



High Meadows
Environmental
Institute

SEPTEMBER 10, 2021 · ONLINE VIA ZOOM

Summer of Learning Symposium



Summer of Learning Symposium

High Meadows Environmental Institute (HMEI) welcomes faculty and friends to the 14th Annual Summer of Learning Symposium – the culminating event for students who participated in HMEI’s Environmental Internship Program this past summer. HMEI’s internship program provides a unique opportunity for students to complement their academic interests with hands-on work experiences and is designed to enrich students’ perspectives and preparation as leaders.

This year’s symposium celebrates the 127 Princeton students from 23 academic departments who worked with University faculty, researchers from other scientific enterprises, government agencies, and not-for-profit organizations on projects focused on pressing environmental challenges. Held virtually this year, the symposium provides an interactive forum for students to recognize and celebrate each other’s work and contributions, exchange perspectives, develop a shared mission, and consider practical, achievable paths toward a healthier and more sustainable planet.

We applaud the determination and dedication of the 2021 interns. Several students were able to work in the field, abiding by changing public health protocols, while others necessarily pursued their internships as remotely mentored assignments. In all cases and regardless of circumstances, students contributed meaningfully to research and emerging scholarship, including projects focused on climate change, biodiversity loss and conservation, alternative energy, environmental policy, urban resilience, water, and human health.

We extend our congratulations to the students and our appreciation to those faculty, colleagues, friends and community partners who made this year’s internship program and the Summer of Learning Symposium possible.

Schedule of Presentations

9:05 AM – 10:30 AM	Innovation and a New Energy Future (pp. 3-4)
9:10 AM – 10:30 AM	Earth History and Environmental Science (pp. 5-6)
9:15 AM – 10:40 AM	Biodiversity and Conservation (pp. 7-8)
9:25 AM – 10:40 AM	The Environment and Health (pp. 9-10)
9:35 AM – 10:50 AM	Food Systems and Agriculture (pp. 11-12)
9:40 AM – 10:50 AM	Biogeochemistry of the Ocean (pp. 13-14)
12:35 PM – 2:00 PM	Water and the Environment (pp. 15-16)
12:45 PM – 2:25 PM	Transitioning to a New Energy Future (pp. 17-19)
12:55 PM – 2:20 PM	Urban Environments and Sustainability (pp. 20-21)
1:00 PM – 2:15 PM	Water: Quality and Resilience (pp. 22-23)
1:10 PM – 2:45 PM	Plant Ecology and Ecosystem Health (pp. 24-25)
1:20 PM – 2:25 PM	Oceans and Atmospheres (pp. 26-27)
3:20 PM – 4:50 PM	Environmental Policy (pp. 28-30)

Innovation and a New Energy Future

9:05 AM – 10:30 AM • [CLICK HERE TO JOIN](#)

MODERATOR: BRUCE KOEL, PROFESSOR OF CHEMICAL AND BIOLOGICAL ENGINEERING

Plasma Diagnostics for Plasma-Assisted Catalysis

BRYANT HALL '22, PHYSICS

MENTORS: BRUCE KOEL, PROFESSOR OF CHEMICAL AND BIOLOGICAL ENGINEERING; SHOTA ABE, POSTDOCTORAL RESEARCH ASSOCIATE, CHEMICAL AND BIOLOGICAL ENGINEERING

Discovering Patterns and Genes Involved in Fe/S Chaperone Synthesis

MINA TAKEGAMI '23, MOLECULAR BIOLOGY

MENTORS: JOSÉ AVALOS, ASSISTANT PROFESSOR OF CHEMICAL AND BIOLOGICAL ENGINEERING AND THE ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; JEREMY CORTEZ, PH.D. CANDIDATE, MOLECULAR BIOLOGY

SuperPipe Particle Image Velocimetry Calibration

BRYAN ALFARO '24, MECHANICAL AND AEROSPACE ENGINEERING

DEVDIGVIJAY SINGH '24, MECHANICAL AND AEROSPACE ENGINEERING

MENTORS: ALEXANDER SMITS, EUGENE HIGGINS PROFESSOR OF MECHANICAL AND AEROSPACE ENGINEERING, EMERITUS; LIUYANG DING, POSTDOCTORAL RESEARCH ASSOCIATE, MECHANICAL AND AEROSPACE ENGINEERING

Efficient Propulsion of Tunabot

GAVIN COTTER '23, MECHANICAL AND AEROSPACE ENGINEERING

ALEC PIRONE '24, CIVIL AND ENVIRONMENTAL ENGINEERING

MENTORS: ALEXANDER SMITS, EUGENE HIGGINS PROFESSOR OF MECHANICAL AND AEROSPACE ENGINEERING, EMERITUS; LIUYANG DING, POSTDOCTORAL RESEARCH ASSOCIATE, MECHANICAL AND AEROSPACE ENGINEERING

An Investigation of Alkali-Activated Cement

BRIDGET DENZER '23, CHEMICAL AND BIOLOGICAL ENGINEERING

MENTORS: CLAIRE WHITE, ASSOCIATE PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING AND THE ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; CHRISTINE PU, PH.D. CANDIDATE, CIVIL AND ENVIRONMENTAL ENGINEERING

Crack Identification in Alkali-Activated Slag Cements

CALEB LUNSFORD '23, CIVIL AND ENVIRONMENTAL ENGINEERING

MENTORS: CLAIRE WHITE, ASSOCIATE PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING AND THE ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; YIGE ZHANG, POSTDOCTORAL RESEARCH ASSOCIATE, CIVIL AND ENVIRONMENTAL ENGINEERING

Case Studies of Yeast8 as a Genome-scale Model and Its Proof-of-Concept Applications

IPSITA TINGI '23, CHEMICAL AND BIOLOGICAL ENGINEERING

KEVIN YEUNG '23, CHEMICAL AND BIOLOGICAL ENGINEERING

MENTORS: JOSÉ AVALOS, ASSISTANT PROFESSOR OF CHEMICAL AND BIOLOGICAL ENGINEERING AND THE ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; JOSÉ MONTAÑO LÓPEZ, PH.D. CANDIDATE, CHEMICAL AND BIOLOGICAL ENGINEERING

Earth History and Environmental Science

9:10 AM – 10:30 AM • [CLICK HERE TO JOIN](#)

MODERATOR: ADAM MALOOF, PROFESSOR OF GEOSCIENCES

Nutrient Consumption in the Southern Ocean During the Last 1 Million Years

ALEX MOOSBRUGGER '24, CIVIL AND ENVIRONMENTAL ENGINEERING

MENTORS: DANIEL SIGMAN, DUSENBURY PROFESSOR OF GEOLOGICAL AND GEOPHYSICAL SCIENCES, PROFESSOR OF GEOSCIENCES; JESSE FARMER, POSTDOCTORAL RESEARCH ASSOCIATE, GEOSCIENCES

Using Machine Learning to Analyze Earth's First Reefs

INDU PANIGRAHI '23, COMPUTER SCIENCE

EVAN WANG '24, COMPUTER SCIENCE

JASMINE ZHANG '24, COMPUTER SCIENCE

MENTORS: ADAM MALOOF, PROFESSOR OF GEOSCIENCES; RYAN MANZUK, PH.D. CANDIDATE, GEOSCIENCES

Application of New Machine Learning Tools for the Study of Ooids and Their Ancient Tropical Marine Environments

ANUBHAV AGARWAL '23, COMPUTER SCIENCE

ANNA KROKHINE '24, MATHEMATICS

HUGH SHIELDS '24, CIVIL AND ENVIRONMENTAL ENGINEERING

MENTORS: ADAM MALOOF, PROFESSOR OF GEOSCIENCES; BOLTON HOWES, PH.D. CANDIDATE, GEOSCIENCES

North Atlantic Ocean Nutrient-Consumption Changes During Climate Events of the Last Glacial Period

MICHAEL KIM '23, ECOLOGY AND EVOLUTIONARY BIOLOGY

MENTORS: DANIEL SIGMAN, DUSENBURY PROFESSOR OF GEOLOGICAL AND GEOPHYSICAL SCIENCES, PROFESSOR OF GEOSCIENCES; JESSE FARMER, POSTDOCTORAL RESEARCH ASSOCIATE, GEOSCIENCES

The History of Eastern Tropical North Pacific Oxygen Since the Last Ice Age

MADELEINE LAUSTED '24, ECOLOGY AND EVOLUTIONARY BIOLOGY

MENTORS: DANIEL SIGMAN, DUSENBURY PROFESSOR OF GEOLOGICAL AND GEOPHYSICAL SCIENCES, PROFESSOR OF GEOSCIENCES; MATTHEW LACERRA, PH.D. CANDIDATE, GEOSCIENCES

Investigation of Nitrogen Sources Contributing to Sapropel Formation in the Eastern Mediterranean

MADDIE ESPOSITO '23, CHEMISTRY

MENTORS: DANIEL SIGMAN, DUSENBURY PROFESSOR OF GEOLOGICAL AND GEOPHYSICAL SCIENCES, PROFESSOR OF GEOSCIENCES; ELLEN AI, PH.D CANDIDATE, GEOSCIENCES

Biodiversity and Conservation

9:15 AM – 10:40 AM • [CLICK HERE TO JOIN](#)

MODERATOR: DANIEL RUBENSTEIN, CLASS OF 1877 PROFESSOR OF ZOOLOGY,
PROFESSOR OF ECOLOGY AND EVOLUTIONARY BIOLOGY

Impact of Grazing Regimes on Rangeland Quality and Wildlife and Livestock Use

MAX GOTTS '24, UNDECLARED

ANNIKA HSI '23, ECOLOGY AND EVOLUTIONARY BIOLOGY

MENTOR: DANIEL RUBENSTEIN, CLASS OF 1877 PROFESSOR OF ZOOLOGY,
PROFESSOR OF ECOLOGY AND EVOLUTIONARY BIOLOGY

Climate Change, Plant-Pollinator Interactions and Hummingbird Color Vision in the Rocky Mountains

DARCY CHANG '23, ECOLOGY AND EVOLUTIONARY BIOLOGY

JULIAN GOTTFRIED '24, ECOLOGY AND EVOLUTIONARY BIOLOGY

MENTOR: MARY CASWELL STODDARD, ASSOCIATE PROFESSOR OF ECOLOGY AND
EVOLUTIONARY BIOLOGY

Urban Biodiversity and Conservation at NYC Parks

JOSEPH HIMMELFARB '24, ECOLOGY AND EVOLUTIONARY BIOLOGY

EVA JORDAN '24, CIVIL AND ENVIRONMENTAL ENGINEERING

JAHIR MORRIS '24, ECOLOGY AND EVOLUTIONARY BIOLOGY

MENTORS: GEORGINA CULLMAN, ECOLOGIST, NEW YORK CITY DEPARTMENT
OF PARKS AND RECREATION; CLARA HOLMES, PLANT ECOLOGIST, NEW YORK
CITY DEPARTMENT OF PARKS AND RECREATION; JAMIE ONG, ENVIRONMENTAL
PROTECTION PROJECT MANAGER, NEW YORK CITY DEPARTMENT OF PARKS AND
RECREATION; HEATHER PLATT, ECOLOGICAL RESTORATION PROJECT ASSISTANT,
NEW YORK CITY DEPARTMENT OF PARKS AND RECREATION; DESIREE YANES,
VEGETATION MONITORING TECHNIC, NEW YORK CITY DEPARTMENT OF PARKS
AND RECREATION

'Go to the Ant Thou Sluggard, Consider Her Ways and Be Wise': Buffel Grass Seed Preferences, Predation and Dispersal in Kenya Home Range by Messor Harvester Ants

ALEX HEINE '24, ECOLOGY AND EVOLUTIONARY BIOLOGY

MENTOR: DINO MARTINS, EXECUTIVE DIRECTOR, MPALA RESEARCH CENTRE, AND VISITING RESEARCH SCHOLAR, ECOLOGY AND EVOLUTIONARY BIOLOGY

Estimating the Recovery Potential of Threatened Species

SOPHIA RICHTER '23, ECOLOGY AND EVOLUTIONARY BIOLOGY

MENTORS: DAVID WILCOVE, PROFESSOR OF ECOLOGY AND EVOLUTIONARY BIOLOGY AND PUBLIC AFFAIRS AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; REBECCA SENIOR, POSTDOCTORAL RESEARCH ASSOCIATE, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS AND THE CENTER FOR POLICY RESEARCH ON ENERGY AND THE ENVIRONMENT

Northern Kenya Conservation Clubs

LUIA CHANTLER EDMOND '22, ANTHROPOLOGY

YUN HALLOWELL '23, ANTHROPOLOGY

MENTORS: DANIEL RUBENSTEIN, CLASS OF 1877 PROFESSOR OF ZOOLOGY, PROFESSOR OF ECOLOGY AND EVOLUTIONARY BIOLOGY

The Environment and Health

9:25 AM – 10:40 AM • [CLICK HERE TO JOIN](#)

MODERATOR: RAMANAN LAXMINARAYAN, SENIOR RESEARCH SCHOLAR, HIGH MEADOWS ENVIRONMENTAL INSTITUTE

Mitigating Neonatal Mortality: Estimates of Vaccine-Avertable Neonatal Sepsis and Antimicrobial Resistance

CHIRAG KUMAR '23, CHEMISTRY

MENTOR: RAMANAN LAXMINARAYAN, SENIOR RESEARCH SCHOLAR, HIGH MEADOWS ENVIRONMENTAL INSTITUTE

Tradeoffs in Individual/Collective Behavior in Response to COVID-19 and in Anticipation of Climate Change

SLOAN HUEBNER '23, SOCIOLOGY

KENZO LACUARTA '22, ECOLOGY AND EVOLUTIONARY BIOLOGY

JONATHAN LIN '24, ECONOMICS

MENTORS: SIMON LEVIN, JAMES S. McDONNELL DISTINGUISHED UNIVERSITY PROFESSOR IN ECOLOGY AND EVOLUTIONARY BIOLOGY; ELKE WEBER, GERHARD R. ANDLINGER PROFESSOR IN ENERGY AND THE ENVIRONMENT, PROFESSOR OF PSYCHOLOGY AND PUBLIC AFFAIRS; SARA CONSTANTINO, POSTDOCTORAL RESEARCH ASSOCIATE, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS AND THE PROGRAM IN SCIENCE, TECHNOLOGY, AND ENVIRONMENTAL POLICY, AND LECTURER IN THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; ELISABETH KRUEGER, POSTDOCTORAL RESEARCH ASSOCIATE AND LECTURER, HIGH MEADOWS ENVIRONMENTAL INSTITUTE

Air Quality Modeling and Environmental Justice

DARIN AVILA '23, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING

KATIE McLAUGHLIN '23, COMPUTER SCIENCE

MENTOR: JULIAN MARSHALL, PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING, UNIVERSITY OF WASHINGTON

Effect of COVID-19 Lockdowns on Air Quality in Delhi, India

SRIJA PATCHA '23, COMPUTER SCIENCE

MENTORS: DENISE MAUZERALL, PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING AND PUBLIC AND INTERNATIONAL AFFAIRS; DISHA SHARMA, POSTDOCTORAL RESEARCH ASSOCIATE, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS AND THE CENTER FOR POLICY RESEARCH ON ENERGY AND THE ENVIRONMENT

Mucormycosis Burden Survey

JOSHUA KU '22, COMPUTER SCIENCE

MENTORS: RAMANAN LAXMINARAYAN, SENIOR RESEARCH SCHOLAR, HIGH MEADOWS ENVIRONMENTAL INSTITUTE; RUCHITA BALASUBRAMANIAN '19, CENTER FOR DISEASE DYNAMICS, ECONOMICS AND POLICY

Predicting Exposure of Children to Environmental Pollutants Using Their Deciduous Teeth

RACHEL KULCHAR '23, CHEMISTRY

MENTOR: SATISH MYNENI, PROFESSOR OF GEOSCIENCES

Food Systems and Agriculture

9:35 AM – 10:50 AM • [CLICK HERE TO JOIN](#)

MODERATOR: SIGRID ADRIAENSSENS, ASSOCIATE PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING

Growing in the Garden State: Understanding Factors that Impact Food Production

LILIANNA GITTOES '24, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING

COLTON LOFTUS '23, COMPUTER SCIENCE

LAURA A. MARSH '23, ECOLOGY AND EVOLUTIONARY BIOLOGY

CARMINA RANGEL-PACHECO '23, SOCIOLOGY

MENTORS: DANIEL RUBENSTEIN, CLASS OF 1877 PROFESSOR OF ZOOLOGY, PROFESSOR OF ECOLOGY AND EVOLUTIONARY BIOLOGY; GINA TALT, FOOD SYSTEMS PROJECT SPECIALIST, OFFICE OF SUSTAINABILITY

Can Soil Nutrient Availability Limit Future Food Production?

KALEB AREDA '24, CHEMICAL AND BIOLOGICAL ENGINEERING

MENTOR: SATISH MYNENI, PROFESSOR OF GEOSCIENCES

Aquaculture and Marine Food Systems

ELENA REMEZ '23, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

MENTOR: ROD FUJITA, LEAD SENIOR SCIENTIST, OCEANS EMERGING ISSUES, ENVIRONMENTAL DEFENSE FUND

Business Development and Marketing for the SSF Hub

ASHLEY TENG '23, COMPUTER SCIENCE

MENTOR: PAM RUITER, SENIOR MANAGER, SSF INITIATIVES, ENVIRONMENTAL DEFENSE FUND

Architectural, Structural and Urban Strategies for Urban Farming

TIFFANY AGYARKO '23, CIVIL AND ENVIRONMENTAL ENGINEERING

ZOEY ZHANG '23, CIVIL AND ENVIRONMENTAL ENGINEERING

MENTOR: SIGRID ADRIAENSSENS, ASSOCIATE PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING

Writing with the National Center for Frontier Communities

NOA GREENSPAN '23, ENGLISH

MENTOR: BENJAMIN RASMUSSEN, PROGRAM MANAGER, NATIONAL CENTER FOR FRONTIER COMMUNITIES

Biogeochemistry of the Ocean

9:40 AM – 10:50 AM • [CLICK HERE TO JOIN](#)

MODERATOR: BESS WARD, WILLIAM J. SINCLAIR PROFESSOR OF GEOSCIENCES AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE

Designing Probes for a nosZ Microarray

YAAKOV ZINBERG '23, MOLECULAR BIOLOGY

MENTORS: BESS WARD, WILLIAM J. SINCLAIR PROFESSOR OF GEOSCIENCES AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; NAOMI INTRATOR, PH.D. CANDIDATE, GEOSCIENCES

Remote Sources of Oceanic Heat Delivery to the Ross Sea Continental Shelf

RACHEL PANG '23, PHYSICS

MENTORS: SARAH GILLE, PROFESSOR, SCRIPPS INSTITUTION OF OCEANOGRAPHY; LYNNE TALLEY, PROFESSOR, SCRIPPS INSTITUTION OF OCEANOGRAPHY; CHANNING PREND, PH.D. CANDIDATE, SCRIPPS INSTITUTION OF OCEANOGRAPHY

Zinc Chemistry in Oceans

DEMETRA YANCOPOULOS '22, CIVIL AND ENVIRONMENTAL ENGINEERING

MENTORS: SATISH MYNENI, PROFESSOR OF GEOSCIENCES; JIANSHU DUAN, PH.D. CANDIDATE, GEOSCIENCES; KEWEI ZHAO, PH.D. CANDIDATE, CHEMISTRY

Potential Predictability of the Spring Bloom in the Southern Ocean Sea-Ice Zone

BEN BUCHOVECKY '23, GEOSCIENCES

MENTORS: JORGE SARMIENTO, GEORGE J. MAGEE PROFESSOR OF GEOSCIENCE AND GEOLOGICAL ENGINEERING, EMERITUS, PROFESSOR OF GEOSCIENCES, EMERITUS; ALEXANDER HAUMANN, ASSOCIATE RESEARCH SCHOLAR, ATMOSPHERIC AND OCEANIC SCIENCES; GRAEME MACGILCHRIST, POSTDOCTORAL RESEARCH ASSOCIATE, ATMOSPHERIC AND OCEANIC SCIENCES; MITCHELL BUSHUK, VISITING RESEARCH COLLABORATOR, ATMOSPHERIC AND OCEANIC SCIENCES

Drivers of Opposing Seasonal Cycles of Mixed Layer Oxygen in the Southern Ocean Sea-Ice Zone

ALINA CHEN '24, COMPUTER SCIENCE

MENTORS: JORGE SARMIENTO, GEORGE J. MAGEE PROFESSOR OF GEOSCIENCE AND GEOLOGICAL ENGINEERING, EMERITUS, PROFESSOR OF GEOSCIENCES, EMERITUS; ALEXANDER HAUMANN, ASSOCIATE RESEARCH SCHOLAR, ATMOSPHERIC AND OCEANIC SCIENCES; GRAEME MACGILCHRIST, POSTDOCTORAL RESEARCH ASSOCIATE, ATMOSPHERIC AND OCEANIC SCIENCES

The Role of Parasites in Controlling Phytoplankton Community Composition and Ocean Productivity

ADIRA SMIRNOV '23, ECOLOGY AND EVOLUTIONARY BIOLOGY

MENTORS: BESS WARD, WILLIAM J. SINCLAIR PROFESSOR OF GEOSCIENCES AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; AMAL JAYAKUMAR, SENIOR PROFESSIONAL SPECIALIST, GEOSCIENCES; JENNA LEE, PH.D. CANDIDATE, GEOSCIENCES

Characterizing the Diurnal Pattern of Gross Photosynthesis in Coral and Algae Species

HANNE BORSTLAP '22, CIVIL AND ENVIRONMENTAL ENGINEERING

MENTOR: YVONNE SAWALL, ASSISTANT SCIENTIST, BERMUDA INSTITUTE OF OCEAN SCIENCES

Water and the Environment

12:35 PM – 2:00 PM • [CLICK HERE TO JOIN](#)

MODERATOR: HOWARD STONE, DONALD R. DIXON '69 AND ELIZABETH W. DIXON PROFESSOR OF MECHANICAL AND AEROSPACE ENGINEERING

Spray Generation by Bubbles Bursting

SREETA BASU '24, MATHEMATICS

MENTORS: LUC DEIKE, ASSISTANT PROFESSOR OF MECHANICAL AND AEROSPACE ENGINEERING AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; DANIEL SHAW, PH.D. CANDIDATE, MECHANICAL AND AEROSPACE ENGINEERING

The Impact of Contaminant Spatial Configuration on Bacterial Chemotaxis

YAXIN DUAN '23, CHEMICAL AND BIOLOGICAL ENGINEERING

MENTORS: SUJIT DATTA, ASSISTANT PROFESSOR OF CHEMICAL AND BIOLOGICAL ENGINEERING; JENNA OTT, PH.D. CANDIDATE, CHEMICAL AND BIOLOGICAL ENGINEERING

Modeling Organic Contaminants at the Air-Water Interface

DANIELA MARTINEZ '24, CHEMICAL AND BIOLOGICAL ENGINEERING

RYAN NEAPOLE '23, CIVIL AND ENVIRONMENTAL ENGINEERING

MORGAN WIESE '23, CIVIL AND ENVIRONMENTAL ENGINEERING

MENTORS: IAN BOURG, ASSISTANT PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; JENNIFER WILLEMSSEN, POSTDOCTORAL RESEARCH ASSOCIATE, CIVIL AND ENVIRONMENTAL ENGINEERING

Biofilm Droplet

JUAN PABLO ALVARADO '23, CIVIL AND ENVIRONMENTAL ENGINEERING

MENTORS: IAN BOURG, ASSISTANT PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; AVERY AGLES, PH.D. CANDIDATE, CHEMICAL AND BIOLOGICAL ENGINEERING

Interactions Between Soil Formation, Landscape Evolution, and Hydrologic Cycle

HAYDEN BURT '22, MECHANICAL AND AEROSPACE ENGINEERING

MENTOR: AMILCARE PORPORATO, THOMAS J. WU '94 PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING, PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE

Modeling Hydrogel Swelling in a Cohesive Granular Medium

CAROLINE ADKINS '22, CIVIL AND ENVIRONMENTAL ENGINEERING

MENTORS: SUJIT DATTA, ASSISTANT PROFESSOR OF CHEMICAL AND BIOLOGICAL ENGINEERING; JEAN-FRANÇOIS LOUF, ASSISTANT PROFESSOR IN CHEMICAL ENGINEERING, AUBURN UNIVERSITY

Engineering Microfluidic Devices to Increase the Degradation Rate of Organic Contaminants Under Flow

KATHARINE CONTRERAS-GODFRIED '22, CIVIL AND ENVIRONMENTAL ENGINEERING

FRANCESCA DiMARE '23, CHEMISTRY

MENTORS: HOWARD STONE, DONALD R. DIXON '69 AND ELIZABETH W. DIXON PROFESSOR OF MECHANICAL AND AEROSPACE ENGINEERING; SAMANTHA McBRIDE, POSTDOCTORAL RESEARCH ASSOCIATE AND PRESIDENTIAL POSTDOCTORAL RESEARCH FELLOW, MECHANICAL AND AEROSPACE ENGINEERING

Transitioning to a New Energy Future

12:45 PM – 2:25 PM • [CLICK HERE TO JOIN](#)

MODERATOR: ROBERT SOCOLOW, PROFESSOR OF MECHANICAL AND AEROSPACE ENGINEERING, EMERITUS

Plasma-Materials Interactions for Fusion Energy

ZIHAN LIN '23, CHEMICAL AND BIOLOGICAL ENGINEERING

MENTORS: BRUCE KOEL, PROFESSOR OF CHEMICAL AND BIOLOGICAL ENGINEERING; SHOTA ABE, POSTDOCTORAL RESEARCH ASSOCIATE, CHEMICAL AND BIOLOGICAL ENGINEERING

A Structured Risk Assessment of Net-Zero Emissions Pathways

JOSEPH FENG '22, MECHANICAL AND AEROSPACE ENGINEERING

AARON LEUNG '23, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING

MENTORS: CHRIS GREIG, THEODORA D. '78 & WILLIAM H. WALTON III '74 SENIOR RESEARCH SCIENTIST, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; RICHARD MOSS, VISITING RESEARCH COLLABORATOR, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT

Macro Energy System Modeling Methodologies and Applications in India for Decarbonization Pathways

ANEESHA MANOCHA '23, ELECTRICAL AND COMPUTER ENGINEERING

MENTORS: JESSE JENKINS, ASSISTANT PROFESSOR OF MECHANICAL AND AEROSPACE ENGINEERING AND THE ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; RAHUL TONGIA, SENIOR FELLOW, CENTRE FOR SOCIAL AND ECONOMIC PROGRESS; NEHA PATANKAR, ASSOCIATE RESEARCH SCHOLAR, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT

Corporate Climates

CALIF CHEN '23, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

TANVI NIBHANUPUDI '23, ECONOMICS

MENTORS: ELKE WEBER, GERHARD R. ANDLINGER PROFESSOR IN ENERGY AND THE ENVIRONMENT, PROFESSOR OF PSYCHOLOGY AND PUBLIC AFFAIRS; JOHANNA MATT-NAVARRO, RESEARCH LAB MANAGER, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; SARA CONSTANTINO, POSTDOCTORAL RESEARCH ASSOCIATE, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS AND THE PROGRAM IN SCIENCE, TECHNOLOGY, AND ENVIRONMENTAL POLICY, AND LECTURER IN THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; JORDANA COMPOSTO, PH.D. CANDIDATE, PSYCHOLOGY; POOJA VIJAY RAMAMURTHI, PH.D. CANDIDATE, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS; MELISSA TIER, PH.D. CANDIDATE, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

Contextualizing Social Norms

NICABEC CASIDO '23, NEUROSCIENCE

SIERRA GONZALES '22, PSYCHOLOGY

MENTORS: ELKE WEBER, GERHARD R. ANDLINGER PROFESSOR IN ENERGY AND THE ENVIRONMENT, PROFESSOR OF PSYCHOLOGY AND PUBLIC AFFAIRS; JOHANNA MATT-NAVARRO, RESEARCH LAB MANAGER, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; GREGG SPARKMAN, POSTDOCTORAL RESEARCH ASSOCIATE, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT

Community Attitudes to Large-scale Renewable Energy Deployment in Net-Zero America Scenarios

SULLIVAN MEYER '24, CIVIL AND ENVIRONMENTAL ENGINEERING

HARVIN SANGHA '23, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING

MENTORS: ELKE WEBER, GERHARD R. ANDLINGER PROFESSOR IN ENERGY AND THE ENVIRONMENT, PROFESSOR OF PSYCHOLOGY AND PUBLIC AFFAIRS; JOHANNA MATT-NAVARRO, RESEARCH LAB MANAGER, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; SARA CONSTANTINO, POSTDOCTORAL RESEARCH ASSOCIATE, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS AND THE PROGRAM IN SCIENCE, TECHNOLOGY, AND ENVIRONMENTAL POLICY, AND LECTURER IN THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; ELISABETH KRUEGER, POSTDOCTORAL RESEARCH ASSOCIATE AND LECTURER, HIGH MEADOWS ENVIRONMENTAL INSTITUTE; GREGG SPARKMAN, POSTDOCTORAL RESEARCH ASSOCIATE, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; JORDANA COMPOSTO, PH.D. CANDIDATE, PSYCHOLOGY

Wind and Solar Technology for the WeatherPower Tool

EMILIO CANO RENTERIA '23, CIVIL AND ENVIRONMENTAL ENGINEERING

MENTORS: ERIC LARSON, SENIOR RESEARCH ENGINEER, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; JENNIFER BRADY, MANAGER, ANALYSIS AND PRODUCTION, CLIMATE CENTRAL

Applications of the Net-Zero America Project

MADELEINE BURNS '24, CIVIL AND ENVIRONMENTAL ENGINEERING

MENTORS: ERIC LARSON, SENIOR RESEARCH ENGINEER, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; SHARI BELL, REGIONAL DIRECTOR, CLIMATE CENTRAL; JENNIFER BRADY, MANAGER, ANALYSIS AND PRODUCTION, CLIMATE CENTRAL

Urban Environments and Sustainability

12:55 PM – 2:20 PM • [CLICK HERE TO JOIN](#)

MODERATOR: ANU RAMASWAMI, SANJAY SWANI '87 PROFESSOR OF INDIA STUDIES, PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE

US Architects Declare

MALACHI BENJAMIN '23, ARCHITECTURE

XUEFEI GAO '22, ARCHITECTURE

ANDREW MATOS '23, ENGLISH

MENTORS: PAUL LEWIS, PROFESSOR OF ARCHITECTURE; ALEXANDRA [XAN] LILLEHEI, FELLOW, US ARCHITECTS DECLARE

Urban Omnibus: Publication Work at an Architectural Non-Profit

LOIS WU '23, ANTHROPOLOGY

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Extreme Model Railroad and Contemporary Architecture Museum Project

EMILY MURRAY '23, ASTROPHYSICAL SCIENCES

CAM MY NGUYEN '23, ARCHITECTURE

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Religious Environments in Roman Britain

NORA KREIKE-MARTIN '24, CLASSICS

HEATHER MADSEN '24, ECOLOGY AND EVOLUTIONARY BIOLOGY

CHARLOTTE ROOT '22, ART & ARCHAEOLOGY

CATHLEEN WENG '24, UNDECLARED

MENTOR: JANET KAY, ASSOCIATE RESEARCH SCHOLAR, ART AND ARCHAEOLOGY

Finer-scale Agricultural Burning Mapping in Punjab, India

JUSTIN CAI '24, CIVIL AND ENVIRONMENTAL ENGINEERING

MENTORS: ANU RAMASWAMI, SANJAY SWANI '87 PROFESSOR OF INDIA STUDIES, PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; KIRTI DAS, ASSOCIATE PROFESSIONAL SPECIALIST, CIVIL AND ENVIRONMENTAL ENGINEERING; JIANYU GU, ASSOCIATE PROFESSIONAL SPECIALIST, CIVIL AND ENVIRONMENTAL ENGINEERING

How Happy Are People in Different Cities in the US and India?

KAYLA MEMIS '22, ANTHROPOLOGY

MENTORS: ANU RAMASWAMI, SANJAY SWANI '87 PROFESSOR OF INDIA STUDIES, PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; KIRTI DAS, ASSOCIATE PROFESSIONAL SPECIALIST, CIVIL AND ENVIRONMENTAL ENGINEERING; JIANYU GU, ASSOCIATE PROFESSIONAL SPECIALIST, CIVIL AND ENVIRONMENTAL ENGINEERING

Water: Quality and Resilience

1:00 PM – 2:15 PM • [CLICK HERE TO JOIN](#)

MODERATOR: IAN BOURG, ASSISTANT PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE

Data-Intensive Analysis of the Climate-Water Crisis in India

TEJAS GUPTA '24, COMPUTER SCIENCE

GRACE LIU '23, COMPUTER SCIENCE

AIDAN MATTHEWS '24, CIVIL AND ENVIRONMENTAL ENGINEERING

MENTOR: RAM FISHMAN, SENIOR LECTURER (WITH TENURE), PUBLIC POLICY, TEL AVIV UNIVERSITY

Site Analysis of New Jersey Stream Health

NATASHA MONTIEL '22, CIVIL AND ENVIRONMENTAL ENGINEERING

MENTORS: STEVE TUORTO, DIRECTOR OF SCIENCE & STEWARDSHIP, THE WATERSHED INSTITUTE; ERIN STRETZ, ASSISTANT DIRECTOR OF SCIENCE & STEWARDSHIP, THE WATERSHED INSTITUTE

Oil Spill Remediation by Enhanced Turbulence

MANALI BADWE '24, MECHANICAL AND AEROSPACE ENGINEERING

ROSY MONAGHAN '24, MECHANICAL AND AEROSPACE ENGINEERING

MENTORS: ALEXANDER SMITS, EUGENE HIGGINS PROFESSOR OF MECHANICAL AND AEROSPACE ENGINEERING, EMERITUS; LIUYANG DING, POSTDOCTORAL RESEARCH ASSOCIATE, MECHANICAL AND AEROSPACE ENGINEERING

Simulating Organic Contaminants at the Water-Air Interface

AMÉLIE LEMAY '24, CIVIL AND ENVIRONMENTAL ENGINEERING

ETHAN SONTARP '24, GEOSCIENCES

MENTORS: IAN BOURG, ASSISTANT PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; JENNIFER WILLEMSSEN, POSTDOCTORAL RESEARCH ASSOCIATE, CIVIL AND ENVIRONMENTAL ENGINEERING

Data Mining Methods and Research on Environmental Literature

BRADLEY MOOREHEAD '23, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING

NATHAN SIMA '23, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING

MENTORS: Z. JASON REN, PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING AND THE ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; JUNJIE ZHU, ASSOCIATE RESEARCH SCHOLAR, CIVIL AND ENVIRONMENTAL ENGINEERING

Plant Ecology and Ecosystem Health

1:10 PM – 2:45 PM • [CLICK HERE TO JOIN](#)

MODERATOR: JONATHAN LEVIN, PROFESSOR OF ECOLOGY AND EVOLUTIONARY BIOLOGY

Reserve and Forest Stewardship Internship

SAM VASEN '23, ECOLOGY AND EVOLUTIONARY BIOLOGY

KEVIN ZHANG '24, UNDECLARED

MENTORS: STEVE TUORTO, DIRECTOR OF SCIENCE & STEWARDSHIP, THE WATERSHED INSTITUTE; ERIN STRETZ, ASSISTANT DIRECTOR OF SCIENCE & STEWARDSHIP, THE WATERSHED INSTITUTE; ALLISON JACKSON, STEWARDSHIP COORDINATOR, THE WATERSHED INSTITUTE

Fighting Fear with Fire: Educating Rural Communities About the Benefits of Prescribed Burning

MEGAN LEINENBACH '23, ECOLOGY AND EVOLUTIONARY BIOLOGY

MENTOR: TIM BOWDEN, OWNER, BOWDEN BROTHERS LLC

Million Tree Project

ASHLEY CAO '23, CIVIL AND ENVIRONMENTAL ENGINEERING

MATTHEW PICKERING '24, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

MENTORS: ZHENXI "ZEEZEE" ZHONG, EXECUTIVE DIRECTOR, SHANGHAI ROOTS & SHOOTS; XIAN LIU, MILLION TREE PROJECT DIRECTOR, SHANGHAI ROOTS & SHOOTS; HANLONG CHEN, MILLION TREE PROJECT COORDINATOR, SHANGHAI ROOTS & SHOOTS; KAI WANG, MILLION TREE PROJECT REGIONAL MANAGER, SHANGHAI ROOTS & SHOOTS

Ka Honua Momona International

MARISSA MEJIA '23, PSYCHOLOGY

JOYCE MO '24, CHEMICAL AND BIOLOGICAL ENGINEERING

MENTOR: TIANI PUA KAWAAUHU-COOK, EXECUTIVE DIRECTOR, KA HONUA MOMONA

Effects of Climate Change on Plant Pathogen Evolution and Epidemiology

KEENAN DUGGAL '23, MOLECULAR BIOLOGY

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ZACHARY SAHIN '23, ENGLISH

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The Oceanic Wakes of Offshore Wind Turbines

SONIKA BAGCHI '23, PHYSICS

MENTORS: LUC DEIKE, ASSISTANT PROFESSOR OF MECHANICAL AND AEROSPACE ENGINEERING AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; JIARONG WU, PH.D. CANDIDATE, MECHANICAL AND AEROSPACE ENGINEERING

A Summer at the USDA Forest Service Southern Research Station Assessing the Impact of Hurricane Michael

JESSE BREWER '22, MOLECULAR BIOLOGY

MENTOR: JENNIFER MOORE MYERS, COMMUNICATIONS TEAM LEADER, USDA SOUTHERN RESEARCH STATION

Oceans and Atmospheres

1:20 PM – 2:25 PM • [CLICK HERE TO JOIN](#)

MODERATOR: GABRIEL VECCHI, DIRECTOR, HIGH MEADOWS ENVIRONMENTAL INSTITUTE, PROFESSOR OF GEOSCIENCES AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE

Real-Time Forecasting System for Hurricane Hazards and Risk

KEVIN CHEN '24, COMPUTER SCIENCE

ANANYA GROVER '24, COMPUTER SCIENCE

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Submesoscale Variability in the Eastern Pacific from Underway Observations

RYAN EUSEBI '22, COMPUTER SCIENCE

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Ice Hardness Inversion in 1D with Physics-Informed Neural Networks (PINN)

ELIJAH POMERANTZ '22, PHYSICS

MENTOR: CHING-YAO LAI, ASSISTANT PROFESSOR OF GEOSCIENCES

Coastal Zone Management and National Estuarine Research Reserve System

SAM CRYAN '22, GEOSCIENCES

MENTOR: ERICA SEIDEN, PROGRAM MANAGER, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Environmental Policy

3:20 PM – 4:50 PM • [CLICK HERE TO JOIN](#)

MODERATOR: ELKE WEBER, GERHARD R. ANDLINGER PROFESSOR IN ENERGY AND THE ENVIRONMENT, PROFESSOR OF PSYCHOLOGY AND PUBLIC AFFAIRS

Climate Policy Advocacy: With Equity in Research, Policy and Practice

MAYU TAKEUCHI '23, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

MENTORS: KATELYN ROEDNER SUTTER, SENIOR MANAGER, U.S. CLIMATE, ENVIRONMENTAL DEFENSE FUND; KATIE SCHNEER, HIGH MEADOWS FELLOW, ENVIRONMENTAL DEFENSE FUND

Local Damages from Hurricanes: Application of Machine Learning with Satellite Data

KATIE KOLODNER '24, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING

MENTORS: MICHAEL OPPENHEIMER, ALBERT G. MILBANK PROFESSOR OF GEOSCIENCES AND INTERNATIONAL AFFAIRS AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; RACHEL YOUNG, PH.D. CANDIDATE, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

Anomalous Weather and Business Activity

MANYU BANERJEE '23, ECONOMICS

MENTORS: MICHAEL OPPENHEIMER, ALBERT G. MILBANK PROFESSOR OF GEOSCIENCES AND INTERNATIONAL AFFAIRS AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; ELMIRA KALHOR, POSTDOCTORAL RESEARCH ASSOCIATE, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

Modeling Farmer Decision-Making Frameworks: Impacts on Adaptation and Policy Outcomes in Nepal

KARENA YAN '23, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING

MENTORS: MICHAEL OPPENHEIMER, ALBERT G. MILBANK PROFESSOR OF GEOSCIENCES AND INTERNATIONAL AFFAIRS AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; NICOLAS CHOQUETTE-LEVY., PH.D. CANDIDATE, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

Inequality, Economic Precarity, and Disruptive Events

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Supporting the Case for Medium and Heavy Duty Vehicle Electrification

ANIKA MASKARA '23, COMPUTER SCIENCE

MENTOR: JAMES FINE, DIRECTOR AND LEAD SENIOR ECONOMIST, RESEARCH AND ANALYTICS, ENVIRONMENTAL DEFENSE FUND

Federal Energy Regulatory Commission, Office of Energy Market Regulation

JACK ANDERSON '23, ECONOMICS

MENTORS: DAVID ORTIZ, DEPUTY DIRECTOR, OFFICE OF ELECTRIC RELIABILITY, FEDERAL ENERGY REGULATORY COMMISSION; NICOLE BUSINELLI '13, ENERGY INDUSTRY ANALYST, FEDERAL ENERGY REGULATORY COMMISSION

Data Science Applications for Electric Reliability

KENNY HUANG '23, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING

MENTOR: DAVID ORTIZ, DEPUTY DIRECTOR, OFFICE OF ELECTRIC RELIABILITY,
FEDERAL ENERGY REGULATORY COMMISSION

New York Lawyers for the Public Interest

TANÉYAH JOLLY '24, SOCIOLOGY

MENTOR: HAYLEY GORENBERG, LEGAL DIRECTOR, NEW YORK LAWYERS FOR THE
PUBLIC INTEREST

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