

Janice L. Bytheway

U.S. Citizen

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Professional Experience

Research Physical Scientist

June 5, 2023-present, 40hours/week

NOAA Physical Sciences Laboratory

Boulder, CO

- *Lead and contribute to research to quantify and characterize the skill, reliability, and systematic biases of forecasts of extreme precipitation from operational NOAA models and experimental model systems.*
 - *Lead and collaborated on an in depth analysis of the High Resolution Ensemble Forecast (HREF) system for warm season forecasts of extreme precipitation, including convective storms.*
 - *One lead author publication and one co-authored publication in preparation.*
- *Lead and contribute to research to characterize sources of uncertainty in modeled and observed precipitation products, including in situ and remotely sensed datasets, with a focus on extremes.*
 - *Collaboration with interagency partners in FEMA and USACE, contributing to efforts to modernize flood risk estimation, including in depth analysis of the representation of extreme precipitation (including convective precipitation) in a variety of in situ, satellite-based, multi-sensor, and reanalysis datasets.*
- *Examine and communicate research findings to inform a variety of stakeholders and guide applications to relevant infrastructure needs, including the estimation of probable maximum precipitation.*
- *Lead and participate in research to further the understanding of western US hydroclimate.*
 - *Lead a study of wintertime precipitation in the Colorado Rocky Mountains as part of the Study of Precipitation, the Lower Atmosphere, and Surface for Hydrometeorology (SPLASH) field campaign.*
 - *Co-authored one published manuscript and submitted one lead author publication (in review as of 10/4/2023).*
- *Provide written and verbal summaries of scientific results for both professional audiences and for education and outreach*
 - *Research findings presented at national and international meetings and invited seminars.*
- *Engage in scientific community service to both the NOAA and broader science communities*
 - *Membership on committees and working groups in professional societies.*
 - *Serve as session chair at conferences.*
 - *Perform peer review of manuscripts for numerous journals*
 - *Mentorship of early career scientist*

Research Scientist II

May 2020 – Present, 40 hours/week

Research Scientist I

March 2017 – May 2020, 40 hours/week

Cooperative Institute for Research in Environmental Sciences (CIRES)

University of Colorado, Boulder, CO

- *Lead and contributed to the experimental design of hydrometeorological and hydroclimatological studies of extreme precipitation events.*
 - *Lead a study of operational forecasts from the Global Forecast System (GFS) and High-Resolution Rapid Refresh (HRRR) models leading up to the Oroville Dam Crisis in collaboration with partners at the California Department of Water Resources (CADWR).*
 - *Designed and lead a study of spaceborne radar observations of shallow convection during the Atlantic Tradewind Ocean-Atmosphere Mesoscale Interaction Campaign (ATOMIC). As a part of this work, observations from the W-Band radar on the NOAA P-3 aircraft were postprocessed and made available for public use at NOAA's National Center for Environmental Information (NCEI).*
- *Assessed precipitation estimates and forecasts from a variety of operational and experimental platforms, derived products, and numerical weather prediction models.*
 - *Assessed the uncertainty in high-resolution quantitative precipitation estimates from in-situ and remote sensing platforms in complex terrain, which informs our understanding of the suitability of various products for use in forecast evaluation.*
 - *Assessed the operational Multi-Radar Multi-Sensor (MRMS) precipitation product in the Russian River Valley of California, leading to improved understanding of the reliability of the MRMS products as related to storm characteristics in this region.*
 - *Assessed performance of satellite-based precipitation estimates over ocean using a newly available dataset of in-situ precipitation estimates from instruments mounted on drifting buoys. Due to the transient motion of the buoys, this work provided improved understanding of the performance of satellite-based precipitation products in regions not previously evaluated using existing in-situ observations.*
 - *Performed and analyzed experiments applying statistical downscaling to the Integrated Multi-satellitE Retrievals for Global Precipitation Measurement (IMERG) product over ocean, accomplishing the goals of a NASA Precipitation Measurements Mission (PMM) project to determine our ability to obtain higher-resolution estimates of oceanic precipitation through downscaling techniques.*
 - *Collaborated with colleagues in the Global Systems Laboratory (GSL) to perform radiative transfer experiments using modeled atmospheric and hydrometeor profiles to simulate passive microwave radiances, for comparison to observed satellite data.*
- *Analyzed model experiments targeting phenomena demonstrated to be key forecast challenges related to extreme rainfall across the U.S.*
 - *Collaborated with colleagues in GSL to assess operational and experimental HRRR forecasts in California as part of the Advanced Quantitative Precipitation Information (AQPI) project to inform potential ways precipitation forecasts could be improved in this region.*

- *Developed a methodology to account for the uncertainty in quantitative precipitation estimates when validating high-resolution model forecasts in complex terrain regions. This work represents one of the first studies to attempt to validate hourly precipitation forecasts in the mountains of California.*
- *Coordinated research tasks and maintained collaborative relationships across diverse teams and institutions, including operational partners.*
 - *Organized and coordinated research tasks across teams within the NOAA Physical Sciences Laboratory (PSL) and at Colorado State University (CSU) during ATOMIC project.*
 - *Collaborated with partners at CADWR to design and perform analyses of precipitation forecasts and products to inform CADWR's use of operational and experimental products in hydrologic forecasting.*
 - *Collaborated with partners at the National Weather Service (NWS) Weather Prediction Center (WPC) to participate in the Flash Flood and Intense Rainfall Experiment (FFAIR), which informs forecasters and model developers of the performance of several experimental convection allowing models in extreme precipitation and flash flooding events.*
- *Provided written and verbal summaries of scientific results for both professional audiences and for education and outreach.*
 - *Published 5 first author and 4 co-authored manuscripts in peer-reviewed journals.*
 - *Contributed to written reports of project progress for CIRES leadership.*
 - *Wrote reports of project findings for PSL leadership.*
 - *Presented research findings at national and international meetings.*
 - *Remotely presented on the science of precipitation to students nationwide as part of the 2020 CIRES Science at Home series.*
- *Collaborated on proposals targeting both internal and external funding opportunities to address key scientific questions furthering the mission of NOAA and PSL.*
 - *Collaborated on a proposal to evaluate ensemble prediction of extreme precipitation with colleagues at NWS WPC.*
 - *Collaborated on a proposal focused on improving satellite-based precipitation estimates over the western U.S. with colleagues at CSU.*
 - *Wrote and collaborated on proposals targeting PSL internal funding.*
- *Engaged in scientific community service to both the CIRES and broader science communities.*
 - *Participated in a number of CIRES and PSL committees.*
 - *Membership on committees and working groups in professional societies.*
 - *Served as session chair at conferences.*
 - *Participated in proposal review panels for NASA.*
 - *Performed peer review of manuscripts for numerous journals.*

Graduate Research Assistant
Teaching Assistant
Research Associate
Graduate Research Assistant
Teaching Assistant

January 2013-February 2017, 20 hours/week
 January 2016-May 2016, 8 hours/week
 September 2008 – December 2012, 20 hours/week
 May 2005 – August 2008, 20 hours/week
 January 2007 – May 2007, 8 hours/week

Department of Atmospheric Science
Colorado State University, Fort Collins, CO

Research Activities

- *Assessed precipitation forecasts from operational and experimental HRRR.*
 - *Collaborated with NOAA GSL to evaluate experimental forecasts of convective precipitation during the model development period, quantifying changes to forecast performance as a result of model upgrades.*
- *Assessed the uncertainty of global satellite-based precipitation estimates. Both the satellite-based precipitation estimates and estimates of their uncertainty as a function of climate regime were included in a climate data record of the global terrestrial water budget.*
- *Developed an empirical surface emissivity model for passive microwave satellite retrievals of precipitation that has served as the basis for continuing work on surface emissivity model development.*
- *Published 5 first author manuscripts and 1 co-authored manuscript in peer-reviewed journals as a result of work performed in these positions.*
- *Provided written and verbal reports of project status to funding agencies and collaborators across various institutions.*
 - *Responsible for quarterly progress reports to NASA.*
- *Presented research findings at national and international meetings.*

Teaching Activities

- *Designed and presented class lectures and review materials, assisted in writing assignments, graded assignments and exams, and provided assistance to students.*
 - *Introduction to Weather and Climate (undergraduate level).*
 - *Atmospheric Radiation (graduate level)*
- *Assisted in the mentoring of undergraduate research interns.*

Atmospheric Scientist

September 2008 – December 2012, 20 hours/week

METSAT Division

Science and Technology Corporation (STC), Fort Collins, CO

- *Developed and produced the NASA Water Vapor Project – MEaSUREs (NVAP-M) Climate Data Record.*
 - *Evaluated fitness of satellite and in-situ data for inclusion in a climate data record.*
 - *Evaluated the impacts of climate change on the global distribution and amount of water vapor.*
- *Produced cloud climatologies and recommended periods of opportunity for a stakeholder performing satellite observation of specific targets.*
- *Provided written reports of project status and scientific results to funding agencies*
 - *Responsible for quarterly progress reports to NASA.*
- *Assisted in writing proposals to external funding agencies.*
- *Co-authored one peer-reviewed scientific manuscript.*
- *Presented research findings at national and international meetings.*

Weather Observer

August 2006 – December 2016, 2-5 hours/week

Colorado Climate Center, Fort Collins Weather Station

Colorado State University, Fort Collins, CO

- *Collected and recorded meteorological observations for climate monitoring, including temperature, precipitation (rain and snow), wind, clouds, and visibility.*
- *Provided a verbal summary of daily weather data for public information.*

Education

Ph.D. Atmospheric Science, 2017

Colorado State University, Fort Collins, CO

Thesis: “Features Based Assessments of Warm Season Convective Precipitation Forecasts from the High-Resolution Rapid Refresh Model”

M.S. Atmospheric Science, 2008

Colorado State University, Fort Collins, CO

Thesis: “A Physically Based Screen for Precipitation over Complex Surfaces Using Passive Microwave Observations”

B.S. Earth Science, 2005

California University of Pennsylvania, California, PA

Concentration: Operational Meteorology

Minor: Mathematics

Honors Thesis: “The Bytheway Method for Optimal Radar Beam Scheduling in the CASA IP1a Testbed”

Relevant Skills

- Programming in Fortran, IDL and Python to analyze and display scientific data.
- Obtaining and reading scientific data from diverse sources in a variety of formats (e.g., GRIB, HDF5, Net-CDF).
- Conducting experiments using in-situ and remotely sensed atmospheric data, with an emphasis on precipitation.
- Evaluating numerical weather prediction (NWP) model forecasts.
- Relating NWP forecast performance to explicitly modeled and parameterized processes.
- Accessing and using NOAA High Performance Computing Systems.
- Presenting scientific information in written and oral formats to both technical and non-technical audiences, including education and outreach activities.
- Designing scientific research projects focused on addressing stakeholder or funding agency needs (e.g., CADWR and NOAA).
- Leading diverse project teams to achieve common goals, including interdisciplinary teams and teams at multiple institutions.
- Composing research proposals to seek project funding sources.
- Collecting and recording atmospheric measurements.
- Assisting in the mentoring of research interns.

- Using Microsoft Office Suite.
- Using Windows, Mac, and Linux operating systems.

Publications

Bytheway, J. L., W. R. Currier, M. Hughes, K. Mahoney and R. Cifelli, 2023: Evaluation of wintertime precipitation estimates and forecasts in the mountains of Colorado. Submitted to *J. Hydrometeorol.*

Bytheway, J. L., E. J. Thompson, J. Yang and H. Chen, 2023: Evaluation of the RainFARM statistical downscaling technique applied to IMERG over global oceans using passive aquatic listener in situ rain measurements. *J. Hydrometeorology*. In press. doi:10.1175/JHM-D-23-0090.1

de Boer, G., A. White, R. Cifelli, J. Intrieri, M. Hughes, K. Mahoney, T. Meyers, Kathy. Lantz, J. Hamilton, W. Currier, J. Sedlar, C. Cox, E. Hulm, L. D. Riihimaki, B. Adler, L. Bianco, A. Morales, J. Wilczak, J. Elston, M. Stachura, D. Jackson, S. Morris, V. Chandrasekar, S. Biswas, B. Schmatz, F. Junyent, J. Reithel, E. Smith, K. Schloesser, J. Kochendorfer, M. Meyers, M. Gallagher, J. Longenecker, C. Olheiser, **J. Bytheway**, B. Moore, R. Calmer, M. D. Shupe, B. Butterworth, S. Heflin, R. Palladino, D. Feldman, K. Williams, J. Pinto, J. Osborn, D. Costa, E. Hall, C. Herrera, G. Hodges, L. Soldo, S. Stierle, and R. S. Webb, 2023: Supporting advancement in weather and water prediction in the upper Colorado River Basin: the SPLASH Campaign. *Bull. Amer. Meteorol. Soc.* In press. doi:10.1175/BAMS-D-22-0147.1

Bytheway, J. L., E. J. Thompson, J. Yang and H. Chen, 2023: Evaluating Satellite Precipitation Estimates over Oceans using Passive Aquatic Listeners. *Geophysical Research Letters*, 50, e2022GL102087, doi:10.1029/2022GL102087.

Cifelli, R., V. Chandrasekar, L. Herdman, D. D. Turner, A. B. White, T. I. Alcott, M. Anderson, P. Barnard, S. K. Biswas, M. Boucher, **J. L. Bytheway**, H. Chen, H. Cutler, J. M. English, L. Erickson, F. Junyent, D. J. Gottas, J. Jasperse, L. E. Johnson, J. Krebs, J. van de Lindt, J. Kim, M. Leon, Y. Ma, M. Marquis, W. Moninger, G. Pratt, C. Radhakrishnan, M. Shields, J. Spaulding, B. Tehranirad, and R. Webb 2022: Advanced Quantitative Precipitation Information: Improving Monitoring and Forecasts of Precipitation, Streamflow, and Coastal Flooding in the San Francisco Bay Area. *Bull. Amer. Meteorol. Soc.* In press. doi:10.1175/BAMS-D-21-0121.1.

English, J. M., D. D. Turner, D. C. Dowell, T. I. Alcott, R. Cifelli, and **J. L. Bytheway**, 2022: Probabilistic forecasts of atmospheric river events using the HRRR Ensemble. *J. Operational Meteorology*. In press.

Bytheway, J. L., M. Hughes, K. Mahoney, R. Cifelli, and J. M. English, 2022: Demonstrating a probabilistic quantitative precipitation estimate for evaluating precipitation forecasts in complex terrain. *Wea. Forecasting*, 37, 45-64, doi:10.1175/WAF-D-21-0074.1.

English, J. M., D. D. Turner, T. I. Alcott, W. R. Moninger, **J. L. Bytheway**, R. Cifelli, and M. Marquis, 2020: Evaluating operational and experimental HRRR model forecasts of atmospheric

river events in California. *Wea. Forecasting*, **36**, 1925-1944, doi:10.1175/WAF-D-21-0081.1.

Bytheway, J. L., M. Hughes, K. Mahoney, and R. Cifelli, 2020: On the uncertainty of high-resolution hourly quantitative precipitation estimates in California. *J. Hydrometeor.*, **21**, 865-879, doi:10.1175/JHM-D-19-0160.1.

Bytheway, J. L., M. Hughes, K. Mahoney, and R. Cifelli, 2019: A multiscale evaluation of multisensor quantitative precipitation estimates in the Russian River Basin. *J. Hydrometeor.*, **20**, 447-466, doi:10.1175/JHM-D-18-0142.1.

Bytheway, J. L., and C. D. Kummerow, 2018: Consistency between convection allowing model output and passive microwave satellite observations. *J. Geophys. Res.*, **123**, doi:10.1002/2017JD027527.

Zhang, Y., M. Pan, J. Sheffield, A. L. Siemann, C. K. Fisher, M. Liang, H. E. Beck, N. Wanders, R. F. MacCracken, P. R. Houser, T. Zhou, D. P. Lettenmaier, R. T. Pinker, **J. Bytheway**, C. D. Kummerow, and E. F. Wood, 2018: A Climate Data Record (CDR) for the global terrestrial water budget: 1984–2010, *Hydrol. Earth Syst. Sci.*, **22**, 241-263, doi:10.5194/hess-22-241-2018.

Bytheway, J. L., C. D. Kummerow, and C. Alexander, 2017: A Features-based assessment of the evolution of warm season precipitation forecasts from the HRRR model over three years of development. *Weather and Forecasting*, **32**, 1841-1856, doi:10.1175/WAF-D-17-0050.1.

Bytheway, J. L., and C. D. Kummerow, 2015: Toward an object-based assessment of high-resolution forecasts of long-lived convective precipitation in the central US. *J. Adv. Model. Earth Syst.*, **07**, 1248-1264, doi:10.1002/2015MS000497-T.

Bytheway, J. L., and C. D. Kummerow, 2013: Inferring the uncertainty of satellite precipitation estimates in data-sparse regions over land. *J. Geophys. Res.*, **118**, 9524– 9533, doi:10.1002/jgrd.50607.

Vonder Haar, T. H., **J. L. Bytheway**, and J. M. Forsythe, 2012: Weather and climate analyses using improved global water vapor observations. *Geophys. Res. Lett.*, **39**, L15802, doi:10.1029/2012GL052094.

Bytheway, J. L., and C. D. Kummerow, 2010: A physically based screen for precipitation over complex surfaces using passive microwave observations, *IEEE Trans. Geosci. Remote Sens.*, **48**, 299-313, doi:10.1109/TGRS.2009.2027434.

Conference and Invited Presentations

Bytheway, J. L., W. R. Carrier, M. Hughes, K. Mahoney, and R. Cifelli, 2023: Evaluation of wintertime precipitation estimates and forecasts in the mountains of Colorado. Invited presentation to the International Precipitation Working Group (IPWG) Orographic Precipitation Focus Group, October 4.

Bytheway, J. L., D. Stovern, K. Mahoney, J. Correia, S. Trojaniak, B. Moore and M. Hughes, 2023: Characterizing extreme precipitation in HREF individual ensemble members. American Meteorological Society Conference on Weather and Forecasting/Numerical Weather Prediction, Madison, WI, July 17-21.

Bytheway, J. L., D. Stovern, K. Mahoney, J. Correia, S. Trojaniak, B. Moore and M. Hughes, 2023: Characterizing extreme precipitation in HREF individual ensemble members. Invited presentation to the Flash Flood and Intense Rainfall (FFaIR) Experiment Seminar Series, Virtual, July 13.

Bytheway, J. L., E. J. Thompson, J. Yang and H. Chen, 2023: Evaluation of downscaled IMERG precipitation over global oceans using PALS. American Meteorological Society Annual Meeting, Denver, CO, January 9-12.

Bytheway, J. L., E. J. Thompson, J. Yang and H. Chen, 2023: Evaluating satellite precipitation estimates over ocean using passive aquatic listeners (poster). American Meteorological Society Annual Meeting, Denver, CO, January 9-12.

Mahoney, K. M., S. K. Biswas, J. L. Bytheway, R. Cifelli, J. D. Colton, C. Cox, W. R. Currier, J. Intrieri, M. Meyers, T. P. Meyers, and A. White, 2023: Analyzing precipitation across scales during the North America Monsoon in the East River Basin, Colorado. American Meteorological Society Annual Meeting, Denver, CO, January 9-12.

Bytheway, J. L., E. Thompson, J. Yang and H. Chen, 2022: Evaluating satellite precipitation estimates over oceans using Passive Aquatic Listeners (poster). 10th Workshop of the International Precipitation Working Group (IPWG), Fort Collins, CO, June 13-17.

Thompson, E. J., K. Drushka, H. Chen, Z. Li, J. L. Bytheway, 2022: Bridging satellite and in-situ scales of rain-induced near-surface salinity stratification. Ocean Salinity Science Conference, New York, NY (and virtual), June 6-9.

Bytheway, J. L., H. Chen, C. Fairall, E. Thompson, R. Cifelli: 2022: Leveraging airborne observations from ATOMIC to investigate satellite representation of shallow tropical convection (invited). Physical Sciences Lab ATOMIC Science Day, Boulder, CO, May 2.

Bytheway, J. L., W. R. Currier, R. Cifelli, K. Mahoney, M. Hughes, 2022: Examining how the spread in the High-Resolution Rapid Refresh Ensemble translates into National Water Model streamflow forecasts. 36th Conference on Hydrology/American Meteorological Society Annual Meeting, virtual, January 24-27.

Bytheway, J. L., W. R. Currier, R. Cifelli, K. Mahoney, M. Hughes, 2021: Examining how the spread in the High-Resolution Rapid Refresh Ensemble translates into National Water Model streamflow forecasts (poster). Fall Meeting of the American Geophysical Union. New Orleans, LA (and virtual), December 13-17.

English, J., D. D. Turner, D. Dowell, T. I. Alcott, W. R. Moninger, R. Cifelli, and J. L. Bytheway, 2021: Evaluating California atmospheric river event precipitation forecasts from the

High-Resolution Rapid Refresh Ensemble (HRRR-E) (poster). Fall Meeting of the American Geophysical Union. New Orleans, LA (and virtual), December 13-17.

Thompson, E. J., J. L. Bytheway, J. Yang and H. Chen, 2021: Comparison of oceanic acoustic rain measurements and downscaled IMERG rainfall for study of air-sea interaction. NASA Precipitation Measurements Mission (PMM) Science Team Meeting, virtual, October 18-22.

Bytheway, J. L., D. D. Turner, and R. Cifelli, 2021: Evaluating QPE/QPF skill with observed and simulated passive microwave brightness temperatures in a radiative closure exercise (poster). American Meteorological Society Annual Meeting, virtual, January 10- 15.

English, J., D. D Turner, T. I. Alcott, W. R. Moninger, J. L. Bytheway and R. Cifelli, 2021: AQPI: RAP/HRRR model forecasts of California atmospheric river events. American Meteorological Society Annual Meeting, virtual, January 10- 15.

Bytheway, J. L., M. Anderson, R. Cifelli, K. Mahoney, and M. Hughes, 2020: Evaluating hydrologic model forcings for use in reservoir operations planning. American Meteorological Society Annual Meeting, Boston, MA, January 12-16.

Bytheway, J. L., M. Hughes, K. Mahoney, and R. Cifelli, 2019: Evaluating quantitative precipitation estimate uncertainty in complex terrain for use in quantitative precipitation forecast validation (poster). Fall Meeting of the American Geophysical Union, San Francisco, CA, December 9-13.

Bytheway, J. L., M. Hughes, K. Mahoney, and R. Cifelli, 2019: Evaluating quantitative precipitation estimate uncertainty in complex terrain for use in quantitative precipitation forecast validation. European Meteorological Society Annual Meeting, Copenhagen, Denmark, September 9-13.

Bytheway, J. L., K. Mahoney, M. Hughes, and R. Cifelli, 2018: Successes and failures of deterministic precipitation forecasts leading up to the 2017 Oroville Dam Crisis (poster). Fall Meeting of the American Geophysical Union, Washington, DC, December 10-14.

Bytheway, J. L., S. Biswas, R. Cifelli, and M. Hughes, 2017: The relative performance of high-resolution quantitative precipitation estimates in the Russian River Basin (poster). Fall Meeting of the American Geophysical Union, New Orleans, LA, December 11-15.

Bytheway, J. L., and C. D. Kummerow, 2017: Evolution of HRRR warm season convective precipitation forecasts over three years of model development (poster). American Meteorological Society Annual Meeting, Seattle, WA, January 22-26.

Bytheway, J. L., 2016: American Meteorological Society: Connecting students at all levels with atmospheric science professionals. Invited presentation to visiting delegation from Chengdu University of Information Technology. Fort Collins, CO, August 1.

Bytheway, J. L., and C. D. Kummerow, 2015: An object-based assessment of the High-

Resolution Rapid Refresh Model over the western US. Fall Meeting of the American Geophysical Union, San Francisco, CA, December 14-18.

Bytheway, J. L. 2015: The data doesn't lie: Lessons from the creation of the NASA Water Vapor Project dataset. Invited presentation to California University of Pennsylvania Earth Science Department, California, PA, October 23.

Bytheway, J. L., and C. D. Kummerow, 2015: Towards an object-oriented validation system for high-resolution NWP models. Invited presentation to National Center for Atmospheric Research (NCAR) Model Evaluation Toolkit (MET) group, January 14.

Bytheway, J. L., and C. D. Kummerow, 2014: Towards an object-oriented validation system for high-resolution NWP models. 7th Workshop of the IPWG. Tsukuba, Japan, November 17-21.

Bytheway, J. L., and C. D. Kummerow, 2013: Inferring the temporal sampling uncertainty of overland satellite precipitation estimates in data-sparse regions. 27th Conference on Hydrology/American Meteorological Society Annual Meeting, Austin, TX, January 5-10.

Bytheway, J. L., T. H. Vonder Haar, and J. M. Forsythe, 2013: Global and regional water vapor variability from the new NASA Water Vapor Project-MEaSURES (NVAP-M) Dataset. 25th Conference on Climate Variability and Change/American Meteorological Society Annual Meeting, Austin, TX, January 5-10.

Bytheway, J. L., J. M. Forsythe, and T. H. Vonder Haar, 2012: Construction of the new NASA Water Vapor Project-MEaSURES (NVAP-M) global water vapor dataset. 18th AMS Conference on Satellite Meteorology, Oceanography and Climatology/First Joint AMS-Asia Satellite Meteorology Conference, New Orleans, LA, January 23-27.

Bytheway, J. L., T. H. Vonder Haar, and J. M. Forsythe, 2012: The New NVAP-M (NASA Water Vapor Project-MEaSURES) global water vapor dataset. 24th AMS Conference on Climate Variability and Change, New Orleans, LA, January 23-27.

Bytheway, J. L., J. M. Forsythe, and T. H. Vonder Haar, 2011: Construction and validation of the new NASA Water Vapor Project-MEaSURES (NVAP-M) global water vapor dataset (poster). World Climate Research Program Open Science Conference, Denver, CO, October 24-28.

Vonder Haar, T. H., J. L. Bytheway, and J. M. Forsythe, 2011: The new NVAP-M (NASA Water Vapor Project-MEaSURES) global water vapor dataset (poster). Proc. WCRP Open Science Conference, Denver, CO, October 24-28.

Bytheway, J. L., C. D. Kummerow, T. H. Vonder Haar and J. Forsythe, 2011: The NASA NVAP-MEaSURES 1987-2010 Global Water Vapor Data Set: design approach and heritage science. GEWEX/ESA DUE GlobVapour Workshop on Long Term Water Vapour Data Sets and Their Quality Assessment. Frascati, Italy, March 8-10.

Bytheway, J. L., J. M. Forsythe, and T. H. Vonder Haar, 2010: Integrating past and present:

Satellite observations and the NVAP-M global water vapor dataset. Fall Meeting of the American Geophysical Union, San Francisco, CA, December 13-17.

Bytheway, J. L., J. M. Forsythe, and T. H. Vonder Haar, 2009: Improvement of the NVAP global water vapor data set for climate, hydrological and weather studies (poster). Fall Meeting of the American Geophysical Union, San Francisco, CA, December 14-18.

Forsythe, J. M., J. L. Bytheway, and T. H. Vonder Haar, 2009: The NVAP global water vapor climate data record: science results and plans for improvement and continuation. 16th AMS Conference on Satellite Meteorology and Oceanography. Phoenix, Arizona, January 11-15.

Bytheway, J. L., 2008: An empirical emissivity model for complex surfaces. 12th Conference on IOAS-AOLS/American Meteorological Society Annual Meeting, New Orleans, January 20-24.

Vonder Haar, T. H., J. Forsythe, and J. L. Bytheway, 2008: Variability of water vapor observations on daily to decadal timescales from the global NVAP dataset (poster). American Geophysical Union Chapman Conference on Atmospheric Water Vapor and Its Role in Climate, Kailua-Kona, Hawaii, October 20–24.

Proposals Funded

- *Evaluating Hydrologic Model Forcings for Use in Reservoir Operations Planning* – Internal proposal to PSL June 2019
 - Collaborative effort with CADWR to examine the use of operational and experimental high-resolution forecasts to force DWR hydrologic models to produce streamflow forecasts in complex terrain.
- *Leveraging Airborne Observations from ATOMIC to Investigate Satellite Representation of Shallow Tropical Convection* – Internal proposal to PSL December 2019
 - Collaborative effort with colleagues in PSL and at Colorado State University to process radar observations from the NOAA P3 aircraft, co-locate the radar observations with satellite radar overpasses, and assess the satellite radar's ability to capture shallow tropical convection.
- *Evaluation of NOAA Operational Forecast Models and Analysis Products* (K. Mahoney, PI) – Internal proposal to PSL December 2022
 - Collaborative effort with colleagues in PSL to use data collected as part of the Study of Precipitation, the Lower Atmosphere and Surface for Hydrometeorology (SPLASH) field campaign to evaluate NOAA operational datasets and forecast products, including MRMS, HRRR, and the National Water Model (NWM).

Professional Affiliations

Earth Science Women's Network (ESWN) 2019 – present
Association for Women in Science (AWIS) 2019 – present
American Meteorological Society (AMS), 2004 – present

American Geophysical Union (AGU), 2008 – present
National Weather Association (NWA) 2003 – 2006
Sigma Gamma Epsilon National Honor Society for the Earth Sciences, inducted 2004

Professional Activities

NOAA/PSL Scientific and Service Activities

- NOAA Weather Prediction Center Flash Flood and Intense Rainfall (FFaIR) Experiment, June 2022
- PSL IT Steering Committee, 2020 – 2022
- CIRES Mentoring Committee

CIRES Service Activities

- CIRES Mentoring Committee, 2020 - present
 - Chair, 2022
 - Vice Chair, 2021
 - Mentoring Program participant, 2019, 2022
- CIRES Members' Council Representative, 2019 – present
- CIRES Outstanding Performance Awards (OPA) selection committee, 2020
- Climate Literacy and Energy Awareness Network (CLEAN) materials reviewer, 2020-present

AMS Service Activities

- AMS Committee on Hydrology, November 2022-present
 - Vice Chair, January 2023-present
- Session Chair, AMS Conference on Hydrology, January 2021, January 2022
- AMS Local Chapter Affairs Committee, January 2020 – January 2022
- Delegate to AMS Congressional Visits Day on Weather Water and Climate, June 2015
- Fort Collins Atmospheric Scientists (FORTCAST) Local chapter of the AMS member, 2014 - present
 - Treasurer, 2016-2017

NASA Service Activities

- NASA ESROGSS Proposal Review Panel, March 2020
- NASA ROSES Proposal Review Panel, November 2019

Colorado State University Service Activities

- Student Mentor to participants in Center for Multiscale Modeling of Atmospheric Processes (CMMAP) Research Experience for Undergraduates (REU) program, 2012, 2013, 2015, 2016
- Colorado State University Department of Atmospheric Science Graduate Student Representative, August 2014-August 2016

Professional Development Activities

- International Precipitation Working Group (IPWG) Orographic Precipitation Focus Group, December 2022- present

- Forecast Informed Reservoir Operations (FIRO) Colloquium Attendee, July 2022
- Earth Science Women's Network (ESWN) Women in Sciences Leadership Workshop, November 2019

Awards

Sigma Gamma Epsilon W.A. Tarr Award, 2005
California University of Pennsylvania Department of Earth Sciences Award, 2005
Order of Omega Patrick Halloran Scholarship, 2004
Phi Sigma Sigma, Epsilon Tau Chapter Lori Hartman Award, 2003 California
University of Pennsylvania Governor's Scholarship, 2001 – 2005

Community Activities

Larimer County Dive Rescue Team, 2017-present
Vice President, 2018-2022
Northern Colorado Beekeepers Association, 2022-present
Loveland Masters Swim Team, 2018-2020
Fort Collins Area Swim Team (FAST) Masters, 2014-2018