RUTGERS Climate Institute

CLIMATE BULLETIN

November 2016

From the Directors…

Tony Broccoli ***Robin Leichenko***

Rutgers is one of the oldest academic institutions in the United States celebrating our 250th anniversary this month. As a whole, the University community has spent the past year reflecting upon our history, global and local challenges, and opportunities for innovation and education. The University's commitment to the Rutgers Climate Institute affirms its recognition that climate change is arguably the most important global environmental issue of the 21st century, with worldwide consequences for generations to come.

Although the Rutgers Climate Institute has only existed for a small fraction of the 250-year history of our university, in that short time the Institute has built bridges across departments, schools, and disciplines. We currently have more than 95 affiliates who come from 10 schools and 22 departments across all three Rutgers campuses. Our mission is to facilitate scholarship, education and outreach on the topic of climate change so that we can continue to develop the knowledge needed within and across disciplines to better understand and address the challenges associated with climate change, to help develop the next generation of scholars, practitioners and policy makers and to inform the Rutgers community as well as the public about critical advances, issues, and best practices.

We are pleased to provide you with our annual update.

Tony Broccoli and Robin Leichenko
Rutgers Climate Institute Co-Directors

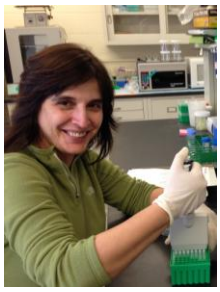
In This Issue…

RESEARCH/AFFILIATE HIGHLIGHTS

BENJAMIN HORTON: RISING SEAS

RCI affiliate **Benjamin Horton** is a Professor in the Department of Marine and Coastal Sciences. His research focuses on how sea-level changes in the past will shape the sea-level changes in the future. One of his most recent studies co-authored with RCI affiliate **Robert Kopp** (Earth and Planetary Sciences, Associate Director of the Rutgers Energy Institute) found that 20th Century global sea-level rise was extremely likely faster than during any of the previous 27 centuries . This study received much public attention, including a tweet from President Barack Obama, referencing it. This year, Professor Horton was acknowledged for his great contributions to understanding and predicting coastal change and sea-level rise as he was awarded the European Geosciences Union Plinius Medal. This prestigious award recognizes outstanding interdisciplinary natural hazard research.

DINA FONSECA: MOSQUITO POPULATIONS AND CLIMATE CHANGE



Dina Fonseca is a Professor of Entomology. One of Dr. Fonseca's primary research interests are invasive mosquitoes, which transmit viruses such as those that result in Zika and dengue fevers. Her research has shown that mosquito populations can differ quite a bit across short distances and over time, changing epidemiological landscapes and risk estimates. She has also shown that mosquitoes move primarily associated with people (in boats, trucks and cars) and that association selects for sub-populations more likely to bite us. Dr. Fonseca works closely with county and state mosquito control programs and the public to develop effective and efficient strategies for mosquito and invasive species control that are sustainable and minimize impacts to the environment. More recently, Dr. Fonseca has started developing predictive tools to forecast changes in salt marsh mosquito populations due to sea-level rise and strategies used to mitigate its impact on coastal communities. Predictive model and enhanced surveillance will allow mosquito control programs in coastal counties to develop proactive strategies and mitigate nuisance, disease and environmental impacts.

MELISSA ARONCZYK: CULTURE AND CONSCIOUSNESS

Melissa Aronczyk is an Associate Professor at the School of Communication and Information. Dr. Aronczyk's research has focused on addressing critical issues in promotional culture, nationalism and national consciousness, and political and cultural interpretations of globalization. In April 2016, Dr. Aronczyk received an NSF grant to fund her newest research which will address the extent, influence, and impact of professional advocacy campaigns on debates in the climate change public sphere. The research aims to explain the extent and impact of strategic communications campaigns on political and public responses to specific U.S. policy efforts around climate change.

HAL SALZMAN: CHALLENGES FOR ARCTIC COMMUNITIES

Hal Salzman is a Professor of Public Policy at the Edward J. Bloustein School of Planning and Public Policy and Senior Faculty Fellow at the John J. Heldrich Center for Workforce Development. Some of his most recent work in the Arctic—funded by the Arctic Social Sciences Program, National Science Foundation—examines the challenges facing local communities in balancing socio-economic development needs—income, employment, education, technology and health—with community survival that is based on subsistence hunting and harvesting, maintaining strong cultural traditions, and creating opportunities that support the aspirations of the next generation. A short film based on the research called, "Arctic Melt: Native Voices" provides Alaskan Arctic community perspectives on the dilemmas of development – of the challenges in these communities facing an increase in outsider-driven development with more open water, moving oil exploration and other activities from remote terrestrial regions into the marine "community garden" of arctic villages. Rutgers Arctic Planning Studio students developed future scenarios that could leverage industrial investments to support village infrastructure, energy needs, and employment.

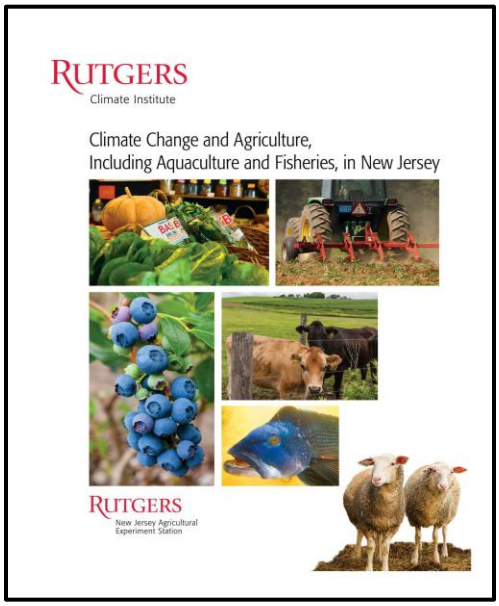
RCI RESOURCES AND INITIATIVES

PROVIDING LOCAL CLIMATE CHANGE INFORMATION

The RCI website includes a wide range of climate change information such as videos and reports developed to provide information that can be used to educate various constituencies about climate change and its impacts in our region. **Videos**

featuring Rutgers faculty including several with local relevance, like this one on *Climate Change and the Jersey Shore: Impacts on Coastal Communities, Ecosystems and Economies*, can be found under "Resources" on the menu bar.

The report *Climate Change and Agriculture, Including Aquaculture and Fisheries, in New Jersey* prepared by the Rutgers Climate Institute and the New Jersey Agricultural Experiment Station covers the challenges that agriculture in New Jersey will face due to the changing climate and response approaches. More resources related to climate change and agriculture can be found here.



Look under RU and Climate Stewardship to learn about the various Rutgers programs that address climate change at Rutgers including innovations in Rutgers energy use and generation, recycling, dining and transportation.

NEW JERSEY SCIENCE AND TECHNICAL ADVISORY PANEL ON SEA-LEVEL RISE AND COASTAL STORMS

Rutgers Climate Institute was instrumental in convening a Science and Technical Advisory Panel (STAP) on behalf of the New Jersey Climate Adaptation Alliance to synthesize for practitioners the most recent climate science needed to inform efforts to

increase the resilience of New Jersey's people, places and assets (including infrastructure, communities and natural resources) to regional sea-level rise, changing coastal storms and the resulting flood risk. The STAP process was co-facilitated by RCI Associate Director, **Marjorie Kaplan** and RCI Affiliate **Jeanne Herb**. Two reports and a summary document were released in October 2016. The first report, *Assessing New Jersey's Exposure to Sea-Level Rise and Coastal Storms: Report of the New Jersey Climate Adaptation Alliance Science and Technical Advisory Panel* , summarizes the deliberations of the STAP. A second report, *Assessing New Jersey's Exposure to Sea-Level Rise and Coastal Storms: A Companion Report to the New Jersey Climate Adaptation Alliance Science and Technical Advisory Panel Report*, describes how coastal hazard data and coastal climate change impacts are currently being addressed in New Jersey. A third document, *Integrating Climate Science into Coastal Resilience Planning and Decision Making in New Jersey*, provides a high level summary of the two reports.

RCI affiliate Professor **Robert Kopp** (Earth and Planetary Sciences) chaired the STAP. Other RCI affiliates who participated in the STAP process and report development include RCI Co-Directors **Tony Broccoli** and **Robin Leichenko** and RCI Affiliates, **Lisa Auermuller** (Jacques Cousteau National Estuarine Research Reserve), **Ben Horton** (Marine and Coastal Sciences), **Ken Miller** (Earth and Planetary Sciences), and **David Robinson** (Geography). As an example of its utility, the STAP effort is being used to inform a 20-town regional resiliency planning project through a partnership with the State of New Jersey Coastal Management Program.

EVENT HIGHLIGHTS

WELCOME TO THE ANTHROPOCENE: A GEOLOGICAL AGE OF OUR MAKING
November 2015

Andrew Revkin Visits Rutgers

Speaker Andrew Revkin

On Thursday November 12, 2015, a packed audience in the Douglass Student Center, Rutgers-New Brunswick, heard award-winning science journalist Andrew Revkin speak on the "Age of the Anthropocene." Author of the @dotearth blog for the *New York Times* and senior fellow at Pace University, Revkin noted that addressing climate change requires a mix of urgency and patience and emphasized the need for sustained engagement, "we can have a good path in a troubled time." Revkin relayed human

implications from his reporting about resource exploitation and climate change and challenged the audience to be sensitive to the needs of those in the developing world for example, those that lack electricity. Among his strategies for sustained engagement are response diversity, innovation, connectedness and communication, teaching, transparency, reflection, and rejoicing in remembering what the planet is about, and repeating the resolve to address environmental problems. This was the inaugural event for "Exploring the Anthropocene: the Age of Us," a series sponsored by the Executive Dean of School of Environmental and Biological Sciences in honor of Rutgers' 250th Anniversary. Along with the Rutgers Climate Institute, the evening lecture was co-sponsored by G. H. Cook Campus Dean, Rutgers Department of Human Ecology, Rutgers Department of Journalism and Media Studies, Rutgers Energy Institute, Environmental Science and Engineering Club, Meteorology Club, Naturalists Club, Oceanography Club, Rutgers Fossil Fuel Divest, and Students for Environmental Awareness. In his introduction, **Tony Broccoli,** Co-director of the Rutgers Climate Institute noted that Revkin has played a very important role in reporting science topics and climate science to the public since the mid-1980s.

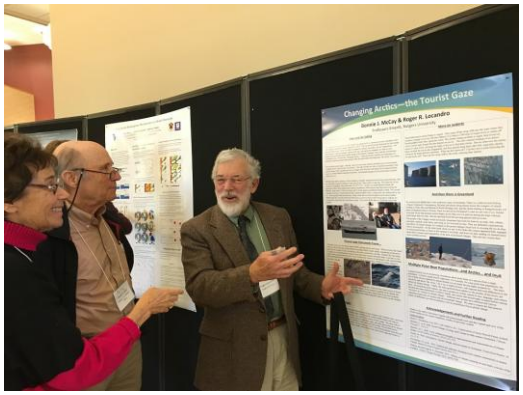
RUTGERS CLIMATE SYMPOSIUM

November 2015

Climate Change and Polar Regions: Natural and Social System Implications

On November 20, 2015, over 200 attendees participated in the Rutgers Climate Institute annual symposium to stimulate interaction and collaboration among the community of natural and social science researchers and university students from institutions in the greater NJ, NY and Philadelphia region interested in climate change. RCI affiliates **Enrique Curchitser** (Environmental Sciences), **Asa Rennermalm** (Geography), **David Robinson** (Geography), **Hal Salzman** (Bloustein School of Planning and Public Policy), and **Oscar Schofield** (Marine and Coastal Sciences) served on the symposium program committee. The keynote speaker, RCI affiliate **Jennifer Francis** (Marine and Coastal Sciences) presented *Crazier Weather and the Arctic Meltdown: Are They Connected?*

Symposium Keynote Jennifer Francis



Left to Right: Rutgers Affiliate Judy Weiss (Biology) with Peddrick Weiss (Adjunct Professor of Radiology, Rutgers-NJ Medical School) and Emeritus Professor Roger Locandro (Ecology, Evolution and Natural Resources) during the annual symposium poster session.

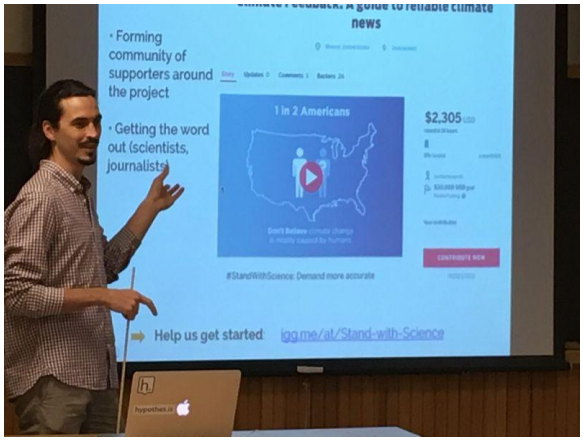
A panel on *Climate Change and Polar Regions: Natural and Social Science Implications* included Doug Martinson, Columbia University; Patricia Yager, University of Georgia, Scott Stephenson, University of Connecticut and Sherilee Harper, University of Guelph. A robust poster session followed with participants from universities and research institutions throughout the region. Speaker presentations, poster session abstracts and poster pdfs can be found here.

STRATEGIES FOR EFFECTIVE SCIENCE COMMUNICATION: A ROUNDTABLE DISCUSSION

April 2016

A discussion for understanding how to communicate science

On April 21, 2016, the Rutgers Climate Institute along with co-sponsors Department of Environmental Sciences, Institute of Earth, Ocean, and Atmospheric Sciences, Cook Campus Dean, and the Environmental Sciences Graduate Student Association hosted "Strategies for Effective Science Communication: A Roundtable Discussion" featuring Dr. Emmanuel Vincent, Center for Climate Communication, University of California – Merced. Dr. Vincent described his work with the Climate Feedback initiative in which he organizes scientists to review influential climate media articles for accuracy by annotating them in a web-browser so they can be peer-reviewed on-line in a timely manner (i.e., within a news cycle).



Dr. Emmanuel Vincent discussing his Climate Feedback initiative

Following Dr. Vincent's talk, RCI affiliates **Lauren Feldman** (Journalism and Media Studies) and **Rachael Shwom** (Human Ecology) participated in a discussion moderated by RCI affiliate **Benjamin**

Lintner (Environmental Sciences) designed so that students and faculty could gain insights into science communication from these experts. Among the topics discussed, was that a goal of science is to be objective and without bias; i.e., it is a systematic evidence-based way to learn about the natural world through the pursuit of facts. Students felt it was important for the public to understand how scientists generate data through systematic evaluation and thus they are not presenting random facts; science is incremental and uses a peer review process. Audience participants felt it was important for scientists to talk more about the scientific process and peer review so that the public understands the work of scientists is subject to the scrutiny of experts in their field and progresses through a deliberative process.

ENERGY AND CLIMATE: ONE DAY TWO GREAT EVENTS

Featuring Intergovernmental Panel on Climate Change (IPCC) Chair, Dr. Hoesung Lee and Former IPCC Chair Sir Robert Watson
May 2016

The 11th Annual Energy Institute Symposium and Climate Change Impacts, Adaptation and Vulnerability: From the IPCC to New Jersey Practitioners

On May 4, 2016, the Rutgers Climate Institute teamed up with the Rutgers Energy Institute to host Energy and Climate: One Day Two Great Events. The Rutgers Energy Institute is led by RCI Affiliate **Paul Falkowski**, (Earth and Planetary Sciences and Marine and Coastal Sciences Board of Governors Distinguished Professor).

Dr. Hoesung Lee, IPCC Chair

The morning program included the *Eleventh Annual Rutgers Energy Institute Symposium* while the Afternoon Program's focus was *Climate Change Impacts, Adaptation and Vulnerability: From the IPCC to New Jersey Practitioners.* Both the morning and afternoon program featured the current chair of the Intergovernmental Panel on Climate Change (IPCC) Dr. Hoesung Lee, who received his Ph.D. in Economics from Rutgers, as well as former IPCC Chair, Sir Robert Watson.

The morning session focused on climate change mitigation and accelerating energy innovation for such mitigation.
The afternoon session focused on the IPCC and relating the information the IPCC develops to local issues. Talks included reflections on IPCC's progress since 1988 as

well as results presented from its 5th Assessment Report for chapters authored and edited by Rutgers faculty including RCI Co-Director **Robin Leichenko** and RCI affiliates **Robert Kopp** (Earth and Planetary Sciences, Associate Director of the Rutgers Energy Institute) and **Alan Robock** (Environmental Sciences). These chapters relate to emergent risks and vulnerabilities, human security, and geoengineering. A panel of New Jersey practitioners representing diverse constituencies including electric generation, coastal management, municipal government, agriculture, and environmental justice related their experiences and best practices in addressing climate change locally and included Russ Furnari (PSEG); Christopher Huch (Jacques Cousteau National Estuarine Research Reserve); Stephen Marks (City of Hoboken); Pam Mount (Terhune Orchards) and Nicky Sheats (Thomas Edison State University). The event agenda and presentations are available here.

New Jersey Practitioners Panel (Left to Right: Russ Furnari, PSEG; Chris Huch, JCNERR; Stephen Marks, City of Hoboken; Pam Mount, Terhune Orchards; Nicky Sheats, Thomas Edison State University)

CLIMATE CHANGE AND PUBLIC HEALTH WORKSHOP

June 2016

A workshop for public health professionals

On Friday June 3, 2016, Rutgers University hosted a workshop for public health professionals to learn about how a changing climate will continue to affect public health in New Jersey and about strategies to better prepare New Jersey's public health practitioners and professionals to address these impacts. The workshop was planned by the New Jersey Climate Change and Public Health Working Group under the umbrella of the **New Jersey Climate Adaptation Alliance** which is facilitated by

Panel on Innovative Efforts to Address Climate Change and Public Heath. Left to Right: Kristina Kintziger (Florida Department of Public Health); Marc Nascarella (Massachusetts Department of Public Health),and George Luber (U.S. Centers for Disease Control)

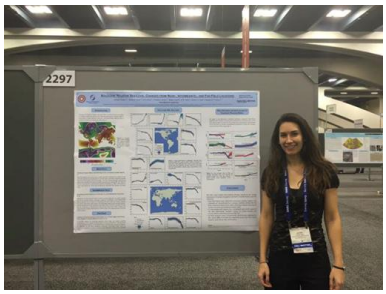
Rutgers University. Rutgers Climate Institute Co-Director **Anthony Broccoli** and Associate Director **Marjorie Kaplan**, were workshop presenters; RCI affiliates **Jeanne Herb** (Bloustein School of Planning and Public Policy) and **Robert Laumbach** (Environmental and Occupational Medicine, Rutgers Robert Wood Johnson Medical School) participated as workshop facilitators. Guest speakers included Jerald Fagliano, Drexel University; George Luber, U.S. Centers for Disease Control and Prevention; Mark Nascarella, Massachusetts Department of Public Health; Kristina Kintzinger, Florida Department of Health; and Amy Goldsmith New Jersey Clean Water Action. A panel discussion on challenges and opportunities in New Jersey was moderated by Colette LaMothe-Galette, New Jersey Department of Health and included Kevin McNally, New Jersey Public Health Association; David Henry, New Jersey Association of County and City Health Officials; and George DiFerdinando, Rutgers School of Public Health and Princeton Board of Health. Presentations and more information can be found here.

STUDENT SPOTLIGHT

RCI STUDENT SUPPORT FUND RECIPIENTS

The Rutgers Climate Institute Student Support Fund furthers climate change education and research by assisting Rutgers students with travel and related expenses. The family of William H. Greenberg (Rutgers University Class of 1944) has graciously seeded the development of this fund. The goal of the RCI Student Support Fund is to further students' education and scholarship, enable them to develop, conduct and collaborate with other academics, and improve their ability to translate their research to a range of constituencies (e.g., general public, other students, educators, policymakers, governmental and non-governmental organizations) all key to their training as the next generation of climate scientists and educators. In addition, the Student Support Fund facilitates students' ability to showcase their research, network and establish connections that will contribute to their success once they have completed their education at Rutgers University.

Two Rutgers Ph.D. students, **Jennifer Walker (Marine and Coastal Sciences)** and **Michael Brady (Geography)** were able to attend the American Geophysical Union Conference in December 2015 with awards from the RCI Student Support Fund.



Jennifer Walker (Marine and Coastal Sciences), RCI Student Support Fund Recipient

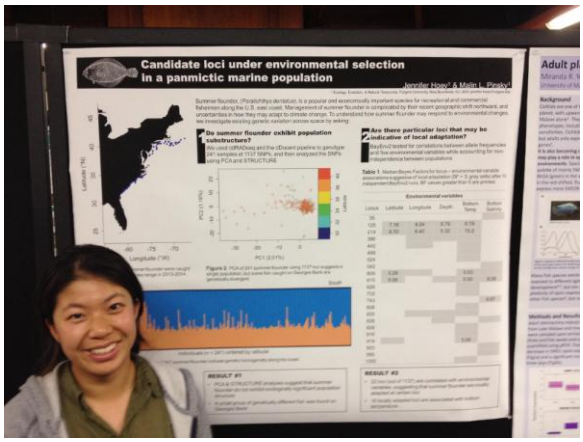
Jennifer Walker, a Ph.D. candidate in the Department of Marine and Coastal Sciences,

presented the poster "Holocene Relative Sea-Level Changes from Near-, Intermediate-, and Far-Field Locations" and also co-convened the session "Feedbacks on Ice-Sheet Growth and Decay During the Last Glacial Cycle."

Michael Brady (Geography), RCI Student Support Fund Recipient

Michael Brady, Rutgers graduate student in the Department of Geography, presented the poster, "Collaborative Community Hazard Exposure Mapping: Distant Early Warning Radar Sites in Alaska's North Slope."

Both Jennifer and Michael agree that being able to participate in the AGU conference helped forge new connections for collaboration and other opportunities.



Jennifer Hoey, Ph.D. student in Ecology, Evolution and Natural Resources used her student support award to present "Candidate loci under environmental selection in a panmictic marine population" at the American Genetics Association Presidential Symposium in Pacific Grove, CA in July 2016. Jennifer notes, "Attending this small, specialized conference allowed me to learn about findings and techniques being used to investigate local adaptation across a wide variety of flora and fauna. It also allowed me to present my findings on local adaptation in summer flounder, facilitating productive conversations about my research and generating ideas on how to best extend it into the future. Perhaps most importantly, I was able to connect and network with top scientists studying local adaptation, as well as other graduate students who are exploring similar questions and who may provide peer support as I build my career."

Chris Free, Rutgers Ph.D. candidate in Oceanography traveled to the International Society of Limnology's annual conference in Turin, Italy in July-August 2016 with

assistance from the RCI Student Support Fund. At this, the largest meeting of freshwater scientists worldwide, Chris was able to promote his dissertation research on the impact of anthropogenic stressors on small-scale Mongolian fisheries, as well as network with international scientists and potential collaborators, and learn about new developments in freshwater conservation research.

As the Student Support Fund grows, RCI intends to expand its reach to undergraduate and master's degree students; however, initial eligibility is limited to Rutgers Ph.D. students whose major area of research is on climate change in the natural, social, health or policy sciences. **More information is available here. Help us grow the RCI Student Support fund here.**

JAMES J. GALLAGHER FELLOWS

Jeremy Glover and Kate Millsaps
2016 Gallagher Family Fellows

The James Gallagher Family Fellowship was established to help advance the knowledge and research of graduate students from Rutgers University interested in climate change preparedness projects that will help advance the mission and objectives of the New Jersey Climate Adaptation Alliance. The Alliance is a coalition of businesses, nongovernmental organizations, public and private sector practitioners, and academics focused on climate change preparedness; the Rutgers Climate Institute helps facilitate and support the NJ Climate Adaptation Alliance. The 2016 Gallagher Family Fellows are **Jeremy Glover** and **Kate Millsaps**.

Jeremy Glover is a candidate for the Master of City and Regional Planning degree at the Edward J. Bloustein School of Planning and Public Policy. He is interested in the interaction between resource networks, both natural and artificial, and land use patterns. He is currently a Research Assistant at the Alan M. Voorhees Transportation Center. Jeremy has a Bachelor of Arts in Economics from Macalester College in St. Paul, MN. As part of his Gallagher Fellowship, Jeremy is analyzing metrics of community resiliency to develop an actionable list of interventions New Jersey communities can take to improve climate change resilience

Kate Millsaps is a candidate in the Bloustein School's dual Master of Public Policy/Master of City and Regional Planning program. At Rutgers, her research has focused on water supply management in the State of New Jersey, specifically climate change adaptation and water demand

forecasting, working with the Environmental Analysis and Communications Group at Bloustein, Rutgers Climate Institute and the Department of Human Ecology. Kate received a B.A. in International Studies and Environmental Studies from Ramapo College. As part of her Gallagher Fellowship, Kate has been supporting the development of an innovative methodology to assess flooding in riverine communities that has the potential to be implemented in climate adaptation planning.

To learn more about the NJ Climate Adaptation Alliance or the Gallagher Family Fellowship, visit: njadapt.rutgers.edu.

SUPPORT RUTGERS CLIMATE INSTITUTE

Click below to help us grow our programs, research and student support.

I want to make a gift to the Rutgers Climate Institute

The Rutgers Climate Institute is a University-wide effort to address one of the most important issues of our time through research, education and outreach. The Institute draws upon strengths in many departments at Rutgers by facilitating collaboration across a broad range of disciplines in the natural, social and policy sciences. Thank you to RCI Intern, Julia Campbell , an M.S. candidate in Environmental Sciences for her assistance in reporting and preparation of the 2016 Annual Bulletin.

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