From high above the tree canopy in Panama, Environmental Studies Certificate students, Dana Miller ’13 and Eskender McCoy ’14 study how tropical forests act as sinks by absorbing carbon from the atmosphere.
With increasing awareness of environmental degradation in the late 1980s, Princeton University’s leadership laid the foundation for a new interdisciplinary center for environmental research, education, and outreach at Princeton. Building upon the University’s disciplinary strengths in the physical sciences and leveraging a pre-existing undergraduate teaching program in environmental studies, a plan was put in place to position Princeton to make unique and important contributions.

Nearly a quarter of a century later, Princeton Environmental Institute (PEI) serves as a vital hub of activity on the Princeton campus by bringing together faculty and students from multiple academic disciplines, along with visitors and collaborating affiliates, to participate in a vibrant community of scholarship and learning on environmental topics.

PEI is globally recognized as a center of excellence in climate science, and also for ground-breaking work at the intersection of energy and the environment, and in the study of oceans and atmosphere, bio-complexity, environmental policy, and infectious disease. The Institute’s instructional programs combine classroom learning with opportunities for guided research and independent study. The establishment of the Grand Challenges Program—a relatively recent milestone in PEI’s history—has influenced a unique integration of PEI’s research and teaching goals by facilitating interdisciplinary collaborations among faculty while engaging students as participants in the research enterprise with transformational benefits for their growth and intellectual development.

The environmental issues that face humanity today are more pressing than ever. There is urgency for academic institutions to be bold in their leadership and steadfast in their quest for knowledge and solutions. This brochure provides an overview of PEI’s research and teaching programs. The content is not comprehensive, but rather designed to inspire curiosity about the work of faculty and students. We invite you to learn more about PEI’s many activities and programs by visiting us on campus and at our website: www.environment.princeton.edu.
PEI’s mission is to advance knowledge and to develop the next generation of leaders by providing outstanding academic programs and opportunities for advanced scholarship and cutting-edge research with an environmental focus.
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PEI is recognized internationally as a center of excellence for environmental scholarship. The Institute’s reputation reflects the preeminence of its faculty and the Institute’s leadership in developing interdisciplinary collaborations that promote advances in knowledge. More than 120 Princeton faculty from 29 academic departments participate actively in PEI’s research and teaching programs.

The establishment of the Thomas A. and Currie C. Barron Professorship in Humanities and the Environment and the recruitment of a prominent scholar to fill that role propels Princeton into a leadership position in the environmental humanities—a rapidly growing and important field of academic inquiry.
PEI draws strength from more than 120 members of the Princeton faculty, representing 29 academic disciplines, whose research and teaching focuses on the scientific, technical, policy, and human dimensions of environmental issues. The Institute functions as a central resource for faculty, post-docs, students, alumni, and others with interest in environmental topics.
IAN C. BOURG  Assistant Professor of Civil and Environmental Engineering and the Princeton Environmental Institute. Research Interests: Mass fluxes in clay media; geologic carbon sequestration; contaminants; isotope geochemistry.

MICHAEL A. CELIA  Theodora Shelton Pitney Professor of Environmental Studies; Professor of Civil and Environmental Engineering; Director, Princeton Environmental Institute. Research Interests: Carbon mitigation; groundwater hydrology; contaminant transport; multi-phase flow in porous media; geological storage of carbon dioxide.

LUC DEIKE  Assistant Professor of Mechanical and Aerospace Engineering and the Princeton Environmental Institute. Research Interests: Numerical and experimental studies of turbulent multi-phase flows in environmental systems; air-sea interaction; waves and breaking waves; drops and bubbles.

MARC FLEURBAEY  Robert E. Kuenne Professor in Economics and Humanistic Studies; Professor of Public Affairs and the University Center for Human Values; Co-Director, Climate Futures Initiative. Research Interests: Welfare economics; social choice theory; public economics, and climate policy.

BRYAN T. GRENFELL  Kathryn Briger and Sarah Fenton Professor of Ecology and Evolutionary Biology and Public Affairs; Director, Health Grand Challenge. Research Interests: Population biology; infectious diseases; phylodynamics.

LARS O. HEDIN  George M. Moffett Professor of Biology; Professor of Ecology and Evolutionary Biology and the Princeton Environmental Institute. Research Interests: Ecosystem analysis; cycling of nutrients and greenhouse trace gases; microbial processes; ecosystem structure and function.

MELISSA LANE  Class of 1943 Professor of Politics; Co-Director, Climate Futures Initiative. Research Interests: Environmental ethics; political theory and climate change; science and democracy; ethics of scientific communication.


SIMON A. LEVIN  James S. McDonnell Distinguished University Professor in Ecology and Evolutionary Biology; Director, Center for Biocomplexity. Research Interests: Ecosystem and biosphere-level patterns and processes; evolution of diversification; ecology of dispersal; strain structure in influenza; environmental economics.

FRANÇOIS MOREL  Albert G. Milbank Professor of Geosciences and International Affairs; Woodrow Wilson School and the Princeton Environmental Institute; Director, PEI-STEP Program. Research Interests: Science and policy of the atmosphere; climate change and impacts; role of non-governmental organizations; role of science and assessment in global change decision making; precautionary frameworks.

ROBERT NIXON  Thomas A. and Currie C. Barron Family Professor in Humanities and the Environment; Professor of English and the Princeton Environmental Institute. Research Interests: Global perspectives on environmental literature and film; environmental justice; the creative and political challenges of imagining environmental time.

MICHAEL OPPENHEIMER  Albert G. Milbank Professor of Geosciences and International Affairs; Woodrow Wilson School and the Princeton Environmental Institute; Director, PEI-STEP Program. Research Interests: Population biology and community ecology of plants; theoretical and mathematical ecology; global interactions among the biosphere, atmosphere, and hydrosphere; carbon mitigation.
AMILCAR PORPORATO
Professor of Civil and Environmental Engineering; Director, Water and the Environment Grand Challenge.
Research Interests: Near-wall turbulence; nonlinear analysis of hydrologic time series; stochastic soil moisture dynamics and water balance; soil-atmosphere interaction; and ecohydrology; complexity in the environment and sustainable use of soil and water resources.

LAURE RESPLANDY
Assistant Professor of Geosciences and the Princeton Environmental Institute. Research Interests: Influence of ocean circulation on marine biogeochemistry and ecosystems; changes in ocean oxygenation; climate and carbon cycle interactions; ocean sub-mesoscale; ocean and climate modeling.

DANIEL I. RUBENSTEIN
Class of 1877 Professor of Zoology; Professor of Ecology and Evolutionary Biology; Director, Program in Environmental Studies; Director, Development Grand Challenge. Research Interests: Conservation biology; behavioral and movement ecology; evolution of cooperation; sustainable development.

JOAN RUDEMAN
Senior Biologist, Princeton Environmental Institute. Research Interests: Cell and developmental biology; hormonally active pollutants; environmental contributions to cancer; links between water pollution and biodiversity loss.

JORGE L. SARMIENTO
George J. Magee Professor of Geosciences and Geological Engineering; Director, Cooperative Institute for Climate Science; Director, Southern Ocean Carbon and Climate Observations and Modeling. Research Interests: Oceanic cycles of climatically important chemicals such as carbon dioxide; study of ocean circulation using chemical tracers; climate and ecosystem modeling.

ROBERT H. SOCOLOW
Professor Emeritus of Mechanical and Aerospace Engineering; Co-Director, Carbon Mitigation Initiative; Co-Director, Climate Futures Initiative. Research Interests: Global energy systems; carbon dioxide capture and storage; nuclear power; energy efficiency; deployment of advanced technologies in developing countries.

GABRIEL VECCHI
Professor of Geosciences and the Princeton Environmental Institute; Director, Climate and Energy Grand Challenge. Research Interests: Climate science; extreme weather events; mechanisms of precipitation variability and change; ocean-atmosphere interaction; detection and attribution of carbon emissions.

BESS WARD
William J. Sinclair Professor of Geosciences and the Princeton Environmental Institute. Research Interests: Biogeochemistry; biological oceanography; microbiology; marine and global nitrogen cycle.

DAVID S. WILCOVE
Professor of Ecology and Evolutionary Biology and Public Affairs and the Princeton Environmental Institute. Research Interests: Conservation of biodiversity; agricultural impacts; invasive species; environmental policy.

XINNING ZHANG
Assistant Professor of Geosciences and the Princeton Environmental Institute. Research Interests: Microbial physiology and ecology; biogeochemical cycling; co-evolution of life and the geochemical environment; cellular metabolism and stable isotope records; molecular to global scale; trace elements and microbial metabolism; symbiosis.

PEI FACULTY SEMINAR SERIES
PEI hosts a monthly lecture series featuring Princeton faculty speaking on a wide range of topics in environmental science, technology, policy, and the humanities. The series is unique for its focus on faculty speakers and attracts more than 150 members of the University and local community as its audience. Recent talks have included:

- “Expert Judgment and Uncertainty Quantification for Sea Level Rise” –Michael Oppenheimer
- “CO2 Sequestration in Conventional and Unconventional Reservoirs” –Michael Celia
- “Spatio-temporal Dynamics of Childhood Infectious Disease: Predictability and the Impact of Vaccination” –Bryan Grenfell
- “The Iowa Farming Corridor: The Des Moines Prototype” –Mario Gandelasas
- “Lead Exposure and the Black-White Test Score Gap” –Janet Currie
- “Goldilocks in Byzantium—Did More Rain Help a Struggling Empire Survive the Arab-Islamic Conquest?” –John Haldon
- “The Bonds We Make and the Bonds We Break: A Chemist’s View of How Metals Drive Biology” –John Groves
- “The Deep Ocean Response to Global Warming: Seeking Insight from the Ice Ages” –Danny Sigman
- “Probabilistic Coastal Hazards Mapping for the U.S.” –Guy Nordenson
- “Competition, Hydraulic Damage, and the Universal Rules Regulating Plant Water Use” –Stephen Pacala
- “The Suffering of Wild Animals: Should We Do Anything About It, and if so, What?” –Peter Singer
- “Small-scale Fluid Dynamics with Environmental Implications” –Howard Stone
- "The Outsized Role of the Southern Ocean in the Regulation of Carbon, Heat, and Biological Productivity” –Jorge Sarmiento
- “Environmental Martyrdom and Defenders of the Forest” –Robert Nixon
- “Mathematical Ecology: A Century of Progress, and Challenges for the Next Century” –Simon Levin
- “The Complex Politics of International Climate Policy” –Robert Keohane
PEI’s environmental research activities involve faculty and researchers working across disciplinary lines. More than 40 Princeton faculty from 18 academic disciplines serve as principal investigators on PEI-based projects including research focused on global change; climate and energy; biogeochemical cycles; molecular geochemistry; biodiversity and conservation; water; disease ecology; environmental policy; and sustainable development.

Central to PEI’s research activities are several long-term projects with support from government, foundation, and industry sources. These projects are interdisciplinary endeavors and provide opportunities for faculty, researchers, and students to push the edge of discovery in environmental science, technical innovation, environmental policy, and human understanding.

The proximity of the Geophysical Fluid Dynamics Laboratory—one of two U.S. government climate modeling laboratories—at the nearby Forrestal campus provides advantages for collaborations and breakthroughs in the realm of climate science and for faculty research in related fields of inquiry.

The Carbon Mitigation Initiative (CMI) is a 20-year-long university-industry partnership that seeks solutions to the carbon and climate problem. The program involves over 70 faculty, research associates, and graduate students from the sciences, engineering, and policy fields. Research activities are aligned around projects in climate science, energy technology, outreach, and integration. CMI’s annual meeting engages over 100 participants in dialogue and presentations on innovations in climate research, technology, and policy.

The Southern Ocean Carbon and Climate Observations and Modeling Program (SOCCOM) is transforming research of the Southern Ocean and advancing understanding of its role in climate change. Led by Princeton University, this National Science Foundation-sponsored program involves 25 researchers at Princeton and 12 partner institutions. SOCCOM’s observations and
By deploying a new generation of robotic floats with cutting-edge sensors, we are building the first real-time, high-resolution, ocean health early-warning system and transforming research in this remote and previously inaccessible region.

— Jorge Sarmiento, Director, SoCCoM

The Cooperative Institute for Climate Science (CICS) is a collaboration involving Princeton University and the National Oceanographic and Atmospheric Administration’s Geophysical Fluid Dynamics Laboratory. Established in 2003, CICS engages more than 60 faculty, researchers, and students from Princeton to explore the science of climate change and earth systems modeling.

The Center for BioComplexity examines the mechanisms sustaining regional and global processes that underlie essential life-support systems. More than 20 Princeton faculty, postdoctoral research scholars, and graduate students contribute to the project along with collaborators at 13 other research institutions. The principal focus of this PEI-based center is to develop new mathematical and empirical approaches for describing mechanisms that determine biological complexity and predictable features of ecological organizations.

PEI’s research interests are distinguishable as endeavors involving faculty and research affiliates working across disciplinary lines.

Top: Global climate models produced by researchers affiliated with CICS simulate dynamic shifts of carbon concentrations occurring in the oceans and atmosphere and their impact over time.

Above: Researchers affiliated with SoCCoM are deploying a robotic observing system comprised of 200 autonomous floats with biogeochemical sensors providing nearly continuous coverage in time and horizontal space over the entirety of the Southern Ocean.
The Climate Futures Initiative (CFI) explores normative and positive approaches to the future of humankind as affected by climate change. The initiative features dialogue across disciplines and world regions with special attention to ethics and uncertainty. A component of CFI is the refinement of integrated assessment models to address ethical issues and to improve the treatment of inequalities and risks. The project involves faculty and postdoctoral research associates from architecture, economics, English, environmental science, engineering, geography, history, political science, politics, and philosophy.

Since Grand Challenges was launched in 2007, research and teaching activities have focused on environmental issues including climate and energy, health and infectious disease, sustainable development in Africa, water, and urban sustainability.

The Environmental Humanities Initiative PEI’s Environmental Humanities Initiative facilitates participation of faculty, research scholars, and students from the humanities in the study of environmental subjects. Research and programming activities are diverse with opportunities for advancing knowledge and teaching in the environmental humanities. The initiative fosters an inclusive dialogue that encourages insights and new perspectives in the examination of environmental topics.
An active visitors program—the Currie C. and Thomas A. Barron Visiting Professorship—has been instrumental in broadening the conversation at Princeton to include faculty from multiple departments. Since 2007, PEI has appointed 12 academic scholars as Visiting Barron Professors including joint appointments in PEI and the departments of anthropology, art and archaeology, English, religion, philosophy, African American Studies, and history, as well as with the School of Architecture, the University Center for Human Values, and the Lewis Center for the Arts. Barron Visiting Faculty are supported as innovators in their respective fields while making contributions to PEI’s research and teaching programs. The visitors have added important capacity for the undergraduate teaching program including courses focused on environmental literature, religion and ecology, environmental justice, climate ethics, environmental history, environmental art, multi-species relationships, and climate and architecture.

Scholarship in the environmental humanities is relevant not merely as an intellectual exercise but because of its potential to significantly impact real world applications involving climate communications, inter-governmental negotiations and diplomacy, environmental policy, regional/urban planning, and in the arts and entertainment. —Thomas A. Barron ’74

PEI’s Environmental Humanities Initiative facilitates broad participation of faculty, research scholars, and students from the humanities in the study of environmental subjects.

Above: Faculty and research associates affiliated with the Climate Futures Initiative meet to address climate risks and uncertainties.

Left: Programming in the environmental humanities includes seminars, lecture series, and conferences on climate ethics, religion and ecology, environmental justice, the arts, sustainability, and more.
A new undergraduate course—The Environmental Nexus—focuses on four intersecting environmental challenges that are expected to reach crisis level by mid-century: climate change, food scarcity, water resource management, and biodiversity loss. The course explores the scientific, policy, social, and ethical dimensions of the issues. By engaging students and faculty from multiple academic disciplines, the course aims to create the largest possible conversation within the University community about climate change and related environmental challenges.

Above: Professor Stephen Pacala delivers lecture on the Environmental Nexus.

PEI offers educational programs for undergraduate and graduate students as interdisciplinary courses of study.

UNDERGRADUATE PROGRAMS
PEI’s undergraduate programs enhance learning, knowledge, curiosity, and potential for contribution.

The Program in Environmental Studies (ENV) is educating a generation of Princeton students as leaders to address critical environmental challenges that they will face throughout their careers and in life. The Program offers a broad selection of courses including laboratory-based exploration, lectures, seminars, and task force styled classes with innovative fieldwork on campus, in the surrounding community, and abroad.

The Environmental Studies curriculum is designed to meet student interest across a range of topics and includes courses in the sciences, social sciences, humanities, and technical fields. Students wishing to demonstrate proficiency pursue a Certificate in Environmental Studies. The ENV Program is among the largest and most popular certificate programs at Princeton with students from 31 academic majors participating. Undergraduates earning the Environmental Studies Certificate pursue diverse opportunities upon graduation including careers in academia, government, business, and the non-profit sector.
Nearly 30 percent of undergraduate students participate with PEI during their four years at Princeton.

PEI offers a remarkably wide range of courses and programs that provide students with the knowledge and skills to understand and address the most important environmental problems of our time.

— Michael A. Celia, Theodora Shelton Pitney Professor of Environmental Studies
At the peak of their careers, today’s undergraduates will be confronted by social and environmental crises stemming from intersecting issues of climate change, biodiversity loss, shortages in the global food supply, and a scarcity of fresh water. Our most important role as educators is to prepare students to be leaders and innovators in addressing these challenges.

— Stephen Pacala, Frederick D. Petrie Professor of Ecology and Evolutionary Biology

**INTERNSHIPS**

PEI offers a wide range of environmentally focused internships in the summer months. As many as 100 Princeton undergraduates from 20 academic majors participate annually. These paid fellowships provide exposure to cutting edge research on environmental challenges including projects in climate science, energy technology, disease and global health, water resource management, environmental policy, and sustainable development. All assignments are mentored by Princeton faculty or a qualified professional host. More than 50 percent of the student experiences involve fieldwork overseas. As interns, students become part of an extended community of scholars, collaborating and working to address the critical environmental problems of today.

**INDEPENDENT FIELD RESEARCH**

In addition to the internship program, PEI provides resources to support undergraduate research pursued in connection with student independent work in the junior and senior years. Upwards of 70 awards are made annually to students in the Environmental Studies Program and to other undergraduates pursuing environmental topics in their research. The ENV Program and related opportunities are open to all students regardless of academic major.
PEI’s support has allowed me to design a thesis that weaves together my passions for the ocean, environmental science, and solution-oriented research. I am studying how groundwater pollution impacts near-shore coral reefs in Bermuda, and how the island’s fish populations may help mitigate these effects.

— Zoe Sims ’17, Environmental Studies Certificate Student and Smith-Newton Scholar
William Van Cleve ’17
Collected ancient reef samples in the Canadian Rockies to understand historical environmental conditions.

Helen Park ’18
Manipulated and optimized yeast species for use as biofuels in a Princeton University lab.

Chris Ferri ’18
Conducted particle simulations for small fusion reactors at Princeton Plasma Physics Lab.

Jane Urheim ’17
Researched how farming communities in California are meeting mitigation requirements to protect threatened and endangered species.

Vivan Yao ’17
Investigated impact of climate change on coral reef bleaching in Bermuda.

William Atkinson ’18
Researched the biodiversity of singing insects in the tropical forests of Costa Rica.

Nicole Neville ’18
Investigated hematite as a photoelectrocatalyst in water splitting to produce hydrogen for fuel cells.

Tianay Zeigler ’18
Optimized solar energy for use in daily appliances.

Angeline Jacques ’16
Examined the history of rivers and canals in São Paulo to improve environmental management.
PEI supports nearly 175 undergraduates annually as interns with Princeton faculty and on independent research projects connected to their senior theses. Since 2007, 1,590 students from 34 academic majors have pursued projects on environmental topics in 91 countries around the globe. Intern destinations are depicted in orange and have included placement in:

### Interns Around the Globe

- **Argentina**
- **Australia**
- **Bahamas**
- **Bangladesh**
- **Belgium**
- **Belize**
- **Benin**
- **Bermuda**
- **Bhutan**
- **Bolivia**
- **Botswana**
- **Brazil**
- **Brunei**
- **Burkina Faso**
- **Cambodia**
- **Canada**
- **Chile**
- **China**
- **Colombia**
- **Costa Rica**
- **Cuba**
- **Dominican Republic**
- **Ecuador**
- **Egypt**
- **El Salvador**
- **Ethiopia**
- **Finland**
- **France**
- **Germany**
- **Ghana**
- **Greece**
- **Grenada**
- **Guatemala**
- **Guyana**
- **Haiti**
- **Honduras**
- **Iceland**
- **Indonesia**
- **Ireland**
- **Israel**
- **Italy**
- **Japan**
- **Jordan**
- **Kazakhstan**
- **Kenya**
- **Lesotho**
- **Liberia**
- **Madagascar**
- **Malaysia**
- **Maldives**
- **Mexico**
- **Mongolia**
- **Mozambique**
- **Namibia**
- **Nepal**
- **Netherlands**
- **New Zealand**
- **Nicaragua**
- **Nigeria**
- **Norway**
- **Palau**
- **Panama**
- **Peru**
- **Philippines**
- **Poland**
- **Portugal**
- **Portugal**
- **Rwanda**
- **Sierra Leone**
- **Singapore**
- **South Africa**
- **South Korea**
- **Spain**
- **St. Lucia**
- **Sweden**
- **Switzerland**
- **Taiwan**
- **Tanzania**
- **Thailand**
- **Trinidad and Tobago**
- **Turkey**
- **Uganda**
- **United Kingdom**
- **United States**
- **of America**
- **Vietnam**
- **Zambia**
- **Zimbabwe**

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**Soumya Sudhaker ’18**
Forecasted small farmholders’ agricultural yields in Zambia using in-field, cloud-distributed sensing.

**Azwad Iqbal ’19**
Studied the role of large mammalian herbivores on the savannas in Kenya.

**Aubree Andres ’17**
Worked to improve the health of vulnerable populations in Cambodia.

**Alec Getraer ’19**
Analyzed the impact of fire and termites on savanna vegetation in Mozambique.

**Olivia Trase ’17**
Studied plant respiration in arctic birches in Sweden.

**Azwad Iqbal ’19**
Studied the role of large mammalian herbivores on the savannas in Kenya.

**Amy Xie ’17**
Assessed the impact of smart grids on electricity use in China.

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**Ethan Campbell ’16**
Sampled seawater to evaluate wintertime nitrogen cycling in the Southern Ocean.

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*PEI internships immerse students into a world they have never experienced before. Students learn how science is done and how it can be applied to solve real world problems. The experience is transformative at both a personal and intellectual level.*

— Daniel I. Rubenstein, Class of 1877 Professor of Zoology; Professor of Ecology and Evolutionary Biology; Director, Program in Environmental Studies
GRADUATE PROGRAMS
Graduate students are active participants in PEI’s research community. The Institute provides support for graduate research and hosts programs that encourage Ph.D. candidates to reach across disciplinary lines to address environmental problems.

PEI-STEP Program
The PEI-STEP Graduate Fellowship Program enables Ph.D. candidates in science, engineering, and other academic disciplines to participate in the Woodrow Wilson School’s program of Science, Technology, and Environmental Policy (STEP) while developing an environmental policy dimension of their doctoral theses. Admitted students are mentored by STEP faculty in addition to their departmental advisors. Many PEI-STEP graduates go on to hold leadership roles including positions in academia, government, industry, and the non-profit sector.

Princeton Energy and Climate Scholars
Ph.D. candidates from diverse disciplinary backgrounds participate as members of Princeton Energy and Climate Scholars—a fellowship group that encourages students to transcend the boundaries of their fields in considering environment and energy topics. Fellows meet monthly as a group and with members of the Faculty Advisory Board to share insights from their research. As many as 20 graduate students with research expertise ranging from energy security and energy technology to climate science and environmental policy participate annually.

Graduate Research Awards
PEI administers several competitive funds for graduate research including the Mary and Randall Hack ’69 Graduate Award for innovative research on water and water-related topics and the Walbridge Fund Graduate Award for research on climate science, climate policy, and energy projects.

Milestones
- PEI-STEP graduates include 58 alumni from 12 academic disciplines
- 90 Ph.D. candidates have participated as Princeton Energy and Climate Scholars

Current Highlights
- PEI hosts a weekly meeting involving faculty, graduate students, and practitioners from the local community for Conversations on Environment, Responsible Energy, and Life (CEREAL)
- PECS students authored and published a comprehensive report on fusion energy
- $80,000 is awarded annually to graduate students for research on water, climate, and energy topics

EDUCATING STUDENTS AS LEADERS:
Left to right: PEI-STEP Ford Fellow, Geeta Persaad, accepted a postdoctoral fellowship at Sanford University following graduation; Princeton Energy and Climate Scholar, Phillip Hannam, wrote his dissertation on China’s investment in the power sector of developing countries and now works at the World Bank.

Facing page: Professor Denise Mauzerall discusses measurement of methane leakage with Caleb Gum ’18 and postdoctoral fellow Stuart Riddick.
Graduate students are active participants in PEI’s research community. The Institute provides support for graduate research and hosts programs that encourage Ph.D. candidates to reach across disciplinary lines to address environmental problems.
**OUTREACH**

**PEI** hosts seminars, lectures, and conferences throughout the academic year on a broad range of environmental topics. Events are open to the public and draw an audience that includes members of the University and Princeton-area communities along with visitors and professional colleagues from peer institutions and collaborating partners in academic, industry, government, and the non-profit sectors. In addition, PEI organizes informal forums for dialogue and discussion. These gatherings serve an important function by bringing together members of the University community.

**Recent Programming**
- “Global Perspectives on Environmental Justice” lecture series
- “Multi-Species Salon” seminar series
- “After the Spectacular Image: Art, Architecture, and the Media of Climate Change” conference
- “What the Arts and Humanities are Good For” lecture series
- “The Art of Environmental Justice in an Expanded Field” symposium

**Service and Community Engagement**
PEI encourages faculty and students to pursue service in the local community and around the globe with connections to its mission as the interdisciplinary center of environmental research and teaching.

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**PEI OUTREACH ON CAMPUS AND AROUND THE WORLD**

*Top to bottom: Artemis Eyster ’19 leads a lesson on conservation for Kenyan schoolchildren; Princeton Energy and Climate Scholars Wei Peng, Janam Jhaveri, Cleo Chou, and Jane Baldwin discuss a fusion energy paper co-authored as a group project; PEI faculty Michael Oppenheimer presents at the Faculty Seminar Series on the challenges of quantifying sea level rise; His Holiness the Gyalwa Karmapa visits with PEI faculty and students to discuss environmental issues.*

*Facing page: Professor François Morel introduces the featured speaker for a PEI Faculty Seminar Series event.*
PEI serves the Princeton University community and beyond by bringing scientists, social scientists, humanists, engineers, and outside experts and leaders together to share research findings and engage in the study of important environmental issues. The Institute sponsors a wide variety of faculty and student projects that improve the quality of communities around the world.

— Michael Oppenheimer, Albert G. Milbank Professor of Geosciences and International Affairs and the Princeton Environmental Institute
PEI faculty are committed to the advancement of knowledge. In 2016, PEI Founding Director, Simon Levin, received the National Medal of Science—the nation’s highest scientific honor—for his research contributions to understanding biological complexity. Levin was honored by President Barack Obama at a ceremony at the White House.

PEI faculty serve as advisors to intergovernmental bodies, policy makers, industry leaders, and the public on a wide range of environmental issues. Michael Oppenheimer, shown here, is a long-time participant with the Intergovernmental Panel on Climate Change. He and several other Princeton faculty received the Nobel Peace Prize for their contributions to advancing knowledge of climate change and mitigating its impacts.

Working as a team, students affiliated with PEI and the Princeton Chapter of Engineers without Borders designed and installed a water pipeline, bringing fresh, clean water to a remote village in Peru. Similar student projects supported by PEI have advanced sustainability by improving infrastructure and resource management in communities in Kenya, Ethiopia, the Dominican Republic, and Ghana.

As the centerpiece of her PEI-supported Grand Challenges project, Professor Carolyn Rouse spearheaded construction of a school in Oshiyie, Ghana. The school’s curriculum focuses on materials science, agriculture, and engineering as solutions to the problems of local sustainability including water scarcity, soil erosion, and waste management. The project has inspired undergraduate and graduate research projects.
Ph.D. students in the Princeton Energy and Climate Scholars program collaborate to plan and implement an annual service activity. For the past two years, the group has mentored local high school students on energy and environment topics with the goal of fostering student curiosity about careers in science and engineering.

In Kenya, PEI summer interns provide educational enrichment to elementary and grade school students in afterschool Conservation Clubs. Lesson plans and educational activities, designed and taught by Princeton students, educate Kenyan students and their families about resource conservation and land management. The Conservation Clubs are an extension of a PEI research project that is restoring habitat and sustainable livelihoods in the African savanna.

PEI faculty and students actively contribute to Campus as Lab projects aimed at sustainability improvements on campus. The Campus as Lab concept originated within the Environmental Studies Program as a multi-year study of water quality in Carnegie Lake. Subsequent projects involved the installation of monitoring devices on top of Butler College and the tracking of performance indicators for the University’s first green roof installation. PEI summer interns, shown here, are sampling water quality in the newly restored Washington Road stream corridor—a principal route for storm water drainage away from campus.
LEADERSHIP

ADMINISTRATION

Michael A. Celia | Director
Katharine B. Hackett | Executive Director
Daniel I. Rubenstein | Director, Program in Environmental Studies
Emily Ahmetaj | Internship Program Manager
Jane Chapman | Assistant to the Executive Director
Rajesri D. Chokshi | Computing Support Specialist
Stacey T. Christian | Manager, Finance & Administration
Caitlin M. Daley | Administrative Assistant
Roberta M. Hotinski | Project Manager, SOCCOM
Zachary Kaado | Grants Manager
Morgan Kelly | Manager, Communications
Amber Lee | Undergraduate/Graduate Program Manager
Hans Marcelino | Web Developer
Laura A. Matecha | Department Office Support
Heidi E. Mihalik | Financial Assistant
Holly Welles | CMI Program Manager

PEI EXECUTIVE COMMITTEE

Elie Bou-Zeid | Associate Professor of Civil and Environmental Engineering
Emily A. Carter | Dean, School of Engineering and Applied Science; Gerhard R. Andlinger Professor in Energy and the Environment; Professor of Mechanical and Aerospace Engineering
Michael A. Celia (Chair) | Theodora Shelton Pitney Professor of Environmental Studies; Professor of Civil and Environmental Engineering; Director, Princeton Environmental Institute
William A. Gleason | Professor of English; Chair, Department of English
John T. Groves | Hugh Stott Taylor Chair of Chemistry; Professor of Chemistry
Lars O. Hedin | George M. Moffett Professor of Biology; Professor of Ecology and Evolutionary Biology and the Princeton Environmental Institute; Chair, Department of Ecology and Evolutionary Biology
Melissa Lane | Class of 1943 Professor of Politics; Director, University Center for Human Values
Simon A. Levin | James S. McDonnell Distinguished University Professor in Ecology and Evolutionary Biology
Lynn Loo | Theodora D. ’78 and William H. Walton III ’74 Professor in Engineering; Professor of Chemical and Biological Engineering; Director, Andlinger Center for Energy and the Environment
Stephen W. Pacala | Frederick D. Petrie Professor in Ecology and Evolutionary Biology
Cecilia E. Rouse | Dean, Woodrow Wilson School; Lawrence and Shirley Katzman and Lewis and Anna Ernst Professor in the Economics of Education; Professor of Economics and Public Affairs, Woodrow Wilson School.
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Princeton Environmental Institute
Princeton University | Guyot Hall
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PRINCETON STUDENTS AND FACULTY PARTICIPATING IN PEI ACTIVITIES

Banner left to right: Zachariah Smart ’18 researches the effects of El Niño on the reproductive biology of the Greater Ani; PEI STEP Fellow Amanda Savagian records bird vocalizations at field site in central Panama; Sindiso Nyathi ’16 presents at Discovery Day poster event; students in Disease Ecology, Economics, and Policy course; PEI’s headquarters in Guyot Hall; Michelle Greenfield ’18 working in the lab.

Back cover: A selection of PEI seminar, event, and course titles.