

Paul W. Miller

Department of Oceanography and Coastal Sciences
Louisiana State University
2231 Energy, Coast, and Environment Building
Baton Rouge, LA 70803

office: 225-578-2734
lab: 225-578-6362
email: pmiller1@lsu.edu

EDUCATION

2017 Ph.D., Geography, University of Georgia
2014 M.S., Geography, Virginia Tech
2012 B.S., Meteorology, Virginia Tech
2012 B.A., Geography, Virginia Tech

ACADEMIC APPOINTMENTS

2021-present Associate Director, LSU Earth Scan Lab
2019-present Assistant Professor, Department of Oceanography and Coastal Science, Louisiana State University
2018 Postdoctoral Research Associate, Department of Geography, University of Georgia
2014-2017 Presidential Fellow, Graduate School, University of Georgia
2016-2017 Graduate Research Assistant, Department of Geography, University of Georgia
2012-2014 Graduate Teaching Assistant, Department of Geography, Virginia Tech

RESEARCH AND TEACHING INTERESTS

Coastal meteorology; Applied meteorology and climatology; Mesoscale climate science; Disorganized convection; Land-atmosphere interactions; Severe weather impacts

JOURNAL PUBLICATIONS (28 Total) (advisees; +undergraduate)

Published or forthcoming

In press Villarini, G., W. Zhang, **P. W. Miller**, L. Grimley, and H. Roberts: Development of an ensemble generator of rainfall associated with tropical cyclones affecting Louisiana. *International Journal of Climatology*.

2021 Ramseyer, C.A., and **P. W. Miller**: Historical Variability in the Trade Wind Inversion in the tropical North Atlantic Ocean and Caribbean. *International Journal of Climatology*, **41**, 5752- 5765.

2021 **Miller, P. W.**, and J. Trepanier: Predicting the Gulf of Mexico Hurricane Season with 500-hPa Temperature. *Geophysical Research Letters*, **48**, e2021GL094741.

2021 **Miller, P. W.**, C. Reesman, M. Grossman, S. Nelson, V. Liu⁺, and P. Wang: Marginal warming associated with a COVID-19 quarantine and its implications for disease transmission. *Science of the Total Environment*, **780**, 146579.

2021 Reesman, C., **P. W. Miller**, R. D'Antonio⁺, K. Gilmore, B. Schott, and C. Bannan: Areal Probability of Precipitation in Moist Tropical Air Masses for the United States. *Atmosphere*, **12**, 255.

- 2021 **Miller, P. W.**, M. Williams, and T. L. Mote: Modeled Atmospheric Optical and Thermodynamic Responses to an Exceptional Trans-Atlantic Dust Outbreak. *Journal of Geophysical Research: Atmospheres*, **126**, e2020JD032909.
- 2020 Vega, T., **P. W. Miller**, R. Rohli, J. Heavilin: Synoptic Climatology of Nuisance Flooding along the Atlantic and Gulf of Mexico Coasts, USA. *Natural Hazards*, **105**, 1281–1297.
- 2020 **Miller, P. W.**, and C. A. Ramseyer: Did the Climate Forecast System anticipate the 2015 Caribbean drought? *Journal of Hydrometeorology*, **21**, 1245–1258.
- 2019 **Miller, P. W.**, T. L. Mote, A. Kumar, and D. R. Mishra: Systematic precipitation redistribution following a strong hurricane landfall. *Theoretical and Applied Climatology*, **139**, 861–872.
- 2019 **Miller, P. W.**, A. Kumar, F. D. S. Moraes, T. L. Mote, and D. R. Mishra: Persistent hydrological consequences of Hurricane Maria in Puerto Rico. *Geophysical Research Letters*, **46**, 1413–1422.
- 2019 **Miller, P. W.**, T. L. Mote, and C. A. Ramseyer: An empirical study of the relationship between seasonal precipitation and thermodynamic environment in Puerto Rico. *Weather and Forecasting*, **34**, 277–288.
- 2019 Ramseyer, C. A., **P. W. Miller**, and T. L. Mote: Future precipitation variability during the early rainfall season in El Yunque National Forest. *Science of the Total Environment*, **661**, 326–336.
- 2018 **Miller, P. W.**, T. L. Mote, C. A. Ramseyer, A. E. Van Buesekom, M. Scholl, and G. Gonzalez: A 42-yr Assessment of Cloud Base Height in the Luquillo Mountains of Eastern Puerto Rico. *Climate Research*, **76**, 87–94.
- 2018 **Miller, P. W.**, and T. L. Mote: The algorithmic detection of pulse thunderstorms within a large, mostly nonsevere sample. *Meteorological Applications*, **24**, 629–641.
- 2018 **Miller, P. W.**, and T. L. Mote: Characterizing severe weather potential in synoptically weakly forced thunderstorm environments. *Natural Hazards and Earth System Sciences*, **18**, 1261–1277.
- 2017 Mote, T. L., C. A. Ramseyer, and **P. W. Miller**: The Saharan Air Layer as an early rainfall season suppressant in the eastern Caribbean: The 2015 Puerto Rico drought event. *Journal of Geophysical Research*, **122**, 10966–10982.
- 2017 **Miller, P. W.**, and T. L. Mote: A climatology of weakly forced and pulse thunderstorms in the Southeast United States. *Journal of Applied Meteorology and Climatology*, **56**, 3017–3033.
- 2017 **Miller, P. W.**, and T. L. Mote: Standardizing the definition of a “pulse” thunderstorm. *Bulletin of the American Meteorological Society*, **98**, 905–913.
- 2017 Mattingly, K. S., P. L. Seymour, and **P. W. Miller**: Estimates of extreme rainfall frequency in urban areas derived from spatially dense rain gauge observations. *Annals of the American Association of Geographers*, **107**, 1499–1518.

- 2017 Debbage, N., **P. W. Miller**, S. E. Poore, K. Morano, T. L. Mote, and J. M. Shepherd: A climatology of atmospheric river interactions with the Southeastern United States coastline. *International Journal of Climatology*, **37**, 4077–4091.
- 2017 Williams, C. A., **P. W. Miller**, A. W. Black, and J. A. Knox: Throwing caution to the wind: National Weather Service wind products as perceived by a weather-salient sample. *Journal of Operational Meteorology*, **5**, 103–120.
- 2017 Grundstein, A. J., J. M. Shepherd, **P. W. Miller**, and S. E. Sarnat: The role of mesoscale-convective processes in explaining the 21 November 2016 epidemic thunderstorm asthma in Melbourne, Australia. *Journal of Applied Meteorology and Climatology*, **56**, 1337–1343.
- 2016 **Miller, P. W.**, A. W. Black, C. A. Williams, and J. A. Knox: Quantitative assessment of human wind speed overestimation. *Journal of Applied Meteorology and Climatology*, **55**, 1009–1020.
- 2016 Ellis, A. W., and **P. W. Miller**: The emergence of lightning in severe thunderstorm prediction and the possible contributions from spatial science. *Geography Compass*, **10**, 192–206.
- 2016 **Miller, P. W.**, A. W. Black, C. A. Williams, and J. A. Knox: Maximum wind gusts associated with human-reported nonconvective wind events and a comparison to current warning issuance criteria. *Weather and Forecasting*, **31**, 451–465.
- 2015 **Miller, P. W.**, A. W. Ellis, and S. Keighton: Spatial distribution of lightning associated with low-shear thunderstorm environments in the central Appalachians region. *Physical Geography*, **36**, 127–141.
- 2015 **Miller, P. W.**, A. W. Ellis, and S. Keighton: The utility of total lightning trends in diagnosing single-cell thunderstorm severity: Examples from the central Appalachians region. *Journal of Operational Meteorology*, **3**, 82–98.
- 2015 **Miller, P. W.**, A. W. Ellis, and S. Keighton: A preliminary assessment of using spatiotemporal lightning patterns for a binary classification of thunderstorm mode. *Weather and Forecasting*, **30**, 38–56.

Under review or in preparation

- In review Bilskie, M. V., T. G. Asher, **P. W. Miller**, J. G. Fleming, S. C. Hagen, and R. A. Luetlich: Real-time simulated storm surge predictions during Hurricane Michael (2018). *Weather and Forecasting*.
- In review Bushra, N. R. Rohli, C. Li, and **P. W. Miller**: Changing Features of the Northern Hemisphere 500-hPa Circumpolar Vortex. *Geophysical Research Letters*.
- In review **Miller, P. W.**, C. Li, K. Xu, S. Caparotta, and R. Rohli: The Evolution of the 2021 SEACOR Power Tragedy. *Bulletin of the American Meteorological Society*.

GRANT SUPPORT

Under review Miller, P. (PI), T. Quirk, E. Maung-Douglass, D. Mishra, T. Mote, C. Ramseyer,

- and F. Moraes. *Eco-Drought Identification in U.S. Coastal Environments along the Gulf of Mexico and U.S. Caribbean*. National Oceanic and Atmospheric Administration (\$591,277).
- Under review Wu, W., P. Biber, D. Petrolia, T. Sempie, and P. Miller (Co-PI). *Machine learning in assessing flood risk and Community Rating System on the Mississippi Gulf Coast*. National Academies of Science, Engineering, and Medicine (\$300,000).
- Under review Miller, P. (PI), and M. Hiatt. *Multi-scale Atmospheric Drivers of Sea Level Fluctuations in Coastal U.S. Waters*. National Science Foundation (\$493,259).
- 2021-2023 Miller, P. (PI). *Gulf Research Program Early Career Research Fellowship*. National Academies of Science, Engineering, and Medicine (\$76,000).
- 2021-2022 Miller, P. (subcontract on large multi-institution, multi-investigator project). *Delta-X*. National Aeronautics & Space Administration (\$9,420).
- 2020-2023 Mote, T., P. Miller (Co-PI), C. Ramseyer, and G. Gonzalez. *Understanding the Mechanisms Leading to Early Warning of Meteorological and Hydrological Drought in the U.S. Caribbean*. National Oceanic and Atmospheric Administration (Total: \$507,198; LSU: \$151,539).
- 2020-2023 Shepherd, M., D. Niyogi, M. Jin, L. Ott, Z. Tao, T. Mote, C. Mitra, J. Santanello, P. Miller (Co-I), N. Debbage, and B. Johnson. *Towards Conceptualization and Predictability: A Multi-scalar Analysis of Urban-Influenced Hydrometeorological Processes*. National Aeronautics & Space Administration (Total: \$1,753,632; LSU: \$199,539).
- 2020-2021 Miller, P. (PI). *RAPID: Coronavirus-driven aerosol reductions in East Asia and the effect on atmospheric dynamics*. National Science Foundation (\$128,339).
- 2020-2021 Miller, P. (PI). *Empirical Probability of Precipitation in Weakly Forced Environments*. University Corporation for Atmospheric Research (\$14,987).
- 2018 Miller, P. (PI), T. Mote, and D. Mishra. *Persistent hydrological consequences of hurricane interactions with the Georgia coastline*. Georgia Sea Grant (\$10,000).
- 2018 Mote, T., and P. Miller (science adviser). *Assessing changes in cloud dynamics in a tropical montane cloud forest using remotely sensed and in-situ observations following catastrophic defoliation from Hurricane Maria*. NASA DEVELOP.
- 2013 Ellis, A., S. Keighton, and P. Miller. *The Utility of Total Lightning for Warning of Pulse-Type Thunderstorms within the Central Appalachian Mountains Region*. University Corporation for Atmospheric Research (\$15,000).

OPERATIONAL ACTIVITIES

- 2020-Present *ADCIRC Surge Guidance System*. Provide daily meteorological briefings during active tropical cyclone systems in the North Atlantic basin to inform the initialization of ocean hydrodynamic models that predict coastal storm surge inundation.

2021 *Delta-X*, Jet Propulsion Laboratory, National Aeronautics & Space Administration. Led daily weather briefings for Delta-X field teams and aerial assets during three-week field campaign in coastal Louisiana. Advised next-day and near-term cloud cover, visibility, surface wind conditions, and precipitation probability.

CONFERENCE ACTIVITIES (advisees; ⁺undergraduate)

- 2021 **Miller, P.W.**, M. Grossman, S. A. Nelson, C. Reesman, and V. Liu⁺: China's COVID-19 Quarantine Marginally Exacerbated a Warm February 2020. *101st Annual Meeting of the American Meteorological Society*. January 9–15, 2021. Virtual meeting.
- 2021 Forney, R., **P. W. Miller**, and N. Debbage: Ranking the Urban Rainfall Effects of Southeastern US Cities. *101st Annual Meeting of the American Meteorological Society*. January 9–15, 2021. Virtual meeting.
- 2021 Reesman, C., **P. W. Miller**, R. D'Antonio⁺, K. Gilmore, B. Schott, and C. Bannan: Empirical Probability of Precipitation (PoP) in Weakly Forced Environments. *101st Annual Meeting of the American Meteorological Society*. January 9–15, 2021. Virtual meeting.
- 2021 Nelson, S. A., and **P. W. Miller**: Responses to Changed Land Surface Conditions following Hurricane Landfall. *101st Annual Meeting of the American Meteorological Society*. January 9–15, 2021. Virtual meeting.
- 2021 **Miller, P.W.**, and C. Ramseyer: Anticipating the 2015 Caribbean drought using the Climate Forecast System. *101st Annual Meeting of the American Meteorological Society*. January 9–15, 2021. Virtual meeting.
- 2021 Bushra, N., R. Rohli, C. Li, and **P. W. Miller**: A Pilot Study of Contrasting Areal Changes of the Northern and Southern Hemisphere Circumpolar Vortices. *101st Annual Meeting of the American Meteorological Society*. January 9–15, 2021. Virtual meeting.
- 2020 **Miller, P.W.**, C. Reesman, M. Grossman, S. Nelson, and V. Liu: China's COVID-19 Quarantine Marginally Exacerbated a Warm February 2020. *Annual Meeting of the American Geophysical Union*. December 1–17, 2020. Virtual meeting.
- 2019 **Miller, P.W.**, A. Kumar, T. Mote, F. D. S. Moraes, and D. Mishra: Systematic precipitation redistribution following a strong hurricane landfall. *115th Annual Meeting of the American Association of Geographers*. April 3–7, 2019, Washington, D.C.
- 2019 Garmong, R., **P. W. Miller**, J. Knox: A WRF sensitivity study on optimizing precipitation forecasting in an operational context. *99th Annual Meeting of the American Meteorological Society*. January 6–10, 2019, Phoenix, AZ.
- 2019 Van Buesekom, A., G. Gonzalez, F. D. S. Moraes, J. Bucher, A. Walz, **P. W. Miller**, T. Mote, M. Scholl: Changes seen in land-atmosphere interaction after a

- large hurricane. *99th Annual Meeting of the American Meteorological Society*. January 6–10, 2019, Phoenix, AZ.
- 2018 **Miller, P. W.** and T. L. Mote: Characterizing severe weather potential in synoptically weakly forced thunderstorm environments. *114th Annual Meeting of the American Association of Geographers*. April 5–9, 2018, New Orleans, LA.
- 2018 **Miller, P. W.**, T. L. Mote, C. A. Ramseyer, A. E. Van Buesekom, and G. Gonzalez: A 42-yr Assessment of Cloud Base Height Trends in the Luquillo Mountains of Eastern Puerto Using Radiosonde Observations from San Juan. *98th Annual Meeting of the American Meteorological Society*. January 7–11, 2018, Austin, TX.
- 2017 **Miller, P. W.** and T. L. Mote: A climatology of weakly forced and pulse thunderstorms in the Southeast United States. *113th Annual Meeting of the American Association of Geographers*. April 5–9, 2017, Boston, MA.
- 2017 **Miller, P. W.** and T. L. Mote: A climatology of weakly forced and pulse thunderstorms in the Southeast United States. *97th Annual Meeting of the American Meteorological Society*. January 22–26, 2017, Seattle, WA.
- 2016 **Miller, P. W.** and T. L. Mote: A climatology of weakly forced thunderstorms in the Southeastern U.S. *71st Annual Meeting of the Southeastern Division of the Association of American Geographers*. November 20–22, 2016, Columbia, SC.
- 2016 **Miller, P. W.** and T. L. Mote: The utility of the term “pulse” within the thunderstorm mode nomenclature. *112th Annual Meeting of the American Association of Geographers*. March 28–April 2, 2016, San Francisco, CA.
- 2016 **Miller, P. W.** and T. L. Mote: Applications of the term "pulse" as a thunderstorm mode descriptor. *96th Annual Meeting of the American Meteorological Society*. January 10–14, 2016, New Orleans, LA.
- 2016 **Miller, P. W.**, A. W. Black, C. A. Williams, and J. A., Knox: Estimating in "vane": A quantitative description of wind speed overestimation by human observers versus instrument measurements. *96th Annual Meeting of the American Meteorological Society*. January 10–14, 2016, New Orleans, LA.
- 2014 **Miller, P. W.**, and T. L. Mote: Usage of the term “pulse” as a thunderstorm mode descriptor in Storm Prediction Center convective outlooks. *69th Annual Meeting of the Southeastern Division of the Association of American Geographers*. November 23–25, 2014, Athens, GA.
- 2013 **Miller, P. W.**, and A. W. Ellis: A meteorological application of cluster analysis: The identification of low-shear, high-instability environments using total lightning data. *68th Annual Meeting of the Southeastern Division of the Association of American Geographers*. November 24–26, 2013, Roanoke, VA.

MEDIA ENGAGEMENTS

Research or Instructional Spotlights

- 2021 *New Model Could Help Predict Gulf of Mexico Hurricanes*. AGU Press Release, 16 September <https://news.agu.org/press-release/new-model-could-help-predict-gulf-of-mexico-hurricanes/>.
*Versions of this press release were featured in newspapers nationwide including, the Houston Chronicle, Miami Herald, Charlotte Observer, and Fort Worth Star-Telegram.
- 2020 *Did clean air during COVID-19 lockdowns impact the weather?* AccuWeather, 20 May 2020. <https://www.accuweather.com/en/videos/did-clean-air-during-covid-19-lockdowns-impact-the-weather/OtDlaXbi>.
- 2019 *Movie 'Frozen' inspires atmospheric modeling classwork*. Associated Press, 23 November 2019. <https://apnews.com/7225221683ee4f43b01e44a03839dafc>.
*This AP story was featured in at least 35 news outlets nationwide, including U.S. News and World Report, The San Francisco Chronicle, Washington Times, Houston Chronicle, Miami Herald, Charlotte Observer, and Kansas City Star.
- 2019 *A professor used the movie "Frozen" as a climate lesson - It worked*. Forbes, 21 November 2019. <https://www.forbes.com/sites/marshallshepherd/2019/11/21/a-professor-used-the-movie-frozen-as-a-climate-lessonit-worked/#794bac037429>.
- 2016 *Humans Misread Wind Speeds, Skewing a Major Hazards Database*. Eos, 6 June 2016. <https://eos.org/articles/humans-misread-wind-speeds-skewing-a-major-hazards-database>.

Comments, Quotes, or References

- 2021 *With a Month Left, the Pacific Hurricane Season Reaches 16 Storms*. New York Times, 13 October 2021 <https://www.nytimes.com/2021/10/13/climate/pacific-storms-risk.html>.
- 2021 *Climate change is making hurricanes stronger, slower and wetter. Ida checked all the boxes*. CNN, 30 August 2021. <https://www.cnn.com/2021/08/30/weather/hurricane-ida-climate-change-factors/index.html>.
- 2021 *BBC World News Nightly Broadcast*. BBC World News, 28 August 2021. Live Zoom interview about imminent landfall of Hurricane Ida for UK audience.
- 2020 *Storms complicate fight against coronavirus pandemic*. The Washington Times, 2 August 2020. <https://www.washingtontimes.com/news/2020/aug/2/storms-complicate-fight-against-coronavirus-pandem/>.
- 2020 *New Orleans air pollution plummeted during coronavirus shutdown, but how long will it last?* The New Orleans Times-Picayune, 21 May 2020. https://www.nola.com/news/coronavirus/article_a07399fa-9ad5-11ea-b6ec-27c951b355e5.html.
- 2019 *Using facial recognition technology for... hailstorms?* The Washington Post, 22 August 2019. <https://www.washingtonpost.com/weather/2019/08/22/using-facial-recognition-technology-hailstorms/>.

INVITED PRESENTATIONS

- 2021 *Geoscience MBA: Managing your weaknesses in graduate school*. 20th Annual Student Conference at the 101st Annual Meeting of the American Meteorological Society. Virtual Meeting. 9 January 2021.
- 2014 *The utility of total lightning in diagnosing pulse-type thunderstorm severity in the Central Appalachian Mountains region*, National Weather Service (NWS) Eastern Region Scientific Services Division nation-wide webinar, 7 May 2014.

HONORS AND AWARDS

- 2018 Third place paper, Climate Specialty Group, 114th Meeting of the American Association of Geographers
- 2018 John Russell Mather Paper of the Year Award, Climate Specialty Group, 114th Meeting of the American Association of Geographers
- 2014–2017 Presidential Fellow, Graduate School, University of Georgia
- 2017 Third place paper, Climate Specialty Group, 113th Meeting of the American Association of Geographers
- 2017 First place poster, Special Symposium on Severe Local Storms, 97th Meeting of the American Meteorological Society
- 2016 First place paper, 71st Meeting of the Southeastern Division of Association of American Geographers
- 2016 First place paper, 11th Symposium on Societal Applications: Policy, Research, and Practice, 96th Meeting of the American Meteorological Society

TEACHING EXPERIENCE

Louisiana State University

- OCS 1006 || Honors: Introduction to Oceanography (Spring 2020, Spring 2021)
- OCS 2013 || Extreme Coastal Weather (Fall 2021)
- OCS 3999 || Undergraduate Research (Spring 2021)
- OCS 7016 || Modeling the Marine Atmosphere (Fall 2019, Fall 2020, Fall 2021)
- HNRS 2000 || Honors: Louisiana, Paradise Lost? (Fall 2020)

University of Georgia

- ATSC 3120 || Weather Analysis and Forecasting (Fall 2016, 2018)

Virginia Tech

- GEOG 3516 || Dynamic Meteorology II (Spring 2014)
- GEOG 3515 || Dynamic Meteorology I (Fall 2013)

STUDENT MENTORSHIP

Students advised

- Lexi Nelson, MS (2021)
- Cade Reesman, MS (expected 2022)
- Robert Forney, PhD (expected 2025)
- Philip Johnson, MS (expected 2023)

Ph.D. committee member

Nazla Bushra (2021)
Daniel Willis (2021)
Wenjia Cao (expected 2022)
Nick Culligan (expected 2023)
Dongxiao Yin (expected 2023)
Luke Sawyer (expected 2024)
Madhusudan Kamat (expected 2023)

M.S. committee member

Alexandria Leake (2020)
Pengfei Wang (expected 2022)
Gabby Fiagnar (expected 2022)
Tyler Gingrich (Virginia Tech; expected 2022)

SERVICE TO PROFESSION AND COMMUNITY

2021 NASA Precipitation Measurement Mission Science Team panel reviewer
2020-present NOAA Drought Task Force IV member
2020-present Ogden Honors College Faculty Advisory Board member
2019-present Editorial Board member, *Atmosphere*
2019-2021 Honors Director, Climate Specialty Group, American Association of Geographers
2018 Guest scientist lecturer for UGA Marine Extension youth summer camps
2017–2018 Lab mentor for student volunteer from local high school
2016–present Reviewer, *Scientific Reports*, *Journal of Climate*, *Weather and Forecasting*,
Journal of Hydrometeorology, *Journal of Applied Meteorology and Climatology*,
Journal of Geophysical Research: Atmospheres, Earth and Space Science,
International Journal of Climatology, *Physical Geography*, *Natural Hazards*,
Atmosphere, *Water*, *Frontiers of Earth Science*

PROFESSIONAL AFFILIATIONS

2015–present American Association of Geographers (AAG)
2015–present Climate Specialty Group of the AAG
2013–present Southeastern Division of the Association of American Geographers (SEDAAG)
2013–present American Meteorological Society (AMS)
2012–present Phi Beta Kappa