Department of Atmospheric and Climate Science Annual Newsletter

UNIVERSITY *of* WASHINGTON

A Message from the Chair

On July 1, 2025, exactly my 20th anniversary at the UW, I became Interim Chair of the Department of Atmospheric and Climate Science. This was precipitated by our former Chair, Professor Joel Thornton, being asked to serve as Interim Dean of the College of the Environment after the departure of former Dean Maya Tolstoy. The fact that Joel was chosen for this important role is evidence of his effective leadership as Chair of our department. I want to thank Joel for his 3 years of service to the department as Chair, and for his continued service to the college as Interim Dean. Searches for chair and dean are ongoing this year, so look to this newsletter next year for an update on leadership.

I am truly honored to be serving this storied department as Interim Chair. Being a faculty member in this department has been like being a kid in a candy store for me. Being surrounded by such incredible faculty and students doing cutting-edge research at the top of their fields was incredibly inspirational to me as a new faculty member, and continues to be so even more as Interim Chair. Thanks to the efforts of Joel and our departmental administrator, Shana Ava, we also have an incredibly dedicated and talented staff, something that makes all of our jobs easier, especially the job as Chair.

In this issue, you can learn about some of this exciting, cutting-edge research. We've highlighted two field campaigns that took place this year, Greater New York Oxidant Trace Gas Halogen and Aerosol Airborne Mission (GOTHAMM), led by Lyatt Jaeglé and Joel Thornton, and Snow Sensitivity to Clouds in a Mountain Environment (S2noCliME), led by Lynn McMurdie. These are just two of many examples of how our faculty, students, and postdocs are answering important questions about the future of air quality, weather, and climate.

An exciting recent development for our college and department is a $10 million grant to the college from the Fund for Science and Technology (FFST), which is part of the Allen Family Philanthropic Ecosystem. The grant launched Collaborative Research in Earth System Science and Technology (CRESST), designed to retain and build capacity in four targeted areas of research. This new funding has been a source of excitement and optimism in otherwise challenging times of federal funding.

We had only one month's notice of the CRESST funding opportunity, so we had to be ready to hit the ground running. Past philanthropic support from our

donors has helped position us for success in this and other endeavors by providing the flexibility to experiment with new ideas and methods, resources to strengthen our community, and opportunities to bring in outside researchers to discuss new ideas. On behalf of everyone in the department, I want to express my gratitude to our many donors.

We are holding our annual alumni event at the American Meteorological Society in January 2026 in Houston, TX this year. I hope to see some of you there! Whether or not you are going to AMS, please feel free to reach out any time to connect with me and other faculty and students in the department.

Sincerely,

Becky Alexander

UW Researchers Take to Skies to Study Air Quality in New York City

By Christopher M. Kenseth, Postdoctoral Scholar

For six weeks this past summer, researchers from the University of Washington (UW) – together with scientists from Stony Brook University (SBU), Colorado State University (CSU), the University of California (UC) Irvine, the University of Colorado (CU) Boulder, the University of Michigan (U-M), the University of Maryland (UMD), the University of Wisconsin (UW)-Madison, the National Center for Atmospheric Research (NCAR), and the NASA Goddard Space Flight Center – took to the skies aboard a flying atmospheric chemistry laboratory to study air quality in one of the most densely populated and chemically complex regions in the World, New York City (NYC).

The greater NYC area is a massive urban sprawl surrounded by dense forests and coastal waters. These three distinct environments all emit gases and particles into the atmosphere that mix and undergo chemical reactions to create a complex chemical "soup" that routinely leads to air pollution events, especially during the summer months. Funded by the National Science Foundation (NSF), the **G**reater New York **O**xidant **T**race **G**as **H**alogen and **A**erosol **A**irborne **M**ission (GOTHAAM) used the NSF/NCAR C-130 aircraft to investigate how this diverse blend of emissions and chemistry forms air pollution.

The NSF/NCAR C-130 prepares for a night flight. GOTHAAM took measurements at all hours to assess how emissions and chemistry evolve over the day-night cycle. Image: Paul Harper, NCAR.

The C-130 was outfitted with over a dozen state-of-the-science instruments, including mass spectrometers, particle analyzers, and trace-gas sensors that collectively measured hundreds of chemical compounds in real time. The team crisscrossed the region from city streets to forests to the ocean and worked around the clock. Signatures of each flight included at least one low-altitude run up the Hudson River and several "missed approaches" at regional airports, where the C-130 would almost touch down on the runway then ascend before hitting the ground to obtain vertical profiles of the atmosphere. By sampling across these contrasting environments, at low and high altitudes, and throughout the full day, GOTHAAM afforded an unprecedented picture of urban atmospheric composition and chemistry.

GOTHAAM team in front of the NSF/NCAR C-130. Pictured UW Researchers: Lyatt Jaeglé (PI), Christopher Kenseth (postdoc), and Olivia Hakan (graduate student). Not Pictured: Joel Thornton (PI), Joe Robinson (graduate student), Racine Nassau (graduate student). Image: Chris Rodgers, Code 10 Photography.

NYC suffers from some of the worst air pollution in the US, and findings from GOTHAAM will directly inform policymakers in developing new mitigation strategies. As a proxy for coastal cities, much of what is learned about NYC can also be translated to other

urban regions. Learn more about GOTHAAM at https://www.eol.ucar.edu/field_projects/gothaam and check out the overview video at https://www.youtube.com/watch?v=eU-VSGM_2Rs.

S2noCliME: Revealing How Mountains Make Snow

By Professor Lynn McMurdie, Troy Zaremba, and Sofia Vakhutinsky

Last winter, Steamboat Springs, Colorado, became the home of a sophisticated network of radars, ground instruments, and a dedicated research team for the Snow Sensitivity to Clouds in a Mountain Environment (S2noCliME) field campaign. This area on the northwest side of the Rocky Mountains feeds the Yampa River, the largest free-flowing tributary of the Colorado River. The winter snowpack that accumulates in the Park Range becomes the source of the summer water supply. When these snow reservoirs are lower than normal, the region faces drought and wildfire risk. Understanding how storms build this snowpack is essential for water resource management across the entire Colorado River Basin.

The goals of S2noCliME are to evaluate the large-scale, mesoscale, and microscale cloud and snowfall properties and use that information to improve our understanding and forecasting of winter storms. S2noCliME utilized Storm Peak Lab, a permanent mountain-top facility situated on Mt. Werner at 3220 m above sea level. Since it is within the clouds during 90% of stormy periods, it provides a rare opportunity to observe precipitation growth processes as they happen. On some storm days, the lab felt like a front-row seat inside the cloud, with rime ice forming on instruments faster than the team could brush it off.

To complement these measurements, two radars were installed for the season: the Colorado State University Sea-Going Polarimetric Radar (SEAPOL) and the Stony Brook University Ka-band Scanning Polarimetric Cloud Radar (KASPR). SEAPOL was installed 40 km west of Steamboat Springs to sample storms as they approached. KASPR was installed just west of town at the new Sleeping Giant School, where it captured clouds and precipitation immediately upstream of and over the Park Range. Meteorological weather balloons (rawinsondes) were launched at the KASPR site. Other ground-based instrumentation included micro-rain radars, ceilometers, and microwave radiometers. New isotopic water vapor measurements also offered additional insight into moisture sources feeding winter storms.

The UW team included PI Lynn McMurdie, Research Associate Professor Peter Blossey, Postdoctoral Scholar Troy Zaremba, and graduate student Sofia Vakhutinsky. Because the launch site was located at a K–8 school, UW team members also participated in outreach events with students at Sleeping Giant School. The students had front-row seats to real atmospheric science, cheering as balloons climbed into the winter sky and disappeared into the clouds.

Postdoctoral Scholar Troy Zaremba and Prof. Lynn McMurdie with Storm Peak lab in the background during a clear day between storms.

All UW team members are currently analyzing the extensive dataset collected during S2noCliME. Other members of the broader team include the lead PI, Prof. Claire Pettersen from the University of Michigan, along with her students and postdocs; PI Prof. Angela Rowe at the University of Wisconsin and affiliate professor in our department, and her students; and PI Prof. Jay Mace of the University of Utah and his group.

Graduate student Sofia Vakhutinsky and Post-doctoral scholar Troy Zaremba on top of Mt. Werner.

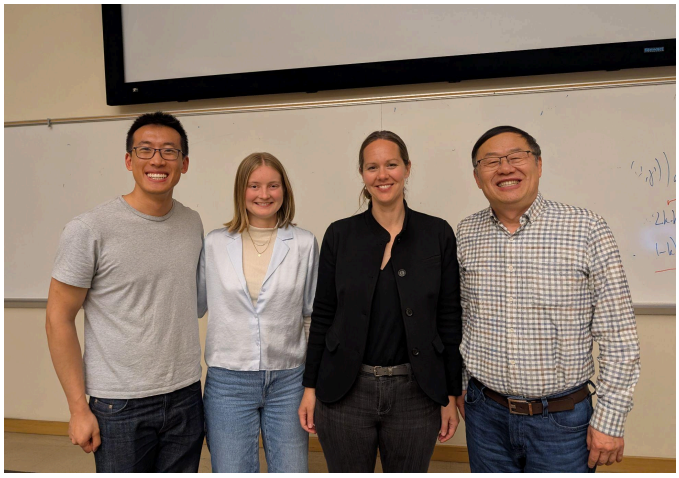
The S2noCliME dataset is now poised to advance winter-storm science across scales, from cloud microphysics to regional water resources: an exciting step toward improving how we predict, understand, and manage mountain snowpack in a changing climate.

Recent Department Lectures

Graduate Students' Distinguished Lecture

With the support of alumna Jennifer Francis and partner Peter Francis, the Department has been able to host the annual Graduate Students' Distinguished Visiting Lecture (GSDVL) for over a decade. Every year, students select a speaker based on rotating themes, and this year's theme was Dynamics.

The 2025 GSDVL was hosted by graduate students Eric Mei and Sky Gale, with Professor Elizabeth (Libby) Barnes, an alumna of the Department, serving as the speaker. Libby was a professor at Colorado State University from 2013 to 2025, and recently joined Boston University as the incoming Dalton Family Chair in Environmental Data Science & Sustainability and Professor of Computing & Data Sciences and of Earth & Environment.



Professor Elizabeth Barnes (second from the right) with the 2025 GSDVL organizers, Eric Mei and Sky Gale, and Professor Qiang Fu.

Libby is a leading expert in climate variability and climate change, specializing in subseasonal-to-decadal prediction and the innovative application of machine learning to climate science. Her groundbreaking work in "explainable" artificial intelligence (AI) has advanced the ability to identify the role of natural variability to reconcile discrepancies between observations and climate models. Dr. Barnes has been recognized by several awards, including the AGU James R. Holton Junior Scientist Award in 2014, the NSF CAREER Award in 2018, the AMS Clarence Leroy Meisinger Award in 2020, named an AGU Fellow in 2021, and the AGU James B. Macelwane Medal in 2021. She was recently awarded the Presidential Early Career Award for Scientists and Engineers (PECASE) for her interdisciplinary, impactful climate AI work.

During her visit in May, Libby gave two talks - one being "Explainable AI for Earth System Prediction: From Black Box to Window into the Future," and the other one was "Interpretable Attention-Based AI for Climate Prediction." Both of which provided an in-depth look into how AI applications and tools can enhance climate prediction over time.

Fleagle Endowed Visiting Lecture

The Fleagle Visiting Faculty Fellowship in Atmospheric Sciences Policy was established by Professor Emeritus Robert G. Fleagle (1918 - 2013). Professor Fleagle wanted students, faculty, and the general public to have the opportunity to learn more about the interactions between atmospheric sciences and national policy.

This year's Fleagle Lecture speaker was Professor Steve J. Davis from the Department of Earth System Science at the Stanford Doerr School of Sustainability and a Senior Fellow at the Precourt Institute of Energy. He leads the Stanford Sustainable Solutions Lab, a research group dedicated to quantifying how different human activities are affecting climate and air quality, how those environmental changes in turn jeopardize human well-being, and the relative priority of solutions. He holds a Ph.D. in Geological and Environmental Science from Stanford University, a J.D. from the University of Virginia School of Law, and a B.A. from the University of Florida.

Professor Steve J. Davis (second from the left) with Professors David Battisti, Becky Alexander, Abby Swann, and Alex Turner.

Steve presented a public talk and a departmental talk when he visited UW. The public talk, "The Tough Stuff: Overcoming the Key Barriers to Net-Zero Emissions," focused on the challenges to achieving net-zero emissions and emerging solutions regarding this topic. In the departmental talk, Steve presented three studies: "one on CCS and CDR in mitigation scenarios and the climate implications of 'underdelivering', one on the potential climate benefits and economics of seaweed farming, and one on the trade-offs of high-CDR and air quality in scenarios."

Faculty Spotlight

Kat Huybers, First Teaching Professor

Kat has been with the Department for several years as a Lecturer, teaching 100-level and 200-level courses, such as ATMOS 111 Global Warming, ATMOS 211 Climate and Climate Change, and ATMOS 220 Exploring Atmospheric and Climate Science. Her dedication to teaching was evident amongst students; many have shared positive learning experiences in Kat's classes. Her exceptional teaching has also led her to the UW College of the Environment Outstanding Teaching Award in 2023, an award that was "presented in recognition of teaching that exemplified the high standards at the heart of the academic mission of the College of the Environment."

In September 2024, she became the first Teaching Professor of the Department! As a Professor, Kat continues to be a leader in the teaching space. She is a member of the College of the Environment Teaching Support Team and co-leads the college's Environment Faculty Fellows program, supporting early-career faculty as they develop and refine their course pedagogy.

Congratulations to Our Faculty

Professor Dale Durran was the recipient of AGU's Jule Gregory Charney Lectureship, which was "presented annually to a prominent scientist who has made exceptional contributions to the understanding of weather and climate."

Congratulations to Our Postdoc

Christopher Kenseth, a NSF AGS Postdoctoral Fellow in the Department, was selected as the recipient of the 2025 James R. Holton Award by AGU. The award "recognizes outstanding scientific research and accomplishments from honorees within three years of receiving their PhD" and "serves to acknowledge exceptional contributions at an early stage of the awardee's career." Chris is currently working with Prof. Joel Thornton and will join the Department of Atmospheric and Oceanic Science at the University of Maryland as an Assistant Professor in January 2026.

Alumni Updates

Here are some highlights from our alumni!

Ángel F. Adames Corraliza (Ph.D. 2016)
Ángel was awarded the MacArthur Fellowship in 2025, also known as the "genius grant". According to the MacArthur Foundation, Ángel "has made significant advances in quantifying the role and impact of moisture in tropical weather and climate phenomena, bringing us closer to a comprehensive dynamical theory of the tropical atmosphere."
Ángel is currently an Associate Professor at the University of Wisconsin-Madison and the Ned P. Smith Distinguished Chair of Climatology in the Department of Atmospheric and Oceanic Sciences.

H. W. Buzz Bernard (B.S. 1963)
Buzz was named the 2025 Mike Mullins Memorial Writer of the Year Award Winner. The award will be presented during the 2025 MWSA Awards Banquet on September 27, 2025, in Kansas City, Missouri.
Some of Buzz's novels include *When Heroes Flew*, *Down a Dark Road*, and *Where Dawn Comes Up Like Thunder*. A pilot/weather officer is featured in books 3 and 5 of the *When Heroes Flew* series.

Justin Minder (Ph.D. 2010)
Justin earned his Ph.D. from the University of Washington in August 2010 and joined Yale University's Department of Geology and Geophysics as a Richard Foster Flint Postdoctoral Fellow. After two years at Yale, he joined the University at Albany (SUNY)'s Department of Atmospheric and Environmental Sciences in 2012. Justin was promoted from Associate Professor to Full Professor in January 2025!

Welcome to our new Graduate Student Cohort for 2025-2026

Ya-Shin Chi
Sierra Dabby
Caleb Fried
Nick Shepard

Congratulations to our Graduates

Bachelor of Science

Jiajing Cai
Matthew Chung
John Cramblitt
Lydia Crook
Hazel Dela Paz
Nathan Gilbert
Amelia Gordon
Yixin Han
Michael Hardie
Tayler Hopley-Sheldon
Ethan Knauss
Jeedarm Lee
Marky Mayanja
Vlad Munteanu
Steven Neff
Braeden Rao
Joseph Renalds
Kyra Schlezinger
Nick Shepard
Jake Stevenson
Annabelle Tjio
Zihan Yin

Master of Science (non-thesis track)

Jason Barr
Je-Yun Chun
Cong Dong
Miles Epstein
Sky Gale
Stella Heflin
Rohan Jain
Aakash Manapat
Zilu Meng
Manali Nayak
Joey Rotondo
Geraint Webb

Master of Science (thesis track)

Valeria Garcia Gallegos, The Radar and Microphysical Properties in the "Dendritic Growth" Layer of Winter Storms: Findings from the IMPACTS Field Campaign

Anna Hall, To Revisit the Stratosphere Troposphere Exchange of Air Mass and Ozone Based on Reanalyses and Observations

David Lopez, Extreme Southwest U.S. and Northern Mexico Vapor Pressure Deficit Events in CMIP6 Climate Model Projections

Katherine Mifsud, Impacts of giant cloud condensation nuclei on precipitation formation in marine low clouds

Raul Moreno, A Paradigm Shift in Precipitation Modeling: Moving Beyond
Numerical Models

Satveer Sandhu, Empirical Orthogonal Teleconnections as a Framework for Regional Climate Analysis: Insights from Pacific Northwest Temperature Extremes

James Yoon, Impacts of interannual isoprene variations on methane lifetimes and trends

Lily Zhang, Hydrometeorological Drivers of Western US Summertime Temperature Variability

Doctor of Philosophy

Pedro Angulo-Umana, The Multiscale Nature of Tropical Convection in Observations and Models

Yuk Chun Chan, Modeling atmospheric perchlorate and chlorate

Vincent Cooper, Paleoclimate and Historical Perspectives on Modern Climate Sensitivity

Andrew DeLaFrance, Process-Based Imprints on Ice-Phase Precipitation Evolution: Quantitative Outcomes and Implications for Radar Remote Sensing

Brittany Dygert, Sea Surface Temperature and Convection in Tropical Radiative
Convective Equilibrium

Zhanxiang Hua, Characterizing and Forecasting Severe Convective Storms using Deep Learning

Ursula Jongebloed, Atmospheric sulfur sources and chemistry from preindustrial to present

Alyssa Poletti, Extreme Climates and How to Avoid Them

Phil Rund, Tides, Winds, and Reactive Halogens: A Study of Multiphase Chemistry in the Marine Boundary Layer

Clayton Sasaki, Convective Upscale Growth in Central Argentina: Environmental Conditions and the Role of the South American Low-level Jet

Aodhan Sweeney, From Surface to Stratosphere: Understanding Interannual Climate Variability and Decadal Changes

Molly Wieringa, Single-column model to global reconstruction: theory, nuance, and applications in sea ice data assimilation

Undergraduate Research

John Cramblitt, Mapping Surface Temperatures and Cold Air Pooling in a Colorado Mountain Watershed: Implications for Modeling

Zayna Haider, Comparing Two Methods to Measure Sulfur Isotopes in Seasonal Ice Core Samples

Ethan Knauss, Characterizing Freezing Rain Events over the Pacific Northwest: Key Drivers and Synoptic Influences

Coco Lipe, Chlorine's Impact on Methane Isotopologue Interpretations

Marky Mayanja, Developing a Method to Measure Seasonal Ice Core Sulfate Isotopes Using an Orbitrap Mass Spectrometer

Eddy Olson, Representations of Convective Development in Present and Future Climate Simulations

Laura Pong, The 2021 Pacific Northwest Heatwave as a Case Study in Examining the SIF-PAR Relationship

Kyra Schlezinger, Summer Sun vs. Winter Fronts: Seasonal Differences in High-Latitude Thunderstorm Characteristics

Nick Shepard, Weather Patterns Contributing to Rapid Wildfire Growth in California

Alyssa Tou, Can We Measure Nitrous Oxide (N_2O) Using Hyperspectral Aircraft Data?

Steven Xu, Application of Data Visualization Skills in Multiple Scenarios

Erika Wood, Analysis of Microphysical Data Within Shear Layers of the IMPACTS Field Campaign: Case Study January 25th, 2020

Yiding Luo & **Shetian Xia**, Evaluating Machine Learning Weather Prediction Models for Mesocyclone Forecasting

Student Fellowships & Awards

Undergraduate Fellowships & Awards

Atmospheric Sciences Undergraduate Student Support Fund: **Coco Lipe**

Sally Schoenberg and Randy Poteet Scholarship: **Yiding Luo**

Mindlin Endowed Fund for Undergraduate Support: **Laura Pong**

Phil Church Award: **Kyra Schlezinger**

Graduate Fellowships & Awards

Achievement Rewards for College Scientists (ARCS): **Caleb Fried, Eric Mei,** and **Manali Nayak**

CICOES Fellowship: **Sky Gale, Aakash Manapat,** and **Alli Moon**

DOE Computational Science Graduate Fellowship: **Zac Espinosa** and **William Yik**

National Defense Science and Engineering Graduate Fellowship: **Ariel Jacobs, Eric Mei,** and **Chad Small**

NASA FINESST Award: **Randall Jones, Raúl Moreno,** and **Celeste Tong**

NSF Graduate Research Fellowship: **Spencer Ressel, Amy Liu, Lily Zhang, Nelly Emlaw,** and **Miles Epstein**

Program of Climate Change (PCC) Fellowship: **Caleb Fried**

Top-Scholar Fellowship: **Ya-Shin Chi, Sierra Dabby,** and **Nick Shepard**

Upcoming Alumni and Friends Event

Reception at AMS 2026 – Houston, TX

We are hosting an Alumni and Friends Reception for our department at the 2026 Annual Meeting of the American Meteorological Society. Join us on **Tuesday, January 27, 2026, at 7:00 p.m.** in the Hilton Americas-Houston, Room 339B, for this special opportunity to connect with students, postdocs, alumni, faculty, and friends of the Department.

Many thanks to our generous Donors

The Department of Atmosphere and Climate Science extends its deepest gratitude to the incredible generosity and steadfast support of its alumni, donors, and friends. Your support strengthens the department and helps our students, researchers, and faculty thrive. The kindness of this community plays a crucial role in the teaching and research that strive to understand and address pressing climate, weather, and air quality issues, and to provide valuable, timely observations and forecasts for decision-making.

This year, we are also celebrating the special contribution that launched the Paros Endowed Chair in Atmospheric and Climate Hazard Research. Thanks to the generosity of Jerry and Linda Paros, this fund will allow us to recruit and retain the world-class faculty that defines this department. Jerry is the founder of Paroscientific Inc. and is a leader in the field of geophysical measurements.

Making a Gift

All gifts of all sizes matter. Philanthropic support is a vital force in fueling research and training the next generation of leaders in the field. We hope you'll consider joining us with a gift that is meaningful to you.

Your gift can be directed to support students, faculty, or programs across the Department of Atmospheric and Climate Science. To learn more about opportunities to make an impact, we invite you to explore our featured funds at the link below or contact Elliott Gore, Associate Director for Advancement for the Department of Atmospheric and Climate Science at egore@uw.edu. The Department's priority funds are:

- Friends of Atmospheric Sciences Fund
- Atmospheric Sciences Graduate Education Fund
- Atmospheric Sciences Undergraduate Student Support Fund
- Steve Pool Memorial Fund for Students in Atmospheric Sciences

Or, you may give to one of our named funds in honor of a faculty mentor. Additional gift funds can be found at: atmos.uw.edu/alumni-and-community/giving. Please indicate if your gift is a joint gift so we may recognize your generosity accordingly. Your gift to the Department of Atmospheric and Climate Science is also tax-deductible. The University of Washington Foundation is registered as a charitable organization, and its Federal Tax ID number is: 94-3079432.

Contact Us
Department of Atmospheric and Climate Science
University of Washington
Box 351640
Seattle, WA 98195-1640

Phone: (206) 543-4250
Fax: (206) 543-0308
Web: www.atmos.uw.edu

The Atmospheric and Climate Science newsletter is published annually for alumni, friends, and members of the UW's Department of Atmospheric and Climate Science.

Please send alumni news and comments to:
chair@atmos.uw.edu

UW Atmospheric and Climate Science graduate students now hold an annual retreat to welcome new student cohorts and to build community. Donors to our Friends of Atmospheric Sciences Fund help make this formative event possible.