ANNA MARIA WILSON, Ph.D.

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EDUCATION

2016 Ph.D. in Hydrology and Fluid Dynamics
Department of Civil and Environmental Engineering, Duke University

2009 B.S. in Atmospheric Sciences, Mathematics Minor
University of North Carolina at Asheville, *Summa Cum Laude*

GRANTS AND RESEARCH AWARDS

2023-2026 Colorado River District/Colorado Water Conservation Board/Upper Yampa Water Conservancy District, Co-I, Project Title: *Enhancing Soil Moisture Observations to Support Water Resource Management in the Upper Yampa River Basin*, $800,000.

2021-2022 Upper Yampa Water Conservancy District, Co-I, Project Title: *Evaluating the Observation Network and Enhancing Soil Moisture Observations to Support Decision Making and to Monitor Potential Impacts of Climate Change in the Upper Yampa Basin*, $130,000.

2019-2022 NOAA Office of Weather and Air Quality Research, Co-I, Project Title: *Enhancing observations of melting level to support forecasts of rain-snow partitioning in the Sierra Nevada,* $301,408.

2017-2019 NOAA Office of Weather and Air Quality Research, Co-I, Project Title: *Quantifying observational requirements for WRF-Hydro forcing in the west using Russian River HMT experience and data to inform National Water Center tools,* $299,883.

AWARDS

2020 Climate Science Service Award, California Department of Water Resources
2016 Outstanding Scholar Award, Pratt School of Engineering, Duke University
2015 Professor Senol Utku Award, Duke University
- Annual award for best pre-Ph.D. peer-reviewed journal papers
- Awarded for Wilson and Barros, 2014

2014 National Science Foundation Travel Award to attend the 2014 Weather Radar and Hydrology International Symposium
2012-2015 National Science Foundation Graduate Research Fellowship Program (GRFP) Fellowship
2010 Pratt-Gardner Fellowship, Duke University
2010-2014 James B. Duke Fellowship, Duke University
2009 Award for Academic Excellence, University of North Carolina at Asheville

RESEARCH AND PROFESSIONAL EXPERIENCE

2018-present **University of California, San Diego.** *Field Research Manager.* Scripps Institution of Oceanography, Center for Western Water and Weather Extremes, San Diego, CA.
- Coordinate and lead all facets of CW3E's field efforts at locations around the world, including airborne reconnaissance
- Identify research priorities and develop field proposals to support program objectives
- Coordinate and assemble materials for grant submissions

- Author and co-author scientific publications using observational data in peer-review journals

2016-2018 **University of California, San Diego.** *Postdoctoral Scholar.* Scripps Institution of Oceanography, Center for Western Water and Weather Extremes, San Diego, CA.

- Lead scientist for Task 4 of FIRO campaign – Advance the science of atmospheric rivers
- Leader of process studies group for West-WRF modeling at CW3E
- Mentor PhD students and undergraduates at UC San Diego
- Co-manage field campaign in the Russian River Basin in northern California, including radiosonde systems, radars, disdrometers, and rain gauges

2010-2016 **Duke University.** *Research Assistant.* Pratt School of Engineering, Durham, NC.

- Led and organized fieldwork tasks including maintenance of rain gauge networks, and deployments of MicroRain Radars and optical disdrometers
- Conducted numerous studies of precipitation microphysical and dynamical processes in complex terrain (western North Carolina) using: an explicit rainshaft model of drop size distribution evolution; analysis of in situ and remotely sensed observations; other modeling and analysis tools such as ARW-WRF and HYSPLIT
- Improved the functionality of the explicit rainshaft model to include the presence of additional low level moisture, in order to more accurately understand the effect of low level cloud and fog on precipitation events in the region
- Conducted sensitivity studies on microphysics and boundary layer schemes in ARW-WRF

2009-2010 **STG, Inc.** *Meteorological Precipitation Analyst.* National Climatic Data Center, Asheville, NC.

- Worked with a team on updating the Hourly Precipitation Dataset
- Developed skills with Linux servers, programming in Fortran and IDL

2009 **National Environmental Modeling and Analysis Center**. *GIS Intern*. National Climatic Data Center, Asheville, NC.

- Worked with a mentor to develop a quality-controlled snowstorm database in GIS
- Developed skills in GIS, presented work at an NCDC seminar and at UNC Asheville

PEER REVIEWED PUBLICATIONS

Cobb, A., Ralph, F.M., Tallapragada, V., **Wilson, A.M.**, Davis, C.A., Delle Monache, L., Doyle, J.D., Pappenberger, F., Reynolds, C.A., Subramanian, A., Black, P.G., Cannon, F., Castellano, C., Cordeira, J.M., Haase, J.S., Hecht, C., Kawzenuk, B., Lavers, D.A., Murphy, M., Parrish, J., Rickert, R., Rutz, J.J., Torn, R., Wu, X., and M. Zheng, 2024: Atmospheric River Reconnaissance 2021: A Review, *Wea. Forecast.*, https://doi.org/10.1175/WAF-D-21-0164.1.

Lavers, D., **A.M. Wilson**, F.M. Ralph, V. Tallapragada, F. Pappenberger, C. Reynolds, J.D. Doyle, L. Delle Monache, C. Davis, A. Subramanian, R.D. Torn, J.M. Cordeira, L. Centurioni, and J. Haase, 2024: Advancing atmospheric river science and inspiring future development of the Atmospheric River Reconnaissance Program. *Bull. Amer. Meteor. Soc.*, **105**, E75-E83, https://doi.org/10.1175/BAMS-D-23-0278.1.

Li, L., F. Cannon, M. Mazloff, A.C. Subramanian, **A.M. Wilson**, and F.M. Ralph, 2024: Impact of Atmospheric Rivers on Arctic Sea Ice Variations. *Cryosphere*, **18**, 121-137, https://doi.org/10.5194/tc-18-121-2024**.**

Martens, H.R., N. Lau, M.J. Swarr, D.F. Argus, Q. Cao, Z. Young, A. Borsa, M. Pan, **A.M. Wilson**, E. Knappe, F.M. Ralph, and W.P. Gardner, 2024: GNSS geodesy quantifies water-storage replenishment and drought improvements in California spurred by atmospheric rivers. *Geophys. Res. Lett.*, **51,** e2023GL107721, https://doi.org/10.1029/2023GL107721.

Zeng, X., H. Su, S. Hristova-Veleva, D.J. Posselt, R. Atlas, S.T. Brown, R.D. Dixon, E. Fetzer, T.J. Galarneau Jr., M. Hardesty, J.H. Jiang, P.P. Kangaslahti, A. Ouyed, T.S. Pagano, O. Reitebuch, R. Roca, A. Stoffelen, S. Tucker, **A.M. Wilson**, L. Wu, and I. Yanovsky, 2024: Vientos - A new satellite mission

concept for 3D wind measurements by combining passive water vapor sounders with Doppler wind lidar. *Bull. Amer. Meteor. Soc.*, **105**, E357-E369, https://doi.org/10.1175/BAMS-D-22-0283.1.

Zheng, M., R. Torn, L. Delle Monache, J. Doyle, F.M. Ralph, V. Tallapragada, C. Davis, D. Steinhoff, X. Wu, **A.M. Wilson**, C. Papadopoulos, and P. Mulrooney, 2024: Improved Sampling Strategies for Atmospheric River Reconnaissance. *Mon. Wea. Rev.*, **152**, 811-835, https://doi.org/10.1175/MWR-D-23-0111.1.

Cobb, A., Cordeira, J., Dettinger, M., Aikens, C., Delaney, C., Forbis, J., Jasperse, J., Hartman, R., Martin Ralph, F., Sumargo, E., Talbot, C., Wilson, A. M., & Yeates, E., 2023: A multidisciplinary training opportunity for the next generation of Forecast-Informed Reservoir Operations (FIRO) collaborators, *Bull. Amer. Meteor. Soc.*, **104**, E1372-E1381, https://doi.org/10.1175/BAMS-D-23-0004.1

DeHaan, L., **A.M. Wilson,** B. Kawzenuk, M. Zheng, L. Delle Monache, X. Wu, D.A. Lavers, B. Ingleby, V. Tallapragada, F. Pappenberger, and F.M. Ralph, 2023: Impacts of Dropsonde Observations on Forecasts of Atmospheric Rivers and Associated Precipitation in the NCEP GFS and ECMWF IFS Models. *Wea. Forecast.*, **38**, 2397-2413, **https://doi.org/10.1175/WAF-D-23-0025.1.**

Dettinger, M., **A.M. Wilson**, and G. McGurk, 2023: Keeping water in climate-changed headwaters longer. *San Francisco Estuary and Watershed Science*, **21**, 1-9, doi:10.15447/sfews.2023v21iss4art1.

Reynolds, C.A., R.E. Stone, J.D. Doyle, N.L. Baker, **A.M. Wilson**, F.M. Ralph, D.A. Lavers, A.C. Subramanian, and L. Centurioni, 2023: Impacts of Northeastern Pacific Buoy Surface Pressure Observations, *Mon. Wea. Rev.,* **151**, 211-226, **https://doi.org/10.1175/MWR-D-22-0124.1.**

Fish, M.A., J.M. Done, **A.M. Wilson**, D.L. Swain, and F.M. Ralph, 2022: Large-scale drivers of successive atmospheric river events in California. *J. Clim.*, **35**, 1515-1536, https://doi.org/10.1175/JCLI-D-21-0168.1.

Garreaud, R., F.M. Ralph, **A.M. Wilson**, A.M. Ramos, J. Eiras-Barca, H. Steen-Larsen, J. Rutz, C. Albano, N. Tilinina, M. Warner, M. Viale, R. Rondanelli, J. McPhee, R. Valenzuela, and I. Gorodetskaya, 2022: Running a scientific conference during pandemic times. *Bull. Amer. Meteor. Soc.,* **103(7)**, E1650-E1657, https://doi.org/10.1175/BAMS-D-22-0023.1.

Roy, R.J., K.B. Cooper, M. Lebsock, J.V. Siles, L. Millan, R. Dengler, R. Rodriguez Monje, S. Durden, F. Cannon, and **A. Wilson**, 2022: First airborne measurements with a G-band differential absorption radar. *IEEE Transactions on Geoscience and Remote Sensing,* **60**, 1-15, https://doi.org/10.1109/TGRS.2021.3134670.

Wilson, A.M., A.C. Cobb, F.M. Ralph, V. Tallapragada, C. Davis, J. Doyle, L. Delle Monache, F. Pappenberger, C. Reynolds, A. Subramanian, F. Cannon, J. Cordeira, J. Haase, C. Hecht, D. Lavers, J.J. Rutz, and M. Zheng, 2022: Atmospheric River Reconnaissance Workshop Promotes Research and Operations Partnership. *Bull. Amer. Meteor. Soc.,* **103**, E810-E816**.**

Ramos, A.M., R. Roca, P.M.M. Soares, **A.M. Wilson**, R.M. Trigo, and F.M. Ralph, 2021: Uncertainty in different precipitation products in the case of two atmospheric river events. *Env. Res. Lett.*, **16,** 045012, https://doi.org/10.1088/1748-9326/abe25b.

Sumargo, E., H. McMillan, R. Weihs, C.J. Ellis, **A.M. Wilson**, and F.M. Ralph, 2021: A Soil Moisture Monitoring Network to Assess Controls on Runoff Generation During Atmospheric River Events. *Hydrological Processes*, **35**, e13998, https://doi.org/10.1002/hyp.13998.

Zheng, M., L. Delle Monache, X. Wu, F.M. Ralph, B. Cornuelle, V. Tallapragada, J. Haase, A.M. Wilson, M. Mazloff, A. Subramanian, and F. Cannon, 2021: Data gaps within atmospheric rivers over the northeastern Pacific. *Bull. Amer. Meteor. Soc.*, **102(3)**, E492–E524, https://doi.org/10.1175/BAMS-D-19-0287.1.

Cannon, F.G., N. Oakley, C.W. Hecht, A. Michaelis, J.M. Cordeira, B. Kawzenuk, R. Demirdjian, R. Weihs, M.A. Fish, **A.M. Wilson**, and F.M. Ralph, 2020: Observations and Predictability of a High-Impact Narrow Cold-Frontal Rainband over Southern California on 2 February 2019. *Wea. Forecasting*, **35**, 2083-2097**.**

Hatchett, B.J., Q. Cao, P. Dawson, C.J. Ellis, C. Hecht, B. Kawzenuk, T. Osborne, J. Lancaster, **A.M. Wilson**, M. Anderson, M. Dettinger, J. Kalansky, M. Kaplan, D. Lettenmaier, N. Oakley, F.M. Ralph, D. Reynolds, A.B. White, M. Sierks, and E. Sumargo, 2020: Observations of an extreme atmospheric river

storm with a diverse sensor network. *Earth and Space Sciences*, **6**, e2020EA001129, **https://doi.org/10.1029/2020EA001129.**

Lawrimore, J.H., D. Wuertz, **A. Wilson**, S. Stevens, M. Menne, B. Korzeniewski, M.A. Palecki, R.D. Leeper, and T. Trunk, 2020: Quality control and processing of Cooperative Observer Program Hourly Precipitation Data. *J. Hydrometeor.*, **21**, 1811-1825.

Ralph, F.M., F. Cannon, V. Tallapragada, C.A. Davis, J.D. Doyle, F. Pappenberger, A. Subramanian, **A.M. Wilson**, D.A. Lavers, C.A. Reynolds, J.S. Haase, L. Centurioni, J.J. Rutz, J.M. Cordeira, M. Zheng, C.W. Hecht, B. Kawzenuk, and L. Delle Monache, 2020: West coast forecast challenges and development of atmospheric river reconnaissance. *Bull. Amer. Meteor. Soc.*, **101**, E1357-E1377.

Sumargo, E., **A.M. Wilson**, F.M. Ralph, R. Weihs, A. White, J. Jasperse, M.A. Lamjiri, S. Turnbull, C. Downer, and L. Delle-Monache, 2020: The hydrometeorological observation network in California's Russian River Watershed: Development, characteristics, and key findings from 1997-2019. *Bull. Amer. Meteor. Soc.*, **101(10)**, E1781-E1800, **https://doi.org/10.1175/BAMS-D-19-0253.1.**

Wilson, A.M., W. Chapman, A.E. Payne, A.M. Ramos, C. Boehm, D. Campos, J. Cordeira, R. Garreaud, I.V. Gorodetskaya, J.J. Rutz, C. Viceto, and F.M. Ralph, 2020: Training the next generation of researchers in the science and application of atmospheric rivers. *Bull. Amer. Meteor. Soc.*, **101(6)**, E738-E743.

Fish, M.A., **A.M. Wilson**, and F.M. Ralph, 2019: Atmospheric river families: definition and associated synoptic conditions. *J. Hydrometeor.*, **20**, 2091-2108.

Martin, A.C., F.M. Ralph, **A.M. Wilson**, L. DeHaan, and B. Kawzenuk, 2019: Rapid cyclogenesis from a mesoscale frontal wave on an atmospheric river: impacts on forecast skill and predictability during atmospheric river landfall. *J. Hydrometeor.,* **20**, 1779-1794.

Ralph, F.M., **A.M. Wilson**, T. Shulgina, B. Kawzenuk, S. Sellars, J.J. Rutz, M.A. Lamjiri, E.A. Barnes, A. Gershunov, B. Guan, K. Nardi, T. Osborne, and G.A. Wick, 2019: ARTMIP-Early start comparison of atmospheric river detection tools: How many atmospheric rivers hit northern California's Russian River Watershed? *Clim. Dyn.*, **52**, 4973-4994.

Ramos, A.M., **A.M. Wilson**, M.J. DeFlorio, M.D. Warner, E.A. Barnes, R. Garreaud, I.V. Gorodetskaya, D.A. Lavers, B. Moore, A. Payne, C. Smallcomb, H. Sodemann, M. Wehner, and F.M. Ralph, 2019: 2018 International Atmospheric Rivers Conference: Multidisciplinary studies and high-impact applications of atmospheric rivers. *Atmos. Sci. Lett.,* **e935, https://doi.org/10.1002/asl.935**.

Rutz, J.J., C.A. Shields, J.M. Lora, A.E. Payne, B. Guan, P. Ullrich, T. O'Brien, L.R. Leung, F.M. Ralph, M. Wehner, S. Brands, A. Collow, A. Gershunov, N. Goldenson, I. Gorodetskaya, H. Griffith, S. Hagos, K. Kashinath, B. Kawzenuk, H. Krishnan, D. Lavers, G. Magnusdottir, K. Mahoney, G. Muszynski, P.D. Nguyen, M. Prabhat, A.M. Ramos, S. Sellars, R. Tome, D. Waliser, D. Walton, G. Wick, **A.M. Wilson**, M. Viale, 2019: The Atmospheric River Tracking Method Intercomparison Project (ARTMIP): Quantifying uncertainties in atmospheric river climatology. *J. Geophys. Res.: Atmospheres*, **124**, 13777-13802.

Vano, J.A., M.D. Dettinger, R. Cifelli, D. Curtis, A. Dufour, K. Miller, J.R. Olsen, and **A.M. Wilson**, 2019: Hydroclimatic extremes as challenges for the water management community: Lessons from Oroville Dam and Hurricane Harvey [in "Explaining Extreme Events of 2017 from a Climate Perspective"]. *Bull. Amer. Meteor. Soc.*, **100(1)**, S9-S14.

Shields, C.A., J.J. Rutz, L.-Y. Leung, F.M. Ralph, M. Wehner, B. Kawzenuk, J.M. Lora, E. McClenny, T. Osborne, A.E. Payne, P. Ullrich, A. Gershunov, N. Goldenson, B. Guan, Y. Qian, A.M. Ramos, C. Sarangi, S. Sellars, I. Gorodetskaya, K. Kashinath, V. Kurlin, K. Mahoney, G. Muszynski, R. Pierce, A.C. Subramanian, R. Tome, D. Waliser, D. Walton, G. Wick, **A.M. Wilson**, D. Lavers, Prabhat, A. Collow, H. Krishnan, G. Magnusdottir, and P. Nguyen, 2018: Atmospheric River Tracking Method Intercomparison Project (ARTMIP): Project goals and experimental design. *Geosci. Model Dev.*, **11**, 2455-2474.

Cannon, F., F.M. Ralph, **A.M. Wilson,** and D.P. Lettenmaier, 2017: GPM Satellite Radar Measurements of Precipitation and Freezing Level in Atmospheric Rivers: Comparison with Ground-Based Radars and Reanalyses. *J. Geophys. Res.: Atmospheres*, **122**, 12747-12764.

Wilson, A.M., and A.P. Barros, 2017: Orographic land-atmosphere interactions and the diurnal cycle of low

level clouds and fog. *J. Hydrometeor.*, **18**, 1513-1533.

Wilson, A.M., and A.P. Barros, 2015: Landform controls on low level moisture convergence and the diurnal cycle of warm season orographic rainfall in the Southern Appalachians. *J. Hydrol.*, **531**, 475-493.

Duan, Y., **A.M. Wilson**, and A.P. Barros, 2015: Scoping a field experiment: error diagnostics of TRMM precipitation radar estimates in complex terrain as a basis for IPHEX2014. *Hydrol. Earth Syst. Sci.*, **11**, 11137-11182.

Wilson, A.M., and A.P. Barros, 2014: An investigation of warm rainfall microphysics in the Southern Appalachians: orographic enhancement via low-level seeder-feeder interactions. *J. Atmos. Sci.,* **71**, 1783-1805.

Williams, C.R., V.N. Bringi, L. Carey, V. Chandrasekar, P. Gatlin, Z.S. Haddad, S.J. Munchak, W.A. Petersen, R. Meneghini, S.W. Nesbitt, S. Tanelli, A. Tokay, **A. Wilson**, and D. Wolff, 2014: Describing the shape of raindrop size distributions using uncorrelated raindrop mass spectrum parameters. *J. Appl. Meteor. Climatol.,* **53**, 1282-1296.

PROCEEDING PUBLICATIONS

Wilson, A.M., R. Cifelli, F. Munoz-Arriola, J. Giovannettone, J. Vano, T. Parzybok, A. Dufour, J. Jasperse, K. Mahoney, B. McCormick, 2021: Efforts to build infrastructure resiliency to future hydroclimate extremes. *GeoExtreme*, Savannah, GA, American Society of Civil Engineers.

F.M. Ralph, J. Jasperse, C.A. Talbot, and **A.M. Wilson**, 2019. Forecast informed reservoir operations: Developing best practices for enhancing use of existing water management infrastructure. *SEDHYD2019*, Reno, NV, US Army Corps of Engineers.

Wilson, A.M., S. Hinson, D. Manns, R. Ray and J.H. Lawrimore, 2010. Hourly precipitation data processing changes at NCDC. *15th Symposium on Meteorological Observation and Instrumentation*, Atlanta, GA, American Meteorological Society, 8.3.

INVITED TALKS

2024 **Wilson, A.M.** Atmospheric Rivers: Forecasting, Observing, and Managing the Impacts of Extreme Precipitation in the western United States. *Indiana University Seminar Series*, Bloomington, IN, 22 April.

2023 **Wilson, A.M.,** F.M. Ralph, V. Tallapragada, C. Davis, L. Delle Monache, J. Doyle, F. Pappenberger, C. Reynolds, A. Subramanian, D. Lavers, L. Centurioni, J.S. Haase, B. Cao, J. Cordeira, B. Kawzenuk, E. Knappe, A. Lundry, A. Michaelis, R. Rickert, S. Roj, J. Rutz, R. Torn, X. Wu, M. Zheng. Atmospheric River Observations from Offshore Evolution to Onshore Impacts. *American Geophysical Union Fall Meeting*, San Francisco, CA, 15 December.

2023 **Wilson, A.M.** Soil Moisture Monitoring in Complex Terrain: Perspective on Challenges and Opportunities. *American Geophysical Union Fall Meeting*, San Francisco, CA, 12 December.

2023 **Wilson, A.M.** Water Year 2023 in California: Forecasting, Observing, and Managing the Impacts of Extreme Precipitation**.** *NASA Goddard Space Flight Center Terrestrial Water Cycle Seminar,* 24 September.

2023 **Wilson, A.M.** Atmospheric Rivers: An Introduction. *Dewberry Resilient Technical Leaders Focus Group*, Virtual, 25 January.

2022 **Wilson, A.M.** Atmospheric River Reconnaissance: Filling Data Gaps to Improve Forecasts of Extreme Events. *California Extreme Precipitation Symposium.* Virtual, 21 June.

2022 **Wilson, A.M.** Forecast Informed Reservoir Operations: Developing An Adaptive, Science Based, climate resilient Proposed Water Management Strategy. *Northern Illinois University Graduate Colloquium*, DeKalb, IL, 28 October.

2021 **Wilson, A.M.** Forecast Informed Reservoir Operations: Developing an Adaptive Science Based Proposed Water Management Strategy. *University of Illinois at Urbana-Champaign Atmospheric Science Graduate Seminar Series,* Urbana, IL, 19 October.

2021 **Wilson, A.M.** Forecast Informed Reservoir Operations: Developing an Adaptive Science Based Proposed Water Management Strategy. *Marquette University Civil Engineering Graduate Seminar Series*, Virtual, 13 October.

2020 **Wilson, A.M.** Enhancing Hydrometeorological Observing Systems throughout California. *Southwest Extreme Precipitation Symposium*, Virtual, 7 October.

2019 **Wilson, A.M.** Rivers in the Sky – Why I Study the Earth's Atmospheric Processes. *American Geophysical Union Fall Meeting*, San Francisco, CA, 13 December.

2019 **Wilson, A.M.** Exploring Novel Strategies to Enhance Use of Existing Water Management Infrastructure: Collecting Unique Observations with Local Partners. *American Geophysical Union Fall Meeting*, San Francisco, CA, 11 December.

2018 **Wilson, A.M.**, and F.M. Ralph. Forecast informed reservoir operations: Background, and supporting forecast improvements through atmospheric data collection and numerical modeling. *Governor's Conference on the Future of Water in Kansas*, Manhattan, KS, 14 November.

2018 **Wilson, A.M.**, and F.M. Ralph. Research on atmospheric rivers and resulting watershed impacts in the Russian River Basin and West Coast. *Russian River Science Forum*, Sonoma County Water Agency, Santa Rosa, CA, 1 May.

2014 **Wilson, A.M.** An investigation into the effect of low level cloud and fog on the precipitation regime in the Southern Appalachians. *EcoLunch Seminar Series*, Wake Forest University, Winston-Salem, NC, 19 March.

CONFERENCE PRESENTATIONS (ORAL)

2023 **Wilson, A.M.,** F.M. Ralph, E. Knappe, R. Hartman, L. Katz, J. Morgan, M. Pan, E. Sumargo, M. Stewart, M. Muxworthy, T. Sullivan, N. Pepper, and N. Stewart: Soil Moisture Observations to Support Water Management in the Upper Yampa: Accomplishments and Next Steps. *12th Annual Upper Colorado River Basin Water Forum*, Grand Junction, CO, 31 October**.**

2023 **Wilson, A.M.,** F.M. Ralph, V. Tallapragada, C. Davis, L. Delle Monache, J. Doyle, F. Pappenberger, C. Reynolds, A. Subramanian, D. Lavers, L. Centurioni, J.S. Haase, B. Cao, J. Cordeira, B. Kawzenuk, E. Kanppe, A. Lundry, A. Michaelis, R. Rickert, S. Roj, J. Rutz, R. Torn, X. Wu, and M. Zheng: Atmospheric River Reconnaissance in Water Year 2023 – A Research and Operations Partnership. *American Meteorological Society 32nd Conference on Weather Analysis and Forecasting*, Madison, WI, 19 July**.**

2021 **Wilson, A.M.**, F.M. Ralph, C. Talbot, J. Jasperse, J. James, J. Leahigh, G. Woodside, A. Hutchinson, M. Anderson, A. Haynes, B. Whitin, S.J. Turnbull, C. Downer, D. Alden, K. Paulsson, A. Cooper, C.J. Ellis, E. Sumargo, R.R. Weihs, D. Reynolds, B. Kawzenuk, C. Hecht, P. Yao, and F. Cannon: Observations in Support of Forecast Informed Reservoir Operations Objectives – Summary of Accomplishments to Date. *American Geophysical Union Fall Meeting*, New Orleans, LA, 16 Dec.

2020 **Wilson, A.M.,** R. Cifelli, A. Dufour, T.W. Parzybok, M.D. Dettinger, J.A. Vano, F. Munoz-Arriola, K. Miller: Toward Greater Resilient Water Infrastructure to Future Hydrometeorological Extremes: Lessons from Oroville Dam and Hurricane Harvey. *American Meteorological Society 100th Annual Meeting, 15th Symposium on Societal Applications: Policy, Research and Practice*, Boston, MA, Amer. Met. Soc., 8.2, 15 January.

2019 **Wilson, A.M.**, F.M. Ralph, D. Alden, C. Ellis, and S. Turnbull: Forecast Informed Reservoir Operations (FIRO): Supporting forecast improvements through targeted data collection. *California Water and Environmental Modeling Forum*, Folsom, CA, 24 April.

2018 **Wilson, A.M.**, F.M. Ralph, B. Henn, D. Alden, S. Turnbull, and C.J. Ellis: An Overview of the FIRO-2018 Field Campaign. *Center for Western Weather and Water Extremes 3rd Annual Meeting*, La Jolla, CA, 17 April.

2017 **Wilson, A.M.**, F.M. Ralph, R. Demirdjian, B. Kawzenuk, and F. Cannon: Observations of Landfalling Atmospheric Rivers in Northern California During Early 2017: Description and Preliminary Results from the FIRO-2017 Field Campaign. *American Meteorological Society 17th Conference on Mesoscale Processes*, San Diego, CA, 27 July.

2017 **Wilson, A.M.**, F.M. Ralph, R. Demirdjian, and B. Kawzenuk: FIRO Field Campaign – Description and preliminary results from a unique observing period in the Russian River watershed in northern California during January – March 2017. *California Extreme Precipitation Symposium*, Davis, CA, 11 July.

2016 Barros, A.P., **A.M. Wilson**, Y. Duan, and X. Sun: Orographic precipitation processes – Observations, modeling, and scaling. *30th Conference on Hydrology*, New Orleans, LA, Amer. Meteor. Soc., 7.2, 9-14 January.

2015 Miller, D.K., A.P. Barros, **A. Wilson**, and G. Cutrell: Eight years of catching hydrometeors in the Great Smoky Mountains National Park and Pigeon River Basin. *Great Smoky Mountains National Park Science Colloquium*, Gatlinburg, TN, 19 March.

2014 **Wilson, A.M.**, and A.P. Barros: Precipitation Studies in Western NC. *North Carolina Rural Water Association Annual Leadership Summit*, Asheville, NC, 4-5 September.

2014 **Wilson, A.M.**, and A.P. Barros: Micro Rain Radar Observations of Precipitation in the Southern Appalachians. *International Weather Radar and Hydrology Symposium*, Reston, VA, 7-10 April.

2014 **Wilson, A.M.**, G.J. Cutrell, D.K. Miller, and A.P. Barros: Investigating Orographic Precipitation Processes in the Southern Appalachians. *24th Annual Great Smoky Mountains National Park Science Colloquium*, Gatlinburg, TN, 20 March.

2014 Cutrell, G., **A. Wilson**, J. Tao, D.K. Miller, and A.P. Barros: Federal research investments: Precipitation studies in the Southern Appalachians. *NEMAC and UNCA's "The Asheville Floods of September 2004: 10 Years of Action, Research, and Mitigation" Symposium*, Asheville, NC, 5 September.

2013 **Wilson, A.M.** and A.P. Barros: Low Level Controls on the Microphysics of Warm Season Rainfall in the Southern Appalachians – Observations and Modeling. *11th International Precipitation Conference*, Ede-Wageningen, The Netherlands, 30 June – 3 July.

2013 Shrestha, P., A.P. Barros, A. Khlystov, and **A.M. Wilson**: Pre-monsoon aerosol-cloud-rainfall interactions in the Central Himalayas due to regional-scale pollution in the Indo-Gangetic Plains. *5th Symposium on Aerosol-Cloud-Rainfall Interactions*, Austin, TX, Amer. Meteor. Soc., J44.4, 5-10 January.

2012 **Wilson, A.M.** A.P. and Barros: Summertime Rainfall and the Spatial Variability of 4D Microphysics in the Southern Appalachians. *23rd Annual Great Smoky Mountains National Park Science Colloquium*, Gatlinburg, TN, 22 March.

2012 **Wilson, A.M.,** A.P. Barros and C.R. Williams: An Intercomparison of Model Simulations and VPR Estimates of the Vertical Structure of a Mesoscale Convective System During MC3E. *18th Conference on Satellite Meteorology, Oceanography and Climatology/First Joint AMS-Asia Satellite Meteorology Conference*, New Orleans, LA, Amer. Meteor. Soc., J10.7, 22-26 January.

2012 **Wilson, A.M.** and A.P. Barros: Summertime Rainfall and the Spatial Variability of 4D Microphysics in the Southern Appalachians. *18th Conference on Satellite Meteorology, Oceanography and Climatology/First Joint AMS-Asia Satellite Meteorology Conference*, New Orleans, LA, Amer. Meteor. Soc., J7.5, 22-26 January.

2012 Barros, A.P., X. Sun, **A.M. Wilson**, and L. Lowman: Multiscale co-organization of atmospheric and terrestrial moisture fluxes in mountain landscapes. *Andes Biodiversity and Ecosystem Research Group Meeting*, Sequoia National Park, CA, 30 September – 3 October.

2012 D.K. Miller, A.P. Barros, L. Lee, **A.M. Wilson**, and R. Wooten: Weather conditions leading to the Gunter Fork Trail debris flow of 14, 15 July 2011. *23rd Annual Great Smoky Mountains National Park Science Colloquium*, Gatlinburg, TN, 22 March.

2011 Barros, A.P., J. Brun, J. Tao, **A.M. Wilson**, and M. Jeuland: System-level auditing of hydrometeorological predictability. *American Geophysical Union Fall Meeting*, San Francisco, CA, NG51H-01, 5-9 December.

2009 Squires, M., C. Tabor, and **A.M. Wilson**: Development of new snowstorm indices and a new GIS snowstorm database at the National Climatic Data Center. *Carolinas and Virginia Climate Conference,* Wilmington, NC, 20-21 October.

CONFERENCE PRESENTATIONS (POSTER)

2019 **Wilson, A.M.**, F.M. Ralph, L. Centurioni, B. Ingleby, A.C. Subramanian, D.A. Lavers, L. Isaksen, L. Delle Monache, V. Tallapragada, F. Pappenberger, C.A. Davis, J. Doyle, and C.A. Reynolds: Atmospheric river reconnaissance surface drifting buoy deployments: supporting forecast improvments through targeted data collection and enhancement of the global observing system. *OceanObs'19*, Honolulu, HI, 16-20 September.

2019 **Wilson, A.M.**, F.M. Ralph, J. Jasperse, C.A. Talbot, B. Kawzenuk, C.J. Ellis, and S. Turnbull: Forecast informed reservoir operations (FIRO): supporting forecast improvements through targeted data collection. *Workshop: Observational campaigns for better weather forecasts*, Reading, UK, 10-13 June.

2019 **Wilson, A.M.**, F.M. Ralph, and B. Kawzenuk: The FIRO 2017-2019 field campaigns: the relationship of atmospheric rivers to reservoir operations and storage regimes. *Center for Western Weather and Water Extremes 4th Annual Meeting,* La Jolla, CA, 15-18 April.

2018 Ralph, F.M., **A.M. Wilson,** T. Shulgina, B. Kawzenuk, S. Sellars, J. Rutz, M. Lamjiri, E. Barnes, A. Gershunov, B. Guan, T. Osborne, and G. Wick: ARTMIP-early start comparison of atmospheric river detection tools: How many atmospheric rivers hit northern California's Russian River watershed? *American Geophysical Union Fall Meeting*, Washington, DC, 10-14 December.

2018 **Wilson, A.M.**, B. Kawzenuk, and F.M. Ralph: The FIRO 2017-2018 field campaigns: the relationship of atmospheric rivers to reservoir operations and storage regimes. *American Geophysical Union Fall Meeting,* Washington, DC, 10-14 December, Poster H11V-1172.

2017 **Wilson, A.M.**, F.M. Ralph, R. Demirdjian, B. Kawzenuk, F. Cannon, and J.M. Cordeira: The FIRO-2017 field campaign: Findings from a unique observing period in the Russian River Watershed in northern California during Jan – Mar 2017. *American Geophysical Union Fall Meeting*, New Orleans, LA, 11-15 December.

2017 **Wilson, A.M.**, and A.P. Barros: Orographic land-atmosphere interactions and the diurnal cycle of low level clouds and fog. *31st Conference on Hydrology*, Seattle, WA, Amer. Meteor. Soc., 471, 22-26 January.

2016 **Wilson, A.M.**, and F.M. Ralph: Investigating the impact of microphysical processes on storm-total precipitation during atmospheric river events in northern California. *American Geophysical Union Fall Meeting*, San Francisco, CA, 12-16 December.

2016 Barros, A.P., M. Eghdami, and **A.M. Wilson**: To catch a cloud: Multiscale precipitation processes in the central Andes. *American Geophysical Union Fall Meeting*, San Francisco, CA, 12-16 December.

2015 **Wilson, A.M.**, and A.P. Barros: Observations and modeling of low level moisture convergence patterns in the Southern Appalachians during the IPHEx EOP. *European Geosciences Union General Assembly*, Vienna, Austria, 12-17 April.

2015 **Wilson, A.M.**, and A.P. Barros: Investigating the seasonal and diurnal evolution of fog and its effect on the hydrometeorological regime in the Southern Appalachian Mountains using a mobile observing platform. *American Geophysical Union Fall Meeting*, San Francisco, CA, 14-18 December.

2015 **Wilson, A.M.**, J. Tao, Y. Duan, M. Arulraj, M. Cadeddu, G. Cutrell, K. Dawson, M. Petters, D. Miller, and A.P. Barros: IPHEx data sets and ongoing studies. *Precipitation Measurement Mission Science Team Meeting*, Baltimore, MD, 13-17 July.

2015 Duan, Y., **A.M. Wilson**, and A.P. Barros: An investigation of topography modulated low level moisture convergence patterns in the Southern Appalachians using WRF. *American Geophysical Union Fall Meeting*, San Francisco, CA, 14-18 December.

2014 **Wilson, A.M.**, and A.P. Barros: Observations and modeling of the near surface vertical structure of the atmosphere in the Southern Appalachians during the Integrated Precipitation and Hydrology Experiment (IPHEx) Extended Observing Period. *American Geophysical Union Fall Meeting*, San Francisco, CA, 15-19 December.

2014 **Wilson, A.M.**, M. Angulo-Martinez, K. Dawson, J. Hader, Y. Duan, M. Petters, and A.P. Barros: Microphysical observations during the IPHEX IOP. *Precipitation Measurement Mission Science Team Meeting*, Baltimore, MD, 4-8 August.

2014 Barros, A.P., J. Tao, **A.M. Wilson**, Y. Duan, M. Noguiera, L. Lowman, L. Weston, and G. Cutrell: The Integrated Precipitation and Hydrology Experiment 2014: Preliminary assessment of hydrologic predictability. *CUAHSI Biennial Colloquium*, Shepherdstown, WV, 28-30 July.

2014 **Wilson, A.M.**, and A.P. Barros: Observations and modeling of orographic enhancement of precipitation in the Southern Appalachians via low-level Bergeron processes. *28th Conference on Hydrology*, Atlanta, GA, Amer. Meteor. Soc., 541, 2-6 February.

2013 **Wilson, A.M.**, Y. Duan, and A.P. Barros: Microphysical transience of warm season precipitation in the Southern Appalachians: Toward physical retrieval. *Precipitation Measurement Mission Science Team Meeting*, Annapolis, MD, 18-21 March.

2012 **Wilson, A.M.**, and A.P. Barros: On the use of an explicit microphysical model to investigate the temporal and spatial evolution of rainfall microphysics in different storm environments. *American Geophysical Union Fall Meeting*, San Francisco, CA, 3-7 December.

2012 Barros, A.P., **A.M. Wilson**, J. Tao, and D.K. Miller: Ground validation in complex terrain: Mapping precipitation processes to understand retrieval errors. *Precipitation Measurement Mission 5th International Workshop for GPM Validation*, Toronto, Ontario, Canada, 10-12 June.

2012 Tao, J., **A.M. Wilson,** A.P. Barros, and R. Wooten: Using a spatially dense, high elevation rain gauge network and a hydrologic model to enhance predictability of landslides in the Southern Appalachians. *Geological Society of America Annual Meeting and Exposition*, Charlotte, NC, 4-7 November.

2011 Barros, A.P., O. Prat, **A.M. Wilson**, and D. Miller: High-resolution observations and modeling of precipitation processes in the Great Smoky Mountains: The importance of getting the physics right. *25th Conference on Hydrology*, Seattle, WA, Amer. Meteor. Soc., 27, 23-27 January.

2010 Barros, A.P., X. Sun, **A.M. Wilson**, J. Tao, D. Miller, and O. Prat: Orographic precipitation processes and high-resolution hydrometeorological modeling in the Southern Appalachians. *Precipitation Measurement Mission Science Team Meeting*, Seattle, WA, 1-4 November.

FIELD EXPERIENCE

2023-present Forecast-Informed Reservoir Operations Field Campaign. Green River, WA Basin
- Instruments: Radiosondes, MicroRain Radars, Optical Disdrometers, Rain Gauges, Soil Moisture

2019-present Forecast-Informed Reservoir Operations Field Campaign. Yuba, Feather, and Santa Ana Basins
- Instruments: Radiosondes, MicroRain Radars, Optical Disdrometers, Rain Gauges, Soil Moisture, Level Loggers**,** ISCO samplers

2018-present Coordinator for Atmospheric River Reconnaissance. North Pacific Ocean.
- Instruments: Dropsondes, Drifting buoys, Airborne Radio Occultation, Radiosondes

2016-present Forecast-Informed Reservoir Operations Field Campaign. Russian River Basin, Sonoma and Mendocino Counties, CA.
- Instruments: Radiosondes, MicroRain Radars, Optical Disdrometers, Rain Gauges, Soil Moisture, Level Loggers

2007-2016 Precipitation Measurement Mission (PMM) Great Smoky Mountains Network. Pigeon River Basin, Haywood County, NC.
- Instruments: Flux Tower, MicroRain Radars, Optical Disdrometers, Rain Gauges

2015 Andes Biodiversity and Ecosystem Research Group. Madre de Dios Basin, Peru.
- Instruments: Rain Gauges, Weather Stations

2013-2014 Integrated Precipitation and Hydrology Experiment. Asheville, NC.
- Instruments: MicroRain Radars, Optical Disdrometers, Rain Gauges, Particle Counters

2011-2012 Global Cold-Season Precipitation Experiment. Egbert, ON, Canada.
- Instruments: L-band and acoustic snow sensors

2011 Midlatitude Continental Convective Cloud Experiment. Ponca City, OK.
- Instruments: Rain Gauges, Optical and 2 Dimensional Video Disdrometers

PROFESSIONAL MEMBERSHIPS

2007 – present American Meteorological Society (AMS)
2011 – present American Geophysical Union (AGU)
2011 – present Earth Science Women's Network (ESWN)
2013 – present Geological Society of America (GSA)
2013 – present American Society of Civil Engineers (ASCE)
2019 – present Sigma Xi Associate Member
2020 – present Association for Women in Science Junior Member

TEACHING AND MENTORING

2024 Mentor, CW3E Intern Program
- Amanda Shea (Cal Poly San Luis Obispo)

2022 Instructor – Forecast Informed Reservoir Operations Colloquium. La Jolla, CA.

2022 Mentor, NSF GEOPATHS. Scripps Institution of Oceanography. La Jolla, CA.
- Anh Pham Phu, Improving Dynamic Visualizations of Weather Observations
- Serena Robella, Tracking Atmospheric River Reconnaissance Observations and Data Assimilation

2021 Mentor, CW3E Intern Program. Scripps Institution of Oceanography. La Jolla, CA.
- Rachel Santi (Colorado Mountain College)
- Gilberto Estrada Camacho (University of the Pacific)

2021 Guest Lecturer for Professor Francisco Munoz-Arriola. Hydroclimatology, College of Engineering, University of Nebraska-Lincoln.

2020 American Meteorological Society 19th Annual Student Conference Panelist

2020 Mentor, CW3E Intern Program. Scripps Institution of Oceanography. La Jolla, CA.
- Madison Muxworthy (Colorado Mountain College)

2019 Mentor, Scripps Undergraduate Research Fellowship Program. Scripps Institution of Oceanography. La Jolla, CA.
- Ketzel Levens (University of Wisconsin, Madison)

2019 Instructor – AR Colloquium Summer School. La Jolla, CA.

2016 Mentor – UCSD California Louis Stokes Alliance for Minority Participation in Science, Engineering & Mathematics Summer Research Program. San Diego, CA.

2010 – 2016 Elementary and Middle School Tutor for the Refugee Resettlement Committee at the Congregation for Duke University Chapel. Durham, NC.

2015 Women and Mathematics Math Mentoring Program. Durham, NC Public Schools.

2012 – 2013 Teaching Assistant, Mechanics of Solids Course. Duke University. Durham, NC.

2011 - 2014 Mentor, Research Experience for Undergraduates. Duke University. Durham, NC.
- Kevin Olson (Georgia Tech)
- Daniel Moraff (Brown University)
- Zarif Gani (Vanderbilt University)
- Lauren Weston (Smith College)

PROFESSIONAL SERVICE AND OUTREACH

2022 - 2023 California State University Chico Engineering Leadership Program Advisory Council Member

2021 – present Scripps Institution of Oceanography Diversity Advisory Committee Member

2021 – present Scripps Institution of Oceanography Safety Committee Member

2021 Unlearning Racism in the Geosciences Scripps Institution of Oceanography Pod Member (Spring Phase) and Pod Leader (Fall/Winter Phase)

2021 FIRO Colloquium Steering Committee Member

2020 – present Global Hydrology Resource Center User Working Group, NASA.
- Co-Chair, 2021
- Chair, 2022

2020 Session Chair, *Toward Infrastructure Standards for a Changing Climate: Sectors and Approaches,* American Meteorological Society 100th Annual Meeting, 15th Symposium on Societal Applications: Policy, Research, and Practice, Boston, MA.

2020 Session Chair, *Toward Infrastructure Standards for a Changing Climate: National and Global Perspectives,* American Meteorological Society 100th Annual Meeting, 15th Symposium on Societal Applications: Policy, Research, and Practice, Boston, MA.

2020 Session Chair, *In Situ Measurements of the Earth System,* American Meteorological Society 100th Annual Meeting, 33rd Conference on Climate Variability and Change, Boston, MA.

2020 - present IARC Steering Committee Co-Chair

2019 AR Colloquium Summer School Steering Committee Member

2018 IARC Steering Committee Member

2018 – 2022 Yampa Basin Rendezvous Steering Committee Member
- Co-chair, 2019-2020

2017 Session Convener and Chair, *Science to Action: Resilient Decision Making in the Midst of Uncertainty*, American Geophysical Union Fall Meeting, New Orleans, LA.

2017 Session Co-Chair, *Atmospheric Rivers*, American Meteorological Society 17th Conference on Mesoscale Processes, San Diego, CA.

2016 – present Water Resources Committee Member, American Meteorological Society.
- Chair, 2023-present

2012 – present Peer reviewer for multiple journals including *J. Hydrol., J. Hydrometeor., Atmosphere, Remote Sensing, J. Geophys. Res.-Atmos., Water, Water Res. Research, Hydrol. Sciences Journal, Meteor. Atmos. Phys., Climate Res.*

2010 – 2016 National Academy of Engineers Grand Challenge K-12 Partners Program at Duke University**.** Durham, NC.

2011 – 2016 Drop Size Distribution Working Group, Global Precipitation Mission, NASA.

2012 – 2016 Water Resources Committee Student Member, American Meteorological Society.

2014 – 2016 Project Lead-the-Way Advisory Board Member, East Chapel Hill High School.

2016 Central North Carolina (Region 3A) K-12 Science and Engineering Fair Judge

2015 - 2016 FEMMES (Females Excelling More in Math, Engineering, and Science) Capstone Event Volunteer

2011 - 2012 Project Lead-the-Way at Duke University**.** Durham, NC.