

# Early Career Scientist Award

Meant to spotlight the discoveries and remarkable work of someone having more recently started on their path of scientific discovery. We look for significant demonstration of initiative, Inspiration, collaboration skills, and other skills and attributes, including the ability to inform and inspire others.

## Dr. Rosimar Rios-Berrios

### THE NOMINATION'S COMPELLING FACETS OF THIS PERSON'S RESEARCH.

Dr. Rosimar (Rosi) Rios-Berrios is recognized internationally as an expert in the topics of mesoscale meteorology, tropical meteorology, and in tropical cyclones. Her expertise is sought after and appreciated broadly, as evidenced by the 14 invited talks in her CV and the three awards for outstanding conference presentations. Her research on tropical cyclones has examined mechanisms of cyclone formation, both in theory and in real-life examples. She led new work on understanding why some hurricanes strengthen when traditional theory expects them to weaken. This work gathered much interest from the tropical cyclone community, and it continues to inspire new scientific studies. Following this work, Rosi expanded her scope of research to investigate tropical rainfall in general. For this work, she developed a novel community tool, namely the “aquaplanet framework” using convection-permitting resolution in the tropics with MPAS-A, a cutting-edge model that can forecast storms across the entire globe. This framework includes novel diagnostics of tropical rainfall systems in the MPAS-A global model that facilitates the work of other researchers in addition to her own. This aquaplanet work is opening doors to several new research avenues, such as assessing the added-value of convection-permitting resolution in global models and exploring multi-scale interactions leading to tropical cyclone formation. These experiments leverage the latest computational advancements to run extensive simulations testing the sensitivity of tropical cyclone rainfall to thermal forcing in a changing climate (e.g., warming oceans and thickening clouds). Rosi is also collaborating on multiple field campaigns studying tropical cyclones and extreme precipitation. She has been involved in all stages, from the experimental design of the campaign, to coordinating the real-time modeling efforts, to managing radar operations and sounding launches during the actual field phase.

Rosi's research is innovative and unique, combining transformative modeling research with a passion for observations and mentorship. Her growing group is one of the only research groups in the world using the aquaplanet framework with convection-permitting resolution to better understand the dynamics of tropical weather systems. These calculations are the first of their kind, and the results she has already obtained will have a major impact on the field. Further, Rosi is the only one exploiting the aquaplanet dataset through statistical analysis of weather phenomena. Rosi's research is bridging the gap between the traditionally separate areas of weather and climate, crucial for understanding the impacts of future climate on humans.



Dr. Rosimar Rios-Berrios



Started in 2009, the annual Governor's Awards for High-Impact Research celebrates the brilliant ground-breaking discoveries and innovative research from Colorado's ecosystem of federally-funded laboratories and institutions.

Organized by CO-LABS, each year's event spotlights the men and women creating our future through brilliant technological and engineering discoveries in aerospace, energy, agriculture, public health, weather prediction, wildlife ecology, communication, earth science and dozens of other fields of research right here in our communities.



WHAT STANDS OUT AS INSPIRING, INFLUENTIAL AND/OR UNIQUE REGARDING THIS PERSON'S RESEARCH CAREER SO FAR?

Rosi's science is innovative and provides valuable insight into our understanding of tropical circulations and tropical cyclones. She has published 17 articles and served as investigator and/or mission scientist on four field campaigns and two major awarded grants. In addition, Rosi was one of two representatives from MMM on the NCAR Strategic Planning committee in 2019. This was a very important role as NCAR embarked on an ambitious pivot to actionable Earth-system science. Most of the representatives on the committee were mid-career scientists. She is already an important voice shaping the future of Earth-system science at NCAR and across the scientific community.

Rosi is also engaged in significant leadership, outreach, and mentorship; she is an inspiration to both students and other early career scientists. She is interviewed on a regular basis, including major outlets such as The New York Times, Wall Street Journal, NBC, Telemundo Denver, and The Weather Channel. She frequently does media interviews, and engages in outreach events such the NCAR Explorers Series, a lecture and engagement series to share science with a diverse community of researchers, teachers and interested members of the public. Rosi is eager to apply her expertise with the public, both because she is simply excited by the science, and to inspire young scientists to become interested in our field. She acts as a leader in improving inclusivity and diversity in the science community, e.g., she is a founding member of the UCAR "Forging Allies and Connections for Equity in Stem" (FACES) employee resource group and currently serves as a spokesperson for "Science Moms" (and is the only early career science mom). Rosi recognizes the needs of other colleagues, particularly those who are early-career or marginalized in some way, and how she shows sustained commitment to address those needs.

Rosi mentors other rising scientists, and in particular has described her motivation to mentor other Latinas, through SOARS summer internships, graduate visits to NCAR, and postdoctoral fellowships at NCAR. She also informally mentors other Puerto Rican students on careers and other professional development topics. She also actively engages with younger students (K-12 and undergraduate students) through virtual visits to their classroom (e.g., "La Ciencia en Casa" from CIRES or NCAR's Explorer Series). She is a trusted expert known to engage in culturally appropriate ways.

Rosi exhibits a deep expertise in all aspects of her profession and has repeatedly taken on leadership roles in pursuing science, outreach, mentoring colleagues, and service to the community. She has faced many challenges along the way from the perspective of a Latina in geosciences, a field that is still struggling to be inclusive. Rosi maintains her kindness and generosity throughout, the mark of a true leader.

Other Awards that Dr. Rios-Berrios has been awarded:

NCAR/MMM special recognition award for developing and promoting the FACES initiative 2020  
NCAR/MMM special recognition award for contributions to NCAR's Strategic Plan 2019  
UAlbany's Narayan R. Gokhale Distinguished Research Scholarship Award 2017  
First place - Outstanding Oral Presentation for the 28th Conference on Weather Analysis and Forecasting, 97th AMS Annual Meeting 2017  
University at Albany, Initiatives for Women award 2013  
Stefani Rafucci Award for the Highest GPA 2012  
Arts and Sciences Faculty Award for the Highest GPA 2012  
Enrico Fermi Award for the Best Student in Physics 2012  
First place - Outstanding Oral Presentation of the Weather Ready Nation category, Sixth NOAA EPP Science and Education Forum 2012  
Third place - Outstanding Poster Presentation, Fifth NOAA EPP Science and Education Forum 2009

**"Dr. Rios-Berrios is a shining example of what it means to be a great scientist. She is equally passionate about improving our understanding of weather and climate and about improving the research community to be more inclusive and representative."**

**- Dr. Gretchen Mullendore, Director of the Mesoscale & Microscale Meteorology Lab at the National Center for Atmospheric Research (NCAR)**

THE HIGHEST DEGREE(S) AND RESEARCH PAPERS OF SIGNIFICANCE FOR DR. RIOS-BERRIOS:

Highest Degree:

Ph.D., Atmospheric Science, 2017

University at Albany, State University of New York (SUNY)

Selected Research Papers of Significance:

Rios-Berrios, R., G. H. Bryan, B. Medeiros, F. Judt, and W. Wang, 2022: Differences in Tropical Rainfall in Aquaplanet Simulations with Resolved or Parameterized Deep Convection, *J. Adv. Mod. Earth Sys.*, 14, e2021MS002902.

Judt, F., D. Klocke, R. Rios-Berrios, B. Vanniere, F. Ziemer, L. Auger, J. Biercamp, C. Bretherton, X. Chen, P. Duben, C. Hohenegger, M. Khairoutdinov, C. Kodama, L. Kornbluh, S.-J. Lin, M. Nakano, P. Neumann, W. Putman, N. Rober, M. Roberts, M. Satoh, R. Shibuya, B. Stevens, P. L. Vidale, N. Wedi, and L. Zhou, 2021: Tropical cyclones in global storm-resolving models. *J. Meteor. Soc. Japan*, 99.

Rios-Berrios, R., 2020: Impacts of radiation and cold pools on the intensity and vortex tilt of weak tropical cyclones interacting with vertical wind shear. *J. Atmos. Sci.*, 77, 669-689, DOI: 10.1175/JAS-D-19-0159.1

Rios-Berrios, R., C. A. Davis, and R. D. Torn, 2018: A hypothesis for the intensification of tropical cyclones under moderate vertical wind shear. *J. Atmos. Sci.*, 75, 4149-4173. DOI: 10.1175/JAS-D-18-0070.1

Rios-Berrios, R., R. D. Torn, and C. A. Davis, 2016: An ensemble approach to investigate tropical cyclone intensification in sheared environments. Part I: Katia (2011). *J. Atmos. Sci.*, 73, 71-93. DOI: 10.1175/JAS-D-15-0052.1 (PDF)



About CO-LABS:

Started in 2007, CO-LABS is a non-profit consortium of federal laboratories, research institutions, businesses and economic development organizations that provide financial and in-kind support for programs that promote the retention and expansion of Colorado's federally-funded scientific resources. Through events, economic analyses, strategic communications and networking activities we work to:

- **PROMOTE** Colorado as a global leader in research and technology
- **EDUCATE** the public about federal research labs' and institutions' impact, and importance of sustained funding for research
- **CONNECT** the labs, universities, economic development organizations and businesses to facilitate partnerships and technology transfer