

From the Directors...



Tony Broccoli



Robin Leichenko

We are pleased to present the second Rutgers Climate Bulletin, which spotlights climate-related news, events, and the research and accomplishments of our faculty and students. The Rutgers Climate Institute has made great advances this past year. For example, we expanded our annual symposium to include experts from throughout the Mid-Atlantic Region. We launched our Student Support Fund to cover travel and related expenses to enhance the scholarship and experiences of Rutgers students for the purposes of climate change education and research. We have joined the Northeast Climate Hub a consortium of land grant institutions and the U.S. Department of Agriculture whose mission is to deliver science-based knowledge and practical information to farmers, ranchers and forest landowners in the Northeast Region. This year the Rutgers Climate Institute has grown to include over 90 affiliated faculty from the natural, social, and policy sciences, as well as applied professional disciplines including engineering, journalism, law, planning and public health. Our educational outreach has increased via our website and social media. We hope you enjoy learning more about the Rutgers Climate Institute.

Tony Broccoli and Robin Leichenko
RCI Co-Directors

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RESEARCH/AFFILIATE HIGHLIGHTS

ROBERT KOPP: AMERICAN CLIMATE PROSPECTUS



RCI affiliate
Robert Kopp (Earth and Planetary Sciences, Associate Director of the Rutgers Energy Institute) served as the

lead scientist for [Economic Risks of Climate Change: An American Prospectus](http://www.climateprospectus.org) (www.climateprospectus.org; published by Columbia University Press). A collaboration with the University of California Berkeley

and Rhodium Group, this book provides innovative new analysis of some of the key risks the American economy faces from climate change: from increased coastal flooding to changes in crop yields, reductions in labor productivity, and threats to human health. The work provided the technical underpinnings for the Risky Business Project (www.riskybusiness.org). Led by former New York City Mayor Michael Bloomberg, former U.S. Treasury secretary Hank Paulson, and philanthropist Tom Steyer, the Risky Business Project seeks to drive a national discussion about the economic risks posed by climate change.

RACHAEL SHWOM: CLIMATE LITERACY



Rachael Shwom is an assistant professor of Climate and Society in the Department of Human Ecology. She is an environmental

sociologist who is interested in how different groups of people in society make sense of and respond to energy and climate change problems. She understands these processes as not just technological or economic processes, but inherently social and political processes. Dr. Shwom's work has focused on business-NGO relationships around energy policy, risk governance, and public opinion

on climate change. More recently, Dr. Shwom has taken an active interest in how Rutgers undergraduate students are learning about the science of climate change, particularly the human dimensions of climate change. "Much of the focus of climate literacy efforts to date has been on increasing the public's understanding of the natural science of climate change to convince them that it's happening, but in order to enable people to communicate and act responsibly on climate change we need to help them understand the social, political and economic factors that cause climate change and influence society's response to it." To this end Dr. Shwom, working with RCI Affiliate, **Dr. Rebecca Jordan** (Rutgers, Human Ecology), have just finished up a

project funded by the National Socio Environmental Synthesis Center to advance interdisciplinary undergraduate teaching of the human-climate system. “Working together with leading experts on model-based teaching, climate systems, and human dimensions of climate change we’ve put together a set of resources that identify content on human-climate systems, skills students need to understand social and natural science, activities that can develop those skills, and a rubric for evaluating where students are in those skills. Many members of the Rutgers Climate Institute, including **Dr. Robert Kopp** and RCI Co-

Director **Tony Broccoli**, played a very important role in helping us develop these tools and we look forward to working with Rutgers faculty more as we seek to improve interdisciplinary undergraduate learning on climate change at Rutgers.” For more information on the project go to <http://www.sesync.org/project/pursuit/understanding-climate-change>. Dr. Shwom, along with RCI affiliates **Steve Brechin** (Sociology) **Tom Rudel** (Human Ecology) are authors of the recently released book, *Climate Change and Society: Sociological Perspectives*, published by Oxford University Press.

MALIN PINSKY: OCEANADAPT

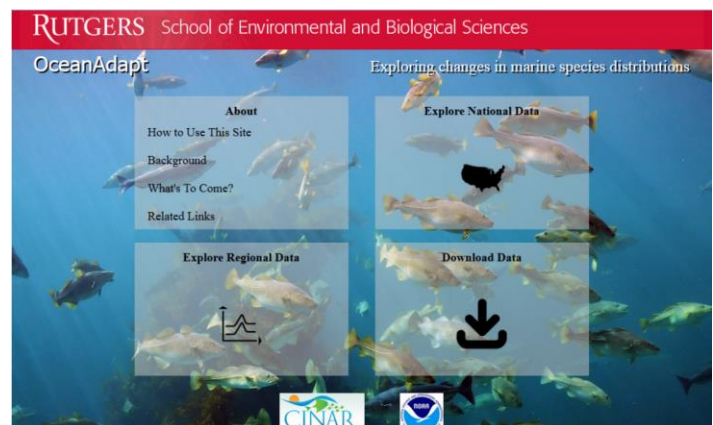
Warming waters from climate change have



caused fish populations to move in search of cooler waters. These movements can have major effects on the fishing industry by changing where, when and which fish can be

caught. Assistant professor and RCI affiliate, **Malin Pinsky** (Ecology, Evolution, and Natural Resources) collaborated with NOAA Fisheries to develop [OceanAdapt](#), a website that provides data and visualizations to track the geographic and depth ranges of more than 650 species of fish and invertebrates in North America and how those distributions have changed over time. *OceanAdapt* can be used by fishermen and scientists alike who must adapt to the challenge of climate change. Dr. Pinsky’s scholarship makes him

a natural fit to develop *OceanAdapt*. For example, Dr. Pinsky was lead author of the study [Marine Taxa Track Local Climate Velocities](#), published in *Science* that evaluated data for 360 species of marine taxa demonstrating that these species shift at different rates and direction because they track changes in ocean temperature, a response to climate change. Tools like *OceanAdapt* help share and visualize the types of data Dr. Pinsky gathers and evaluates.



PATRICIA FINDLEY: MENTAL HEALTH AND CLIMATE CHANGE



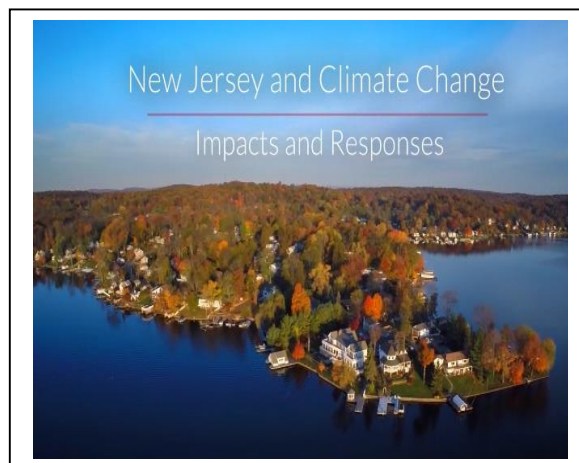
Patricia A. Findley, DrPH, MSW, is an Associate Professor of Social Work, the Special Assistant to the Dean for Interprofessional

Health Initiatives, and the Newark MSW Campus Coordinator. Her research interests include chronic illness, physical disability, disaster preparedness and response, and cancer survivorship. She holds a research scholar position within the Veterans Administration where she explores both physical and mental health issues, as well as gender issues within the veteran population. Dr. Findley's affiliation with the Rutgers Climate Institute has allowed her to work with others outside her discipline and better her knowledge on climate change and how environmental impacts can affect both a person's physical and mental health.

Extreme weather events can have a major impact on a person's mental and physical health. Dr. Findley is working on finding the gaps in the behavioral health system so that they can be addressed through shifts in policy to help be prepared for the next weather-related disaster. Dr. Findley is investigating the impact of Hurricane Sandy on individuals, children, and families in hopes of elucidating some of the ongoing health and mental health issues that need continued attention to enhance awareness of policy makers. Dr. Findley is a co-author of two recent reports on the social well-being and health impacts following Superstorm Sandy [*The Hurricane Sandy Person Report: Disaster, Exposure, Health Impacts, Economic Burden, and Social Well-Being*](#) and [*The Hurricane Sandy Place Report: Evacuation Decisions, Housing Issues and Sense of Community*](#).

RCI RESOURCES

The [RCI website](#) includes a wide range of climate change information such as videos, reports, news, internships, and job postings. Videos featuring Rutgers faculty including several with local relevance, like this one on *NJ and Climate Change: Impacts and Responses*, can be found under "Resources" on the menu bar. The report by RCI Associate Director **Marjorie Kaplan** and RCI Affiliate **Jeanne Herb** 2012 *Update to New Jersey's Statewide Greenhouse Gas*



Emissions Inventory can be found under "Resources" or by clicking this [link](#).

This update, with emissions estimates for 2010, 2011, and 2012, notes that while NJ is likely to achieve its 2020 statutory statewide greenhouse gas emissions targets, it needs a 75% reduction of current emissions to meet its 2050

statutory limit.

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

EVENT HIGHLIGHTS

MID-ATLANTIC REGIONAL CLIMATE SYMPOSIUM

November 2014

Climate Change and The Tropics: Implications and Adaptation

On November 21, 2014 Rutgers Climate Institute hosted a one-day 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. The symposium theme was Climate Change and The Tropics: Implications and Adaptation. The tropics are of particular concern to climate scientists due to this region's limited resources for adapting to a changing climate.



Symposium poster session



Morning Panelists Left to Right: Mark Cane, Laura Schneider, Thomas Knutson, and Laia Andreu-Hayles

In addition to distinguished speakers and panelists such as RCI affiliates **Heidi Hausermann** (Human Ecology), **Benjamin Lintner** (Environmental Sciences), **Pam McElwee** (Human Ecology), **Laura Schneider** (Geography), and **Jim Wright** (Earth and Planetary Sciences) there were 30 posters featuring the research of over 150 authors. A recording of the symposium, presentations and posters can be found under the "Past Events" on the "Events" menu at climatechange.rutgers.edu.

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CLIMATE CHANGE AND AGRICULTURE IN NEW JERSEY:

March 2015

A workshop for Rutgers Extension Faculty and Staff

On March 4, 2015, Rutgers Climate Institute in partnership with New Jersey Agricultural Experiment Station, Rutgers Department of Agricultural and Resource Management Agents and the Rutgers Department of Plant Biology and Pathology hosted a workshop for Rutgers Agricultural Experiment Station Cooperative Extension faculty and staff on climate change and agriculture.

Presentations were made by Rutgers faculty and staff as well as outside experts. RCI affiliates **Bingru Huang** (Plant Biology and Pathology), **David Robinson** (Geography), **Mark Robson** (Plant Biology and Pathology), **Michael Westendorf** (Animal Science), RCI co-Director **Anthony Broccoli**

(Environmental Sciences), and the Associate Director of RCI **Marjorie Kaplan** all presented along with colleagues from other Rutgers departments, the NJ Department of Agriculture, USDA Northeast Climate Hub and USDA Natural Resources Conservation Service and representative NJ agricultural producers. Presentations covered a breadth of New Jersey agriculture considerations in a changing climate including cranberries and blueberries, vegetable crops, turfgrass, peaches, equine and animal science and water resources.

Additional support for the Workshop was provided by the USDA-Northeast Climate Hub. Workshop presentations can be found at climatechange.rutgers.edu.



Morning Panelists Left to Right: Bingru Huang, Chris Obropta, Nicholi Vorsa, Michael Westendorf, Carey Williams, and Andrew Wyenandt

HIGH-PERFORMANCE & DISTRIBUTED COMPUTING FOR POLAR SCIENCES:

December 2014

Workshop about connecting the polar science and high performance distributed computing communities.

RCI affiliates, **Asa K. Rennermalm** (Geography) and **Shantenu Jha** (Electrical and Computer Engineering) organized the workshop *High-Performance & Distributed Computing for Polar Sciences: Applications, Cyberinfrastructure and Opportunities* which took place at Rutgers University, New Brunswick on the 4th and 5th of December 2014. Approximately thirty U.S based researchers gathered for two days of presentations and discussions centered on how polar science can benefit from High-Performance and Distributed Computing. While many scientific domains have made significant advancements ranging from understanding fundamental physical processes to designing new and functional materials, HPDC is an underutilized resource within the polar science community. Yet, climate change in the 20th and 21st century is dramatically changing the polar regions, e.g., receding Arctic sea ice and accelerating mass loss from glaciers and ice sheets. These changes may have widespread consequences on many aspects of the earth systems, e.g.



Attendees of HPDC workshop

carbon budget, sea levels and freshwater input to oceans. To understand the changing polar regions and global impacts, scientists are increasingly using very large datasets derived from high-resolution satellite imagery and computer modeling where HPDC could facilitate problem solving. Workshop information available at <https://sites.google.com/site/polarhpdc/home>. Support was provided by the National Science Foundation, Rutgers University's Departments of Geography and Electrical and Computer Engineering, and the Rutgers Climate Institute.

GLOBAL CLIMATE CHANGE AND INEQUALITY: LOCAL TO GLOBAL PERSPECTIVES April 2015

On Friday April 10, 2015, Rutgers hosted *Global Climate Change and Inequality: Local to Global Perspectives* a symposium which explored across disciplines the state-of-the-art thinking and research on the problem of inequality linked to expected global climate change and related environmental disasters that occur in different locations and cultures. Since some groups, communities, and nations will be much more vulnerable than others to a changing climate, a fundamental task ahead for scientists and others rests on better understanding who is likely to be affected by a changing climate and related disasters, in what ways they will be most vulnerable, and how might those vulnerabilities be addressed through various social actions, including policies and planning. Also relevant are the social consequences of mitigation policies and other efforts to reduce climate change. If

communities and nations are to remain vibrant and resilient, conscious and concerted efforts will be needed to make sure everyone is valued and no one is left behind.

The event was free and open to the public. RCI Co-Director **Robin Leichenko** and RCI Affiliates **Steve Brechin**, **Karen O'Neill** and **Tom Rudel** all participated in the symposium.

In addition to Rutgers Climate Institute, a myriad of departments and programs sponsored this program including [First 100 Days Initiative](#); [Rutgers Centers for Global Advancement and International Affairs](#); [Rutgers Department of Geography](#); [Rutgers Department of Human Ecology](#) and [Rutgers Department of Sociology](#).



Speakers and organizers at the Symposium left to right: Mauro Baldanza, Stéphane Hallegatte, Karen O'Neill, Steven Brechin, Tom Rudel, Karen O'Brien, Teja Pristavec, Robin Leichenko, Adelle Thomas, Ana Baptista, and Lori Peek

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RUTGERS DAY

April 2015

RCI teamed up for another year with the Office of the NJ State Climatologist for our *Weather and Climate: Demonstration and Ask The Experts* at Rutgers Day 2015. This year colleagues from the U.S. Department of Agriculture, Natural Resources Conservation Service - NJ District Office joined us to explain the link between healthy soils and climate change. Soil health is important for reducing greenhouse gas emissions and helping make land more resilient to climate change. The NRCS rainfall simulator was a helpful demonstration of how cover crops

and natural vegetation are adaptive measures for addressing heavier precipitation.



Rutgers Day visitors watch rainfall simulator demonstration

CARBON SHOCK: HOW CLIMATE CHANGE IS RESHAPING GEO-POLITICS AND CHANGING THE COST OF EVERYTHING

February 2015

A lecture and book signing by author Mark Schapiro



crowd of over 175 students, faculty, staff and members of the public. Schapiro's talk was

Mark Schapiro, an award-winning journalist spoke on the intersection between climate change, economics and politics to a

based on his latest book *Carbon Shock: A Tale of Risk and Calculus on the Front Lines of the Disrupted Global Economy*. Schapiro's book is a series of narratives from around the world where the costs of climate change are being experienced and where the battle over shifting to a less carbon-intensive economy is being fought. Schapiro also participated in two sessions prior to his evening lecture: one with RCI affiliate **Cymie Payne's** (Human Ecology, Rutgers School of Law) International Environmental Law and Policy

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Class and another with leaders from Rutgers student groups whose missions involve topics related to climate change. Along with the Rutgers Climate Institute, the evening lecture was sponsored by Office of the Cook Campus Dean, Rutgers Environmental

Sciences Graduate Student Association, Rutgers Oceanography Graduate Student Association, Rutgers Fossil Fuel Divestment, and Students For Environmental Awareness. A video of Mark Schapiro's talk is available at climatechange.rutgers.edu.

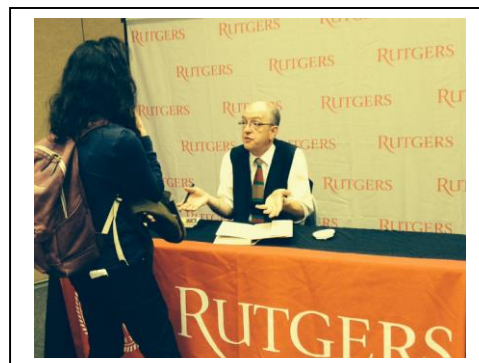
ARE OUR BRAINS WIRED TO IGNORE CLIMATE CHANGE?

September 2014

George Marshall visits Rutgers

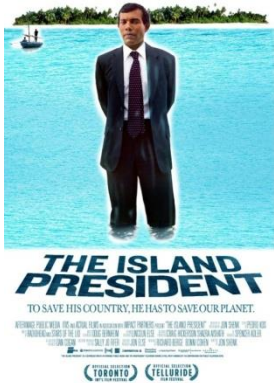
George Marshall, one of Europe's leading experts on climate change communication, gave an engaging talk to a gathering of 200 Rutgers students, faculty, staff and members of the public at the Rutgers Cook Campus Center on its New Brunswick campus regarding his latest book, *Don't Even Think About It: Why Our Brains Are Wired to Ignore Climate Change*. Marshall has been on a quest to discover why people are inclined to ignore climate change even when presented with scientific facts. His research involved discussions with Nobel Prize-winning psychologists and the activists of the Texas Tea Party; the world's leading climate scientists and the people who denounce them; liberal environmentalists and conservative evangelicals. One of his conclusions is that climate change is difficult to accept and that humans therefore

construct a narrative that enables us to ignore it, reject it or shape it in our own image. George Marshall's visit was sponsored by the Rutgers Climate Institute the Cook Campus Deans, Rutgers Department of Human Ecology, Rutgers Association of Planning and Policy Students, Rutgers Ecology Graduate Student Association, Rutgers Environmental Science and Engineering Club, Rutgers Environmental Sciences Graduate Student Association, Rutgers Geology Club, Rutgers Meteorology Club, Rutgers Oceanography Club, Rutgers Undergraduate Geography Society and Students for Environmental Awareness. A video of his talk is available at climatechange.rutgers.edu.



George Marshall signs his book after his lecture

STUDENTS FOR ENVIRONMENTAL AWARENESS FILM FESTIVAL



Held on November 17th, 2014 the Students for Environmental Awareness organization with a co-sponsorship from the Rutgers Climate Institute, held a film festival which included two films: “The Island President” and “Disruption”.

Following a screening of the two films, RCI affiliates **David Hughes** (Anthropology), **Robert Kopp** (Earth & Planetary Sciences, Rutgers Energy Institute), and **Benjamin Lintner** (Environmental Sciences) participated in a panel discussion. Most of the questions focused on issues of social justice, responsibility, and costs borne by the developed versus the developing world.

STUDENT SPOTLIGHT

RCI STUDENT SUPPORT FUND LAUNCHED

RCI has established a new Student Support Fund to be used by Rutgers students for travel and related expenses for the purposes of climate change education and research. Seeded through the generosity of the family of William H. Greenberg (Rutgers University Class of 1944), initial recipients will be Rutgers Ph.D. students whose major area of research is on climate change in the natural, social, health or policy sciences.

Participation in conferences, workshops, symposia, professional meetings, field activities, and visits to federal or state agencies or universities for educational and research purposes has multiple benefits to students' scholarship and professional development. It will 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, policy-makers, governmental and non-governmental organizations) all key to their training as the next generation of climate scientists and educators. In addition, the new fund will facilitate 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.

As the fund grows, RCI expects to expand its reach to undergraduate and master's degree students. More information is available [here](#). Help us grow the fund [here](#).

RCI'S NEWEST WILLAM H. GREENBERG FELLOW



The William H. Greenberg Fellowship was established by Mrs. Phyllis Greenberg to honor her husband who was a graduate of Rutgers University, Class of 1944. Greenberg fellows are Rutgers

University graduate students who have completed their qualifying exams and whose Ph.D. research fits within the scope of the Rutgers Climate Institute. Thus, Greenberg Fellows receive substantial support as their academic endeavors are related to studying the causes of climate change, understanding its effects on our society and environment, and informing society about those impacts. The 2015 William H. Greenberg Fellowship was awarded to Arielle Catalano.

Arielle is pursuing a PhD in Atmospheric Science in the Department of Environmental Sciences. Her dissertation research is in the effects of climate change on the climatology of simulated extratropical cyclones and application of high-resolution global climate model. Arielle notes, "The William H. Greenberg Fellowship supports my educational and research efforts, and it is an honor to receive this funding. I am grateful for all that this fellowship provides, which includes the freedom to expand my volunteering efforts while delving into the heart of my research. The Greenberg Fellowship perfectly encompasses what is important to me as a scientist: understanding climate change impacts and improving public awareness of these consequences."

JAMES J. GALLAGHER 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, NGOs, local groups and academics focused on climate change preparedness; the Rutgers Climate Institute helps facilitate the NJ Climate Adaptation Alliance. The 2015

Gallagher Family Fellows are Lauren Murphy and Deanna Moran.

Lauren Murphy is a Ph.D student in the Department of Sociology. Her research analyzes and evaluates the effect of neighborhood environments on health behaviors and outcomes, with an overarching goal of recognizing space as a context for understanding health inequalities. Deanna Moran is a Masters candidate in the Bloustein School's dual Public Policy/Master of City and Regional

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Planning program. As part of her Gallagher summer fellowship, Deanna supported the enhancement of geospatial decision-support tools that facilitate climate change resilience at the state, local and community levels.

Lauren and Deanna's research has focused on climate change and public health mapping and preparing a climate and health profile report for New Jersey.

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



Lauren Murphy and Deanna Moran
2015 Gallagher Family Fellows

GEORGE H. COOK SCHOLAR: RAHUL D. GHOSAL

The George H. Cook Scholars Program is an independent research program for undergraduate students in the Rutgers School of Environmental and Biological Sciences (SEBS) under the mentorship of an approved advisor. The program is meant to act as an intensive capstone project for undergraduates seeking the challenge and experience of performing their own independent research. In 2015, Rahul Ghosal, was designated as a George H. Cook Scholar for successfully completing this program under the guidance of RCI Co-Directors **Robin Leichenko** (Geography) and **Tony Broccoli** (Environmental Sciences) and RCI affiliate **Cymie Payne** (Human Ecology).

A May 2015 Rutgers SEBS graduate, Rahul's research project, ***Climate Vulnerability and Small Island States: A Case Study of the Caribbean*** explored the synergistic impacts between climate change and globalization as

being especially problematic for these small developing nations that lack both the social capital and resources required for the degree of



Left to right: Anthony Broccoli, Robin Leichenko, Rahul Ghosal, and Cymie Payne

adaptation needed for their particular vulnerabilities. He analyzed vulnerability, in socio-economic terms, exploring the climate-sensitive sectors of tourism, agriculture, and fishing regionally and nationally and concluded that given the vulnerabilities of these three sectors, the need for adaptation is urgent in these states.

[Support 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.

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climatechange.rutgers.edu

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