

2018 **THE 20TH ANNUAL
PETER B. WAGNER
MEMORIAL AWARD**

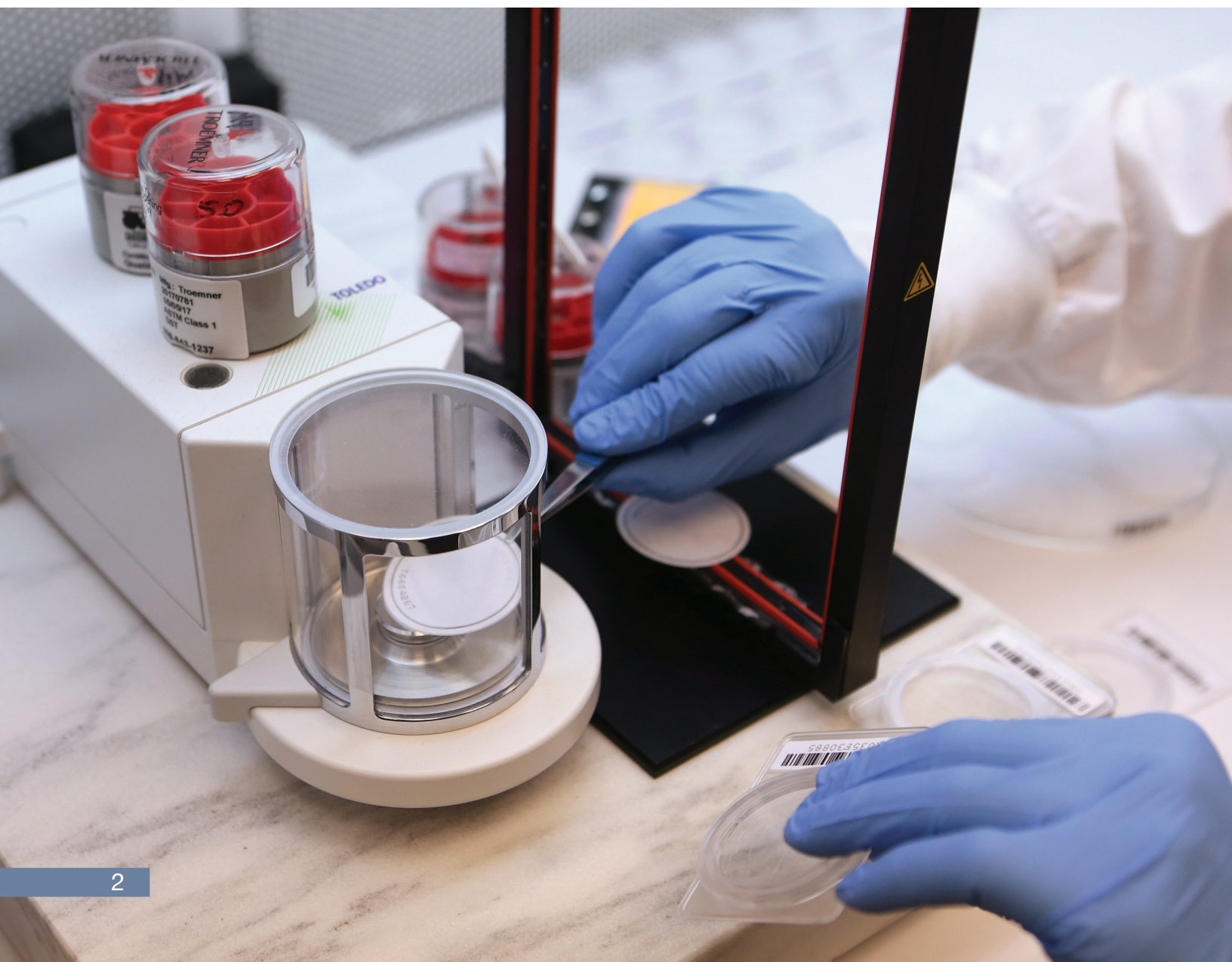
*July 19th, 2018
Desert Research Institute*



Recognizing Graduate Women in the Atmospheric Sciences since 1998

The Peter B. Wagner Award is a competitive national honor that recognizes a woman pursuing a graduate education in the atmospheric sciences who has published an outstanding academic paper.

The Wagner Award is the only such honor for graduate women in the atmospheric sciences in the United States, and the amount of the award is \$1,500.





Dr. Peter B. Wagner, an atmospheric scientist who had been a faculty member at the Desert Research Institute since 1968, was killed while conducting research in a 1980 plane crash that also claimed the lives of three other Institute employees.

In 1981, Dr. Wagner's family and friends established a memorial scholarship to provide promising graduate students in the Desert Research Institute's Atmospheric Sciences Program a cash award to further their professional careers.

Mrs. Sue Wagner—former Nevada Gaming Commissioner, Nevada Lieutenant Governor, DRI employee, and widow of Dr. Wagner—later extended that opportunity nationally and specifically for women through the creation of the Peter B. Wagner Memorial Award in 1998.

"The Peter B. Wagner Memorial Award came at an important time in my life, as I had recently graduated with my Ph.D. and was unsure of myself and whether or not a fulfilling career in science was really an option for me. The knowledge that my work was being recognized by others completely away from my own research circle was a huge psychological boost for me. I pursued postdoc openings with more confidence, including applying for a National Research Council postdoctoral fellowship that came through. This allowed me to spend three years at the then NOAA Environmental Technology Laboratory in Boulder, CO. From there, I moved into a faculty position at the University of Miami 14 years ago. It is not an exaggeration to say that the Award was a game-changer for me, in terms of helping me to see myself as a real scientist."

- Paquita Zuidema, 1999 Winner

2018 Wagner Award WINNER & FINALISTS

Isabel McCoy: Winner

Atmospheric Sciences, University of Washington

Her winning paper: "Identifying Meteorological Controls on Open and Closed Mesoscale Cellular Convection Associated with Marine Cold Air Outbreaks"

Isabel has always been interested in clouds, even as a child, but she did not know that Atmospheric Science much less Cloud Physics was a possibility until university. While earning her B.S. in Physics at the New Mexico Institute of Mining and Technology, Isabel interned at the University of Washington (UW) Joint Institute on the Study of the Atmosphere and Ocean (JISAO). It was there that she first discovered the world of cloud and climate science, and she hasn't looked back. Currently in her fourth year at UW, Isabel has continued to broaden her scientific horizons and enjoy this journey of discovery. While at UW, she has had the pleasure of working with many excellent scientists (particularly her advisor, Rob Wood), earned both the National Science Foundation (NSF) and American Meteorological Society (AMS) graduate fellowships, completed a M.S. and started a Ph.D., and even had the opportunity to participate in a field campaign (the Southern Ocean Clouds Radiation Aerosol Transport Experimental Study, SOCRATES). Isabel believes that atmospheric science has the potential to make the world a better place, and she looks forward to the next many years of her career striving to achieve precisely that.



Lauren T. Fleming: Finalist

Department of Chemistry, University of California, Irvine

Her paper: "Molecular composition of particulate matter emissions from dung and brushwood burning household cookstoves in Haryana, India"

Lauren got her bachelor's degree in chemistry from the College of Wooster in Ohio. There, she studied the kinetics of aqueous oxalic acid photooxidation with Professor Karl J. Feierabend as a Clare Boothe Luce research scholar. Lauren is currently a graduate student in the Nizkorodov and Rowland-Blake labs at the University of California, Irvine and is expected to earn her Ph.D. in the spring of 2019. Her research at UCI focuses on characterizing biomass burning smoke. In the summer of 2015, Lauren travelled to rural northern India to collect smoke samples from village cookfires. She uses high resolution mass spectrometry methods to characterize compounds in particles and gas chromatography methods to measure mixing ratios of trace gases in smoke.



Julia Montoya-Aguilera: Finalist

Department of Chemistry, University of California, Irvine

Her paper: "Secondary organic aerosol from atmospheric photooxidation of indole"

Julia began her research career as an undergraduate at the California State University, Los Angeles where she conducted atmospheric chemistry research with Professor Krishna Foster. Being in Los Angeles, a large city with highly congested highways, Julia explored the impact of fossil fuel combustion on air quality through the production of a class of compounds known as polycyclic aromatic hydrocarbons. After graduating in 2015 with a B.S. in Chemistry, Julia came to the University of California, Irvine (UCI) to pursue a Ph.D. in Chemistry. Under the mentorship of Prof. Sergey Nizkorodov, Julia currently explores the formation of secondary organic aerosols (SOA), a subset of atmospheric particulate matter that impacts global climate and adversely affects human health. Her first project at UCI was to investigate the formation of SOA from indole, a volatile organic compound emitted from plants under stress. Stressors, such as elevated temperatures and drought, are likely to lead to increasing indole emissions in the future. Julia also researches the formation and aging of SOA particles in the presence of ubiquitous atmospheric species, such as ammonia and water.



THEN & NOW: Past Wagner Award Winners

2017: Jessica M. Tomaszewski

*Department of Atmospheric and Oceanic Sciences,
University of Colorado, Boulder*



Her winning paper: “Do wind turbines pose roll hazards to light aircraft?”

2018: NSF Graduate Research Fellow, Graduate Research Assistant, Department of Atmospheric and Oceanic Sciences, University of Colorado at Boulder. Jessica has also gained industry experience as an intern at NextEra Energy during summer of 2018. She loves sharing her work on encouraging effective wind energy growth through understanding wind turbine impacts on their ambient environment and has won presentation awards at the American Meteorological Society’s Annual Meeting in 2017 and 2018, as well as at the 2018 Boundary Layers and Turbulence Conference.

2016: Natalie M. Freeman

Department of Atmospheric and Oceanic Sciences, Institute of Arctic and Alpine Research, University of Colorado, Boulder



Her winning paper: “Decreased calcification in the Southern Ocean over the satellite record”

2018: Natalie earned her Ph.D. in atmospheric and oceanic sciences from the University of Colorado Boulder in 2017 under the guidance of Dr. Nicole Lovenduski. Previously, she earned a B.S. in mathematics from the University of Kansas in 2012 and a M.S. in atmospheric and oceanic sciences from the University of Colorado Boulder in 2014. Natalie was honored to be a NSF Graduate Research Fellow from 2012-2015 and is currently a Scripps Postdoctoral Scholar Program Fellow. Dr. Freeman’s research focuses on the physical and biogeochemical oceanography of the Southern Ocean and utilizes hydrographic and remote sensing data and numerical model output. Natalie was the recipient of the Carol B. Lynch Graduate Fellowship in 2016 for her interdisciplinary research and selected for the NASA MPOWIR (Mentoring Physical Oceanography Women to Increase Retention) Speaker Series. Since 2013, she has mentored underserved and underrepresented students in STEM. Dr. Freeman is currently a member of the AGU and serves on the Leadership Council of the Association of Polar Early Career Scientists.

2015: Laura Kreidberg

Department of Astronomy and Astrophysics, University of Chicago

Her winning paper: “Clouds in the atmosphere of the super-Earth exoplanet GJ 1214b”

2018: Dr. Kreidberg successfully defended her Ph.D. in Astronomy and Astrophysics from the University of Chicago in 2016. In addition to a National Science Foundation Graduate Research Fellowship from 2013 through 2016, Laura received the University of Chicago William Rainey Harper Dissertation Fellowship and the Plotnick Fellowship from the Physical Sciences Division in 2015. She was recognized with the International Astronomical Union Division F Ph.D. Prize in 2017. While still in graduate school, Laura applied for a fellowship with the Harvard University Society of Fellows and recently completed her first year there as a Junior Fellow. Shortly after arriving at Harvard, where she is a member of the Institute for Theory and Computation that is a component of the Harvard-Smithsonian Center for Astrophysics, Dr. Kreidberg collaborated with Professor Abraham Loeb on a paper concerning characterization of the atmosphere of a recently discovered exoplanet known as Proxima b. This paper, “Prospects for Characterizing the Atmosphere of Proxima Centauri b,” was published in *The Astrophysical Journal Letters* in 2016 with Dr. Kreidberg as first author. She also has successfully competed for observational telescope time on space-based platforms including five awarded proposals in 2017 for studies ranging from the atmospheric diversity of mini-Neptunes to atmospheric water abundance for a sub-Saturn-mass planet. She authored a chapter in 2017 for the *Handbook of Exoplanets* and has given 10 invited presentations so far in 2017 throughout the U.S. and internationally. She is currently finishing a three year appointment at the Harvard Society of Fellows, maintaining an active research program on the atmospheres of extrasolar planets. Recent results include a climate map of an ultra-hot Jupiter and a detection of water and clouds in the atmosphere of a Neptune-like planet. Laura plans to extend this work to smaller, more Earth-like planets discovered by recently launched Transiting Exoplanet Survey Satellite (TESS), using the unprecedented capabilities of Hubble's successor, the upcoming James Webb Space Telescope.



THEN & NOW: Past Wagner Award Winners

2014: Dana R. Caulton

Department of Chemistry, Purdue University

Her winning paper: "Toward a better understanding and quantification of methane emissions from shale gas development"

2018: Dana defended her thesis and graduated from Purdue University in December 2014 with a Ph.D. in Analytical Chemistry. Her graduate research focused on quantification of greenhouse gas sources and sink using an aircraft platform. In 2015 she took a position as a Postdoctoral Research Associate in the Department of Civil and Environmental Engineering at Princeton University where she worked in the Atmospheric Chemistry Group of Professor Mark Zondlo. Her research focused on quantifying emissions from unconventional natural gas well pads in Pennsylvania. This work led to an invited seminar at AGU in 2016. She will join the University of Wyoming Department of Atmospheric Science faculty as an Assistant Professor in September 2018.

2013: Kelly McCusker

Department of Atmospheric Sciences, University of Washington



Her winning paper: "Rapid and extensive warming following cessation of solar radiation management"

2018: Research Associate, Department of Atmospheric Sciences, University of Washington--formerly at University of Victoria and the Canadian Centre for Climate Modelling and Analysis (CCCma)--working with Dr. John Fyfe at CCCma, Professor Paul Kushner at University of Toronto, and Professor Cecilia Bitz at UW as a part of the Canadian Sea Ice and Snow Evolution (CanSISE) network. Kelly received her Ph.D. in Atmospheric Sciences from the University of Washington in August 2013 under the guidance of Professors David Battisti and Cecilia Bitz.

2012: Kristen Lani Rasmussen

*Department of Atmospheric and Oceanic Sciences,
University of Washington*

Her winning paper: “Orogenic Convection in Subtropical South America as Seen by the TRMM Satellite”

2018: Assistant Professor, Colorado State University, Fort Collins, CO. Kristen received a B.S. in Meteorology and Mathematics and a B.A. in Music at the University of Miami in 2007. She completed her M.S. in 2011 and Ph.D. in 2014 from the Department of Atmospheric Sciences at the University of Washington. Her graduate research primarily focused on cloud and mesoscale processes of high-impact weather in South America using the TRMM satellite and flooding in India and Pakistan. Kristen was an Advanced Study Program Postdoctoral Fellow at the National Center for Atmospheric Research and worked with scientists from the Mesoscale and Microscale Meteorology Lab (MMM) and Research Applications Lab (RAL) from 2015 to 2016.



2011: Rasa Zalakeviciute (Grivicke)

*Laboratory for Atmospheric Research, Department of Civil &
Environmental Engineering, Washington State University*

Her winning paper: “Chemically-resolved aerosol eddy covariance flux measurements in urban Mexico City during MILAGRO 2006”

2018: Professor/Researcher Department of Environmental Engineering Universidad de Las Américas, Ecuador. Rasa is currently teaching in a university UDLA in Quito.



THEN & NOW: Past Wagner Award Winners

2010: Maria Cazorla

*Department of Meteorology and Atmospheric Science,
Penn State College of Earth and Mineral Sciences*

2018: Professor/Director, Atmospheric Measurement Station Universidad San Francisco de Quito (USFQ), Department of Environmental Engineering.

2009: Sara Horst

Department of Planetary Sciences, University of Arizona



2018: Assistant Professor, Department of Earth and Planetary Sciences, Johns Hopkins University. Sara's primary research interest is atmospheric chemistry. In particular, she is interested in the complex organic chemistry occurring in the atmosphere of Titan and the complex organics elsewhere in the solar system (and the universe!), whether they are produced in an atmosphere or on a surface. Horst's group at Johns Hopkins studies atmospheric chemistry and the role that atmospheres play in planetary habitability through models, experiments, and observations in the atmosphere of Venus, Titan, Saturn, Triton, Pluto, and extrasolar planets. They are also interested in the organic chemistry happening in the oceans of Europa and Enceladus.

2008: Katye Altieri

Institute of Marine and Coastal Sciences, Rutgers University

Her winning paper: “Oligomers formed through in-cloud methylglyoxal reactions: Chemical composition, properties, and mechanisms investigated by ultra-high resolution FT-ICR Mass Spectrometry”

2018: Dr. Katye Altieri is a Lecturer in the Department of Oceanography at the University of Cape Town researching climate and biogeochemistry in the marine atmosphere. She has focused on a number of areas including surface ocean-lower atmosphere nitrogen cycling, the impact of air pollution on the ocean, and the chemical composition and climate impact of organic aerosols. Katye obtained her Ph.D. in Oceanography from Rutgers University and a Masters in Public Policy from Princeton University. She was a NOAA Climate and Global Change Postdoctoral Fellow jointly appointed between Princeton and Brown University.



2007: Ariane Verdy

Department of Earth, Atmospheric, and Planetary Sciences, MIT

Her winning paper: “Carbon dioxide and oxygen fluxes in the Southern Ocean: Mechanisms of Interannual variability”

2018: Applications Programmer, Scripps Institution of Oceanography. Ariane Verdy is an oceanographer interested in exchanges between the ocean and the atmosphere. Her current work focuses on data assimilation of biogeochemical observations in high-resolution models to produce estimates of air-sea CO₂ fluxes. She is developing new methods for efficiently assimilating both physical and biogeochemical data, with the goal of improving flux estimates by forcing the model to be consistent with observations of the ocean carbon system.



THEN & NOW: Past Wagner Award Winners

2006: Paula Agudelo

Georgia Institute of Technology

Her winning paper: "Transition between suppressed and active phases of intraseasonal oscillations in the Indo-Pacific warm pool"

2005: Heather Dawn Reeves

Department of Marine, Earth, and Atmospheric Science, North Carolina State University

Her winning paper: "Effect of stable layer formation over the Po Valley on the development of convection during MAP IOP-8"

2018: Research Associate, Cooperative Institute for Mesoscale Meteorological Studies (CIMMS/NSSL), University of Oklahoma, and NOAA/OAR/National Severe Storms Laboratory, Norman, OK. Recent publication: "The Uncertainty of Precipitation-Type Observations and Its Effect on the Validation of Forecast Precipitation Type."

2004: Sarah A. Tessendorf

Department of Atmospheric Sciences, Colorado State University

Her winning paper: “The 29 June 2000 Supercell Observed During STEPS. Part 1: Kinematics and Microphysics”

2018: Sarah earned a B.S. in Meteorology/Climatology from the University of Nebraska-Lincoln in 2000, and an M.S. (2003) and Ph.D. (2006) in Atmospheric Science from Colorado State University where she studied hail growth, storm electrification, and radar meteorology. Sarah was a Cooperative Institute for Research in Environmental Sciences (CIRES) postdoctoral fellow at the NOAA Earth System Research Laboratory before being hired as a Project Scientist at NCAR’s Research Applications Lab (RAL) in 2008. Sarah currently manages several research projects and conducts cloud microphysical research related to winter orographic precipitation formation, aerosol and cloud seeding effects on precipitation, improving microphysics parameterizations in models, and improving aircraft icing diagnostic and forecast products.



2003: Jessica D. Lundquist

Scripps Institute of Oceanography, University of California, San Diego

Her winning paper: “Spring Onset in the Sierra Nevada: Is snowmelt independent of elevation?”

2018: Dr. Jessica Lundquist grew up in California and spent every summer hiking in the Sierra Nevada. She received her B.S. in Atmospheric Science from University of California, Davis in 1999, her M.S. in Oceanography from Scripps Institution of Oceanography (SIO) at U.C. San Diego in 2000 (with a thesis on coastal fog), and her Ph.D. in Oceanography from SIO in 2004 (with a dissertation on diurnal cycles in mountain streamflow). She spent 2 years in Boulder as a CIRES postdoctoral fellow with the University of Colorado, Boulder and NOAA, where she finally learned to ski. She began her position as Assistant Professor at the University of Washington in fall 2006 and was promoted to Associate Professor in 2011, then became a full Professor in 2017. Jessica was awarded the Cryosphere Young Investigator Award from the American Geophysical Union in 2008. She received the Water Resources Research Editor’s Choice Award in 2014 for her paper on forest-snow interactions around the world.



THEN & NOW: Past Wagner Award Winners

2002: Roberta Quadrelli

Department of Atmospheric Sciences, University of Washington

2018: Roberta works at the International Energy Agency (IEA) as head of the unit on Balances, Emission, Prices and Efficiency of the Energy Data Centre, where she had also been head of the non-member countries data section. Previously, she worked as a science officer at the International Council for Science (ICSU) managing international research programmes. Roberta began her career as a climate researcher, receiving in 2004 a doctorate in atmospheric sciences at the University of Washington (USA), after her graduation in physics at the University of Bologna (Italy).

2001: Ana Lia Quijano

*Program in Atmospheric and Oceanic Sciences and Laboratory for
Atmospheric and Space Physics, University of Colorado, Boulder*

Her winning paper: "Influence of the aerosol vertical distribution on the retrievals of aerosol optical depth from satellite radiance measurement"

2000: Teresa M. Bals-Elsholz

Department of Earth & Atmospheric Sciences, SUNY Albany

2018: Associate Professor of Meteorology, Geography and Meteorology Department Chair, Valparaiso University, IN. Teresa teaches at a large undergraduate meteorology program at Valparaiso University. She teaches atmospheric dynamics to the junior meteorology majors and tropical meteorology, including Southern Hemisphere (or Teresa-sphere) weather, and has taught computer programming, introductory meteorology, and a professional preparation course. She loves teaching to students with a variety of meteorology interests from research to forecasting to broadcasting. The large percentage of women meteorology majors (over 40%) is an added bonus. Involvement in academic governance and the professional community has been a rewarding experience. Teresa's research interests still lie in subtropical precipitation patterns and have branched into science education research and radar meteorology.



1999: Paquita Zuidema

*Program in Atmospheric and Oceanic Sciences,
University of Colorado, Boulder*

2018: Professor, Department of Atmospheric Sciences, RSMAS/MPO, University of Miami, FL. Paquita's research interests revolve around clouds, of all latitudes: their radiative impacts, lifecycle processes, interaction with large-scale circulation, and characterization. She continues to work with datasets acquired by field campaigns, of which the paper that received attention from the Peter Wagner Memorial Award committee was the first, and has come into her own leading field campaigns as well.



THEN & NOW: Past Wagner Award Winners

1998: Jennifer Comstock (Barnett)

Department of Meteorology, University of Utah



Her winning paper: “A Method for Retrieval of Physical and Infrared Radiative Properties of High Clouds using a Polarization Lidar, an Infrared Radiometer, and a Radiative Transfer Model”

2018: Earth Scientist, Atmospheric Sciences & Global Change, Pacific Northwest National Laboratory (PNNL), Richland, WA. Jennifer’s research interests are understanding the physical processes that influence cloud lifecycle using remote sensing and computational modeling techniques, with a focus on ice and mixed phase clouds. She has worked in several roles during her career at PNNL, including research scientist, Science Translator for the Atmospheric Radiation Measurement (ARM) program, and Deputy Director of the ARM Aerial Facility. Jennifer currently serves as the Engineering and Science Products Manager for the DOE ARM Program, which involves coordinating development activities and setting priorities for the program.



(From left) Mrs. Sue Wagner, DRI’s Marc Pitchford, Ph.D., and Kelly McCusker, the 2013 Wagner Award Honoree.

Eligibility:

To be eligible, applicants must be pursuing a Masters or Ph.D. in a program of atmospheric sciences or a related field as of the application deadline date. Applicants must submit a paper based on original research directly related to the identification, clarification, or resolution of an atmospheric or climatic problem.

Selection Criteria:

The Selection Committee is composed of faculty from the Atmospheric Sciences Graduate Program. Papers will be evaluated based on the following content areas:

- Originality of ideas expressed and presentation of concept;
- How well the subject matter relates to real-world atmospheric or climatic problems or their resolution; and
- How well the research is defined by the introduction, methods, results, and conclusions of the manuscript.

An entry into this competition can be based on a manuscript that has been either submitted, accepted for publication, or appeared in press within the past 12 month before the application deadline. Authors are encouraged to address broader impacts of their work for the field of atmospheric sciences.

Manuscripts submitted for consideration for this award should be a report of work done primarily by the applicant. The applicant should be the first author but not necessarily the single author. The submitted manuscript should be in a form acceptable for publication in a scientific journal. Length should be no more than 15 pages of double-spaced text, exclusive of figures, title page, and references using minimum 12-point font. Reprints of published papers will be accepted, if it appeared in press within the past 12 months. Submitted manuscripts will be reviewed by the Award Selection Committee.



Thank you to the members of the 2018 Selection Committee:

Vera Samburova, Ph.D., Wagner Award Chair and associate research professor
Heather Holmes, Ph.D., assistant research professor
Pat Arnott, Ph.D., professor
Jack Gillies, Ph.D., research professor
Andrey Khlystov, Ph.D., research professor



The Desert Research Institute (DRI) is a recognized world leader in basic and applied interdisciplinary research. Committed to scientific excellence and integrity, DRI faculty, students, and staff have developed scientific knowledge and innovative technologies in research projects around the globe. Since 1959, DRI's research has advanced scientific knowledge, supported Nevada's diversifying economy, provided science-based educational opportunities, and informed policy-makers, business leaders, and community members. With campuses in Reno and Las Vegas, DRI serves as the non-profit research arm of the Nevada System of Higher Education. For more information, please visit www.dri.edu.

DRI's faculty members are nontenured and responsible for their own salaries through external grants and contracts. Through this blend of academic rigor and private-sector pragmatism, DRI has earned a reputation for delivering high-quality scientific information in an efficient, transparent, and accountable fashion.



NORTHERN NEVADA SCIENCE CENTER
2215 Raggio Parkway
Reno, NV 89512



SOUTHERN NEVADA SCIENCE CENTER
755 E. Flamingo Road
Las Vegas, NV 89119