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May 16, 2023

hen I look at where V society stands on tackling climate change, I see both enormous urgency and hope. From unprecedented wildfires to enormous water challenges during a long-term drought, climate change is already impacting our health and economy. At the same time, the technology and innovation we need to solve the problem are at hand and starting to scale up. The scientific understanding is crystal clear - the 2020s are the pivotal decade for climate action. We have a rapidly closing window to avoid dangerous climate impacts and chart a sustainable and prosperous future. And there are many reasons for optimism and hope.

We launched the Wilkes Center for Climate Science & Policy in August 2022 with the goal of driving transformative science and innovation around practical solutions to climate change. The Wilkes Center has ambitious goals around climate science and solutions research, entrepreneurship, education, and outreach. It has been an exciting and busy first year.

Utah is a unique and important place for launching a worldclass climate center. Utah is particularly vulnerable to climate change impacts but simultaneously brings a pragmatic, solutions-oriented approach and stands to benefit enormously from the transition to a clean energy economy. The Wilkes Center strives to fuse cutting-edge science with innovation, respond nimbly to critical and urgent societal needs,

and catalyze and elevate

THE 2020'S ARE THE PIVOTAL DECADE FOR CLIMATE ACTION.

the incredible scholars and students across disciplines working on climate change at the University of Utah.

One of the major highlights of this past year was the formation of the Great Salt Lake Strike Team. We co-convened this strike team along with the partners at the U, Utah State University, and state agencies at the request of Utah legislators. The strike team was a multidisciplinary collaboration between the research universities and state agencies to serve the people of Utah. This team synthesized the best available science to provide answers to two key questions about the shrinking Great Salt Lake: how did we get here and what can we do about it? Our findings were stark but hopeful. The strike team provided a science and policy assessment

to the legislature during the 2023 session. The legislature ultimately funded over \$500 million in water conservation and infrastructure and made significant investments to start refilling the lake. Other major highlights in this first year include the development of climate tools around climate risks, heavy investment in student and faculty support around climate research, a 24-hour climate solutions "hackathon" on urban heat solutions, and the launch of the \$1.5 million international Wilkes

Center Climate Prize at the U to find the boldest and most impactful climate solutions.

In the year ahead, we look forward to expanding our programs and impact, bringing world-class scientists and leaders to the U, and supporting transformative work around climate forecasting, climate impacts, and climate solutions.

We are committed and racing full-speed ahead on working to help solve one of the defining challenges facing humanity in the 21st century.

Sincerely,

William Anderegg Director

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MISSION

The Wilkes Center for Climate Science & Policy at the University of Utah strives to provide transformative, integrative, and cutting-edge science, education, entrepreneurship, and practical solutions to tackle climate change in Utah, the United States, and around the Earth. Researchers affiliated with the Wilkes Center are working on the defining issues of our age.



UNIVERSITY OF UTAH LEADERSHIP

William Anderegg, *Director* Assoc. Professor, School of Biological Sciences

John C. Lin, *Assoc. Director* Professor, Department of Atmospheric Sciences

Tim Collins, *Team Member* Professor, Department of Geography, Environmental & Sustainability Studies Program

Sara Grineski, *Team Member* Professor of Sociology, Environmental & Sustainability Studies Program.

Gannet Hallar, *Team Member* Professor, Department of Atmospheric Sciences, Director, Storm Peak Laboratory

STAFF

Kyla Welch, Programs Manager

Ross Chambless, Community Engagement Manager

EXTERNAL ADVISORY COMMITTEE

David Cumming VP, Board of Directors of Powdr Corp; Cumming Foundation

Tim Hawkes

General Counsel at Great Salt Lake Brine Shrimp Cooperative, Inc., Senior Fellow at the College of Science

Amy Luers Global Director, Sustainability Science - Strategy & Solutions at Microsoft

Stephen Pacala

Frederick D. Petrie Professor in Ecology & Evolutionary Biology, Princeton University

James Randerson

Ralph J. and Carol M. Cicerone Professor of Earth System Science at UC Irvine

Rebecca Shaw

Chief Scientist and Senior Vice President, Global Science, World Wildlife Fund Inc.

Clay Wilkes

Founder of the Wilkes Center for Climate Science & Policy, Founder of the Red Crow Foundation

FOUNDERS

Clay and Marie Wilkes

Founders Clay and Marie Wilkes have worked on humanitarian projects for decades, leading education and economic initiatives in Salt Lake City, Peru, and Nepal. The Wilkes Center for Climate Science and Policy was created in 2022 as a result of their desire to urgently address threats created by climate change.

LAUNCHING FOR RAPID IMPACT (FY 2022/23)



12 faculty projects awarded seed grants 5 climate-focused postdoctoral researchers funded 29 funded graduate students

climate modeling & forecasting tools published

\$40,000 total amount awarded for The Wilkes Center Student Innovation Prize



\$346,293 Faculty Research Funds

140 Climate Hackathon student participants

\$16K additional Student Prizes 204 students at event with Protect Our Winters

58 undergraduate Wilkes Scholars 77 total international climate prize submissions

49 students doing climate-focused SRI research

RESEARCH LEADERSHIP

TRANSFORMATIVE, INTEGRATIVE, CUTTING-EDGE

Wilkes Center Faculty Leadership are accomplishing groundbreaking research to help policymakers make informed decisions for addressing climate change.





WILLIAM ANDEREGG,

Wilkes Center Director and Associate Professor of Biology, was recognized this past year as one of the most "highly-cited" researchers in the areas of plant hydrology and forest stress. He is also a 2023 recipient of the National Science Foundation's Waterman Award. Together with other forest-focused scientists across the world he published one study that models long-term risks to forests across the U.S. Another report co-authored by Anderegg provides a roadmap for which nature-based climate solutions could be most effective in reducing greenhouse gas emissions or removing carbon dioxide from the atmosphere and storing it, such as planting forests, restoring wetlands or climate-smart agriculture.

JOHN LIN, Associate Director of the Wilkes Center, Professor in the Department of Atmospheric Sciences, co-authored a study this past year with NOAA that found emissions from a single magnesium refinery operated by US Magnesium may be responsible for a significant amount of the fine particles that form the dense brown clouds that hang over Salt Lake City in winter. The findings resulted in the legislature and Governor Cox taking actions to address the pollution source. Lin continues to research the exchange of greenhouse gasses and pollutants between the land surface and the atmosphere at the Land-Atmosphere Interactions Research group.



GANNET HALLAR, Professor in the Department of

Atmospheric Sciences, leads the research team at the U's remote, mountaintop Storm Peak Laboratory in Colorado recently published findings that human-cased emissions, likely from nearby power plants, are releasing aerosols that form clouds - a finding that could help increase the accuracy of climate forecasting models. Hallar, along with John Lin, also co-authored studies that measured how wildfires are degrading summer air quality across the West and that wildfire plumes are reaching greater heights and releasing more aerosols as wildfires intensify.

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SARA GRINESKI, Professor of Sociology and Environmental & Sustainability Studies, recently lead-authored a series of collaborative papers examining extreme weather events, environmental injustices, and mental health inequities. Findings highlight the need to improve infrastructure systems to withstand extreme weather in a manner that provides equitable protection and to prioritize mental health support for socially marginalized residents after extreme weather events.



TIMOTHY COLLINS, Professor of Geography and

Environmental & Sustainability Studies, has coauthored numerous studies that document how racial/ethnic minority and low socioeconomic status populations in the U.S. experience disparate exposures, adverse experiences, and health impacts from climate and weather hazards such as air pollution, flooding, and extreme heat. Recent projects have focused on the socially disparate impacts of large climate-related disasters, including Hurricane Harvey and Winter Storm Uri. Collins is a member of the USEPA Board of Scientific Counselors.

CLIMATE FORECASTING TOOLS

The Wilkes Center website is home to 4 visualization tools illustrating the results of studies undertaken by Wilkes Center faculty.



Global Forest Climate Risk Modeling





Utah Greenhouse Gas Monitoring Tool





High-resolution US Forest Risks Modeling Tool





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US Forest Carbon Futures Modeling Tool



Research Leadership

AWARDED FACULTY SEED GRANTS



PI: Katharine Walter Co-PI: Kimberly Hanson, **Kevin Perry**

Mapping current and future risk of Valley fever across Utah

PI: Luisa Whittaker-Brooks Co-PI: Feng Liu

Decarbonizing the aviation industry: Plasma activated sites for CH₄ and CO₂ capture and conversion into C5+ aviation fuels

PI: Danielle Endres

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Climate Justice Coalitions: Seeking Policy Change at UN **Climate Change Conferences**

PI: Richard Medina Co-PI: Emily Nicolosi, **Simon Brewer**

Tracking Climate Change Solutions Disinformation on Facebook: A Systematic Analysis

PI: Kerry Kelly Co-PI: Kevin Perry

Understanding the oxidative potential and bioavailability of dust from the Great Salt Lake

PI: Talia Karasov

The impact of climate change associated drought on quaking aspen (Populus tremuloides) defense against pathogens

PI: John Pearson Co-PI: Neng Wan

Inhaling Danger: The impact of air pollution on perioperative outcomes

PI: Summer Rupper Co-PI: Andrew Linke Co-PI: Sarah Yeo Risks, Benefits, and Costs of Hydropower in a Changing

Climate

PI: Ashutosh Tiwari

Accelerated carbonation of Ca- and Mg-bearing mineral oxides for CO₂ removal from the atmosphere

PI: Simon Brewer Co-PI: Courtenay Strong

Application of deep learning to downscale future precipitation in complex terrain for climate research

PI: Leif Anderson **Co-PI: Michael Thorne** Co-PI: Tonie M. van Dam

The future of glaciers using a novel, multi-disciplinary approach

PI: Brenda Bowen

Co-PI: Cari Johnson Climate science and policy associated with Lake Powell reservoir sediments in Utah



Research

The Wilkes Center postdoctoral scholar program is creating the next generation



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of leaders in climate science and policy. We endeavor to attract spectacular recent PhDs in sciences that address studies with relevance to the Wilkes Center climate research and climate policy goals, ranging from data-informed climate forecasting; wildfire and climate extremes such as heat waves, droughts, and floods; climate impacts on local communities, economies, ecosystems, and human health; and the development of tools to mitigate, adapt, and manage climate impacts.



Post-doc researcher **Kai Wilmot** is modeling wildfire plume rise and the subsequent atmospheric dispersion of smoke at local to continental scales for the purposes of climatological understanding and air quality forecasting. He is pursuing development of a 5-day smoke forecast for the western U.S. that employs trajectory modeling, physics-based wildfire plume rise forecasting, satellite-based estimation of wildfire emissions, and approaches to wildfire spread that leverage meteorological information across a range of scales.



Meng Liu received his PhD, studying forest dynamics (biomass change and fire activities) with remote sensing data. His research interests are using remote sensing tools to capture forest disturbances like fire and drought and anaylyzing forest carbon change. He is working on forest sensitivity change in response to drought stress under the warming climate.



German Vargas is a plant ecophysiologist focusing on developing an ecological forecast framework to predict forest ecosystem responses to drought stress. He has studied the ecological factors shaping drought tolerance traits in tropical plants and linked these traits to ecosystem-level responses to extreme drought.



Chao Wu received his PhDs in 2019. His research aims to better understand the interaction and feedback between disturbances, vegetation, and climate. He is currently contributing to the effort to quantify the potential for and risks facing forests as natural climate solutions at both regional and global scales.



Linging Yang is interested in climate change impacts on ecosystems across the world. She is working towards quantifying the climate mitigation potential of forest carbon offset as nature-based climate solutions and exploring the global forests' response to a changing climate. She combines satellite, ground, and cutting-edge computer models to better understand the future of ecosystems in a changing climate.

The Wilkes Center has offered multiple additional postdoctoral fellowship positions to begin the summer of 2023.

GREAT SALT LAKE **STRIKE** TEAM

In the summer of 2022, with the Great Salt Lake at a record low lake. They wanted to understand the consequences of lowering water levels and the possible benefits of various policy actions they could take. The Wilkes Center and the Kem C. Gardner Institute, along with key partners at Utah State University and state agencies convened a

THE POLICY ASSESSMENT REPORT

Understanding that decisions to bring more water to Great Salt Lake would need to be based on the best available science and data, the Strike Team sought to provide data and answers to key questions needed for saving the lake. The effort aimed to be impartial, data-driven, and rapid

10 to best support the needs of state decision-makers while not advocating for specific policy positions.

> The Strike Team released its policy assessment report on February 8, 2023, to provide data and answers to key questions needed for saving Great Salt Lake.

Follow the QR code to read the report online.



PARTNERS







Notes:
1. The analysis is based on a high greenhouse gas emission scenario referred to as Shared Socioeconomic Pathway (SSP) 585. Lower emission scenarios tend to produce similar changes but at smaller magnitudes.
2. There are 30 global climate models included in this analysis, developed by leading modeling centers in countries including the United States. The simulations were coordinated by the Coupled Model Intercomparison Project Phase 6 (CMIP6) and were analyzed by Courtenay Strong at the University of Utah. were coordinated by the Coupled model intercomparison rroject risks to control and were analyzed by Courtenay strong at the University of Utah. S Great Salt Lake is not explicitly represented at the grid spacings used in these global climate models. The analysis uses the grid point nearest the central latitude and longitude of the lake in each model. Source: Data from CMIP6; Analysis by Courtenay Strong. 2022



Policy Engagement



The Great Salt Lake Strike Team offered six specific recommendations for gubernatorial and legislative support for the lake in the coming year:

1. Leverage Wet Years

The current wet year offers a significant opportunity to make progress on the lake elevation. Do not miss this opportunity.

2. Set a lake elevation range goal

Adopt a lake elevation target level range based on analysis prepared by the Utah Division of Forestry, Fire, and State Lands. A range in the 4,198-4,205-feet elevation level will maximize benefits across many factors. Meeting this goal requires policymakers to focus on inflows that both fill and maintain targeted elevation ranges.

3. Invest in conservation

Conservation to increase the inflows to, or decrease withdrawals from, Great Salt Lake should be implemented to stop the decline in lake levels and initiate restoration.

4. Invest in water monitoring and modeling

Additional investment in water intelligence will allow the state to be more responsive and effective to challenges. The Strike Team suggests a more than doubling of current state investments in accurate and timely measurements and forecasts that will help inform and guide state decisions.



The Utah Department of Natural Resources is currently developing the Great Salt Lake Basin Integrated Plan in partnership with water users, universities, environmental groups and government agencies. When finished, it will provide actions to ensure a resilient water supply for all water users in the basin, including Great Salt Lake. Resources should be allocated to the effort and all should be encouraged to participate.

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6. Request in-depth analyses on policy options

The governor and legislature can direct the Great Salt Lake Strike Team to further model specific policy options and parameters to identify the most water-efficient, cost-effective, and high-return options.



THE 2023 WILKES CLIMATE SUMMIT

The inaugural Wilkes Climate Summit, May 16-17, 2023, brings together Utah's leading policymakers, and nationally-recognized scientists, foundations, and innovators to discuss the most promising and promising solutions solutions for climate change.

DAY 1: Frontiers in Climate Solutions

We focus the first day on how different sectors of the economy, government, and society can accelerate climate solutions. Focused breakout panel sessions include:

- Businesses & utilities
- Federal-level action
- Non-governmental organizations
- Entrepreneurs and startups
- State-level action
- Philanthropy

The first day also includes presentations by the finalists for the Wilkes Center Climate Prize at the University of Utah.

DAY 2: Science and Innovation Needs to Accelerate Solutions

We focus the second day on current innovations and the ways science can inform policy decisions.

- Health Sciences
- Nature-based Climate Solutions
- The Future of Water
- Modeling/forecasting of complex systems and the Arctic
- Wildfire
- Climate impacts on vulnerable communities

The second day also featured the Student Innovation Finalists and student poster presentations.



SCIENCE & INNOVATION TO ACCELERATE CLIMATE SOLUTIONS

Learn more here





NATIONAL & INTERNATIONAL COLLABORATIONS

Wilkes Center faculty have continued to collaborate with national and international research partners on climate change research projects.



In March, 2023, John Lin presented to a group of 18 International Visitors to Utah from across the African continent on a U.S. State Departmentorganized program titled "The Climate Crisis: Working Together for Future Generations."

On March 8, 2023, William Anderegg attended a White House forum on campus and community-scale climate change solutions conference. Anderegg shared ideas on how other climate centers can provide information services to states, municipalities, and indigenous communities; and serve as proving grounds for new climate solutions and strategies to bring them into the innovation ecosystem. In April 2023, Anderegg partnered with other climate researchers in submitting recommendations to the U.S. Greenhouse Gas Monitoring and Measurement Interagency Working Group.





Wilkes Center faculty leaders have consulted with nationally-elected leaders and water and land mangers in other states on their research findings.

In September 2022, Associate Director John Lin joined former South Carolina congressman Bob Inglis and Utah Congressman John Curtis, who founded the Conservative Climate Caucus, for a "field trip" to Rock Canyon Trail to discuss various solutions to climate change. The event was jointly organized by republicEn, Citizens' Climate Lobby, and the Wilkes Center to bring together Utah constituents, climate scientists and conservationists to discuss the impacts of and opportunities with climate change.

UNDERGRADUATE WILKES SCHOLARS PROGRAM

The Wilkes Scholars Program (WSP) enables outstanding undergraduate students to explore pressing climate challenges facing our state, region, and planet through transformative research. Wilkes Scholars work with a faculty mentor to advance research related to the mission of the Wilkes Center for Climate Science and Policy—catalyzing innovative science and solutions to address climate change.

The Wilkes Center awarded Wilkes Scholar fellowship grants to 24 students in Fall 2022/Spring 2023.

WSP student projects ranged from "Quantifying urban temperature and land-use changes in the Salt Lake Valley from 1998-2019" to "A geospatial and climatic analysis of the rise and fall of the Aksumite Empire on the Tigray Plateau, Ethiopia," to "Misinformation, Humor & Climate Change: A Content Analysis of TikTok Posts."



Undergraduate **Ana Julissa Chavez**, who is double majoring in atmospheric sciences and geography while minoring in anthropology, received a Wilkes Scholar award for her research, "Long-term Human and ecosystem adaptations to climate change in the Rockies (Utah) over the past 12,000 years."



Undergraduate **Nash Christian Ward**, who is majoring in Math, received a Wilkes Scholar award for his research, "the effect of multi-scalar fractals on the albedo of the ice pack."

GRADUATE RESEARCH GRANT

In partnership with the Global Change and Sustainability Center, the Wilkes Center offers small travel and research grants to eligible graduate students for projects related to climate science and/or climate policy.

The research funding bolsters graduate level research inquiries across disciplines for gaining a broader perspective to research questions. The travel funding supports student participation in professional meetings and professional development opportunities.

The Wilkes Center awarded funding to 29 graduate students in Fall 2022/Spring 2023.



Kaedan O'Brien, PhD Candidate in the Department of Anthropology, is using Wilkes Center funding to analyze the carbon, oxygen, and strontium stable isotopes from drilled fossil herbivore tooth enamel from Kenya. These three elements allow us to reconstruct past diet, vegetation cover, rainfall, seasonality, and migration over the past 100,000 years. This information will allow us to interpret how prehistoric animals lived, how ecosystems functioned, and long-term climate change in a key location for modern human origins.

CLIMATE SOLUTIONS HACKATHON

On January 27 and 28, 2023, The Wilkes Center hosted the U's first 24-hour Climate Solutions "Hackathon"-an intense problem-solving competition where teams of students were challenged to develop a winning solution for a climate changerelated problem.

The topic of this year was urban heat: the phenomenon of cities

becoming excessively hot because of urbanization, lack of vegetation and climate change, which is causing a range of harmful effects across the world, such as air pollution, health problems and increased energy consumption.

Almost 140 undergraduate and graduate students from different disciplines and backgrounds participated in the event, at the Crocker Science Center, while U faculty with specialties in urban engineering or atmospheric sciences also made the rounds and offered feedback. By the noon deadline the next day, 14 teams submitted their proposals on slide decks to the Wilkes Center team. The top three teams were invited to share posters showcasing their ideas at the Wilkes Climate Summit in May.



WINNING SUBMISSIONS

First place: Schools as heat shelters (\$3,000 prize)

"Team Green Campus Solutions" Aarushi Verma (undergraduate, quantitative economics) Vivek Anandh (undergraduate, computer science) Adrian Sucahyo (undergraduate, electrical engineering) Victoria Carrington (graduate, law, biochemistry) **Second place:** Resiliency hubs and portable cooling centers (\$2,000 prize)

"Team USmart Solutions" Sevda Zeinal Kheiri, (graduate, electrical and computer engineering) Luis Rodriguez-Garcia, (graduate, electrical and computer engineering) Hollis Belnap, (graduate, electrical and computer engineering) **Third Place:** An urban heat formula (\$1,000 prize)

"Team Hacking Urban Heat" Jack Perry, (undergraduate, mathematics and quantitative analysis of markets and organizations) Thomas Stewart (undergraduate, chemical engineering) Nathanael Busath (undergraduate, finance)

More information about the event is available at: wilkescenter.utah.edu/hack/

SRI RESEARCH STREAMS

The Wilkes Center coordinates with the Science Research Initiative (SRI), a program of the University of Utah offered to College of Science students, to support climate-focused research experiences termed 'streams'. The SRI Program provides deeply-engaged science research experiences for first and second year undergraduates.

Big Data for Quantifying Climate Inequities

Students in this stream examine patterns and inequities in climate and pollution exposures at a fine scale and generate novel insights. This exciting ongoing project integrates big spatial data on climate change-related impacts, including heat risk, flood risk, and air pollution, with cuttingedge demographic and population data to provide a detailed and evolving picture of how climate risks are already affecting people around the U.S.

Stream Leaders: Dr. Tim Collins and Dr. Sara Grineski

Urban CO₂ Emissions

This stream investigates relationships between urban CO_2 emissions, population density, and socioeconomic variables, along with satellite observations of CO_2 for 113 major urban centers around the world, with a broad goal to improve understanding of the role of cities in addressing climate change and point to possible development strategies that may be relevant to policymakers.

Stream Leader: Dr. Kai Wilmot and Dr. John Lin

Hallar Aerosol Research Team (HART)

Utilizing mountain-top labs in Steamboat Springs, Colorado, and in the town of Alta, Utah, this research group monitors measurements of gases and particles in the atmosphere to understand the source location and impacts for continuously understanding our urban and remote environments. Stream Leader: Dr. Gannet Hallar



Learn more here



HANDS-ON RESEARCH LOCATIONS



SRI students in Costa Rica, March 2023. Photo credit: Juliette Weber

MONTEVERDE INSTITUTE (MVI) Costa Rica

In partnership with SRI, the Monteverde Institute provides a unique setting for learning about sustainable development and environmental challenges, Spanish language and culture, conservation biology, community health, land use planning, integrated water resources, and innovative science and solutions to address climate change.

STORM PEAK LAB Steamboat Springs, Colorado

The Storm Peak Lab (SPL), run by Gannet Hallar, is situated on a 70 km long north-south mountain barrier, on average 10,568 feet above sea level, and east of the agricultural Yampa Valley and the town of Steamboat Springs, CO. Due to its location and topography, SPL is ideally situated for in-cloud measurements. A permanent research laboratory of this type allows study on a recurrent longterm basis, enabling a greater understanding and characterization of the aerosol-cloud-precipitation processes than is available from temporally limited field projects at unfamiliar locations.



SRI students with Dr. Hallar at Storm Peak Lab, Colorado, March 2023. Photo credit: Melissa Dobbins

THE WILKES CENTER CLIMATE PRIZE AT THE UNIVERSITY OF UTAH

\$1.5 MILLION TO CONFRONT THE DEFINING ISSUE OF OUR AGE

Due January 31, 2023 Phase I: First Round Submissions

77 Submissions received Due March 8, 2023 Phase II: Second Round Applicant Proposals **10**

Second Round applicants

In Fall of 2022, The Wilkes Center invited applications from people, projects, and organizations who are working to address the climate crisis to submit their best ideas in competition for winning the \$1.5 Million prize. The Wilkes Center team was particularly interested in ideas that have the potential to reduce emissions or remove greenhouse gases on a global scale and that can benefit human well-being and livelihoods. Those submissions which showed the most promise for scalability, feasibility, and potential of co-benefits to communities, economies, or ecosystems were invited to apply to the Second Round.

WILKES CENTER CLIMATE PRIZE APPLICANTS SUBMITTED IDEAS FROM ACROSS THE WORLD



PARTNERS:

The prize is supported by a cross section of Utah-based organizations and industries.

Zions Bank The Cumming Foundation The Huntsman Foundation Clay and Marie Wilkes Rio Tinto Finley Resources Huntsman Corporation Chevron





May 16-17, 2023 Phase III: Finalists Pitch at the Wilkes Summit

Third Round applicants

September 2023 Award Ceremony **1** Prize-winning Idea

WILKES CENTER CLIMATE PRIZE SELECTION COMMITTEE

The Wilkes Center Climate Prize Phase II applications will be judged by a panel of respected industry leaders and experts in their field. Each selection committee member brings a wide array of expertise and experience that span industry, academia, philanthropy, and non-governmental organizations.

The top prize will be awarded to the idea with the most scalable impact, the most feasible concept, and the solution most likely to benefit communities, economies, or ecosystems.

Kimberly Nicholas Sustainability Scientist at Lund University, Sweden James Marshall Shepherd Georgia Athletic Association Distinguished Professor, University of Georgia Steven Hamburg Chief Scientist, Environmental Defense Fund	Walt Reid Vice President, Environment and Science, Packard Foundation Klaus Lackner Director, Center for Negative Carbon Emissions, Arizona State University	19

THE WILKES CENTER STUDENT INNOVATION PRIZE

Boosting U Students' Most Innovative and Boldest Ideas for Tackling Climate Change

In addition to the Wilkes Center Climate Prize, the Wilkes Center invites students at the U to submit their most innovative, creative, and bold ideas for tackling climate change in our inaugural Wilkes Center Student Innovation Prize. Student prize submissions are required to detail the scalable and innovative impact for mitigating climate change, feasibility, and potential for co-benefits to people and/or ecosystems.

\$40,000 in total prize amounts are awarded (\$20K for the First prize, \$10K for Second prize, and two \$5K Third prizes).

The Wilkes Center Student Innovation Prize is open to all U students (undergraduate & graduate students), and the submissions were due by the end of Earth Week, April 21, 2023.

Solutions



As part of its support for the Wilkes Center, the University of Utah and the College of Science invested heavily during the past year in fields related to climate science and policy. In addition to providing salary and research

support packages for the Wilkes Center director and leadership team, the University hired four tenure-track faculty members working in climate-related areas of need. These researchers include experts on air quality and climate interactions, land surface modeling, natural climate solutions, and responses in plant physiology to changing climates.

This spring, the University also extended tenure-track offers to four additional climate-focused researchers. Negotiations for these roles will continue into the summer with the hope that candidates will accept and join the faculty either in January or July of next year. Since these appointments include ongoing salary lines and research start-up packages, the hires represent a substantial long-term commitment by the University to increase the institution's capacity and impact in climate research.

The University and College also made substantial commitments in the education and research spaces throughout the past year. The College supported scholarships and research stipends for undergraduate students, postdoctoral fellows, and faculty members participating in the Science Research Initiative. This first and second-year program is designed to introduce undergraduate students to faculty-driven research early in their academic careers and includes several climate-focused research projects. In order to expand climate research activities, the University also funded graduate and postdoctoral fellowships to support current faculty projects.

These graduate students and postdoctoral researchers play essential roles in research projects, often doing much of the day-to-day data collection and analysis. Due to an extraordinary interest in a university-wide seed grant call, the Office of the Vice President for Research and College of Science contributed over \$90,000 in additional support to fund more projects. The University sees this as a good investment since some previous initiatives have seen up to 17:1 returns in federal research dollars for each internal dollar invested.

At the institutional level, the University continued to expand activities related to its overall climate footprint. President Taylor Randall re-signed the Presidents' Climate Leadership Commitment designed to achieve carbon neutrality and improve climate change resilience. President Randall also announced that the University will accelerate its net zero pledge completion date from 2050 to 2040.

As part of those efforts, the University of Utah's Climate Commitment Task Force continued work on a Climate Action Plan with actionable goals around reducing the institution's emissions from university operations and preparing for climate change's current and future impacts. The University also allocated capital improvement funds to install energy-saving equipment and infrastructure throughout campus.

2022 - 2023 BUDGET	FOR CLIMATE SCIENCE & POLICY
Research Seed Grants Postdoctoral Fellowships Named Chairs & Professorships	Budget \$220,000 \$540,000 \$200,000
Scholarships Experiential & Entrepreneurial Learning Programs Graduate Fellowships	\$300,000 \$300,000 \$210,000
Outreach Workshops & Speaker Series Wilkes Summit Wilkes Center Climate Prize Student Prizes	\$140,000 \$100,000 \$1,500,000 \$50,000
Operations Center Operations	\$480,000

LOOKING TO THE FUTURE

The Wilkes Center for Science & Policy has arrived at the right time and exactly in the right place. The shrinking Great Salt Lake, summertime wildfires, heat waves, and relentless air quality concerns have placed climate change top of mind for many Utahns.

Meanwhile, millions of dollars of federal investments through the Inflation Reduction Act and the Infrastructure Investment and Jobs Act mean that Utah has more nationally coordinated opportunities to grow more resilient and prepared for tackling the climate crisis. Increasingly, scientific and technological capabilities to understand and address our changing climate are converging with public awareness of the problem and the increasing calls for meaningful policy actions.

The Wilkes Center for Climate Science & Policy is wellpositioned to make significant impacts in national and global advancements in climate change -related research and policy innovation. Growing partnerships with key University of Utah centers -such as the Global Change & Sustainability Center, the Kem C. Gardner Policy Institute, and the Hinckley Institute of Politics, and the University of Utah Health Sciences system-has primed the Wilkes Center to flourish in the coming years. Moreover, the merger of the College of Science and the College of Mines and Earth Sciences will provide a

centralized new home for the Wilkes Center.

As we look to the future, here are some exciting possibilities for the Wilkes Center.

GRAND CHALLENGES

Starting in academic year 2023-24, the Wilkes Center will help assemble teams of researchers tackling "grand challenges" who can make large advances in key priority areas of climate forecasting, climate impacts, and climate

THE WILKES CENTER FOR

CLIMATE SCIENCE & POLICY IS

WELL-POSITIONED TO MAKE

SIGNIFICANT IMPACTS.

solutions. In particular,

the effort will aim for state-of-

the-art, multidisciplinary, and transformative projects that have large real-world impacts and can deliver tools and data into the hands of decision-makers. Potential areas may include climate extremes, climate and ecosystems, water resources, carbon cycling, wildfires, and scalable climate solutions.

FOSTERING ENTREPRENEURSHIP

The Wilkes Center's educational programs are designed to facilitate and support an entrepreneurial perspective that values exploration, research, and innovation. The Center will also support an entrepreneurialoriented class where students learn the basics of new product development and then are tasked with surveying the national landscape to propose a new product that will address climate change solutions. Students in the course can apply for The Wilkes Center Student Innovation Prize which provides a cash award, and access to university resources. These programs will support students from concept to launch.

BRINGING LEADING THINKERS TO CAMPUS

The speaker series will be focused on climate-related research topics and is designed to provide a platform for leading experts in the field to share their findings and insights with a wider audience. The series will cover a broad range of topics related to climate science and policy including the impacts of climate change on ecosystems and biodiversity, the role of renewable energy in mitigating greenhouse gas emissions, and the latest research on climate modeling and prediction. The series will also provide a venue for policymakers to discuss ideas,



challenges, and opportunities to collaborate with climate change-related researchers.

Each session of the series will feature a distinguished speaker who presents their research and engages with the audience through a Q&A session. The series aims to raise awareness about the urgent need for action to address climate change and to inspire individuals to take action in their own communities. Graduate students will be invited to attend a lunch with these distinguished speakers to promote collaboration. We will explore partnerships with other institutes and centers on campus for relevant speakers as well.

ATTRACTING WORLD-CLASS TALENT

The Wilkes Center is excited to work with departments and centers of excellence around campus to help attract and recruit world-class researchers in climate science and solutions. These researchers will be tackling critical problems and connect across traditional disciplines and boundaries.

STRIKE TEAMS AND WORKSHOPS

The Great Salt Lake Strike Team has provided an exciting and impactful model for engaging and collaborating with key stakeholders to tackle major climate challenges facing Utah and the world. We plan to engage and drive future strike teams and workshops around urgent themes in climate, water, and air resources, potentially including science to underpin carbon markets, forest management, urban heat impacts, and air pollution challenges.



The Applied Science Project, currently under construction, will become the future home of the Wilkes Center for Climate Science & Policy, along with the departments of Atmospheric Sciences and Physics & Astronomy.

CONNECT WITH US

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