

Earth system observations for weather and climate research: Extensive experience distilling large data sets, designing observing strategies, and combining information from multiple sources including multispectral satellite, radar, lidar, in situ meteorological measurements, and numerical weather model output. Applications include weather decision support, climate adaptation planning, and AI training using high quality data sets for machine learning and deep learning. Basic research focus areas include cloud lifecycles, winter weather, marine clouds, orographic precipitation, and tropical convection.

Education

- 1996 Ph.D., University of Washington, Atmospheric Sciences
Thesis: Characteristics of Precipitating Tropical Convection
Graduate supervisor: Robert A. Houze, Jr.
- 1985-1986 Additional coursework, University of Southern California,
Artificial Intelligence and Probability Theory.
- 1983 B.S., Brown University, Geology-Physics/Mathematics, magna cum laude

Professional Employment

- 2005- Distinguished Professor (2018-), Professor (2011-2018), Associate Professor (2007-
2011) Assistant Professor (2005-2007), Department of Marine, Earth and Atmospheric
Sciences, North Carolina State University, Raleigh, NC
- 2022- President and CEO, Atmometrics, Inc.
- 1999-2005 Research Associate Professor (2004-2005), Research Assistant Professor (1999-2004),
Department of Atmospheric Sciences,
University of Washington, Seattle, WA
- 1996-1999 Research Scientist, Mesoscale Group, Department of Atmospheric Sciences,
University of Washington, Seattle, WA
- 1988-1990 Software Engineer III, Research Applications Program,
National Center for Atmospheric Research, Boulder, CO
- 1986-1988 Technical Marketing Engineer, Graphics Division,
Symbolics Inc., Los Angeles, CA
- 1983-1986 Member of Technical Staff, Data Systems Laboratory,
TRW Defense Systems Group, Redondo Beach, CA

Awards, Editorships, Affiliations, Committees, and Fellowships

- 2017 Fellow, American Meteorological Society
- 2012-2021 Editor, American Meteorological Society Journal of Applied Meteorology and
Climatology
- 2024- International Precipitation Working Group -- Machine Learning Focus Group, Member
- 2024 Participant, NSF Workshop – Exploring the Ethical Considerations and Governance
Requirements of Climate Intervention
- 2024 NASA Group Achievement Award to IMPACTS Team
- 2023- International Precipitation Working Group -- Snowfall/Particle Scattering Focus Group,
Member
- 2023 Finalist, NCSU Graduate School Outstanding Graduate Faculty Mentor Award

2021	Board of Trustees Member, University Corporation for Atmospheric Research, Boulder, Colorado
2020	NOAA Physical Sciences Laboratory 5-year Review Panel Member
2017-	Faculty Fellow at the Center for Geospatial Analytics, North Carolina State University
2016-	Adjunct Professor, School of Marine and Atmospheric Sciences, Stony Brook University
2016-2024	Affiliate Faculty, Department of Geography and Planning, Appalachian State University, North Carolina
2016	Thank a Teacher Recognition, North Carolina State University
2015-2021	NCAR Earth Observing Laboratory External Advisory Committee
2013	American Meteorological Society, Committee on Researcher Involvement in the AMS
2012	American Meteorological Society, Membership Subcommittee
2011-2016	DOE Atmospheric System Research Science Team
2011-2014	NASA MODIS Science Team
2010-2014	NCAR Earth Observing Laboratory-Observing Facilities Assessment Panel
2009-2010	DOE ARM Climate Research Facility Science Advisory Board Member
2009	NOAA National Severe Storms Laboratory Review Board Member
2008-2009	Co-chair, American Meteorological Society, 13th Conference on Mesoscale Processes
2006-2008	DOE ARM Climate Research Facility Science Advisory Board Member
2006-2011	American Meteorological Society, Mesoscale Processes Committee
2005-2007	Co-chair, Sierra Hydrometeorology Atmospheric River Experiment (SHARE) Scientific Steering Committee
2005-2007	World Meteorological Organization/IUGG Science Assessment of Aerosol Effects on Precipitation Working Group
2005-2006	NASA Global Precipitation Mission, Advisory Panel on Ground Measurements
2003-2005	NASA Global Precipitation Mission, Ground Validation International Steering Group
2003	NASA Certificate of Appreciation for contributions to the Instrument Incubator Program and to the Earth Science Enterprise
2001-	American Geophysical Union, Atmospheric Sciences/Precipitation and Cloud Committee
2001-2003	Co-chair, NASA Global Precipitation Mission, Calibration and Validation of Satellite Precipitation Measurements Working Group
2000-2006	NASA Precipitation Measurement Missions Science Team
1996	Promise of Excellence Award, Seattle Chapter, Women in Communications, Inc.
1992-1995	EOS Global Change Fellowship
1990-1992	NASA Space Grant Fellowship
1983	Sigma Xi Scientific Research Society
1979	Westinghouse Science Talent Search Honors for project on hydroponics for space missions.

Field Project Leadership

2023-	Eastern Carolina Atmospheric Observing Site, Plymouth, NC: Co-chief Scientist
2019-2023	NASA Investigation of Microphysics and Precipitation for Atlantic Coast-Threatening Snowstorms: Science Team PI and Mission Scientist
2014	Radar Observations of Storms for Education, Colorado, Chief Scientist
2007-2023	Stony Brook, NY, Meteorological Observatory, Co-chief Scientist
2006-2009	Poga Mountain, NC, Meteorological Observatory, Chief Scientist
2001	EPIC Stratocumulus Study: Southeastern Pacific, NOAA Ship Ronald H. Brown, Senior Scientist
1998-1999	KWAJEX: Kwajalein, Marshall Islands, Project Science Coordinator, Project Scientist-NASA and NOAA project with over 100 scientists and engineers
1997	PACS TEPPS: Tropical eastern Pacific, First research cruise of NOAA Ship Ronald H. Brown, Chief Scientist

Other Field Project Experience

2011-2015	Wasatch Hydrometeor Aggregation and Riming Experiment, Alta, Utah, Radar Scientist
2010	Inhibition of Snowfall by Pollution Aerosols: Colorado, Radar scientist
2008	VAMOS Ocean Cloud Atmosphere Land Study (VOCALS): Southeastern Pacific, Radar scientist
2004	HYDROMET 2004: California, Disdrometer scientist
2003	PACJET 2003: California, Disdrometer scientist
	IMPROVE II: Oregon, Disdrometer scientist
1995	COAST II: Washington, Aircraft flight planning and mission summary preparation
1993	COAST: Washington, Aircraft radar scientist and cloud physics scientist
1992-1993	TOGA-COARE: Honiara, Solomon Islands, Aircraft radar and cloud physics scientist
1991	CaPE: Florida, Doppler and dual polarization radar scientist, aircraft scientist, radar scan coordinator
1988-1990	Several field projects in Denver, CO area related to demonstration of Terminal Doppler Weather Radar (TDWR) and nowcasting for the FAA

Peer-reviewed articles and book chapters (underlined names are students, post-docs and science staff directly supervised)

- (96) Yorks, J. E., M. A. Miller, T. J. Lang, J. A. Finlon, L. S. Adams, B. A. Colle, S. J. Greybush, A. J. Heymsfield, G. M. Heymsfield, R. Kroodsma, S. LeBlanc, M. W. McLinden, G. M. McFarquhar, R. M. Rauber, S. E. Yuter, T. Zaremba, and L. McMurdie, 2025: Sampling strategies to optimize coincident remote sensing and in situ cloud and precipitation measurements from multiple aircraft. *Bull. Amer. Met. Soc.*, submitted 7/2025.
- (95) McLaurin, L. K., S. E. Yuter, K. D. Burris, and M. A. Miller, 2025: The power of hourly weather data: Observed air temperature climate trends for pragmatic decision-making. submitted to *PLOS Climate*, revised 9/2025.
- (94) Tomkins, L. M., S. E. Yuter, M. A. Miller, M. Oue, and C. N. Helms, 2025: Synthesis of surface snowfall rates and radar-observed storm structures in 10+ years of Northeast US winter storms. *Atmos. Chem. Phys.*, /doi.org/10.5194/acp-25-9999-2025
- (93) Allen, L. R., S. E. Yuter, D. M. Crowe, M. A. Miller, and K. L. Thornhill, 2025: In-cloud characteristics observed in US Northeast and Midwest non-orographic winter storms with implications for ice particle mass growth and residence time. *Atmos. Chem. Phys.*, doi.org/10.5194/acp-25-6679-2025.
- (92) Yuter, S. E., M. M. Sevier, K. D. Burris, and M. A. Miller, 2025: Characteristics of observed electromagnetic wave ducts in tropical, subtropical, and middle latitude locations. *Atmosphere*, doi.org/10.3390/atmos16030336.
- (91) Yuter, S. E., 2025: "Precipitation Radar" in the Encyclopedia of Atmospheric Sciences, 3rd edition, edited by A. Detwiler, W. Robinson, P. Yang, Elsevier Ltd., Oxford, UK, in press, ISBN: 9780323960267
- (90) Allen, L. R., S. E. Yuter, M. A. Miller, and L. M. Tomkins, 2025: Hunting for gravity waves in non-orographic winter storms using 3+ years of regional surface air pressure networks and radar observations. *Atmos. Chem. Phys.*, doi.org/10.5194/acp-25-1765-2025.
- (89) Tomkins, L. M., S. E. Yuter, and M. A. Miller, 2024: Dual adaptive differential threshold method for automated detection of faint and strong echo features in radar observations of winter storms. *Atmos. Meas. Tech.*, doi.org/10.5194/amt-17-3377-2024.
- (88) Oue, M., B. A. Colle, S. E. Yuter, P. Kollias, P. Yeh and L. M. Tomkins, 2024: Microscale updrafts within the U.S. Northeast coastal snowstorms using high-resolution cloud radar measurements. *Mon. Wea. Rev.* 10.1175/MWR-D-23-0055.1.
- (87) Allen, L. R., S. E. Yuter, M. A. Miller, and L. M. Tomkins, 2024: Objective identification of pressure wave events from networks of 1-Hz high-precision sensors. *Atmos. Meas. Tech.*, doi.org/10.5194/amt-17-113-2024.

- (86) Tomkins, L. M., S. E. Yuter, M. A. Miller, and L. R. Allen, 2022: Image muting of mixed precipitation to improve identification of regions of heavy snow in radar data. *Atmos. Meas. Tech.*, doi.org/10.5194/amt-15-5515-2022.
- (85) Hueholt, D. M., S. E. Yuter, and M. A. Miller, 2022: Revisiting diagrams of ice growth environments. *Bull. Amer. Meteor. Soc.*, DOI 10.1175/BAMS-D-21-0271.1
- (84) McMurdie, L. A., G. M. Heymsfield, J. E. Yorks, S. A. Braun, G. Skofronick-Jackson, R. M. Rauber, S. Yuter, B. Colle, G. M. McFarquhar, M. Poellot, D. R. Novak, T. J. Lang, R. Kroodsma, M. McLinden, M. Oue, P. Kollias, M. R. Kumjian, S. J. Greybush, A. J. Heymsfield, J. A. Finlon, V. L. McDonald, S. Nicholls, 2022: Chasing snowstorms: The Investigation of Microphysics and Precipitation for Atlantic Coast-threatening Snowstorms (IMPACTS) campaign. *Bull. Amer. Meteor. Soc.*, doi.org/10.1175/BAMS-D-20-0246.1
- (83) Miller, M.A., S. E. Yuter, N. P. Hoban, L. M. Tomkins and B. A. Colle, 2022: Detecting wave features in Doppler radar velocity observations. *Atmos. Meas. Tech.*, 1689–1702, doi.org/10.5194/amt-15-1689-2022
- (82) Patel, R. N., S. E. Yuter, and M. A. Miller, S. R. Rhodes, L. Bain, and T. Peele, 2021: The diurnal cycle of winter season temperature errors in the operational Global Forecast System (GFS), *Geophys. Res. Lett.*, DOI: 10.1029/2021GL095101.
- (81) Tomkins, L. M., D. B. Mechem, S. E. Yuter, and S. R. Rhodes, 2021: Regional flow conditions associated with stratocumulus cloud-eroding boundaries over the southeast Atlantic. *Mon. Wea. Rev.*, DOI:10.1175/MWR-D-20-0250.1
- (80) Perry, L. B., S. E. Yuter, T. K. Matthews, P. Wagon, A. Khadka, D. Aryal, D. Shrestha, A. Tait, M. A. Miller, A. O'Neill, S. R. Rhodes, I. Koch, T. Sherpa, S. Tuladhur, S. K. Baidya, S. Elvin, A. C. Elmore, A. Gajurel, and P. A. Mayewski, 2020: Observations of an Everest snowstorm from the world's highest surface-based radar observations. *Weather*, DOI:10.1002/wea.3854
- (79) Yuter, S. E., 2019: The Weather Around Us. Chapter 15 Introduction for *The Good Earth: Introduction to Earth Science*, McGraw Hill, 416–417.
- (78) Ganetis, S. A., B. A. Colle, S. E. Yuter, N. P. Hoban, 2018: Environmental conditions associated with observed snowband structures within northeast U.S. winter storms. *Mon. Wea. Rev.*, 146, 3675–3690, DOI:10.1175/MWR-D-18-0054.1.
- (77) Yuter, S. E., J. D. Hader, M. A. Miller, D. B. Mechem, 2018: Abrupt cloud clearing of marine stratocumulus in the subtropical southeast Atlantic, *Science*, DOI: 10.1126/science.aar5836.
- (76) Endries, J. L., L. B. Perry, S. E. Yuter, A. Seimon, M. Andrade-Flores, R. Winkelmann, N. Quispe, M. Rado, N. Montoya, F. Velarde, and S. Arias, 2018: Radar-observed characteristics of precipitation in the tropical high Andes of southern Peru and Boliva. *J. Appl. Meteor. Clim.*, **57**, 1441–1458, doi.org/10.1175/JAMC-D-17-0248.1
- (75) Mechem, D. B., C. S. Wittman, M. A. Miller, S. E. Yuter, and S. P. deSzoek, 2018: Joint synoptic and cloud variability over the northeast Atlantic near the Azores. *J. Appl. Meteor. Clim.*, **57**, 1273–1290, DOI: 10.1175/JAMC-D-17-0211.1.
- (74) Perry, L. B., A. Seimon, M. Andrade, J. L. Endries, S. E. Yuter, F. Velarde, S. Arias, M. Bonshoms, E. J. Burton, R. Winkelmann, C. M. Cooper, G. Mamani, M. Rado, M. Montoya, M. Quispe, 2017: Modes of precipitation delivery in the Cordillera Vilcanota of Peru and Cordillera Real of Bolivia. *Annals of the Assoc. of American Geographers*, **107**, 309–322. DOI: 10.1080/24694452.2016.1260439
- (73) deSzoek, S. P., K. L. Verlinder, S. E. Yuter and D. B. Mechem, 2016: The timescales of variability of marine low clouds. *J. Climate*, doi: 10.1175/JCLI-D-15-0460.1
- (72) Molthan, A. L., B. A. Colle, D. Stark and S. E. Yuter, 2016: Comparisons among modeled and observed reflectivity and fall speeds for snowfall of varied riming degree during winter storms on Long Island, NY. *Mon. Wea. Rev.*, http://dx.doi.org/10.1175/MWR-D-15-0397.1.

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- (70) Yu, C.-K., P.-R. Hsieh, S. E. Yuter, L.-W. Cheng, C.-L. Tsai, and Y. Chen, 2016: Measuring droplet fall speed with a high-speed camera: Accuracy and outdoor applications. *Atmos. Meas. Tech.*, doi:10.5194/amt-9-1755-2016.
- (69) Burleyson, C. D. and S. E. Yuter, 2015: Sub-diurnal stratocumulus cloud fraction variability and sensitivity to precipitation. *J. Climate*. doi: 10.1175/JCLI-D-14-00648.1, **28**, 2968-2985.
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- (67) Garrett, T. J., S. E. Yuter, C. Fallgatter, K. Shkurko, S. R. Rhodes, and J. L. Endries, 2015: Orientations and aspect ratios of falling snow. *Geophys. Res. Lett.*, doi:10.1002/2015GL064040.
- (66) Wilbanks, M., S. E. Yuter, S. P. deSzoeko, W. A. Brewer, M. A. Miller, A. M. Hall and C. D. Burleyson, 2015: Near-surface density currents observed in the southeast Pacific stratocumulus-topped marine boundary layer, *Mon. Wea. Rev.*, **143**, 3532-3555. 10.1175/MWR-D-14-00359.1
- (65) Wood, R., M. Wyant, C. S. Bretherton, J. Rémillard, P. Kollias, J. Fletcher, J. Stemmler, S. deSzoeko, S. Yuter, M. Miller, D. Mechem, G. Tselioudis, C. Chiu, J. Mann, E. O'Connor, R. Hogan, X. Dong, M. Miller, V. Ghate, A. Jefferson, Q. Min, P. Minnis, R. Palinkonda, B. Albrecht, E. Luke, C. Hannay, Y. Lin, 2015: Clouds, aerosol, and precipitation in the marine boundary layer: An ARM Mobile Facility deployment, *Bull. Amer. Met. Soc.*, **96**, 419-440.
- (64) Bluestein, H. B., R. M. Rauber, D. W. Burgess, B. Albrecht, S. M. Ellis, Y. P. Richardson, D. P. Jorgensen, S. J. Frasier, P. Chilson, R. D. Palmer, S. E. Yuter, W.-C. Lee, D. C. Dowell, P. L. Smith, P. M. Markowski, K. Friedrich and T. M. Weckwerth, 2015: Radar in atmospheric sciences and related research: Current systems, emerging technologies and future needs. *Bull. Amer. Met. Soc.*, **95**, 1850-1861.
- (63) Colle, B. A., D. Stark, and S. E. Yuter, 2014: Surface microphysical observations within East Coast winter storms on Long Island, NY. *Mon. Wea. Rev.*, **142**, 3126-3146. 10.1175/MWR-D-14-00407.1
- (62) Cunningham, J. G. and S. E. Yuter, 2014: Atmospheric characteristics of cool-season intermittent precipitation near Portland, Oregon. *Mon. Wea. Rev.*, **142**, 1738-1757. 10.1175/MWR-D-13-00133.1
- (61) Garrett, T. J. and S. E. Yuter, 2014: Observed influence of riming, temperature, and turbulence on the fall speed of solid precipitation. *Geophys. Res. Lett.*, doi:10.1002/2014GL061016.
- (60) Mechoso, C. R., R. Wood, R. Weller, C. S. Bretherton, A. D. Clarke, H. Coe, C. Fairall, J. T. Farrar, G. Feingold, R. Garreaud, C. Grados, J. C. McWilliams, S. P. deSzoeko, S. E. Yuter, and P. Zuidema. 2014: Ocean-cloud-atmosphere-land interactions in the southeastern Pacific: The VOCALS Program. *Bull. Amer. Met. Soc.*, **95**, 357-375.
- (59) Yuter, S. E., 2014: "Precipitation Radar" in the Encyclopedia of Atmospheric Sciences, 2nd edition, edited by G. R. North, J. Pyle and F. Zhang. Academic Press, London, pp 455-469.
- (58) Biasutti, M. and S. E. Yuter, 2013: Observed frequency and intensity of tropical precipitation from instantaneous estimates. *J. Geophys. Res.*, **118**, 9534-9551, doi:10.1002/jgrd.50694.
- (57) Burleyson, C. D., S. P. deSzoeko, S. E. Yuter, M. Wilbanks and W. A. Brewer, 2013: Ship-based observations of the diurnal cycle of southeast Pacific marine stratocumulus clouds and precipitation. *J. Atmos. Sci.*, **70**, 3876-3894, doi:10.1175/JAS-D-13-01.1.
- (56) Kingsmill, D. E., P. J. Neiman, B. J. Moore, M. Hughes, S. E. Yuter, and F. M. Ralph, 2013: Kinematic and thermodynamic structures of Sierra barrier jets and overrunning atmospheric rivers during a land-falling winter storm in northern California. *Mon. Wea. Rev.*, **141**, 2015-2036.

- (55) Lin, Y., B. A. Colle, and S. E. Yuter 2013: Impact of moisture flux and freezing level on simulated orographic precipitation errors over the Pacific Northwest, *J. Hydromet.*, **14**, 140-152.
- (54) Miller, M. A, and S. E. Yuter, 2013: Detection and characterization of drizzle cells within marine stratocumulus using AMSR-E 89 GHz passive microwave measurements. *Atmos. Meas. Tech.*, **6**, 1-13, doi:10.5194/amt-6-1-2013.
- (53) Stark, D., B. A. Colle and S. E. Yuter, 2013: Observed microphysical evolution for two East Coast winter storms and the associated snow bands. *Mon. Wea. Rev.*, **141**, 2037-2057.
- (52) Yuter, S. E., M. A. Miller, M. D. Parker, P. M. Markowski, Y. Richardson, H. Brooks, and J. M. Straka, 2013: Comment on "Why do tornadoes rest on weekends?" by D. Rosenfeld and T. Bell. *J. Geophys. Res.*, doi:10.1029/2012JD018622.
- (51) Allen, G., G. Vaughan, T. Toniazzo, H. Coe, P. Connolly, S. E. Yuter, C. D. Burleyson, P. Minnis, and J. K. Ayers, 2013: Gravity wave--induced perturbations in marine stratocumulus, *Q. J. Roy. Met. Soc.*, doi:10.1002/qj.1952.
- (50) deSzoeki, S. P., S. E. Yuter, D. B. Mechem, C. W. Fairall, C. D. Burleyson, P. Zuidema 2012: Observations of stratocumulus clouds and their effect on the eastern Pacific surface heat budget along 20 °S, *J. Climate*, **25**, 8542-8567, 10.1175/jcli-d-11-00618.1.
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- (48) Waliser, D. E., M. Moncrieff, D. Burridge, A. Fink, D. Gochis, B. N. Goswami, B. Guan, P. Harr, J. Heming, H.-H. Hsu, C. Jakob, M. Janiga, R. Johnson, S. Jones, P. Knippertz, J. Marengo, H. Nguyen, M. Pope, Y. Serra, C. Thorncroft, M. Wheeler, R. Wood, and S. Yuter, 2012: The "Year" of Tropical Convection (May 2008 to April 2010): Climate Variability and Weather Highlights, *Bulletin of the American Meteorological Society*, **93**, 1189-1218.
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- (45) Sobel, A. H., C. D. Burleyson, and S. E. Yuter, 2011: Rainfall on small tropical islands. *J. Geophysical Research*, **116**, D08102, doi:10.1029/2010JD014695.
- (44) Wood, R., C. S. Bretherton, C. R. Mechoso, R. A. Weller, B. Huebert, B. Albrecht, H. Coe, G. Allen, G. Vaughan, P. Daum, C. Fairall, D. Chand, L. Gallardo Klenner, C. Grado Quispe, D. S. Covert, T. S. Bates, R. Krejci, F. Straneo, L. M. Russell, S. de Szoeki, A. Brewer, S. E. Yuter, A. Chaigneau, T. Toniazzo, P. Minnis, S. Abel, W. Brown, and S. Williams, 2011: The VAMOS Ocean-Cloud-Atmosphere-Land Study Regional Experiment (VOCALS-REx): Goals, platforms, and field operations. *Atmos. Chem. Phys.*, **11**, 627-654. doi:10.5194/acp-11-627-2011.
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- (42) Smith, B. L., S. E. Yuter, P. J. Neiman, and D. E. Kingsmill, 2010: Water vapor fluxes and orographic precipitation over Northern California associated with a land-falling atmospheric river. *Mon. Wea. Rev.*, **138**, 74-100.
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- (37) Cotton, W. and S. Yuter, 2008: Ch 2—Principles of Cloud and Precipitation Formation in *Aerosol pollution impacts on precipitation: A scientific review*. WMO/IUGG International Aerosol Precipitation Science Assessment Group, Springer, 13-43.
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Reports (not peer-reviewed)

- Burleyson, C. D., S. E. Yuter, and L. Rose, 2011: Atmospheric Observations Feasibility Study for the Lake Victoria Basin Commission. 16 pp.
- Yuter, S. E., J. Koistinen, S. Di Michele, M. Hagen, A. Illingworth, S. Shimizu, and D. Wolff, 2004: GPM Ground Validation Basic Radar Products and Implications for Observation Strategies. Accessible at: www.arxiv.org, arXiv:physics/0401101, 11 pp.
- Adkins, W., and S. E. Yuter, 2002: Report on Potential Tropical Open Ocean Precipitation Validation Sites, NASA Global Precipitation Mission Reports, *NASA/TM-2002-210010*, 77 pages.
- Yuter, S., R. Houze, V. Chandrasekar, E. Foufoula-Georgiou, M. Hagen, R. Johnson, D. Kingsmill, R. Lawrence, F. Marks, S. Rutledge, and J. Weinman, 2002: GPM Draft Science Implementation Plan Ground Validation Chapter. Accessible at www.arxiv.org, arXiv:physics/0211095, 22 pp.
- Yuter, S. E., 1984: Preliminary results of albedo correlation between Europa and Ganymede. *Advances in Planetary Geology*, NASA TM-86247, 212-216.

Research Data Public Archive Contributions:

- Tomkins, L., S. Yuter, M. Miller, N. Corbin, N. Hoban, (2023). Northeast US Regional NEXRAD radar mosaics of winter storms from 1996-2023, part 1 [Dataset]. Dryad.
<https://doi.org/10.5061/dryad.zcrjdfnk6>
- Tomkins, L., S. Yuter, M. Miller, N. Corbin, N. Hoban (2023). Northeast US Regional NEXRAD radar mosaics of winter storms from 1996-2023, part 2 [Dataset]. Dryad.
<https://doi.org/10.5061/dryad.rbnzs7hj9>

Funded Research Grants: total of over \$7M since July 2000

start date	end date	agency	title	role	collaborators	amount (\$)
May-2025	Sept-2025	University of Nevada	Summit Lake Paiute Tribe Climate Adaptation Planning for Ecosystems and Community	Co-PI	PI-Miller, NCSU	\$54,401
Mar-2025		Robinson Brown - donation	Support for undergraduate research	PI		\$5000

May-24	Dec-26	Office of Naval Research	Cloud and boundary layer forecast evaluations	PI		\$648,898
May-21	Sept-24	Robinson Brown - donation	Ground Climate Study – support for undergraduate research	PI		\$10,000
Jan-21	Dec-24	Office of Naval Research	Marine Boundary Layer Characteristics, Clouds, and Air-Sea Interactions Matching Observations and Model Forecasts to Diagnose COAMPS and NEPTUNE Weaknesses	PI		\$461,021
Aug-19	Jul-23	NSF	Collaborative Research: Extensive Field Observations and Modeling to Understand Multi-band Precipitation Processes within Winter Storms	PI	Colle-Stony Brook University	404,434
Jun-19	Jun-21	Delta Air Lines	Delta Air Lines Task Order (Meteorology: Weather Prediction Model Verification)	PI		256,147
Jan-19	Dec-25	NASA	The Investigation of Microphysics and Precipitation for Atlantic Coastal Threatening Snowstorms (IMPACTS)	PI	McMurdie-University of Washington	519,510
Nov-18	Jun-19	NCSU-STEM Education Initiative	Campus-scale weather data to compare to conceptual models of daily and storm passage air temperature and humidity changes	PI		2700
Nov-17	Jun-18	NCSU-STEM Education Initiative	Visualization of the movements of air that underlie weather	PI		2700
July-17	Jun-22	NSF	Collaborative Research: Mechanisms governing synoptic-scale, rapid cloud dissipation in subtropical marine low clouds	PI	Mechem-U. Kansas	460,187
Sep-15	Aug-18	subcontract from Stony Brook U (NASA prime)	Nowcasting severe storm evolution and tracking storm life cycles in the northeast United States using GOES-R	PI	French- Stony Brook University	90,000
Feb-14	Jan-19	NSF	Collaborative Research: Observations and modeling of mesoscale precipitation banding in cool-season storms	PI	Colle-Stony Brook University	462,319

Mar-14	Feb-17	NSF	Real examples of classic storm structures for classroom use based on data from FRONT-PORCH	PI		92,479
Sep-13	Aug-17	NSF	Flipping the Script: Using short videos to promote learning in introductory geoscience courses	co-PI	PI-McConnell NCSU	10,000 (Yuter portion)
Sep-11	Jul-14	NOAA	Cooperative Institute for Climate and Satellites (CICS) - Yuter subcontract	PI		125,180
Sep-11	Sep-16	DOE	Collaborative Research: Cloudiness transitions within marine clouds near the Azores	PI	Mechem - U Kansas and deSzoeki Oregon State	510,182
Sep-11	Aug-15	NSF	Collaborative Research: The Wasatch Hydrometeor Aggregation and Riming Experiment	PI	Garrett - U. Utah	129,546
Apr-11	Sep-11	Lake Victoria Basin Commission	Strengthening Meteorological Services on Lake Victoria to enhance safety of navigation and exploitation of natural resources	co-PI	PI-Semazzi- NCSU	130,000 (Yuter portion)
Sep-10	Aug-13	NASA	NASA Space and Earth Science Fellowship Casey Burleyson	PI		90,000
Sep-10	Feb-15	NASA	Global characteristics of marine stratocumulus clouds and drizzle	PI		337,985
Sep-09	Aug-12	NSF	Collaborative Research: Intermittent and steady state processes in orographic precipitation	PI	Colle-Stony Brook University	345,879
Aug-09	Aug-10	ASTREC	Optimal reconfiguration of multiple small satellites for environmental monitoring	PI	Rao- University of Florida	12,800
Dec-08	Nov-11	NSF	Collaborative Research: Inhibition of snowfall by pollution aerosols	PI	Cotton- Colorado State	69,467
Jun-08	Jun-12	NOAA	Collaborative Research: Ship-based observations of air-sea interactions and stratocumulus cloud-aerosol-drizzle processes in VOCALS	PI	Fairall-NOAA, deSzoeki Oregon State	298,764
Jan-08	Dec-08	UNC-GA	Improving snowfall forecasts in western North Carolina	PI	Perry- Appalachian State	18,614
Sep-07	Sep-10	NASA	NASA Space and Earth Science Fellowship Matthew Miller	PI		83,960
Feb-06	Jan-10	NSF	Average and variability characteristics of orographic precipitation at multiple scales	PI		330,000
Nov-03	Nov-04	NASA	Global and local site oceanic precipitation validation	PI		158,000

Nov-03	Nov-04	NASA	GPM oceanic validation leading to PDR	PI		130,000
May-02	Jun-06	NSF	Scale and characteristics of convective processes in orographic rainfall	PI		404,444
Mar-01	Feb-04	NSF	Soundings, C-band radar, data synthesis and model intercomparisons for the EPIC 2001 stratocumulus study	co-PI	Bretherton, Wood-University of Washington	178,149
Jul-00	Jun-04	NASA	Joint probability analysis of the natural variability of oceanic precipitation	PI		512,000

Courses taught at North Carolina State University:

Dr. Yuter uses research-validated teaching methods, including extensive use of active learning, in all her classes:

Introduction to Atmospheric Sciences (MEA 215, 4-credit course with laboratory). Weather and climate introductory course for freshman meteorology majors and STEM majors. Taught this course and predecessor course since 2006.

Introduction to Meteorological Remote Sensing (MEA 511, 3-credit course for upper-level undergraduates and graduate students), Features a semester long project to design and justify a radar observing system for an assigned season and location in the U.S. Taught since 2006.

Atmospheric Convection (MEA 714) and *Dynamics of Mesoscale Convective Systems* (715) (3-credit graduate courses), co-taught with Dr. Matthew Parker. The two classes were offered alternating fall semesters from 2006-2023.

First Year Graduate Seminar (MEA 611/612/613), Guest lecture on Time Management, every fall since 2013.

Junior Seminar (MEA 495 Spring 2023, 1-credit course focused on junior-level student professional development, career goals, and plans. Discussions of professional opportunities, resources, and ethics. Co-taught with Dr. Catherine Davis (marine) and Dr. Adam Curry (geology).

Courses taught at University of Washington:

Meteorological Instruments and Observations (upper-level undergraduate course, co-taught with Dr. Dean Hegg)

Boundary Layer Meteorology (upper-level undergraduate course).

Professional Development Workshops:

NCSU NSF I-CORPS Entrepreneurial Training, participant (Oct-Nov 2021)

ADVANCE-GEO Workshop on Strategies for Responding to Harassment and Improving our Workplace Climate (23 March 2019), arranged for funding from Department and College and hosted workshop.

NCSU Building Future Faculty Program (20 March 2015), Presenter and Panelist.

On the Cutting Edge: *Preparing for an Academic Career in the Geosciences Workshop* (June 27-30, 2012, Chapel Hill NC), Workshop Leader.

Supervision of Graduate Students (chair or co-chair of committee)

23 graduate students: 7 Ph.D. students and 15 M.S. students completed degrees. Current student: 1 Ph.D.

University of Washington, Department of Atmospheric Sciences

Ph. D. Kimberly Comstock, 2006: Mesoscale variability and drizzle in southeast Pacific stratocumulus. Co-advised with Christopher Bretherton.

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

- Ph.D. Luke R. Allen, 2024: Observed mesoscale surface air pressure waves and in-cloud characteristics in the context of winter storm structures. Funded in part by the NCSU Center for Geospatial Analytics.
- Ph.D. Laura M. Tomkins, 2024: Synthesis of radar-observed characteristics, storm structures, and surface snowfall rates in 10+ years of Northeast US winter storms. Funded in part by the NCSU Center for Geospatial Analytics.
- Ph.D. Kevin D. Burris, 2023: Examining winter storm structures with high-resolution observed profiles. Funded by the U.S. Air Force.
- Ph.D. Casey D. Burleyson, 2013: Environmental controls on stratocumulus cloud fraction. Funded in part by a NASA Earth and Space Science Fellowship.
- Ph.D. Jeffrey G. Cunningham, 2012: Atmospheric characteristics of cool season intermittent precipitation near Portland, Oregon. Funded by the U.S. Air Force.
- Ph. D. Matthew A. Miller, 2010: Satellite observations of low marine clouds. Funded in part by a NASA Earth and Space Science Fellowship.
- M.S. Happiness F. Mpunza, 2025: Assessment of the Accuracy of Numerical Weather Prediction Models in Africa and South America Using Surface Observations
- M.S. Rachel E. Kennedy, 2023: Assessing Numerical Weather Prediction Model Forecast Skill Under Different Weather Conditions Using Surface Observations
- M.S. Laura M. Kent, 2021: Multi-year analysis of ice streamers within coastal northeast US winter storms
- M.S. Spencer R. Rhodes, 2019: Large-scale environments associated with southeast Atlantic marine stratocumulus cloud-clearing boundaries.
- M. S. John D. Hader, 2016: Propagating, cloud-eroding boundaries in southeast Atlantic marine stratocumulus.
- M.S. Nicole P. Hoban, 2016: Observed characteristics of mesoscale banding in coastal northeast U.S. snow storms.
- M.S. Nicole A. Corbin, 2016: Northern California's Central Valley spatial precipitation patterns associated with atmospheric rivers under different environmental conditions.
- M. S. Andrew M. Hall, 2014: Lifecycle characteristics of marine stratocumulus precipitation in the southeast Pacific.
- M.S. Matt C. Wilbanks, 2013: Near surface density currents observed in the southeast Pacific stratocumulus-topped marine boundary layer.
- M.S. Margaret L. Frey, 2013: Regional and interannual comparisons of marine stratocumulus precipitation.
- M.S. Justin A. Crouch, 2009: Multi-season observational study of the thermodynamic, kinematic and precipitation structures within flooding and typical storms in the Oregon Cascades.

- M.S. Barrett L. Smith II, 2007: The interaction of moisture fluxes and orographic precipitation over the mountains of northern California associated with a landfalling atmospheric river.
- M.S. M. Jordan Payne, 2007: Three-dimensional microphysical and dynamical structures of winter storms in the U.S. Pacific Northwest.
- M.S. Matthew A. Miller, 2007: Evaluation of TRMM satellite precipitation retrievals and satellite-observed characteristics of marine shallow clouds.
- M.S. Christopher T. Holder, 2007: The mesoscale characteristics of tropical oceanic convection within Kelvin and mixed Rossby-gravity wave events.

Current graduate student: Warren Lewis (Ph.D)

Advisor for non-thesis M.S. (dates are year when degree was completed): Katherine Rojowsky, 2010; John L'Heureux, 2012; Nan Zhang, 2012; Victoria Olivia, 2013, Christopher Harmon 2017.

Graduate committee member for students outside of NCSU: Kristin Goris (Ph. D., Duke U., 2009), David Stark (M.S., Stony Brook U., 2012), Sara Ganetis (Ph.D., Stony Brook U., 2017), Jason Endries (M.S., Appalachian State U., 2017), Laura Tomkins (M.S., U. Kansas, 2019), Sandra Vazquez Martin (Ph.D., Luleå University of Technology, Sweden, 2021), Phillip Yeh (Ph.D., Stony Brook U., in progress), Erin Leghart ((Ph.D., Stony Brook U., in progress), Ronak Patel (Ph.D. Caltech, in progress).

Undergraduate research supervision and mentoring: *41 undergraduates at NCSU* including 15 women, 1 disabled student, and 5 under-represented minority students (* denotes presented poster at University Research Symposium and/or other conference):

Casey Burleyson* (2006-07), David Stark* (2007-09), M. Tai Bryant* (2007-15), Lara Pagano (2007-08), John Boyer* (2007), Kevin Smith (2007), Jay Bozeman (2007), Clay McGee* (2008-10), Angel Adames* (2009), Christina Aldereguia* (2009-10), Andrew Hall* (2009-11) Jeremy Freeman (2009-10), Matt Woelfle (2010-12), Cameron White* (2011), Jennifer Dean (2012-13), Nicole Corbin* (2013-2015), Megan Amanatides* (2014-15), Sara Berry* (2014-15), Jason Endries* (2014-15), Spencer Rhodes* (2014-2016), Siu Kei (Edward) Chan* (2015-16), Emma Scott* (2015-17), Laura Tomkins* (2015-17), Levi Lovell* (2015-18), Luke Allen* (2017-18), Daniel Hueholt* (2017-2020), Lindsay Hochstatter* (2017-2019), Ronak Patel* (2018-2021), Toby Peele* (2019-2022), Lily Bain (2019-2021), McKenzie Peters* (2019-2022), Robert Harley (2019-2021), Anya Aponte-Torres* (2020-2023), Jordan Fritz* (2021-2024), Declan Crowe* (2021-2024), Logan McLaurin* (2021-2025), Cameron Gilbert* (2023-2025), McKenzie Sevier* (2023-2025), Nathan Faulk* (2024-2025), Wayne Johnson* (2024-), Rebecca Moore* (2024-), Lily Price* (2025-), Philip Zimmer* (2025-).

Invited talks (since 2021):

Naval Research Laboratory-Monterey: Evaluation of strengths and weaknesses of ERA5 reanalysis and observations of low cloudiness and the boundary layer in Eastern North Carolina. 5 August 2025, Monterey, CA

NOAA WPC-HMT joint Winter Weather Experiment Seminar Series: 3D characteristics of snow bands and implications for surface snowfall in Northeast Winter Storms, 18 Jan 2024. Online.

University of Maryland Earth System Science Interdisciplinary Center Seminar Series, "New insights on snowfall from observations of winter storms", 4 December 2023. Online.

Lightning talk for GIS Week, Center for Geospatial Analytics, "The power of hourly weather data: Unveiling climate trends for pragmatic decision making", 15 November 2023.

Guest Lecture on "Radar observations and their interpretation" for Colorado State University graduate class on Microphysics ATS 724, Professor Sonia Kreidenweis, 14 November 2023. Online.

International Precipitation Working Group, Snowfall Focus Group Seminar Series, Insights on Microphysics from Airborne and Surface-based Observations of Winter Storms, 8 November 2023. Online.

Naval Research Laboratory-Monterey: Weather-conditioned evaluations of COAMPS and GFS forecasts relative to surface observations. 7 August 2023, Monterey, CA

Richard H. Johnson Symposium at the 102th American Meteorological Society Annual Meeting: Constraints on the interpretation of cause and effect between kinematic and microphysical structures within storms and potential remedies. 26 Jan 2022, Online presentation at Virtual Conference.

Asheville Museum of Science, “Ask a Scientist” talk on Snowflake Variations and How They Form, moderated live on Facebook, 6 August 2021.

Public Media and Outreach (since 2018)

Deutsche Welle : Fact check: Texas floods–cloud seeding theories dismissed

<https://www.dw.com/en/fact-check-texas-floods-cloud-seeding-theories-dismissed/a-73195643>
posted 7/8/2025

Phys.org Beam me up: Using laser to detect moth migrations, posted 2/6/2024

<https://phys.org/news/2024-02-lasers-moth-migrations.html>

NCSU CALS News: Beam me up: Using laser to detect moth migrations, posted 2/5/2024

<https://cals.ncsu.edu/news/beam-me-up-using-lasers-to-detect-moth-migrations/>

NOAA WPC-HMT Winter Weather Experiment seminar series, 3D characteristics of snow bands and implications for surface snowfall in Northeast Winter Storms, 18 Jan 2024, online talk by Sandra Yuter and Laura Tomkins

NPR Short Wave Podcast, *Winter storm brings snow to the East Coast. But what's in a snowflake?*

<https://www.npr.org/2024/01/08/1198909104/short-wave-draft-01-08-2024>

NPR All Things Considered, Just how big can a snowflake get? It depends on what you mean by 'snowflake'

<https://www.npr.org/2023/12/25/1217356234/just-how-big-can-a-snowflake-get-it-depends-on-what-you-mean-by-snowflake>
aired 25 December 2023

Center for Geospatial Analytics Research News Spotlight (posted 15 November 2022) New Visualization Tool Helps Weather Forecasters and Researchers More Easily Identify and Study Bands of Heavy Snow

<https://cnr.ncsu.edu/geospatial/news/2022/11/15/new-visualization-tool-heavy-snow/>

Ladies Who Lunch Conversations with Leann Lavin (*released 4 November 2022*)

<https://www.facebook.com/LadiesWhoLunchConversations/videos/it-doesnt-get-more-exciting-topical-or-interesting-im-sure-youll-agree-it-was-su/431300802506609>

Deep Convection Podcast (released 5 July 2022), <https://deep-convection.org/2022/07/05/episode-7-sandra-yuter/>

NPR Marketplace, With helium in short supply, scientists are worried

<https://www.marketplace.org/2022/05/26/with-helium-in-short-supply-scientists-are-worried/>
aired 26 May 2022

NCSU Partnerships Blog: NC State Helps Delta Air Lines Fly Safer

<https://partnerships.ncsu.edu/blog/2022/04/12/nc-state-helps-delta-air-lines-fly-safer/>, published 12 April 2022

New York Times, Forecasters Face Loss of Data as Weather Balloon Flights Are Cut,

<https://nyti.ms/3uVqeIv>, published 5 April 2022.

WUNC 91.5 North Carolina Public Radio on NASA IMPACTS, piece aired on 10 March 2022 during morning local news.

Popular Science, NASA's storm-chasing planes fly through blizzards to improve snowfall forecasts.

<https://www.popsoci.com/science/nasa-planes-improve-snowstorm-forecasts/>, published 3 Feb 2022

WRAL TV on NASA IMPACTS field project, piece aired 8 Feb 2022 during 7 pm newscast.

Podcast for AAAS Science Magazine, 19 Jul 2018 <https://www.sciencemag->

[org.prox.lib.ncsu.edu/podcast/why-platypus-gave-suckling-and-how-gravity-waves-clear-clouds](https://www.sciencemag-
org.prox.lib.ncsu.edu/podcast/why-platypus-gave-suckling-and-how-gravity-waves-clear-clouds)

NCSU Press release: <https://news.ncsu.edu/2018/07/yuter-cloud-clearing/>

Article on snowflake research featured at <https://news.ncsu.edu/2018/12/how-big-can-snowflakes-be/>

Conference Abstracts (underlined names are students, post-docs and scientific staff directly supervised)

Johnson, W. S. E. Yuter, M. A. Miller, 2026: Differences among cloud water to rain water transitions within prevalent microphysics schemes. *Abstracts, 30th AMS 25th Student Conference*, January 2026, Houston, TX.

Moore, R. S. E. Yuter, M. A. Miller, 2026: Solar radiation, low-level cloud, and boundary layer characteristics over eastern North Carolina. *Abstracts, 30th AMS 25th Student Conference*, January 2026, Houston, TX.

Price, L., S. E. Yuter, M. A. Miller, and R. Moore, 2026: Detection and movement of low clouds by combining several types of upward-looking observations. *Abstracts, 30th AMS 25th Student Conference*, January 2026, Houston, TX.

Zimmer, P., M. A. Miller, S. E. Yuter, and L. B. Perry, 2026: Historical weather observations and potential future climate trends for the Summit Lake, Nevada region. *Abstracts, 30th AMS 25th Student Conference*, January 2026, Houston, TX.

Peng, X., D. Tyndall, C. Camacho, M. Janiga, B. Ruston, M. Liu, W. Lewis, S. Yuter, M. Miller, H. Christopherson, N. Baker, P. Pauley, T. Whitcomb, 2026: Introduction to the Navy Global Environmental Model Reanalysis (NAVGE-M-RA), *Abstracts, 30th Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface*, January 2026, Houston, TX.

McMurdie, L. A., R. M. Rauber, J. A. Finlon, B. Colle, C. Helms, G. Heymsfield, A. Janiszewski, N. Leonardo, K. Lundstrom, M. Miller, L. Tomkins, P. Yeh, J. Yorks, S. Yuter, and T. Zaremba, 2025: Radar investigations of precipitation bands and elevated convection within winter cyclones during NASA IMPACTS. *Abstracts, AMS 41st Conference on Radar Meteorology*, August 2025, Toronto, Canada.

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Service within NC State (last 5 years)

Faculty mentor for Assistant Professor Camilo Rey-Sanchez (2021-), MEAS Undergraduate Curriculum Committee (2022-), Faculty advisor to Broadcast Meteorology Club (2011-), College of Sciences Professors of Distinction Committee (2023-), Data Science Initiative Advisory Council (2016-2021), Chair of MEAS ETF Committee (2011-2021), College of Sciences ETF Committee (2019-2021), O. Max Gardner Award Committee (2018-2021), MEAS Faculty Search Committee (Boundary Layer position), (2020).