CSU Atmospheric Science researchers address ozone pollution

New research examines sources of ozone at Carlsbad Caverns National Park in New Mexico. Unhealthy levels of ozone in the park have grown along with expansion of oil and natural gas production in the nearby Permian Basin. Work by CSU Atmospheric Science Department researchers identifies major contributions to the problem from Permian Basin pollutant emissions. This effort is part of a long history of collaborative research with the National Park Service to characterize and help solve air quality challenges in national parks across the country.

Another team of CSU researchers is conducting field measurements near Salt Lake City to better understand how ozone forms and moves across the region. Data from their work will inform Utah's state ozone implementation plan, which aims to address continually poor air quality along the Wasatch Front from ground-level ozone.

Carlsbad Caverns National Park
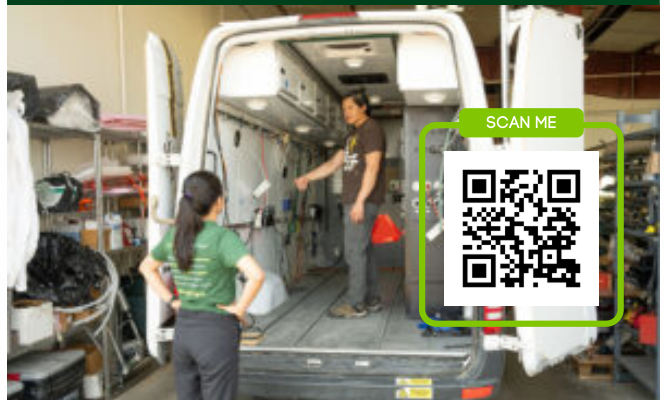*Read the full story by Josh Rhoten at*
https://col.st/UuOYx

SCAN ME

Urban Air Quality
Read the full story by Josh Rhoten at
https://col.st/P368x

SCAN ME

Donate

Your support of the Department of Atmospheric Science enhances recruitment and retention of world-class faculty and students, while ensuring critical contributions to weather, climate, and air quality research. Thank you for considering how you can make a contribution for our shared success.

Please email **Beth.Hallmark @colostate.edu** to learn more or give directly by visiting **advancing. colostate.edu/ATMOS**.

Contact Us

Department of Atmospheric Science
1371 Campus Delivery
Colorado State University
Fort Collins, CO 80523-1371
Phone: (970) 491-8682
atmos.colostate.edu

Please call or email us with alumni news, comments, questions, corrections, and address updates to **info@atmos.colostate.edu**

The *Atmospheric Science Newsletter* is published annually for alumni, friends, and members of the department.

Editors: Theresa Barosh, Eric Maloney, Sarah Tisdale

Happy New Year: A message from our Department Head, Eric Maloney

Happy New Year from the CSU Department of Atmospheric Science. Our department has continued its success in delivering cutting-edge atmospheric science graduate education and research to Colorado, our nation, and the world. I continue to be truly humbled to lead the outstanding students, educators, researchers, and staff in this top-ranked department.

The multitude of awards and other honors received by individuals in our department over the last year continues to be impressive. Among many other incredible honors, University distinguished Professor Sonia Kreidenweis was named to the National Academy of Engineering (**pg 3**), and Professor Jeffrey Collett was honored with the title of University Distinguished Professor (**pg 4**). We also have much else to celebrate. Dr. Dien Wu of Cal Tech will be joining us in January 2025 as an Assistant Professor (**pg 6**), culminating a very successful surface-atmosphere interaction faculty search. We are currently searching for a new faculty member in application of artificial intelligence to the atmospheric sciences. Congratulations also to Prof. Johnny Chan, who was named the 2024 ATS Outstanding Alum and will receive his award at a virtual ceremony with the department on January 23, 2025 (**pg 13**). There were also some bittersweet moments this year with Professors Scott Denning, A.R. Ravishankara, and Steve Rutledge transitioning to emeritus status. We are gratified that all three intend to retain close connections to our department and CSU!

With all the new hires and growing groups (our number of graduate students is near a record!), upkeep and renovation of our facilities continues to be a major source of attention. We recently completed an entire remodel of the third floor of our main building upgrading offices and bringing more light into the interior with installation of storefront glass. Please check it out next time you are in town. We are also eyeing other parts of our facilities for renovation including the second floor of the main building. I'll be busy raising funds in the next year to help with these renovations!

I hope to see you at a meeting or elsewhere in 2025 and wish you a healthy and productive year.

Sonia Kreidenweis elected to National Academy of Engineering

The National Academy of Engineering added Colorado State University professors Sonia Kreidenweis and Jorge Rocca as new members for 2024.

Kreidenweis is a University Distinguished Professor in the Department of Atmospheric Science. She received her B.S. in chemical engineering from Manhattan College and her M.S. and Ph.D. in chemical engineering from the California Institute of Technology. Her research focuses on characterization of the physical, chemical and optical properties of atmospheric particulate matter, and the effects of atmospheric aerosols on visibility and climate. She is a former president and fellow of the American Association for Aerosol Research, a past member of the executive committee and fellow of the American Meteorological Society and a fellow of the American Geophysical Union.

EPISODE 3

Sonia Kreidenweis

THE NEXT
((150))
with President Parsons

COLORADO STATE UNIVERSITY

SCAN ME

Listen to the podcast at **https://col.st/DIleN**

Read the full NAS SOURCE story at **https://col.st/XO2e2**

Kreidenweis is also a former research associate dean and executive associate dean in the college, and former interim dean of the Graduate School.

She said she was honored to be added to the academy.

"It has been such a privilege to be a part of the vibrant CSU community – especially the Department of Atmosphere Science – that provides a supportive and interdisciplinary culture in which new ideas can take root and grow," Kreidenweis said. "I am so grateful to the wonderful colleagues and students that I have been fortunate to work with over the years. Their energy and creativity inspire me daily and are the true drivers of our research and impact."

Story by Josh Rhoten

The right stuff: Love of chemistry leads to distinguished atmospheric science career
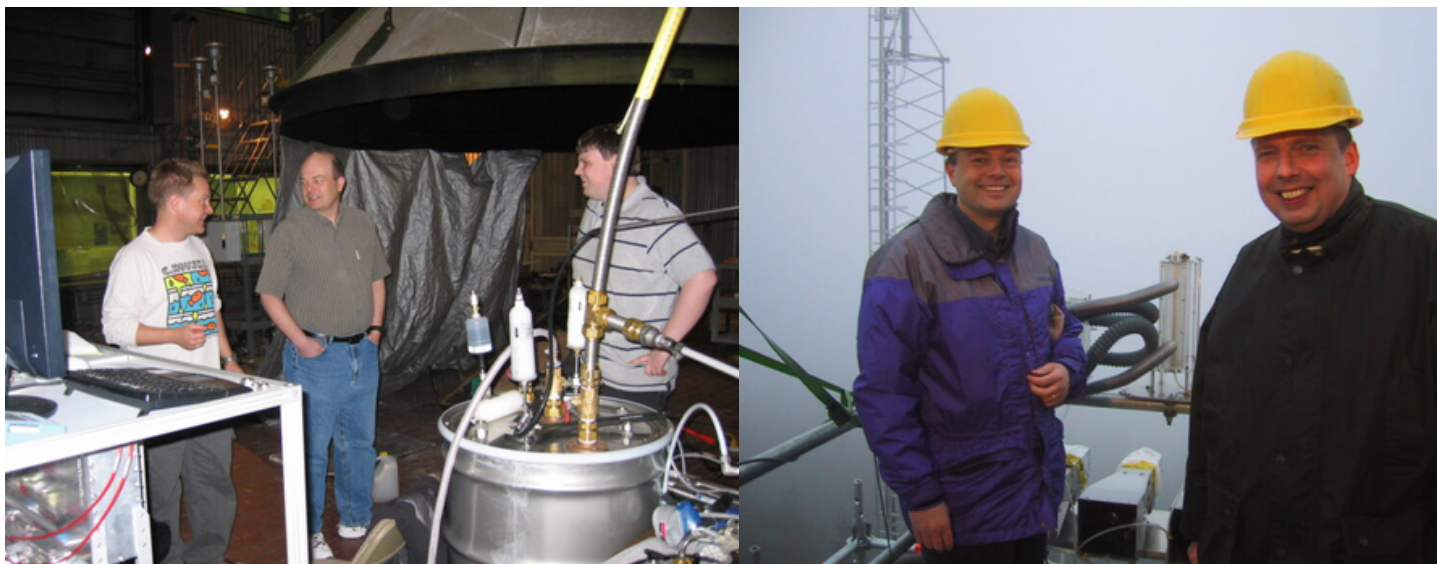
CSU bestowed Jeff Collett with the honor of University Distinguished Professor in Atmospheric Science. Typically, only 20 or so faculty members across all eight colleges carry the distinction at any one time.

Collett's research focuses on understanding the chemical composition of fog and clouds and helping communities and agencies address environmental air quality concerns. He has worked extensively with the National Park Service — studying the impacts of pollution from urban areas, agriculture, oil and gas development and wildfire smoke in pristine areas, including studies in national parks such as Rocky Mountain, Grand Teton, Yosemite, Grand Canyon, Big Bend and Carlsbad Caverns. He also collaborates with cities, towns and counties across Colorado to capture and measure air quality impacts of oil and gas development. In recent years, he has collaborated extensively in China.

"His work truly embodies the land-grant ideal of cutting-edge research with community impact," said fellow Atmospheric Science University Distinguished Professor Sonia Kreidenweis.

Collett and Kreidenweis helped build a fledgling Atmospheric Chemistry/Air Quality program into a powerhouse that has since attracted more researchers and led to collaborations across campus. They include fellow Atmospheric Science + Chemistry UDP A.R. "Ravi" Ravishankara; Jeff Pierce and Emily Fischer in Atmospheric Science; Tami Bond, Shantanu Jathar and John Volckens in Mechanical Engineering; Ellison Carter in Civil and Environmental Engineering; Jay Ham in Soil and Crop Sciences, and Delphine Farmer, Megan Willis and Chuck Henry in Chemistry, among others.

Story by Emily Wilmsen

SCAN ME

Read the full story at
https://col.st/7zoRY

Faculty, research staff, alumnus honored by American Meteorological Society

Associate Professor Melissa Burt, who is also the Associate Dean for Diversity, Equity, and Inclusion for the Walter Scott, Jr. College of Engineering, has been named a fellow of the American Meteorological Society. Election as a fellow recognizes outstanding contributions to advance the atmospheric and related sciences, technologies, applications, and services to the benefit of society. Burt's research spans science identity and belonging, the influence of mentorship and well-being, social justice inclusion in STEM education, and science communication.

"I am incredibly honored to receive this acknowledgement and have been overwhelmed by the support and appreciation," said Burt. "I am extremely grateful for this community and all of the people who I have had an opportunity to collaborate with over the years."

Distinguished Professor Emeritus Graeme Stephens, now at the NASA Jet Propulsion Laboratory, received the Carl-Gustav Rossby Research Medal from AMS. This award is presented to individuals based on outstanding contributions to the understanding of the structure or behavior of the atmosphere and represents the highest award the society can bestow on an atmospheric scientist. Stephens was recognized for breakthroughs in understanding how radiation, clouds, and precipitation shape climate system feedbacks by driving the design of innovative Earth observation platforms and their applications.

"I want to say that I still consider the Department as my academic and in many ways intellectual 'home' – it is a place that allowed me over the 26 years as a faculty to deepen my understanding of the atmosphere and shape my ideas about it," said Stephens. "So this recognition is equally recognition of my great academic home."

Atmospheric Science alumni Annareli Morales, Tristan L'Ecuyer, and Elizabeth Mulvihill also received AMS honors.

"We couldn't be more excited for Melissa and Graeme and the prestige that they provide to ATS and CSU," said Eric Maloney, department head of CSU Atmospheric Science. "We look forward to celebrating with them at the AMS Annual Meeting in New Orleans in January 2025."

Story by Theresa Barosh

Dr. Dien Wu to join the department

It is a pleasure to announce Dr. Dien Wu will be joining our department as an Assistant Professor in January 2025. Dr. Wu will be coming here as a culmination of our recent surface-atmosphere interaction faculty search.

Currently a scientist in the Division of Geological and Planetary Sciences at Cal Tech, Dr. Wu received her Ph.D. in Atmospheric Sciences from the University of Utah in 2020. She seeks to quantify human impacts on carbon, water, and energy fluxes over climate-sensitive regions using unique remote sensing and modeling techniques. Dr. Wu's areas of interest include the urban carbon cycle, assessing the impact of irrigation on carbon and water fluxes, examining the impact of prescribed burns on emissions and local ecosystems, and exploring the complexities of interactions at urban-wildland and urban-agriculture interfaces, among other topics. She also has many exciting teaching plans related to such topics.
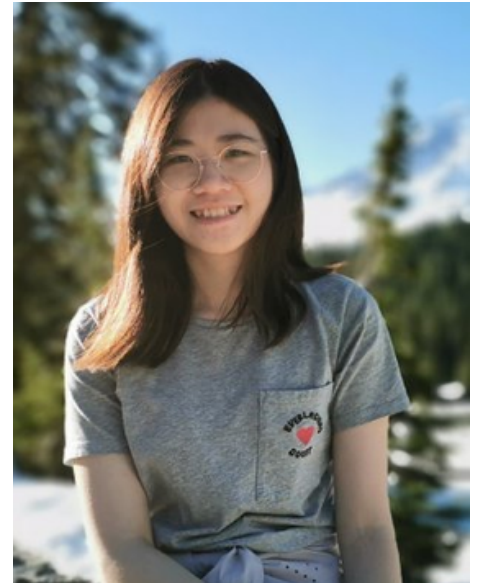
U.S. Senator John Hickenlooper visited the department

In September, our students did weather balloon and drone demonstrations for U.S. Senator John Hickenlooper. He also spoke with foothills campus faculty and researchers about current and future research, including topics of methane and air quality, satellite remote sensing, and Earth systems modeling.

"It was a great opportunity to highlight the observing systems that CSU researchers have deployed all over the world to better understand how thunderstorms work and how we can improve forecasts," said Atmospheric Science Professor Russ Schumacher.

Scott Denning and Steve Rutledge named Professors of the Year

Congratulations to the co-recipients of the ATS Professor(s) of the Year award, Scott Denning and Steve Rutledge. The awards were presented by graduate representatives Olivia Lee and Bali Summers at our Fall 2024 Welcome Picnic, with Steve accepting in person. Scott was recognized for his exemplary efforts in teaching ATS 150 Global Climate Change, and Steve was recognized for outstanding instruction in ATS 350 Introduction to Weather and Climate. We're so happy they are both still contributing to classroom instruction here at CSU.

Department staff, faculty honored with college awards

Award winners from the Walter Scott, Jr. College of Engineering are recognized for outstanding achievements and overall excellence throughout the college. Nominations are accepted through faculty and staff, and each award highlights achievements made throughout the previous year. From Atmospheric Science:

Jim Hurrell received the Art Corey Award for Outstanding International Contributions.

Samantha Reynolds won the Administrative Excellence Award.

Jessie Creamean received the Outstanding Researcher Award.

Welcome to new 2024 students

Photo of the 2024 incoming class, from left to right: Meghan Stell-Stewart, Anastasia Tomanek, Phoebe Lin, Tzu Jui Chou (Ray), Olivia Pierpaoli, Chandler Jenkins, Aspen Morgan, Jared Stickney, Jared McGlothlin, Lauren Beard, Jesse Robinett, Sierra Whiteman, Joseph Dale, Brandon Wolf, Ana Lasso de la Vega, Hannah Grace Marti, Tzu-Han Hsu, Jolan von Plutzner, Evan Cowden, and Caleb Steele (not pictured: Brandon McGuire and Henry Olling)

We welcomed 22 new graduate students at our Fall 2024 picnic. Faculty introduced their new students and postdoctoral fellows and shared a little about the research each will be doing. When asked what they are excited about at CSU, students shared:

- Learning
- Field work
- Working with people from diverse backgrounds
- Hands-on research
- Remote sensing
- Cool clouds
- Research to operations
- Community

During the picnic faculty introduced new students and postdoctoral scholars. Emeritus Professor Steven Rutledge shared some words of encouragement.

"You know that you've landed in a really, really great place. I just want to encourage you to take advantage of all that is here because it will lay the foundation for your career. You're going to all go on and do great stuff," said Rutledge, "I know that for a fact. I've seen it all these years."

Congratulations, graduates!

We asked our Spring and Summer graduating students about the most important thing they learned at CSU. Graduates mentioned the importance of a good support system and giving to their communities.

"I learned the importance of different perspectives in an interdisciplinary scientific environment," said Brian Heffernan. Others mentioned their specific study systems or research questions and recommended finding enjoyable work.

2024 Graduates

Student - degree - advisor

Marc Alessi - **Ph.D.** - Maria Rugenstein
Ben Ascher - **M.S**. - Sue van den Heever
Kevin Barry - **Ph.D.** - Sonia Kreidenweis/Paul DeMott
Zaibeth Carlo-Frontera - **M.S.** - Libby Barnes/Eric Maloney
Kimberley Corwin - **Ph.D.** - Emily Fischer
Alex DesRosiers - **Ph.D.** - Michael Bell
Zoe Douglas - **M.S.** - Kristen Rasmussen
Andrew Feder - **M.S.** - Dave Randall
Nico Gordillo - **M.S.** - Libby Barnes
Brian Heffernan - **M.S.** - Sonia Kreidenweis
Wei-Ting Hsiao - **Ph.D.** - Eric Maloney
Spencer Jones - **M.S.** - Chris Kummerow
Julieta Juncosa Calahorrano - **Ph.D.** - Emily Fischer
I-Ting Ku - **Ph.D.** - Jeff Collett
James Larson - **M.S.** - Jim Hurrell/Dave Thompson
Emily Lill - **M.S.** - Emily Fischer/Jessie Creamean
Andrey Marsavin - **M.S.** - Jeff Collett
Camille Mavis - **M.S.** - Sonia Kreidenweis/Jessie Creamean
Kathryn Moore - **Ph.D.** - Sonia Kreidenweis/Paul DeMott
Michael Needham - **Ph.D.** - Dave Randall
Jamin Rader - **Ph.D.** - Libby Barnes
Jesse Turner - **M.S.** - Steve Miller
Weixin Zhang - **M.S.** - Jeff Collett

Attention, Alumni!

If you are interested in having a profile on the **Alumni Network page**, visit the page and complete the linked form to create your profile. In the future, CAMP plans to host virtual events that will allow current students to meet members of CAMP's Alumni Network.

STUDENT NEWS

Student visits NASA Goddard for summer research on first-of-its-kind satellite air quality observations

Graduate student Madison Shogrin went to Washington D.C. over the summer as one of three Goddard Earth Sciences Technology and Research II visiting scholars. Shogrin worked on research using new satellite observations to explore air quality in North America.

At Colorado State University, Shogrin works on peroxyacetyl nitrate, or PAN, a secondary pollutant in smog, with her advisor Emily Fischer, a professor in the Department of Atmospheric Science within the Walter Scott, Jr. College of Engineering. Shogrin and Fischer use satellite observations to locate and study the distribution of this pollutant.

"Emily is such a great mentor and advisor because she is really individualized with her students," said Shogrin. "She wants to know, 'what is your goal after you leave here.' And she knows my goal is to go to a NASA lab eventually. So, she heard about this opportunity, and she said 'I know a student that would be interested' and she encouraged me to apply for this fellowship."

Experience with data from satellites set Shogrin up well for her research at Goddard.

For her GESTAR II summer fellowship, Shogrin worked with Lok Lamsal, a GESTAR-affiliated Research Scientist at NASA Goddard Space Flight Center. Shogrin studied distribution of formaldehyde and nitrogen dioxide across North America. In polluted regions, nitrogen dioxide and volatile organic compounds (VOCs) from PAN. Formaldehyde is a VOC researchers can measure from space, so it serves as a proxy for VOCs.

"I knew of the group that Lok is in because they do a lot of retrievals in the UV and visible region of the spectrum," said Shogrin. "I've been working in the thermal infrared. So, it's a different process for the retrieval. Those satellite observations are super relevant for my work with PAN, so it logically made sense to get experience with this other region of the spectrum and to learn about these measurements."
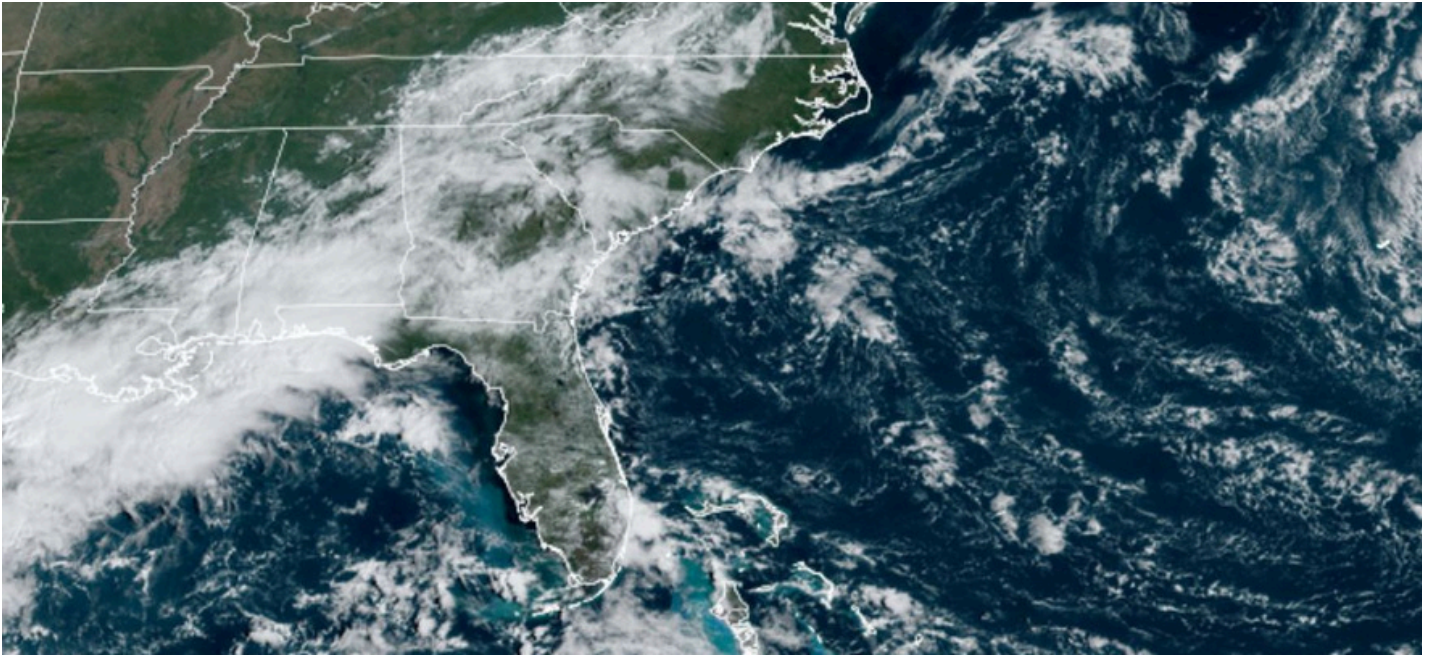
At Goddard, Shogrin researched ozone production sensitivity – predicting ozone formation and movement. To do that from space, researchers look at a ratio of formaldehyde to nitrogen dioxide, precursors to ozone.

Story by Theresa Barosh

SCAN ME

Read the full story at
https://col.st/Yw3XE

Ocean currents influence climate more than expected

James Larson is the first author on a new Nature paper titled "Signature of the western boundary currents in local climate variability." Larson conducted the research as a master's student at Colorado State University, and he is currently an Atmospheric Science doctoral student in the Walter Scott, Jr. College of Engineering.

"The western boundary currents are the most dynamic, the fastest moving," said Larson, "They have these giant swirling eddies and meanders. These currents are sort of like the equivalent of a raging river. There's just so much going on and it's about capturing everything that's going on there."

Larson started down the road to research as an undergraduate student. His favorite classes were fluid dynamics while earning his degree in aerospace engineering. Pursuing this interest, he got involved in undergraduate atmospheric science research with Alex Gonzalez.

Working with Gonzalez, Larson got curious about how important the ocean is to climate and how the ocean is represented in climate models. Gonzalez completed his doctoral work at CSU's Atmospheric Science Department in 2015. Gonzalez encouraged Larson to apply for graduate school.

"I've had wonderful advisors who guided me to this point," said Larson.
He can be found leading work outside with Rams Against Hunger to fight food insecurity in the community when he is not on his computer.

"I love this research, but it's all computer work. I like coding. It's fun. Sometimes it's difficult to do that all day, every single day, though. Too much of a good thing can be a bad thing. The [food insecurity] project is a good way to be in the CSU community — getting away from the computer and getting my hands dirty and actually being outside, which I love."

Story by Theresa Barosh

Student and postdoc awards, fellowships, and scholarships

Air and Waste Management Association Rocky Mountain States Section Graduate Scholarship	**Weixin Zhang**
AMS Conference on Artificial Intelligence for Environmental Science second-place Best Student Oral Presentation	**Allie Mazurek**
AMS Conference on Atmospheric Chemistry Outstanding Student Oral Presentation Award	**Olivia Sablan**
AMS Conference on Mountain Meteorology first-place Outstanding Presentation Award	**Mitchell Gregg**
AMS Conference on the Transition of Research to Operationssecond-place Student Oral Presentation	**Allie Mazurek**
AMS first-place Oral Presentation Award	**Kimberley Corwin**
AMS Graduate Fellowship	**Hannah Grace Marti**
AMS Special Symposium on Tropical Meteorology and Tropical Cyclones first-place Best Student Oral Presentation Award	**Angelie Nieves Jiménez**
AMS Symposium on Aerosol Cloud Climate Interactions Best Student Presentation Award	**Kevin Yang**
AMS/NWA High Plains Conference Outstanding Student Presentation Award	**Christine Neumaier**
David L. Dietrich Award	**Lilly Naimie**
Herbert Riehl Memorial Award	**Andrey Marsavin**
Maria Silva Dias Award	**Allie Mazurek**
NOAA S2S Applications Workshop, Early Career Poster Award	**Jingxuan Cui**
Shrake-Culler Scholarship	**Ivy Glade**
First place in WxChallenge	**CSU team**
William Gray Award	**Tyler Barbero**

WxChallenge CSU team

Weixin Zhang

Mitchell Gregg

Prof. Johnny Chan selected as 2024 CSU ATS Outstanding Alum

We are delighted to announce that Prof. Johnny Chung Leung Chan has been selected to receive the Outstanding Alum award this year. Prof. Chan received his Ph.D. from the department in 1982, studying with Prof. William Gray. His dissertation was entitled "The Physical Processes Responsible for Tropical Cyclone Motion."

Throughout his career, Prof. Chan has conducted breakthrough research on tropical cyclones (TCs). He contributed the first papers to identify the role of the beta effect on the steering of TCs (Chan and Gray 1982; Chan and Williams 1987), was the first to identify the relationship between TC activity in the western North Pacific and ENSO (Chan 1985), and then extended these linkages to the Quasi-Biennial Oscillation and the Pacific Decadal Oscillation, leading to the first-ever real-time seasonal forecasting of TC activity in the western North Pacific (Chan et al. 1998; 2001).

Note from Chan:

I would like to thank the Department of Atmospheric Science for selecting me to receive this prestigious award. There are many people to whom I would also like to express my gratitude. The first and foremost is my Ph.D. supervisor, Professor William Gray who brought me to CSU in 1978. His advice was not limited to my research but in almost all walks of life, and not only during the four-and-a-half years when I was at CSU, but throughout my academic career until his passing in 2016. His passion in research constantly challenged me to explore new frontiers to push the boundaries of our knowledge in tropical cyclones. His support and care for his students was a model that we should all follow. This award, therefore, is in some way, an honor to Bill who had taught me so much. Without his mentorship, I probably would not have reached my current academic achievements.

Second, I would like to thank all the professors who had taught me during my Ph.D. study at CSU, in particular Professors Wayne Schubert, William Cotton and Richard Johnson. Their courses were always challenging and inspiring, and our in-class and out-of-class discussions have substantially enhanced my understanding of the underlying concepts in the various topics.

My appreciation also goes to my classmates at CSU. They provided support during times of frustration and we had lots of fun, and beer, together to vent our pressure in our research. Their organization of meetings to discuss the contents of seminal papers helped me increase my knowledge about the atmosphere.

My four-and-a-half years at CSU shaped my future career, and I want to thank everyone who has taught me or interacted with me in one way or another during this period. My sincere and heartfelt thanks to all of you who have made this award a reality.
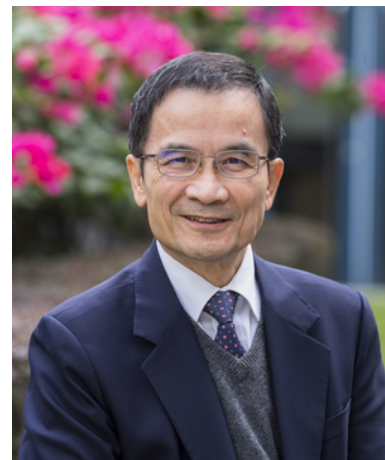
Paul DeMott named a Fellow of the American Association for Aerosol Research

Senior Research Scientist (Emeritus) Dr. Paul DeMott has been named a Fellow of the American Association for Aerosol Research. As can be reviewed on the AAAR website, the AAAR Board of Directors established the category of Fellow to honor significant contributions by individuals to the discipline of aerosol science and technology, and service to AAAR. AAAR Fellows are expected to actively promote the field of aerosol science and technology and the ideals of AAAR. Paul has done extensive research in the area of aerosol-cloud interactions, particularly ice phase transitions of atmospheric particles for conditions present in various regions of the troposphere, including layer clouds in winter, cumulus clouds, and cirrus clouds.

ALUMNI NEWS

Eric Guillot (M.S., '10) was promoted in April 2024 to be the Winter Weather Program Manager in the Analyze, Forecast, and Support Office (AFS) at National Weather Service Headquarters.

David Henderson (M.S., '14) for the past 7 years worked as a research scientist in the Space Science and Engineering Center at the University of Wisconsin-Madison. This fall, Henderson started a position as assistant professor in the Atmospheric and Oceanic Sciences department at the University of Wisconsin-Madison.

Steven Brey (Ph.D., '19) is an Applied Scientist at Amazon where he works on mitigating weather impacts on operations. Brey builds models, tools, and datasets that enable operations and business decisions to manage weather and other risks.

Liz Mulvihill (M.S., '90; Ph.D., '07) was elected an American Meteorological Society Fellow as part of the 2025 cohort. Mulvihill currently serves as the Director of the UCAR Community Programs Education and Training Center and the COMET Program.

Timothy Lang (M.S., '97; Ph.D., '01) served as the project scientist for a NASA field campaign called ALOFT, which occurred during July 2023. The campaign made major discoveries about the common production of gamma rays by thunderstorms, which led to two recent publications in the prestigious journal Nature (Highly dynamic gamma-ray emissions are common in tropical thunderclouds and Flickering gamma-ray flashes, the missing link between gamma glows and TGFs). ALOFT also made important measurements of tropical lightning and convection that are relevant to future NASA missions such as INCUS. ALOFT data will be hosted by NASA.

Gregory Poulos (Ph.D., '96) Founded in 2017, ArcVera Renewables, a technical consulting firm utilizing atmospheric science data analysis and mesoscale/large eddy simulation numerical weather prediction to optimize and help complete wind, solar and battery storage projects with Greg as CEO, was sold to Bureau Veritas in September 2024. The firm has contributed to the completion of over 300,000 MW of green energy projects on 6 continents, including the first wind farms in 20 US states and countries, and 60% of all wind farms in the US. Atmospheric science has an important role to play in the clean energy transformation, from micro to climatic spatio-temporal scales.

Gus Alaka (M.S., '11; Ph.D., '14) is the new Director of the Hurricane Research Division in NOAA's Atlantic Oceanographic and Meteorological Laboratory. Alaka is thrilled to lead an amazing team into the next-generation of hurricane forecasting.

Knox Williams (MS, '70) was a student of Bill Gray. His guidance got Nox an interview and job offer with the National Hurricane Center in Miami. Nox turned that offer down for another job offer from the US Forest Service in Colorado in avalanche forecasting and research. He took that one, and had a career of 36 years doing exactly that, and was one of the founders of the Colorado Avalanche Information Center. Upon retirement in 2006, he was on a committee to hire his replacement, who is Ethan Greene, also a Ph.D. grad student of CSU Atmospheric Science. Knox lives in retirement in Cedaredge, Colorado, on the western slope, and seldom visits Fort Collins. But when he does, he drives to the Atmospheric Science building, just to refresh memories.

Update from Colorado Climate Center Director, Russ Schumacher

Climate-wise, 2024 was very different than 2023 in Colorado. And it was a year of change for the Colorado Climate Center as well. But what hasn't changed is our mission to provide climate monitoring, climate research, and climate services for Colorado.

2024 has been a very warm year for Colorado, like it has been for most of the planet. For water year 2024, precipitation averaged across the state was close to normal, but as always the real story is in the details. Northern Colorado, which had one of its wettest summers on record in 2023, turned back to drought in summer 2024. The opposite occurred in southern and western Colorado, which went from drought in 2023 to a very wet summer this year. Wildfire worries returned to the northern Front Range with the Alexander Mountain fire in late July and early August. For more details, check out our summary of Water Year 2024, and to follow along with Colorado's climate each month, make sure you're subscribed to receive the monthly statewide climate summaries in your inbox. January 2024 saw the release of the 3rd edition of Climate Change in Colorado, an in-depth look at observed changes and future projections across the state. The report includes summaries of temperature, precipitation, water supply, and hazards; and how they are all changing. This report has already become an important resource for decision makers, the media, and the public in Colorado.

The Climate Change in Colorado report was led by Becky Bolinger, who had served as assistant state climatologist for about six years. Sadly, Becky departed the Climate Center in 2024 to pursue another opportunity. Long-time CCC staff member Peter Goble was promoted to the assistant state climatologist role in July.

The CCC hosted the annual meeting of the American Association of State Climatologists on the CSU campus in June 2024. This brought climate services experts together to discuss research, outreach, and best practices, and was highly successful with nearly 100 participants in person and more online.


The Colorado Agricultural Meteorological Network (CoAgMET) continues to grow and thrive. A new-and-improved website was released in summer 2024 that features an interactive real-time map on the homepage. New all-weather precipitation gauges, 10-meter towers, and barometers were installed at select stations, with more of these upgrades in the works for the next year.

After celebrating its 25th anniversary in 2023, CoCoRaHS (the Community, Collaborative Rain, Hail, and Snow network) had another banner year of volunteer precipitation observing in 2024. The CoCoRaHS database recently surpassed 75 million daily precipitation observations, and an upgraded mobile app and website were released to support observers in submitting their data. CoCoRaHS is a part of several new and ongoing research projects, including an effort to make participatory science more accessible and equitable, and two projects to better understand and predict hail.

CoAgMET and CoCoRaHS will also both be part of a large effort to expand soil moisture monitoring in Colorado, and to connect those measurements to on-the-ground conditions reported by volunteer observers.

One other new initiative in 2024 is that we started blogging – so if the other data and resources on the CCC website don't quench your thirst for Colorado Climate information, take a deeper dive by visiting and subscribing to our blog!

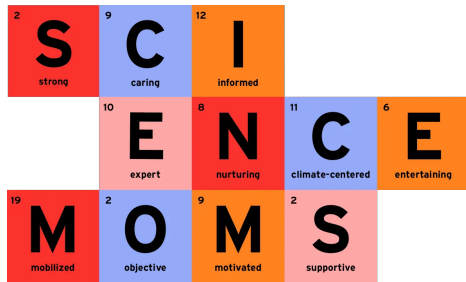*Update from Colorado Climate Center Director Russ Schumacher*

SCAN ME

Subscribe to our blog at
https://climate.colostate.edu/blog/
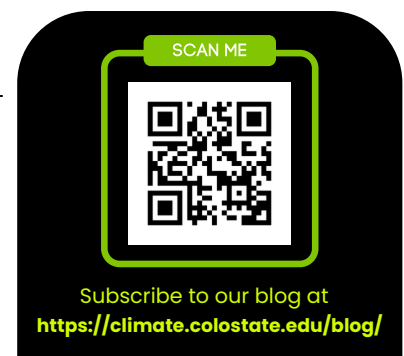
Science Moms Podcasts feature Drs. Melissa Burt, Emily Fischer

With the shows My Climate Journey, World Changing Ideas, The InEVitable, and others

https://sciencemoms.com/climate-change-podcasts/

CSU faculty contribute to most comprehensive assessment of climate change in U.S.

Story by Jayme DeLoss
https://col.st/ATRDx

CSU-led satellite mission to study extreme weather moves into construction phase

Story by Josh Rhoten
https://col.st/xBrBy

Last of a groundbreaking set of Earth observing satellites launches

Story by Theresa Barosh
https://col.st/TCcsD

Interdisciplinary team calls for modernized standards in national study on probable maximum precipitation

Story by Theresa Barosh
https://col.st/s71Nr
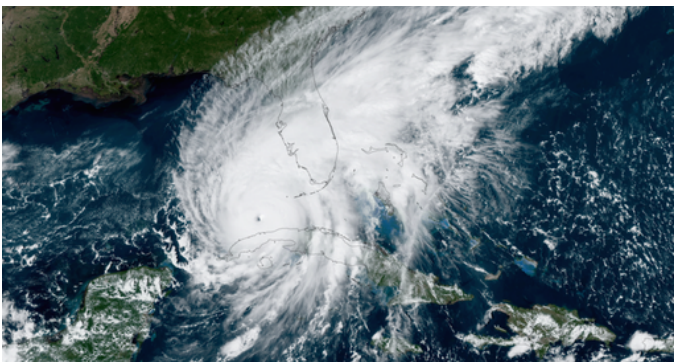
CSU part of $6.6M Data Assimilation Consortium to improve weather forecasting

Story by Josh Rhoten
https://col.st/QonFa

Earth's water future veers into sci-fi territory, researchers say

Story by Josh Rhoten
https://col.st/1UBXm

CSU is a long-time leader in innovating hurricane research and forecasting

For the past 40 years, Colorado State University has been at the forefront of tropical weather research and seasonal hurricane forecasting. Every day, CSU faculty and students lead work on predicting, understanding and mitigating the impacts of destructive hurricanes like Katrina, Irma and now Beryl.

By integrating work from the university's top-rated Department of Atmospheric Science with expertise in climate studies, engineering and social sciences, CSU researchers develop comprehensive strategies to address the challenges posed by these storms. The university also leads in quickly translating and applying new techniques, methods and findings to real-world storms through a now decades-long partnership with the Cooperative Institute for Research in the Atmosphere.

Beyond the 2024 Atlantic seasonal hurricane forecast, the stories in this Special Report from SOURCE showcase the university's expertise in better understanding the rapid intensification of storms, community resilience planning and understanding how storms destroy buildings.

Stories by Josh Rhoten, Jayme DeLoss, and Stacy Nick

Inside the storm described by a CSU student: What it's like to fly into a hurricane

Researchers strive to better understand how and why hurricanes rapidly intensify into deadly storms

How did the preeminent hurricane research center arrive at a landlocked university?

Next-gen hurricane modeling being evaluated by team that includes CSU alum

CSU hurricane expert rates Hollywood storm scenes

The Day After Tomorrow. The Perfect Storm. How real are the storms in some of Hollywood's most popular movies? A video by John Cline shares comical reviews.

SCAN ME

Read the full stories at
https://source.colostate.edu/innovating-hurricane-research-and-forecasting/