

Autumn 2016

# Atmospheric Circulation

Newsletter of the University of Washington Atmospheric Sciences Department

## OLYMPEX: Testing a NASA Satellite on the Olympic Peninsula

by

Dr. Lynn McMurdie and Professor Robert A. Houze, Jr.

It's early October 2015, and NASA is launching a large and complex field project to test a new precipitation measuring satellite, and scientists from the Departments of Atmospheric Sciences and Civil and Environmental Engineering are leading this massive adventure. There is no need for earplugs to protect your ears from the roar of rockets or a countdown: the Olympic Mountains Experiment (OLYMPEX) is being launched by a mule train.



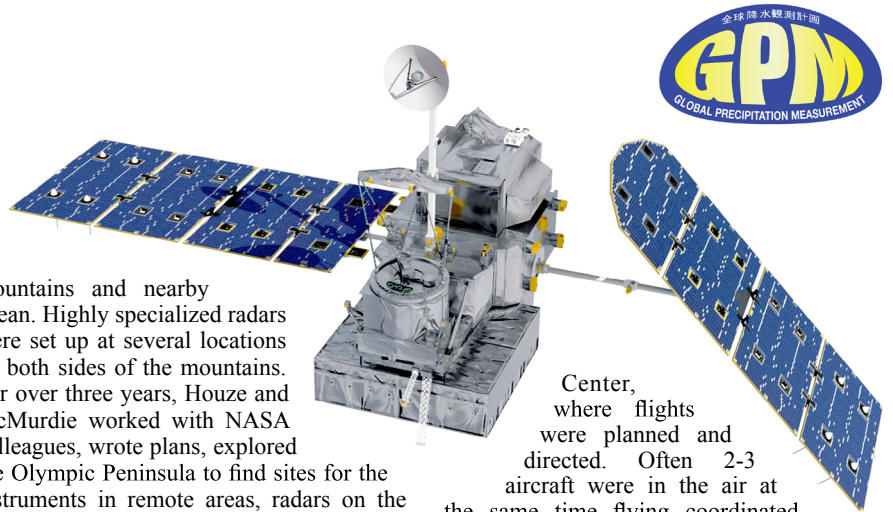
Mules carry OLYMPEX instruments through wilderness to the high terrain of the Olympic Mts.

OLYMPEX occurred last fall and winter and was led by Prof. Houze and Dr. McMurdie of the Department of Atmospheric Sciences. The mission is to test how well the Global Precipitation Measurement (GPM) satellite (depicted) with two radars and a passive microwave radiometer aboard can measure rain and snow over both ocean and mountains. The Olympic Peninsula is an ideal location for this project as it is home to a temperate rain forest, with old growth trees covered in lichen and moss and lies in the track of the Northern Hemisphere's winter storms. Wet weather systems repeatedly traveling from the Pacific Ocean over the coastal region and into the Olympic Mountains are a perfect natural laboratory for the experiment. The Peninsula receives annual precipitation ranging from over 100 inches to about 180 inches in the mountainous interior. The Olympic National Park covers much of the higher terrain and is a designated national wilderness area; thus, the need for mules to carry instruments and gear into the most remote sites. But much more than that is needed.

Three high performance aircraft flew numerous missions over and into the clouds enveloping the

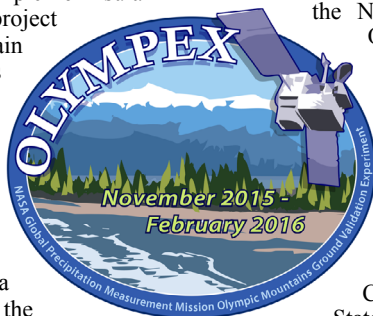
mountains and nearby ocean. Highly specialized radars were set up at several locations on both sides of the mountains. For over three years, Houze and McMurdie worked with NASA colleagues, wrote plans, explored the Olympic Peninsula to find sites for the instruments in remote areas, radars on the coast and inland, and locations for aircraft staging. Two aircraft stationed at McChord Airforce Base flew well above the clouds with the same type of instruments as those flown on the GPM satellite. A third aircraft flew inside the storms with cloud instruments to measure the sizes and types of rain and snow particles. To realize this plan, McMurdie and Houze developed relationships with numerous organizations and agencies. In addition to several NASA groups (Goddard Space Flight Center, Marshall Space Flight Center, the Jet Propulsion Laboratory, and the Armstrong Flight Facility), they worked with the National Park Service, the Quinault Indian Nation, Environment Canada, the National Weather Service, the Center for Severe Weather Research, the National Center for Atmospheric Research, the U.S. Forest Service, and the Universities of Utah, Illinois, Michigan, Colorado State, Pennsylvania State, Medellin (Colombia), Texas A&M, and Washington. Participants in OLYMPEX came from all these organizations and from four countries. Over 100 individual participants played important roles in OLYMPEX.

The Department of Atmospheric Sciences was the nerve center of the project. The 6th floor of the Atmospheric Sciences Building was partially taken over by the project. McMurdie and Houze directed this Operations



Center, where flights were planned and directed. Often 2-3 aircraft were in the air at the same time flying coordinated patterns. McMurdie directed a team of graduate student forecasters, who briefed the flight directors on the upcoming weather conditions every day. These briefings were crucial for deciding the exact times to launch the aircraft, operate radars and launch soundings. The lead graduate student forecaster was Jennifer DeHart of the Department of Atmospheric Sciences. The flights were carried out over the four specialized radars and ground instruments, which measured not only the amounts of precipitation but also the types and numbers of raindrops and snowflakes in the air and how these particles were falling to the ground. The radars operated at a variety of frequencies, bracketing the frequencies of the satellite radars. Three of these radars were set up on the wet southwestern side of the Olympic Mountains and a 4th was installed

OLYMPEX — Continued on page 8

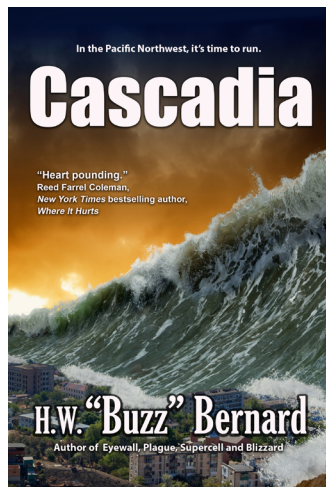


The NASA S-band NPOL (left) and Ka/Ku band D3R (right) dual-polarization Doppler radars installed on Quinault Nation land near Taholah, WA, in OLYMPEX.

## Alumni News

**Bob Berkovitz** ('69, B.S.) continues to volunteer his time at the Arizona Science Center in Phoenix since his retirement in 2005 from a career as a meteorologist with the National Weather Service. Bob is the Program Chair for the Tempe, AZ chapter of NARFE (National Active and Retired Federal Employee Association).

**H.W. "Buzz" Bernard** ('63, B.S.) released his newest novel, *Cascadia*, in July. He is currently president of the Southeastern Writers Association. He resides in Roswell, Georgia, with his wife, Christina, his grandson, Nicholas, and a fuzzy Shih Tzu named Stormy. You can visit Buzz Bernard at his website: [www.buzzbernard.com](http://www.buzzbernard.com).



**Steven Businger** ('86, Ph.D.) was appointed Chair of the Department of Atmospheric Sciences at the University of Hawaii in January of 2016.

**Brad Carl** ('11, B.S.) has been hired as the new weekend evening meteorologist at FOX 23 in Tulsa, Oklahoma.

**Steven Cavallo** ('09, Ph.D.) was awarded an ONR (Office of Naval Research) Young investigator Program (YIP) award, one of only two in the atmospheric sciences for 2016. Steven is an Assistant Professor at the University of Oklahoma's School of Meteorology.

**David Dempsey** ('85, Ph.D.) is currently serving a three-year term as Chair of the Department of Earth & Climate sciences at San Francisco State University.

**Iona Dima-West** ('05, Ph.D.) is currently in London working for "Willis Re," as the Divisional Director of their Catastrophe Model Research and Evaluation team.

**Kyle E. Fitch** and **Christopher D. Miller** (both '06, B.S.), both Active Duty Weather Officers, were selected to promote to the rank of Major this year. Kyle is currently stationed at Wright-Patterson Air Force Base, Ohio and Chris is at the United States Air Force Academy, Colorado.

**Harry H. Hendon, III** ('85, Ph.D.) was elected as a fellow in the 2016 class of the American Geophysical Union.

**Charanjit Pabla** ('12, B.S.) received his M.S. in Atmospheric Science (with an emphasis in Dual-Polarimetric Radar and Precipitation modeling) at the University of Alabama in Huntsville. He is currently an Operational Meteorologist/Data Scientist at the Commodity Weather Group, a private energy forecasting firm based near Washington, D.C.

**Ben Schott** ('02, B.S.) was recently selected to be the next Meteorologist in Charge of the National Weather Service office in Sullivan/Milwaukee, WI after two years as the Meteorologist in Charge of the NWS Binghamton, NY office. Ben has served over 14 years with the NWS.

**Rex Thompson** ('09, B.S.) was part of this fall's inaugural class of the UW's new M.S. in Data Science program. He has been working at DSG Solutions, a small environmental consulting firm in Shoreline, WA. Rex also serves as the Chair of the Puget Sound Chapter of the Air & Waste Management Association.

## Alumni Event at the AMS

Plans are in the works for a department alumni dinner during the 2017 Annual Meeting of the American Meteorological Society, taking place in January in Seattle. Stay tuned for more information on the department's home page NEWS sidebar or <http://www.atmos.washington.edu/outreach/news.shtml>. To ensure your email invitation is sent to your current address, you can update your contact information by going to [www.washington.edu/alumni/subscribe/address-change.html](http://www.washington.edu/alumni/subscribe/address-change.html) or contacting the department at [atmos@uw.edu](mailto:atmos@uw.edu).

## Robert A. Houze, Jr. Symposium at the AMS

At the 2017 Annual Meeting in January, the American Meteorological Society will be hosting the Robert A. Houze, Jr. Symposium to celebrate and honor Professor Houze for his 45-year career as a researcher and educator and his seminal contributions to the fields of mesoscale and tropical meteorology. The symposium will take place on Tuesday, January 24, 2017. For more information, visit <https://ams.confex.com/ams/97Annual/webprogram/HOUZESYMP.html>.

## Chair's Column

I've had the pleasure of writing this column for the past 4 years, but this one will in fact be my last. My term as chair ends July 2017 and, although I will miss aspects of this job that are very rewarding, like advocating for and realizing positive change for the department, I look forward to flexing my teaching muscles more fully and spending more time with my graduate students. I thank my colleagues for their patience and cooperation during my time as chair, and my graduate students for rising to the challenge with the added independence that this term of service required.

We have a lot to celebrate from the past year, such as Professor Dennis Hartmann's election to the National Academy of Sciences, and watching the field operations for the OLYMPEX project take place right in the ATG building. We also celebrate a new Department Administrator, Jennifer Weiss, and Chair's Assistant, Wanjiku Gitahi, who are both providing fantastic service to the department. A

good example is the Autumn Social, which they planned and managed together in South Campus Center, without ever having previously attended one of our Autumn Social gatherings! We bid farewell to former Chair's Assistant Debbie Wolf in August, who served the department with dedication and distinction for over 25 years. Thank you, Debbie, and best wishes in retirement!

During the past year we also had what is perhaps our most difficult faculty search in a generation or longer, and it ended without making a hire. I refused to call it a "failed" search, because it reminded me that we are a relatively small, collaborative department, and cooperation is an essential part of what makes this department great. We work in a time of limited resources at the University, with no sign this will change any time soon, so this search really forced us to think about investing for the future and making sure we are aligned in our priorities.

Finally, this would not be a Chair's column without the annual reminder that you, Friends

of Atmospheric Sciences, help us reach our goals with your generous end-of-year gifts. Our funding goals include increasing support for graduate students, diversity, our faculty, and our facility. I note that another thing I will miss when I am no longer chair is writing those thank-you notes for your donations, but I still have seven months to go, so help me finish this job with a bang!

*Greg Hakim*



*Greg Hakim behind the Fleagle desk.*

## From the Andes to the Jungle

by

Xiaojuan Liu, Graduate Student

I never expected to travel in the Southern Hemisphere. But all of a sudden, there I was: in Peru and a member of a team of 19 scientists that included geologists, biologists, hydrologists and geochemists, as well as a science journalist and a science photographer. The objective of our interdisciplinary team was to examine data to test the hypothesis that the western Amazon is the most biodiverse region on the planet because the rise of the Andes fractured the landscape, generating insurmountable ecological niches that allowed for accelerated species diversification. The purpose of our trip was to find the geological and biological data that could test this hypothesis.

Our first destination was the Descaso-Yauri basin, a Miocene-age deposit on the Altiplano. Although it is called a basin, it is actually at an elevation of about 3950 meters. It is therefore very dry. The annual rainfall is only 50 mm compared to 940 mm of Seattle. But 10 million years ago or so, it was much wetter, as evidenced by a huge fossilized tree trunk of at least 9 m wide lying in the backyard of a local cattle ranch, 4000 m up on Peru's Altiplano. A tree of this type and size does not live on the Andean Altiplano today; nor is it found at similar altitudes elsewhere on the planet today. This and other evidence suggests that 10 million years ago the Andean Altiplano was much lower and wetter than it is today.

The biggest challenge traveling in the high Andes is altitude sickness. Nausea, headache, and difficulty breathing are very common when lowlanders go to high elevation. Local people use coca leaves to alleviate the symptoms of high altitude: you can make tea from the coca leaves, or chew coca leaves directly. The best way to avoid the symptoms of high altitude sickness, however, is to go to high elevation slowly. But this is a luxury we didn't have.

Just as I was getting adjusted to the thin air, we left for our second destination: the Wayqecha cloud forest. Spanning from 3010 m to 2000 m, the Wayqecha cloud forest is one of the world's most important biodiversity hotspots. The ecologist in our group told us there are about 300 tree species in a single hectare here compared to about 300 tree species in the entire eastern North America. The staggering richness of the species became evident to us as we descended from about 4000 m to about 1500 m following an old Incan trail. Within a vertical distance of only 2500 m, the vegetation changed from grassland to trees draped in moss, and finally to a veritable jungle of lush ferns. This astounding biodiversity is undoubtedly linked to the steep slope of the Andes. The sharp gradient in altitude and hence temperature and moisture creates an exceptional array of habitats that suits a vast number of species.



*The Andes-Amazon Geogenomics group, taken at Abra Pirhuayani, a high mountain pass at an elevation of 4725 m in the Andes of Peru.*

*Photo credit: Jason Houston*

Once we reached 1500 m, we boarded a bus and continued to descend for another half a day to Atalaya, a small village comprised of several rough wooden houses on the upper Madre de Dios River. From there, we boarded two river canoes and headed down the Madre de Dios River for a day, and then up Manu River for another day until we reached our final stop — the Cocha Cashu Biological Station deep in the intact lowland tropical rainforest. Getting its name from a Cashew-shape lake nearby, Cocha Cashu is the world's only permanent tropical ecological station that is minimally impacted by humans. To keep the site pristine, the Peruvian government has put very strict regulations on who can visit the Station. To visit, you first need a special permit, which is given for scientific purposes only. You also need to have been vaccinated against yellow fever, tetanus and influenza, and pass a health check before entering because indigenous people residing in the area are susceptible to certain diseases.

Living in Cocha Cashu was also a bit challenging. The lake by which we set out tents is full of black caimans which showed up as numerous red dots with a flashlight at night. The dense giant trees in the forest may fall down on you at any time due to their shallow roots in the rich soil. There are also indigenous people close by who are known to be tall, strong and unfriendly. But my biggest fear was the snakes. The damp and dark rainforest is a dreamland

for snakes, including the bushmaster, the most poisonous snake in the Manu National Park where Cocha Cashu resides. They don't usually attack people, but they don't mind doing so when being stepped on accidentally. So the top rule living in Cocha Cashu is always wearing rain boots when walking on the trail. Rule Number 2 is always shaking your boots before putting them on; you never know whether a snake or a bullet ant would crawl in for a nap. Although courageous enough to swim in the lake that has caimans, which is allowed during the day only, in fear of the snakes, I never dared to walk alone at night.

Despite all those fears, this was my favorite stop for our entire trip. The western Amazon where Cocha Cashu belongs is the world's most diverse region in terms of plants; it has over 15,000 tree species. But trees are just part of the picture. It also has over 800 bird species, representing 25% of all the birds known in South America and 10% of the world. It has 13 monkey species in total, including the world's smallest monkey, pygmy marmoset. Nor is it short of big mammals, such as the peccaries, giant otter, human-sized rodents, and even jaguars. Speaking of jaguars, many tourist companies claim to guide you to see the jaguars, but you really have to be very lucky to see them. On the other hand, if you check the camera trap, they are almost everywhere, including the Cocha Cashu Station.

## From the Andes to the Jungle...continued

For 10 days, we traveled from the Andes to the Amazon, spanning a total distance of over 1000 miles, and over 15,000 vertical feet. This is not a leisure trip at all. For most of the days, we had to get up at 5 am or even earlier. We also had to carry all the equipment, food and cookware. And we slept in tents, rustic lodges or hostels without heat or even light in the freezing days. But because of the stark contrast of the climates between now and 10 million years ago and the astounding biodiversity we saw and experienced, both caused by the rise of the Andes, this turned out to be the best trip I have ever taken.

*Right: Xiaojuan in the lowland tropical Amazon rainforest near Cocha Biological Station.*



## Professor Dennis Hartmann Elected to NAS

by  
Professor Gregory Hakim



Professor Dennis L. Hartmann was elected into the US National Academy of Sciences (NAS) at their February 2016 Annual Meeting. The NAS is a private, non-profit society of distinguished scholars, established by an Act of Congress, signed by President Abraham Lincoln in 1863. The NAS is charged with providing independent, objective advice to the nation on matters related to science and technology. Scientists are elected by their peers to membership in the NAS for outstanding contributions to research. The 84 new members elected in 2016 bring the total of active members to 2,268, which also include UW Atmospheric Sciences faculty Peter Rhines and J. Michael Wallace. Deceased faculty members James R. Holton and Richard J. Reed were also members. The NAS includes the physical, biological and social sciences. The geophysics section, which atmospheric scientists normally join, has 70

members, and includes scientists who study the fluid and solid Earth as well as space and planetary sciences.

The NAS produces a peer-reviewed journal, *Proceedings of the National Academy of Sciences*, which is edited by the members. The primary public function of the NAS is to produce unbiased reports to advise the US government on scientific issues, and numerous UW ATMS faculty have been heavily engaged in this work. Professor Mike Wallace led a study on “Surface Temperature Reconstructions for the Past 2000 years” 2006. Professor Chris Bretherton led a study “A National Strategy for Advancing Climate Modeling” 2012. Hartmann chaired “An Assessment of NASA’s Earth Science Program” 2012. NAS reports are freely available as pdf files from the NAS web site.

Dennis joined the Department in 1977 after earning his bachelor’s in mechanical engineering from the University of Portland and his doctorate in geophysical fluid dynamics from Princeton University. His research looks at the atmosphere’s role in climate variability and change, and how the atmosphere interacts with the ocean in a changing climate. He has particular interests in the stratosphere, the role of clouds in Earth’s climate, and the interaction of storms with jet streams. In January he published the second edition of his textbook, *Global Physical Climatology*. He served as the Department Chair from 2002-2007, and as interim dean of the College of the Environment from 2008-2010.

## Public Lectures

The 2016 Robert Fleagle Endowed Lecture in Atmospheric Sciences Policy was delivered on October 13, 2016, by Cathleen Kelly, a Senior Fellow at the Center for American Progress. Kelly’s lecture was entitled “Tackling Climate Change Security Threats: A Mounting Imperative for the Next President.” For more information on our lectures, please visit our lecture website at <http://www.atmos.washington.edu/alumni.update/lectures.shtml>.

Prof. Shang-Ping Xie, Scripps Institution of Oceanography at the University of California San Diego, visited the department as the Graduate Students’ Distinguished Visiting Lecturer. Prof. Xie gave a public lecture on April 7, 2016 entitled “El Niño, and the Rise of the Pacific as Global Climate Pacemaker.”

## Labs Unlocked

On November 17, the College of the Environment’s Labs Unlocked series featured the research of Michelle Tigchelaar, a post-doc in Prof. David Battisti’s lab, alongside Karl Lapo, a graduate student in Jessica Lundquist’s lab. Their talk, titled “From Local Snowpack to Global Food Security: Answering Questions about a Changing Climate,” was part of the night’s theme of “Pathways to Climate Resilience.” The event also featured special guest Jeff Renner, as well as College of the Environment faculty members Amy Snover and Nick Bond. Jeff Renner (B.S.) and Nick Bond (Ph.D.) are both Atmospheric Sciences alumni.

## UW WxChallenge Forecasting Team Has Another Successful Season

by  
Joe Zagrodnik, Graduate Student

The 2015-16 UW WxChallenge forecasting team once again placed near the top of the national collegiate forecasting competition. The 25-member team consisted of a mix of undergraduates, graduate students, and faculty competing against atmospheric sciences programs across the US. The team finished in 6th place nationally after forecasting the high and low temperature, maximum sustained wind speed, and precipitation for 10 different cities over a 20-week period. We would like to acknowledge 7 forecasters who advanced to the “postseason” tournament: Lynn McMurdie, Elizabeth Maroon, Jon Weyn, Luke Madaus, Ken Ho, Patrick Foster, and Jen DeHart. Additionally, Nick Weber was awarded a trophy for being the second best graduate student forecaster at El Paso, Texas. The 2016-17 season is currently underway. All UW faculty, students, staff, and alumni are eligible to join the team in January 2017. Contact Joe Zagrodnik ([jzagrod@uw.edu](mailto:jzagrod@uw.edu)) for more information.

## Congratulations to Graduates

### Doctor of Philosophy

- Adames, Ángel F.**, *An observational and theoretical study of the structure and propagation of the Madden-Julian Oscillation* (Kim/Wallace)
- Barnes, Hannah C.**, *The Microphysical Structure of Mesoscale Convective Systems* (Houze)
- Harrop, Bryce E.**, *On the nature of the atmospheric cloud radiative effect and its impact on tropical convection* (Hartmann)
- Hillman, Benjamin R.**, *Reducing errors in simulated satellite views of clouds from large-scale models* (Ackerman)
- Madaus, Luke E.**, *Constraining storm-scale forecasts of deep convective initiation with surface weather observations* (Hakim/Mass)
- Maroon, Elizabeth A.**, *Large-scale Climate Asymmetries in General Circulation Models: The Influence of Land on Tropical Precipitation and the Role of the Rocky Mountains on the Oceanic Meridional Overturning Circulation* (Frierson/Battisti)
- McCoy, Daniel**, *Microphysics and Southern Ocean Cloud Feedback* (Hartmann)
- Powell, Scott W.**, *Dynamics of Large-Scale Convective Onset in the Madden-Julian Oscillation* (Houze)
- Singh, Hansi Alice**, *Moisture Transport, Energetics, and Teleconnections in the Global Climate System* (Bitz)
- Steiger, Nathan J.**, *Global climate reconstruction across time and space using data assimilation* (Battisti/Roe/Hakim)

### Master of Science

- Geiss, Andrew Vincent**, *Multi-year Trends in MODIS and MISR Observed Cloud Fraction over the Extratropical Oceans* (Marchand)
- Huang, Jiayue**, *Improving constraints on the sources and distribution of sea salt aerosols in polar regions* (Jaegle)
- Kohyama, Tsubasa**, *Antarctic sea ice response to weather and climate modes of variability* (Hartmann)
- Lague, Marysa M.**, *Progressive Mid-latitude Afforestation: Local and Remote Climate Impacts in the Framework of Two Coupled Earth System Models* (Swann)
- Ordonez, Ana Cristina**, *Ice-atmosphere interactions and sea ice predictability at multiple resolutions in the Community Earth System Model* (Bitz)
- Perkins, Walter A.**, *Reconstructing Past Climate by Using Proxy Data and a Linear Climate Model* (Hakim)
- Picard, Lee M.**, *The Sensitivity of Orographic Precipitation to Flow Direction: An Idealized Modeling Approach* (Mass)
- Ray, Brandon M.**, *Understanding the limits of the seasonal prediction of sea ice in the Arctic* (Bitz)

- Twedt, Judy Renee**, *The Impact of Tropical Teleconnections on Antarctic Sea Ice and Climate* (Battisti/Frierson/Bitz)
- Wall, Casey J.**, *On the Influence of Poleward Jet Shift on Shortwave Cloud Feedback in Global Climate Models* (Hartmann)

### Bachelor of Science

- Kevin Brockman**  
**Jason Easter**  
**Dennis Ferrer**  
**Patrick Foster**  
**Anthony Goodwin**  
**Ken Ho**  
**Weiming Ma**  
**Jeremy MacDonough**  
**Michael McKeirnan**  
**Chelsea Mealey**  
**Daniel Nesser**  
**Emily Ramnarine**  
**Matthew Rogers**  
**Virginia Lee-Klemm Rux**  
**David Taylor**  
**Cory Tung**  
**Tessa Vollrath**  
**Celeste Nicole Smoczyk Wrye**

## Scholarships and Awards

*American Meteorology Society:*

**Lydia Tierney**

*ARCS Fellowship:*

**Lucas Vargas Zeppetello**

*College of the Environment Scholarship:*

**Jamin Rader**

*Graduate Opportunity Program Award:*

**Lucas Vargas Zeppetello**

*GSFEI Top Scholar Award:*

**Rachel Atlas**

**Katie Brennan**

*Holton Departmental Award Scholarship:*

**Robin Clancy**

*NDSEG Graduate Fellowship:*

**Jonathan Weyn**

*National Science Foundation:*

**Rachel Atlas**

**Isabel McCoy**

**Lucas Vargas Zeppetello**

*Program on Climate Change Fellowship:*

**Lydia Tierney**

## Undergraduate and Faculty Research

The following undergraduate students and faculty members worked together during the past year:

- Violeta Lio King** / Nick Bond: Quality Control of Daily Precipitation Data
- Kallista Angeloff, Jonathan Chriest, Thomas Lamb** / Dargan Frierson: The effect of SST gradients on midlatitude storm intensity
- Daniel Barnes, Rabea Baroudi, Zane Brant, Kurt Blancaflor, Ben Celsi, Austin Chu, Louis Dinh, Chelsea Guo, Ben Peterson, Sally Wei, Daniel Zhu** / Dargan Frierson: EarthGames: Explaining environmental science concepts with interactive digital media
- Eliza Dawson, Sam Potter** / Dargan Frierson: Southern African orography impacts on low clouds and the Atlantic ITCZ in a coupled model
- Teddy O'Brien, Jacob Price, Thomas Schuldt** / Dargan Frierson: General circulation responses to perturbations in a hierarchy of GCMs
- Matson Porthier** / Joel Thornton: interpreting aircraft measurements of forest emissions that contribute to aerosol formation

## Welcome to New Graduate Students for 2016–2017

- Rachel Atlas**, University of Chicago (Bretherton)
- Katie Brennan**, Lewis and Clark College, OR (Hakim)
- Robin Clancy**, University of Bristol (Bitz)
- Yue Dong**, Tokyo Institute of Technology (Battisti)
- Megan McKeown**, Texas A&M University (Thornton)
- Hamid Alizadeh Pahlavan**, University of Tehran (Fu)
- Qiaoyun Peng**, Fudan University, Shanghai (Thornton)
- Lydia Tierney**, Wesleyan University, CT (Durrant)
- Lucas Vargas Zeppetello**, Columbia University, NY (Battisti)

Also, welcome back to **Fiona Lo**, who rejoins the department after earning her M.S. degree here in 1996. (Battisti)

## Donor Recognition

The Department of Atmospheric Sciences gratefully acknowledges the donors who have generously supported us during the past fiscal year July 1, 2015 through June 30, 2016.

### Individual Donors

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## Department News

**Welcome to Research Assistant Professor Edward Blanchard Wrigglesworth.** His research interests include atmosphere-sea ice-ocean interactions, Arctic Sea ice predictability, and snow on sea-ice in the Arctic.

**Faculty Awards and Honors—Professor Qiang Fu** was elected as a fellow of the American Association for the Advancement of Science, for his outstanding contributions to measuring and understanding how radiative heat is transferred through the Earth's atmosphere, and how this relates to climate and climate change.

**Professor Abby Swann** received an Early Faculty Development (CAREER) Program Award from the National Science Foundation.

**Professor Steve Warren** was elected as a fellow in the 2016 class of the American Geophysical Union. This is a tremendous honor, extended to only one in a thousand AGU members every year. The 2016 class of Fellows will be recognized during the Honors Tribute on Wednesday, 14 December, held during the 2016 AGU Fall Meeting in San Francisco.

**Research—**Polar scientists from UW, including **Professor Cecilia Bitz**, **Research Associate Yongfei Zhang**, and **Research Assistant Professor Edward Blanchard Wrigglesworth**, visited Alaska's North Slope in June for the 2016 Barrow Sea Ice Camp to collect data and discuss issues related to measuring and modeling sea ice.

**Student Awards—Lexie Goldberger**, graduate student, won the student poster competition at the American Association for Aerosol Research (AAAR) conference in October. Her poster was on the role of biomass burning on atmospheric oxidant sources.

**Marysa Laguë**, graduate student, received a 3-year fellowship from the National Science and Engineering Research Council of Canada.

**Max Menchaca**, graduate student, won first place for best student oral presentation at the 17th AMS (American Meteorological Society) Mountain Meteorology Conference in June. **Jen DeHart**, graduate student, won first place for her poster.

**Postdoctoral Awards—Sigi Schobesberger**, Research Assistant, won a Marie Curie Postdoctoral Fellowship from the EU for his proposed work as part of a collaboration between UW and the University of Helsinki to study trace gas fluxes and chemistry over forested ecosystems.

**Outreach—**The Outreach Video Group completed its latest UW Atmos Outreach video, *El Niño and the Case of the Missing Sardines - Episode 4*, a mystery film noir. To watch this and other fun and informative videos, visit their channel at <https://www.youtube.com/channel/UCbEmigxpSICZlscdtX46KMw>.

About one hundred third graders from Valhalla Elementary visited the department on December 1, 2015. The students were led in an interactive discussion of weather and atmospheric processes by graduate students **Andre Perkins**, **Max Menchaca**,

**Ángel Adames**, and **Research Scientist Peter Blossley**.

**EarthGamesUW**, our educational game team, participated in the 2015 national Climate Game Jam, sponsored by NOAA (National Oceanic and Atmospheric Administration), the Smithsonian, and the White House. Their game, ClimateQuest, won first place in the competition and was showcased at the Museum of Natural History in Washington, D.C. this year.

**Staff news—**Welcome to **Francis Timlin**, who started as our new Fiscal Specialist in November, 2015. **Jennifer Weiss** started as our Administrator in February, 2016. **Gerald Cournoyer** began as our Advancement Liaison with the College of the the Environment in July. **Wanjiku Gitahi** began as our new Assistant to the Chair in September, following the retirement of **Debbie Wolf**, after 25 years of service to the department. **Erica M. Coleman** joined us as our new Academic Advisor and Student Services Coordinator in October. **Andrew Sattler** was promoted to Grants Manager in June, 2016.

**Baby News—****Professor Abby Swann** and Nick Branigan were pleased to welcome Felix William Swann-Branigan into their family on January 27, 2016.

**Xiaojuan Liu** and Guozheng Shao were pleased to welcome Eleanor Shao into their family on March 18, 2016.

**Tsubasa** and **Rikako Koyhama**, were pleased to welcome Taku Koyhama into their family on April 5, 2016.

## Giving to the Department of Atmospheric Sciences

Please consider supporting the activities of the Department of Atmospheric Sciences. Your gift strengthens the core of the UW through recruitment and retention of world-class students and faculty. Your support of undergraduate and graduate students helps to create the next generation of scientific leaders. Help us to ensure that the department continues to be a leader in weather, climate and quality.

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Please send alumni news, comments, questions, corrections and address updates to [atmos@uw.edu](mailto:atmos@uw.edu) or call (206) 543-4250.

Giving questions can also be referred to:  
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## OLYMPEX...continued

on Vancouver Island to document the leeside precipitation. Ground instruments included specialized and calibrated precipitation gauges for rain and snow located at various elevations on both the windward and leeward sides of the Olympic Mountains. Snow poles and cameras in trees documented the accumulating snow pack. (Sometimes the cameras documented lounging elk and curious bear cubs.) Rawinsondes were launched on the Pacific coast and on Vancouver Island, often in wet, blustery weather.

OLYMPEX was fortunately during an excellent year to study storms crossing the Olympic Mountains. A veritable stampede of storm systems paraded across the Peninsula throughout the 6-week period of intensive operations, ranging from weak occluded frontal systems, to postfrontal convection, and to "atmospheric river" storms, notorious for their flooding potential in west coast mountain

ranges. The only break in the wet weather was during Thanksgiving when an upper-level ridge parked itself over the west coast for 5 days. This break allowed a calibration flight under clear conditions, and a rest for weary crews. During one especially wet 10-day period at the beginning of December, over 40 inches of rain was recorded at one of the project sites at an elevation of ~3000 feet on the south facing slopes of the Olympic Mountains. Lake Quinault experienced three rises of 15 feet to near flood condition in these wet systems.

OLYMPEX was an opportunity for public outreach to foster understanding of the Earth's weather and climate and NASA's role in observing these conditions from space. Angela Rowe and Shannon O'Donnell of the UW team gave dozens of presentations for schools, community groups, NPS visitors, the news

media, and social media groups. They led tours of the radars while the project was underway, and Shannon used the jumbotron at Safeco Field to tell several thousand kids about OLYMPEX this past spring.

Now Houze and McMurdie's team will join many other investigators in NASA and other institutions to analyze the massive and historic dataset collected by the aircraft, radars, and ground instruments in OLYMPEX. These data will tell us how well the satellite orbiting overhead detects the rain and snow over mountains and will greatly improve how well we understand how the atmosphere produces the rain and snow over mountains that are crucial to life and well being in the Northwest and elsewhere.



*Left: The OLYMPEX forecasting team. From left: S. Bang and L. Campbell (U. of Utah), N. Weber, L. McMurdie, J. DeHart, L. Madaus and J. Zagrodnik (U. of Washington)*

*Right: L. McMurdie (left), R. Houze (middle) and W. Petersen (right) of NASA making daily decisions about OLYMPEX operations.*

