. He took classes in economics, the sciences (studying climate change nearly two decades before the concept entered the public sphere), and public policy to build a robust base of knowledge. He spent summers at Oak Ridge National Laboratory and in Washington to further round out his perspective. In Chapel Hill he was active on a task force to advise the mayor on potential impacts and alternatives to the planned Shearon Harris nuclear plant.

Through this multidisciplinary lens, Sturm formulated a question that would shape his career: Is there a way to *not* use the energy that we’re building these power plants to provide? His honors thesis explored ways that utilities can invest in energy efficiency as an alternative to nuclear power.

“Think of energy efficiency as a dollar bill on the ground,” Sturm says. “Economists would say that the dollar isn’t there because (certainly) someone would have already picked it up. I was seeing all of these dollar bills on the ground, all of these really cost-effective, energy-efficient investments that weren’t happening. So I started looking at using innovative financing mechanisms to mobilize investments in energy efficiency as an alternative to new power plants.”

After graduating from UNC in 1981, Sturm continued his studies in energy and natural resource policy and finance at Harvard University’s Kennedy School of Government. There, he fine-tuned his question: How do you make money flow into things that make sense from an environmental standpoint? Answering that question at the nexus of energy and finance has become the theme of his career: Mobilizing large sums of private sector commercial investment in efforts that yield positive benefits.

Sturm launched a business to sell energy savings to building managers by syndicating third-party investors financing energy efficiency investments in other peoples’ buildings. Environmental benefits were collateral results from just plain smart investments. “My approach is to show people a way to benefit economically through investments that maximize profit but contribute to the public good.”

After seven years, Sturm joined the nonprofit International Institute for Energy Conservation to apply the experience of energy efficiency investment in the U.S. market in order to build efficient economies in developing countries. He was president of IIEC for several years.

In 2000 Sturm joined the International Finance Corporation, the private sector investment arm of the World Bank Group. IFC’s mission is to eliminate poverty and improve people’s lives through private sector development, into which IFC invested \$18 billion last year. He initially focused on energy efficiency investment, then expanded his work to enable companies to become more resilient in the face of climate change and to scale up adoption of low carbon technologies and practices. He now leads IFC’s energy access advisory business, where he works to mobilize commercial investment to expand energy access for the underserved.

“One third of the world’s population lacks access to electricity,” notes Sturm, who created the WBG’s Lighting Africa and Lighting Global programs. “This state of energy poverty constrains economic development and education and has implications for gender equality. It’s a situation that we’re addressing by scaling private investment in distributed solar solutions.”

These problems are never simple, and the solutions require multi-disciplinary approaches, says Sturm, who spoke about these initiatives and their impacts as part of the UNC Institute for the Environment’s speaker series in March. “Energy has to do with resources, economics, behavior, finance. If you don’t understand the problem from those multifaceted perspectives and create solutions that address all of those perspectives, you just can’t achieve the impact you desire. That’s why interdisciplinary programs like the UNC Institute for the Environment are so important.”



Russell Sturm

# CELEBRATING GOOD TIMES...



Celebrating 15 years of the Outer Banks Field Site in Manteo, NC.

At the Outer Banks Field Site, the Community Advisory Board (CAB) has been an integral partner since the beginning, advising the faculty on local environmental issues and opportunities, mentoring students and hosting internships, and facilitating connections with other community resources. So when it came time to celebrate the site’s 15th anniversary, CAB members were right in the middle of things.

Beth Storie, a 1979 Carolina graduate and longtime CAB member who, together with her husband, has hosted many events and meetings (and even student houseguests) over the years, opened their beautiful Manteo home to celebrate. On a Saturday evening in January, more than 80 current and former UNC students, faculty and local friends, reunited and reminisced.

“It was an amazing experience to be with these students again,” says Storie. “So many said that this was more than a field site; it shaped them as human beings. While of course the academics were incredibly important, the experience of being here on the Outer Banks and being a part of the community and really understanding this place from something other than the classroom perspective – that is what they all look away. And that made their classroom learning so much more potent.”

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The Highlands Field Site is also planning a 15th anniversary celebration in the fall. All field site alumni will be invited back to the Highlands Biological Station for a cookout, a retrospective slideshow and hiking around the Highlands area. For more information, contact Karen Kandl at [kkandl@email.wcu.edu](mailto:kkandl@email.wcu.edu).

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Over the years, Thailand Field Site Director Rich Kamens has fostered strong connections between the program’s current students and alumni. As a result, today’s students are able to link with a cohort of UNC graduates working throughout the energy sector.

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environmental issues through a combination of coursework, independent research, field trips, internships and mentorships with local organizations, and a culminating capstone group project where students apply their skills and interests to a relevant environmental issue. With the help of community members, challenges facing host communities help shape the curriculum at each site, and students share the results of capstone research with community partners.

Under the leadership of IE Associate Director for Education Greg Gangi, today's field sites have each honed their focus to a specific set of environmental issues to appeal to students with particular career interests. (Featured in box below.) "One thing that hasn't changed," Gangi notes, "is the importance of experiential learning based in these communities. That remains a unique part of the field site experience. It's a great way for our students to get involved with research, do an internship, build their resumes and gain confidence if they want to go on to graduate school."

Over the past 15 years, nearly 1,000 Carolina undergraduates have participated in IE's field site programs. While most have been environmental majors, the programs are open to all UNC students, and participants have come from political science, public policy, biology and geography, among other majors.

The university is also creating several new dual degree programs with UNC's professional schools, and the field sites will offer students exceptional opportunities to dive into research related to their fields of interest. For instance, several students in the new five-year Environment & Science Communication program (combines an undergraduate degree in environmental science or studies with a master's in journalism) spent this fall at OBX getting a start on research that they can continue into graduate school. Likewise, the Thailand Field Site is a great fit for students who choose the energy track in the new Environmental Information Science program, while those in the smart cities/urban informatics track will find great value in the Sustainable Triangle Field Site.



In 2001, the first three permanent field sites welcomed Carolina students. Top photo: Thailand; bottom left: Outer Banks; bottom right: Highlands.

“Essayist Marcel Proust famously commented that ‘The real voyage of discovery consists not in seeking new landscapes, but in having new eyes.’ At the Highlands Field Site, we endeavor to help our students to see even familiar landscapes with new eyes, learning to read the ecological, geological and historical stories inscribed on the slopes and coves of the southern Appalachians. In that way we hope to come to a deeper understanding of both the interplay of factors that shape biological diversity and the balance between ecological integrity and human impacts.”

—Jim Costa  
Director, Highlands Field Site

## DISTINCT SETTINGS, DIFFERENT CHALLENGES

**Highlands (NC) Field Site**, hosted by the Highlands Biological Station in the southern Appalachians, gives students the chance to immerse themselves in rich biodiversity and conservation issues of this mountainous region. Over the years, the site – with its high diversity of habitats and organisms, including salamanders, flowering plants and fungi – has become more focused on questions of biogeography, conservation and biodiversity, as well as the human dimension by examining how people have interacted with the mountain landscape over the centuries.

**Outer Banks Field Site**, hosted by the UNC Coastal Studies Institute on Roanoke Island, combines a multidisciplinary approach to the sustainable management of coastal resources with experiences set in the ecology and culture of North Carolina's coastline and estuaries. This program emphasizes social science paired with natural science, and how the two relate and inform environmental decision-making in coastal communities.

**Thailand Field Site**, hosted by King Mongkut's University of Technology Thonburi, focuses on the intersection of energy and environment

in a Southeast Asian country that is dealing with many of the environmental and energy-related issues that other developing nations face. This site prepares students for careers in the energy sector and often leads to publications based on student research in peer-reviewed journals.



Highlands



Outer Banks



Thailand

# NEW IE BOARD CHAIR SEEKS DIVERSE MEMBERSHIP

ONLY ONE REQUIREMENT: A PASSION FOR THE ENVIRONMENT

As the new chair of the Board of Visitors (BOV) for the UNC Institute for the Environment, Reginald Holley is excited about IE's future and the board's role in supporting the Institute. His biggest priority: To continue to fill the seats of the 30-member board with individuals from a diverse range of backgrounds and experiences who share his passion for the environment.

"IE has a very dynamic board," says Holley, who first joined the BOV in 2007 at the behest of Tom Darden, who was then chair of the nominating committee. "We have men and women who are invested in all things related to the environment. We have members in the corporate sector, attorneys, scientists, bankers and academics. We have students, working professionals and retirees; democrats, republicans and independents; from all across North Carolina and beyond. As some of our long-time members rotate off the board, we want to make sure that we continue to value all aspects of diversity – be it profession, geography, career stage, ethnicity, political affiliation, fundraising capacity – so that our membership reflects the composition of our state and our country. I believe that there is strength in diversity, and that it's the only way for us to be in the best position to champion IE's mission."

Since beginning his two-year term in July 2015, Holley has been working closely with the BOV's nominating committee, chaired by Bryan Brice, to find candidates for board membership who will complement the existing strengths of the board and advance the work of IE.

A 1989 Carolina graduate who earned a degree in political science, Holley is principal and founder of The Longmire Group in Raleigh, a lobbying firm that assists clients in maximizing governmental relationships. He previously worked as deputy state director for U.S. Senator Elizabeth Dole, and as director of the State Youth Council for the North Carolina State Department of Administration, where he developed policies and procedures for promoting youth involvement in leadership in government, civic affairs and local communities.

In 2006, when Darden invited Holley to join the UNC Institute for the Environment's Board of Visitors, the native North Carolinian quickly said yes.

"There are two things in life that made an indelible impression on me: Growing up in a public housing complex located right next to an active dump, and the opportunity to attend and graduate from Carolina," Holley says.



Reginald Holley

"Being away from there, on this campus, allowed me to appreciate how people of low income and low resources are inordinately impacted by environmental decisions. (It also made it possible for me to move my mom away from there.)"

"Being involved with the Institute is an opportunity for me to be engaged in a conversation around the environment in a very broad way. The work that we do as board members in terms of supporting IE allows me to be a champion and to make sure that IE's work reaches into those communities of low wealth."

Holley says that the board is excited, in particular, about advocating for IE having a larger footprint on the UNC-Chapel Hill campus, through engagement at all levels. Holley himself is actively engaged: In February, he led the morning keynote session for the 2016 NC Clean Tech Summit co-hosted by the Institute for the Environment.

"Reggie Holley brings with him terrific organizational and networking skills that really benefit our Board of Visitors and the full Institute by better connecting us on and off campus," said IE Director Larry Band. "He is a dedicated Tar Heel, and his passion and enthusiasm for Carolina and the quality of our environment are inspiring and are moving us in very interesting and productive directions."



Over the past five years, 29 minority and female undergraduate students have participated in IE's IDEA program.

## INCREASING DIVERSITY IN THE GEOSCIENCES

RENEWED PROGRAM PROVIDES ENHANCED RESEARCH OPPORTUNITIES AND MENTORING FOR MINORITY UNDERGRADUATES – AND IMPORTANT INSIGHTS INTO WHAT MAKES MENTORING WORK

The UNC Institute for the Environment's Environmental Resource Program (ERP) has received a second grant from the National Science Foundation to continue, and expand, an educational enrichment program aimed at increasing diversity in the geosciences.

The original **Increasing Diversity and Enhancing Academia (IDEA)** program, also funded by the NSF, aimed to increase participation of underrepresented minority students (including African American, Hispanic and Native American) and women in the geosciences. For the past five years, IDEA

offered opportunities for undergraduate students at UNC, North Carolina Central University, and other universities in the UNC system, to work with UNC faculty mentors on research projects.

Through IDEA's Undergraduate Research Experience, selected students were paired with UNC faculty in their areas of interest and worked on cutting-edge lab and field science in disciplines such as marine sciences, geology, geography and environmental sciences to gain the foundation and skills necessary to pursue a graduate degree. Throughout the 10-week summer program, students were

mentored by faculty and graduate students, attended graduate school and career preparation seminars, and socialized with their fellow students, faculty and mentors to build connections.

Over the past five years, 29 minority and female undergraduate students participated in IDEA. Two-thirds continued their summer research and mentoring relationships into the school year. Three have gone on to pursue graduate degrees in a geoscience field; of those who entered the workforce after college graduation, the majority pursued careers in the geosciences or other STEM fields.

IDEA also included a successful program for local high school students interested in the environmental and geosciences. Facilitated by UNC and NC Central faculty and staff (and in partnership with Elizabeth City State University in the first two years), this free program included a week-long Summer Science Institute and three Saturday Academies during the school year for students to engage in field and laboratory study, meet scientists and learn about college pathways and careers.

### IDEA-2.0 DRILLS DEEPER

The new three-year grant, awarded in early 2016, will enable the UNC Institute for the Environment and partners at NC Central to build on the original IDEA to broaden participation, improve institutional capacity to offer career-relevant geoscience education at both institutions and generate useful insights into how such practices could be implemented successfully at other institutions.

Increasing Diversity and Enhancing Academia-2 (IDEA-2.0) will focus strictly on undergraduates: rising sophomores and juniors, with an emphasis on underrepresented minorities and female students, providing them with evidence-based, career-relevant experiences that prepare them for work or further study in geosciences.

“The first few years of college are a critical juncture for deciding on a career path and whether to go into the geosciences,” explains ERP Director Kathleen Gray. The UNC team is excited about this opportunity to formalize a strong working relationship that they have already established with colleagues at NC Central, and to continue to work together to increase STEM diversity.

IDEA-2.0 will continue the very successful Undergraduate Research Experience, although students will now have the opportunity to choose between an on-campus research experience at UNC or NC Central or an internship with a geoscience-related business. The new program will also make continuing research through the academic year a requirement, with Saturday programs designed to build students’ science identity, provide peer support to each other, and continue to build on mentoring support systems.

IDEA-2.0 will also focus on understanding and strengthening the mentoring relationship and finding ways to effectively foster diversity in STEM fields.

“Mentoring has been shown to reinforce students’ confidence in their ability to succeed and is associated with higher grades in STEM courses, higher rates of degree completion, and with participants’ ultimate pursuit of science careers,” says Megan Hoert Hughes, who will serve as program director for 2.0. “Understanding what motivates mentors and what makes them effective mentors for underrepresented minorities and women students is crucial to the program’s success. At the same time, we want to know from the undergraduates: what do you need from us to help you succeed in the geosciences?”

Sherick Hughes, associate professor in the UNC School of Education, will lead this qualitative evaluation. Through ongoing interviews with and feedback from IDEA mentors and undergraduates, his team will seek to distinguish the attributes of high quality mentoring relationships, training needs to strengthen those relationships, and ways that faculty training in cultural competency influences mentors’ perceptions of interactions with underrepresented minority and female students.

ERP plans to use these findings to attract more UNC and NC Central faculty, postdoctoral scholars and graduate students into mentoring roles and to train them to successfully mentor minorities and women through the geosciences career pipeline. ERP will also work with academic departments at the two universities to build departmental capacity to create and sustain their own mentoring programs, and will share these findings with the broader academic community to help increase minority representation in the geosciences nationally and globally.

“We know that a more deliberate approach to mentoring these students is needed if we are to attract them to and keep them in the geosciences,” Gray says. “This research will help us more successfully engage program mentors and better prepare them to meet the mentorship needs of the students. Over time,

## TWO IDEA GRADUATES SHARE HOW THE PROGRAM HAS IMPACTED THEM

**Joseph Roberts** was the first student enrolled in IDEA. As a junior at NC Central (he graduated with a BS in geography in 2013), he was looking for internships to make himself more competitive in the geographic information system (GIS) job market.



Joseph Roberts

IDEA gave him an opportunity to work with Brent McKee, an expert in global biogeochemical cycles, in the UNC Department of Marine Sciences.

“I was able to use state-of-the-art analytical equipment to sample rivers and streams. As a GIS analyst, you really don’t get out of the office much, so I found it amazing how I could actually see the data that I was mapping on a daily basis. I also learned much about GIS due to the challenges that we ran into when it came to data acquisition, process and organization. Half of the battle of GIS is troubleshooting, so this was great practice.”

Roberts went on to earn a master’s degree in geography at the University of Tennessee-Knoxville. He now works as a GIS analyst at Amec Foster Wheeler in Nashville.

**Maite Ghazaleh** discovered the IDEA program via a flyer in the UNC Marine Sciences Department. The Carolina undergraduate participated in the program for one and a half years before graduating with a BS in environmental science and minors in marine science and biology. (She also spent a semester at the Morehead City Field Site.)



Maite Ghazaleh

“My IDEA experience was valuable in that I was able to prioritize undergraduate research over an odd job to make ends meet. My appointment with IDEA allowed me to work directly with Drs. Justin Ries and Karl Castillo and eventually publish a peer-reviewed paper as an undergraduate. Through working in a lab, I discovered career opportunities in academia and developed skills, including CV writing and public speaking, that greatly enhanced my graduate school applications. My history with IDEA and undergraduate research qualified me for a prestigious five-year fellowship at the University of Georgia.”

Ghazaleh is now a doctoral student in environmental health science at UGA in Athens, GA.

we anticipate that sustained opportunities for student research combined with enhanced mentoring will contribute to cultural shifts within our institutions that are likely to promote greater diversity in geoscience disciplines and the workforce.”



More than 700 participants gathered for the 3rd annual NC Clean Tech Summit in February. The Summit fosters leadership and growth in North Carolina's clean tech industry, and facilitates economic development by providing a forum to share knowledge and involve students with major employers across the state.

## CREATING A NATIONAL HUB OF CLEAN TECH

By Brandon Bieltz, Office of Communications and Public Affairs  
Get more at [ie.unc.edu/cleantech](http://ie.unc.edu/cleantech)

For years, students have told UNC-Chapel Hill environment and ecology professor Greg Gangi that they no longer want to simply study what is wrong with the planet – they want to begin working on the solutions.

That problem-solving notion sparked the idea for the NC Clean Tech Summit — a place where academia, government and the private sector meet to share ideas and create solutions.

“The central theme of the conference is about the importance of clean technology to solve important state and global problems,” said Gangi, the associate director for education at UNC’s Institute for the Environment.

Held Feb. 18 and 19 at the Friday Center, the NC Clean Tech Summit highlights the latest innovations, recent trends and pressing challenges — and North Carolina’s central role — in the growing clean technology industry.

Chancellor Carol L. Folt, who made welcoming remarks Feb. 18, said the summit represents Carolina taking a lead in advancing clean technology. With the help of universities, government, business and non-profits, she said, North Carolina can become the national hub for clean technology.

Hosted by the Institute for the Environment and the Center for Sustainable Enterprise at UNC Kenan-Flagler Business School, the conference was focused on five main themes: The Internet of things: smart cities, smart energy, smart homes and smart water; energy transition in the southeast amid a changing landscape;

exploring new approaches and solutions to environmental challenges, including industry water usage, restoration projects, and innovations in transportation; advancing clean tech economic growth through the power of collaboration between industry and universities; and innovative financing of clean technology.

Throughout the two-day conference, more than a dozen panel discussions led by industry, government and academic leaders focused on innovation and emerging trends. Panels covered a range of issues from venture capital in clean tech and the state’s emerging wind industry to predictive analytics and clean energy policies.

In addition to the panels, the conference featured keynote addresses from David Fountain, North Carolina president of Duke Energy, and Jim Hughes, chief executive officers of First Solar, which manufactures solar panels.

The summit, Gangi said, is also the ideal time to build the relationships necessary to make progress, as well as introduce students to industry leaders.

“The goal is to not only educate students, but show them career pathways where there’s going to be a lot of opportunities in the future,” he said.

The connections and personal relationships made during the NC Clean Tech Summit are what Gangi hopes yields the big results.

“We’re trying to find where those sweet spots are where we can create public-private partnerships,” he said. “This is a good way to convene people and develop relationships and hopefully this will lead to good ideas.”



Megan Neligan

### ‘FEELING OF HOPE’ AFTER ATTENDING UN CLIMATE CHANGE CONFERENCE, SAYS NELIGAN ‘16

Megan Neligan is a senior environmental studies major. Over the winter, she traveled to Paris to attend the United Nations Climate Change Conference. Read more about this student and her amazing experience.

**READ THE FULL Q + A AT** [HTTP://UNC.LIVE/1PG6YLA](http://UNC.LIVE/1PG6YLA).

#### What was the biggest take away from COP21?

The feeling in Paris after COP 21 was one of hope. Especially after the recent terrorist attacks, it was wonderful to see countries come together through this agreement.

#### What was it like to be present for this historic event?

Being in Paris during this time was both thrilling and jolting. It was thrilling because I was able to meet people from such a wide range of countries who all cared about climate change and were pushing for the same goal. On the other hand, it was jolting because it was so clear how much we all still need to do—at a rapid pace—to address climate change.

In April of 2016, countries will sign the agreement and affirm that climate change not only is a huge problem, but also presents huge opportunities for innovation. I saw many young people and students at the side conferences. Maybe one of them or I will be collaborating on a business venture in the near future to address climate change.

#### The one thing I will always remember about this experience is...

... realizing how great an impact – negative or positive – one country or individual can have on the rest of the world, meaning my generation must take this opportunity and responsibility seriously.

# CAROLINA PROFESSOR'S RESEARCH SPEAKS FOR THE TREES

In the Dr. Seuss classic children's book the "Lorax," readers are treated to a fable of the diminutive Lorax creature who claims to "speak for the trees" as he lectures on the value of balancing environmental protection and economic growth.

UNC-Chapel Hill is home to a professor who is studying and researching trees to better understand climate and weather. Erika Wise is an expert in the field of dendrochronology—the scientific method of dating tree rings—which in some cases can date the time at which tree rings were formed to the exact year.

In one sense, Wise is "speaking for the trees" and using them to tell the story of past weather patterns and climate history from hundreds of years ago.

Wise, an assistant professor in the department of geography, always had a strong interest in climatology and after an introductory course on dendrochronology at the University of Arizona—home to one of the leading tree ring labs in the country—she was hooked on the field of study.

Much of Wise's research takes place in the Rocky Mountain region and the Northwest part of the country as she uses data from tree rings to understand storm track patterns. This work is helping to develop historical weather maps from hundreds of years ago down to the detail of looking at seasonal information year by year. The data collected through this research can inform and establish major changes in long ago weather patterns and identify drought periods as a basis of comparison with current climatic conditions.

One of the most exciting aspects of the research is the citizen-science component of the work. Wise and her team have developed a volunteer network of teachers and students at schools to collect data on precipitation through the use of rain gauges. The data collected from these young citizen-scientists will be linked with data from soil moisture and tree-ring data Wise has collected to help understand climate and weather patterns, such as El Niño.

In addition to her nationally significant research, Wise has established herself as a leader on Carolina's campus. She is one of the leaders of the Carolina Climate Change Scientist faculty group, which is comprised of more than three dozen faculty members teaching classes on the topic and conducting climate related research. In discussing the formation of the group Wise said, "a number of faculty members recognized there were many professors on campus working on different aspects of climate change and there was a need for coordination and collaboration."

Since its founding by a handful of faculty several years ago, the group continues to remain active by hosting seminars, coordinating research projects, and serving as an important convener to foster collaboration among faculty from a variety of disciplines across the university. Climate change research at Carolina is ongoing in a number of departments and schools, including Marine Sciences, Geology, Public Policy, Mathematics, the schools of Public Health, Law, and Business, and several more units across campus.

This spring the Carolina Climate Change Scientist group hosted its 3rd annual UNC Climate Change Symposium to highlight the latest research and included a poster session featuring dozens of research projects from undergraduate and graduate students.



Erika Wise, an assistant professor in the department of geography, is an expert in the field of dendrochronology—the scientific method of dating tree rings—which in some cases is accurate to the exact year.

Wise works closely with a number of these students through her Climate and Tree Ring Environmental Science Research group. She cites the high level of knowledge and acumen, in addition to the enthusiasm, of students at Chapel Hill as one of her favorite parts of being a professor at Carolina.

At the end of the "Lorax" Dr. Seuss writes, "Unless someone like you cares a whole awful lot, nothing is going to get better. It's not."

Fortunately for Carolina, Wise cares passionately about her research and her engagement with students as she works to understand the critically complex history of climate change and share those findings with the world.

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Director, Morehead City Field Site,  
Institute for the Environment; Hill  
Distinguished Professor of Marine  
Sciences, Institute of Marine Sciences

TAMLIN PAVELSKY  
Associate Professor, Geological  
Sciences

ROBERT PEET  
Professor, Biology

DANIEL RODRIGUEZ  
Director, Center for Sustainable  
Community Design, Institute for the  
Environment; Distinguished Professor,  
City and Regional Planning  
(Ex-Officio)

CONGHE SONG  
Professor, Geography

DANIELLE SPURLOCK  
Assistant Professor, City and  
Regional Planning

JILL STEWART  
Associate Professor, Environmental  
Sciences and Engineering

J. JASON WEST  
Associate Professor, Environmental  
Sciences and Engineering

RICHARD WHISNANT  
Professor of Public Law and  
Government,  
School of Government

PETER WHITE  
Professor, Biology

ERIKA WISE  
Assistant Professor, Geography

### UNC Environment Newsletter Staff

EMILY WILLIAMS, Writer/Editor  
LAURA ERTEL, Writer  
STEVE WALL, Writer  
TONY REEVY, Senior Associate Director  
UNC CREATIVE, Design

UNC INSTITUTE for the ENVIRONMENT  
The University of North Carolina at Chapel Hill  
Campus Box 1105  
Chapel Hill, NC 27599-1105

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## FIELD NOTES

**Grant Parkins** joined the Institute's Environmental Resource Program as the Watershed Education Coordinator. Prior to joining the Institute, Parkins served as the manager of school programs for the North Carolina Botanical Garden and as a science educator for UNC's DESTINY Traveling Science Learning program.

Congratulations and a big thank you the following faculty + staff for their service to UNC-Chapel Hill and the state of North Carolina!

Tony Reevy (25 years)  
David Salvesen (15 years)  
Rusty Rogers (10 years)  
Dongmei Yang (5 years)  
Alejandro Valencia (5 years)

Save the dates for two upcoming signature IE events!

**CMAS Conference**                      **NC Clean Tech Summit**  
Oct. 24-26, 2016                      Mar. 2-3, 2017



Check out IE's new  
Web site for more  
news + events.  
[ie.unc.edu](http://ie.unc.edu)

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Hats off to the Environment and Ecology Class of 2016!



Representative John Szoka delivered the commencement address on May 7.

