

Research Associate Professor
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EDUCATION

Ph.D. Atmospheric Sciences	University of Washington, 1989
M.S. Atmospheric Sciences	University of Washington, 1983
B.S. Atmospheric Sciences minor, Environmental Studies	University of California, Davis June 1978, High Honors

EMPLOYMENT

2017—present	Research Associate Professor, Department of Atmospheric Sciences, University of Washington
1991 - 2017	Research Meteorologist III and Senior Lecturer, University of Washington
1989 - 1991	Postdoctoral Scientist, Cooperative Institute for Meteorological Satellite Studies, University of Wisconsin
1980 - 1988	Research Assistant, University of Washington
1978 - 1979	Forecaster, River Forecast Center, National Weather Service, Portland OR

AWARDS

1999, 2004, 2011, 2015, 2017, 2019	Atmospheric Sciences Department Teaching Award.
2016	NASA Precipitation Measurement Mission (PMM) Science Team Award

FIELD EXPERIMENTS – CURRENT AND FUTURE

2015-2016	<i>The Olympic Mountains Experiment, OLYMPEX</i> . Served as Project Manager in preparation for OLYMPEX 2012 – 2015, as Operations Director during field operations, November 2015 – January 2016, and as a Lead Science Principal Investigator. As Operations Director, oversaw student forecasters and helped make operational decisions for the operations of aircraft, radars and ground instrumentation.
2017 – 2018	<i>The Remote sensing of Electrification, Lightning, And Mesoscale/microscale Processes with Adaptive Ground Observations, RELAMPAGO</i> . Will serve as Forecast coordinator, lead forecaster and assist with radar operations during RELAMPAGO, November 2018
2020 – 2023	<i>Investigation of Microphysics and Precipitation for Atlantic Coast-Threatening Snowstorms, IMPACTS</i> . Serving as the Lead PI for the project. Working with colleagues at NASA Goddard, and other science PIs from SUNY Stonybrook, University of Illinois, Pennsylvania State University and University of North Carolina. Project selected 25 September 2018

COMMITTEES

2012—2018	UNIDATA Strategic Advisory Committee.
2016—present	Member of the Global Precipitation Measurement Particle Size Distribution working group (GPM-PSD Working Group).
2016—present	Member of the AMS committee on Mountain Meteorology
2017, 2019	Co-Convenor of the GPM sessions of the Fall AGU meeting
2020	Co-Chairperson of the 19 th AMS Conference on Mountain Meteorology

EDITORIAL DUTIES

2016-present Editor Weather and Forecasting
2010-2015 Associate Editor for Weather and Forecasting

RESEARCH GRANTS

1993—1996 Co-Investigator on NSF grant titled: *Structure and Evolution of Southern Ocean Mesocyclones using Multiple Satellite Systems*. Work was performed with Drs. Kristina Katsaros and Andrew Carleton.

1996—1999 Co-Investigator on NSF grant titled: *Electronic Laboratory for Synoptic and Mesoscale Instruction*.

2005—2009 Principal Investigator on NSF grant titled: *Climatology of Forecast Skill and Major Forecast Failures over North America and Adjacent Waters* with Co-Investigator, Dr. Cliff Mass.

2009—2012 Principal Investigator on NRL grant titled: *Predictability and Weather Regimes along the West Coast*.

2011—2014 Co-Investigator with R. Holzworth, G. Hakim and C. Mass on NOAA grant titled: *Lightning Studies*.

2013—2014 Project Manager for NASA grant, *OLYMPEX Feasibility Study* with R. A. Houze, Jr., PI.

2014—2015 Co-PI NASA grant, *OLYMPEX Preparation Study*, with R. A. Houze, Jr., PI

2015—2016 Co-PI for NASA grant, *Field Research in the Olympic Mountains*, with R. A. Houze Jr., PI

2016—2017 PI for NASA grant, *Analysis of OLYMPEX radar and ground data*, with Co-PI R. A. Houze, Jr.

2017—2020 PI for NSF grant, *West Coast precipitation processes as modulated by storm structure and terrain* with Co-PI Angela Rowe.

2017—2018 PI for NASA grant, *Orographic Precipitation as Measured by OLYMPEX Radar, Ground, and Aircraft Data*

2017—2018 PI for NASA grant, *Climatology of Eastern United States*

2017—2021 Co-PI for NSF grant, *Radar observations of convective lifecycle near Argentina's Sierras de Cordoba*, with PI Angela Rowe and collaborator, Kristen Rasmussen. (Now a subcontract with University of Wisconsin)

2019—2020 PI for NASA grant, *GPM and TRMM Data Refinement*.

2019—2023 PI for NASA grant, *Investigation of Microphysics and Precipitation for Atlantic Coast-threatening Snowstorms (IMPACTS)*.

2020—2021 PI for NASA grant, *GPM and TRMM Data Products*.

ADVISING

Graduate Students as Chair of committee
Garret Wedam, 2005 – 2008 Masters Thesis advisor, chair. Title: *Measuring Skill of Numerical Weather Prediction*.

Joe Zagrodnik, 2013—2019. PhD granted March, 2019, Title: Modification of Precipitation in Mid-Latitude Cyclones Passing over a Coastal Mountain Range

Andrew DeLaFrance, September 2018 -- ?

Clayton Sasaki, September 2018 -- ?

Victoria McDonald, September 2019 -- ?

Thesis committees

Bri Dotson, in Atmospheric Sciences, masters, Fall 2007;

Veronica Berrocal in Statistics, PhD, June 2007 and

Brian Ancell in Atmospheric Sciences, PhD, June 2006.

Megan Chaplin, Masters August 2017.

Robert Conrick, Masters June 2018, PhD committee, graduated July 2021

Brandon McClung, Masters committee, June 2019

Spencer Tangen, masters committee

Callie McNicholas, PhD committee, graduated July 2021

Emily Tansey, masters and PhD committee

Jonathan Weyn, PhD committee, graduated June 2020

Johnathan Metz, PhD committee, graduated July 2021

Daniel Lloveras, Masters 2021, and PhD Committee

Justin Pflug, PhD committee, GSR, graduated June 2021

Zhanxiang (Henry) Hua, Masters committee

Patrick Murphy, Masters committee

Ryan Eastman, PhD committee

Henry Zhanxiang Hua, Masters committee

Litai Kang, PhD committee

Undergraduate Students

Steven Brey, 2013—2014

Parker Malek 2014—2015

Thomas Schuldt 2016—2017

Kenneth Wohl 2016—2017

Kyle Anderson 2017—2018

Jamin Rader 2017—2019

Thomas Lamb 2018—2018

Jordan Rendon, 2019 – 2020

Anthony Edwards, 2021

Alex Hewett 2021

TEACHING EXPERIENCE

At the University of Washington:

Summer 1983 Taught the “Weather” course (ATMS 101).

Spring 1985 Taught a University of Washington Extension Program course titled “Weather and the Atmosphere”.

1991 - present
(except 1996) Laboratory instructor for the “Atmospheric Structure and Analysis” course for juniors in atmospheric sciences (ATMS 370). Responsible for the instruction and grading of the laboratory portion of the course. Coordinated with the lecture instructor concerning the content of the laboratory. The laboratory consists of map analysis and computer-based laboratory assignments.

1992 - present	Laboratory instructor for the “Atmospheric Motions II” course for seniors in atmospheric sciences (ATMS 442). Responsible for the content, instruction and grading of the laboratory portion of the course. The laboratory consists of computer-based assignments.
1991 - 1998	Laboratory instructor for the “Atmospheric Structure and Analysis I: Synoptic Scale Systems” course for graduate students in atmospheric sciences (ATMS 551). Responsible for the content, instruction and grading of the laboratory portion of the course. The laboratory included both map analysis and computer-based assignments. Currently, this course is not taught every year.
Spring 1997, 2000 and 2002	Laboratory instructor for “Introduction to Synoptic Meteorology” (ATMS 502). Coordinated with the lecture instructor concerning the content of the laboratory assignments, responsible for the instruction and grading of the laboratory portion of course. The laboratory consisted of map analysis, computer-based assignments and a student project.
1998, 1999, 2001, 2003-present	Taught “Introduction to Synoptic Meteorology” (ATMS 502). Fully responsible for the course including course content, lectures, laboratory assignments, and grading.
2013 - present	Designed and taught a 1 credit, pass/no pass class called Weather Challenge offered in Autumn and Winter Quarters. It’s a course open to all University students who have taken Atmos Sci. 101 or who are undergraduate majors. Students must enter the National Weather Challenge Forecast contest and learn about current weather at select cities around the country.
Summer 2017	PNNL Instrumentation Class. Short course taught at PNNL, Richland Washington. Responsible for grading student projects and presentations.

SEMINARS AND CONFERENCE PRESENTATIONS – LAST 3 YEARS ONLY

15 April 2021	University of British Columbia, Invited : Modification of Precipitation Processes by Complex Terrain: The Olympic Mountains Experiment (OLYMPEX)
14 December 2020	AGU, contributed: Investigation of Microphysics and Precipitation for Atlantic Coast-Threatening Snowstorms (IMPACTS): Preliminary results from the first deployment in winter 2020
2 December 2020	Panelist, Regional Precipitation Session of the NOAA-DOE Precipitation Processes and Predictability Workshop, Invited .
5 October 2020	International Atmospheric River Conference, contributed: The Role of Warm Rain Processes in Atmospheric River Events during the Olympic Mountains Experiment: OLYMPEX

13 July 2020 19th AMS Conference on Mountain Meteorology, contributed: Modification of precipitation processes by complex terrain: What are we learning from the Olympic Mountains Experiment (OLYMPEX), virtual conference.

15 April 2020 Dynamics Seminar UW, contributed: IMPACTS: Investigation of Microphysics and Precipitation in Atlantic Coast Threatening Snowstorms, Seattle WA.

13 December 2019 AGU, contributed: IMPACTS: Investigation of Microphysics and Precipitation in Atlantic Coast Threatening Snowstorms, San Francisco, CA

23 October 2019 University of Utah, **Invited**: Precipitation Processes in Winter Cyclones: A Tale of two field campaigns. Salt Lake City, UT

18 September 2019 AMS Radar Conference, presented by co-Author G. Heymsfield: The IMPACTS Airborne Field Campaign to Study East Coast Snowstorms. Nora, Japan

3 September 2019 International Conference on Alpine Meteorology (ICAM), contributed: Modification of Precipitation in Cyclones Passing over a Coastal Mountain Range: Results from OLYMPEX. Riva del Garda, Italy

29 July 2019 AMS Conference on Mesoscale Meteorology, Poster, contributed: Modification of Precipitation in Cyclones Passing over a Coastal Mountain Range: Results from OLYMPEX. Savannah, GA

31 July 2019 AMS Conference on Mesoscale Meteorology, Oral, contributed: IMPACTS: A NASA Earth Venture Suborbital Airborne Field Campaign to study US East Coast Snowstorms. Savannah, GA

21 June 2019 12th International Precipitation Conference, Contributed: IMPACTS: Investigation of Microphysics and Precipitation in Atlantic Coast Threatening Snowstorms. Irvine, CA

10 January 2019 Precipitation Processes from Radars on Air- and Space-borne Platforms. **Invited**: India Radar Conference, Pune, India

9 January 2019 Aircraft Radar measurements of the Vertical Structure and Microphysical Characteristics of Precipitation across the Olympic Mountains. **Invited**: India Radar Conference, Pune, India

15 December 2018 Three-Dimensional reflectivity structure from the Dual-Frequency Radar (DPR) on the Global Precipitation Measurement (GPM) Satellite over coastal mountain ranges. AGU, Washington DC

9 October 2018 Investigation of Microphysics and Precipitation for Atlantic Coast-Threatening Snowstorms (IMPACTS), poster presentation at the PMM meeting, Phoenix, AZ.

10 October 2018 Verification of the GPM Satellite by the Olympic Mountains Experiment (OLYMPEX), poster presentation at the PMM meeting, Phoenix, AZ.

18 September 2018 Precipitation Processes in Cyclones Passing over a Coastal Mountain Range: Recent Results from the Olympic Mountains Experiment (OLYMPEX), Colorado State University, Invited Lecture, Fort Collins, CO.

26 June 2018 Terrain-Enhanced Precipitation Processes above the Melting Layer: Results from the Olympic Mountains Experiment (OLYMPEX), AMS Mountain Meteorology meeting, Santa Fe, NM.

26 June 2018 Precipitation Processes in Cyclones Passing over a Coastal Mountain Range: Recent Results from OLYMPEX, Poster presentation at the AMS Mountain Meteorology meeting, Santa Fe, NM.

FIELD CAMPAIGN RELATED DOCUMENTS AND DATASETS

Houze, R. A., Jr., L. A. McMurdie, W. Petersen, M. Schwaller, 2015:OLYMPEX: Ground Validation Experiment Field Operations Plan. Copies available at http://olympex.atmos.washington.edu/docs/OLYMPEX_OpsPlan.pdf

McMurdie, L. A., R. A. Houze, Jr., C. R. Mass, J. D. Lundquist, D. P. Lettenmaier, W. Petersen, M. Schwaller, 2013: Implementation Plan for OLYMPEX. Internal Document. Copies available at: <http://olympex.atmos.washington.edu/meetings/meeting1.html>

Petersen, W. R. Houze, and L. McMurdie. 2018. GPM Ground Validation OLYMPEX Field Campaign Data Collection Data set available online <http://ghrc.nsstc.nasa.gov/> from the NASA EOSDIS Global Hydrology Resource Center Distributed Active Archive Center Huntsville, Alabama, U.S.A. doi: <http://dx.doi.org/10.5067/GPMGV/OLYMPEX/DATA101>

McMurdie, L.A., Heymsfield, G., Yorks, J.E., and Braun, S.A. 2019. Investigation of Microphysics and Precipitation for Atlantic Coast-Threatening Snowstorms (IMPACTS) Collection. Data available online [<http://ghrc.nsstc.nasa.gov/>] from the NASA EOSDIS Global Hydrology Resource Center Distributed Active Archive Center, Huntsville, Alabama, U.S.A. doi: <http://dx.doi.org/10.5067/IMPACTS/DATA101>

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McMurdie, L. A., G. Heymsfield, J. Yorks, S. A. Braun, G. Skofronick-Jackson, R. Rauber, S. Yuter, B. Colle, G. McFarquhar, M. Poellet, D. Novak, T. Lang, R. Kroodsma, M. McLinden, J. Finon, V. McDonald, S. Nicholls, M. Oue, P. Kollias, S. Brodzik, 2021: Chasing Snowstorms: The Investigation of Microphysics and Precipitation for Atlantic Coast-threatening Snowstorms (IMPACTS) Campaign. *Bull. Amer. Meteor. Soc.*, In review.

Sasaki, C., A. K. Rowe, L. A. McMurdie, K. L. Rasmussen, 2021: New Insights into the South American Low-Level Jet from RELAMPAGO Observations. *Mon. Wea. Rev.*, In review.

DeLaFrance, A., L. A. McMurdie, A. K. Rowe, 2021: Orographically Modified Ice-Phase Precipitation Processes During the Olympic Mountains Experiment (OLYMPEX). *J. Atmos. Sci.*, accepted, DOI: <https://doi.org/10.1175/JAS-D-21-0091.1>

Nesbitt, S. W., P. Salio, E. Ávila, P. Bitzer, L. Carey, V. Chandrasekar, W. Deierling, F. Dominguez, M. E. Dillon, C. M. Garcia, D. Gochis, S. Goodman, D. A. Hence, K. Kosiba, M. Kumjian, T. Lang, L. M. Luna, J. Marqis, R. Marshall, L. McMurdie, E. Nascimento, K. L. Rasmussen, R. Roberts, A. K. Rowe, J. J. Ruiz, E. Sao Sabbas, C. Saulo, R. S. Schumacher, Y. G. Skabar, L. Augusto, T. Machado, R. Trapp, A. Varble, J. Wilson, J. Wurman, E. Zipser, A. Arias, H. Bechis, and M. Grover, 2021: A storm safari in Subtropical South America: Proyecto RELAMPAGO. *Bull. Amer. Meteorol. Soc.*, published on-line 19 April 2021. DOI: <https://doi.org/10.1175/BAMS-D-20-0029.1>

Varble, A., S. Nesbitt, P. Salio, J. C. Hardin, N. Bharadwaj, P. Borque, P. DeMott, Z. Feng, T. Hill, J. Marquis, A. Matthews, F. Mei, R. Oktem, V. Castro, L. Goldberger, A. Hunzinger, K. Barry, S. Kreidenweis, G. M. McFarquhar, L. McMurdie, M. Pekour, H. Powers, D. M. Roms, C. Saulo, B. Schmid, J. Tomlinson, S. van den Heever, A. zelenyuk, Z. Zhang, and E. Zipser, 2021: Utilizing a storm-generating hotspot to study convective cloud transitions: The CACTI Experiment. *Bull. Amer. Meteorol. Soc.*, published on-line 13 April 2021. DOI: <https://doi.org/10.1175/BAMS-D-20-0030.1>

Zagrodnik, J. P., L. A. McMurdie, R. Conrck, 2021: Barrier and sub-barrier scale precipitation processes in stratiform precipitation over the Olympic Mountains. *Mon. Wea. Rev.*, **149**, 503 – 520, <https://doi.org/10.1175/MWR-D-20-0164.1>

Piersante, J. O., K. L. Rasmussen, R. S. Schumacher, A. K. Rowe, and L. A. McMurdie, 2021: A Synoptic evolution comparison of the largest MCSs in subtropical South America between spring and

- summer. *Mon. Wea. Rev.*, **149**, 1943-1966. <https://doi.org/10.1175/MWR-D-20-0208.1>
- Donohoe, A., E. Dawson, L. A. McMurdie, D. S. Battisti, A. Rhines, 2020: Seasonal asymmetries in the lag between insolation and surface temperature. *J. Clim.*, **33**, 3921 – 3945. https://doi.org/10.1175/JCLI-D_19-0329.1.
- Zagrodnik, J. P., L. A. McMurdie, R. A. Houze, Jr., S. Tanelli, 2019: Vertical structure and microphysical characteristics of frontal systems passing over a three-dimensional coastal mountain range. *J. Atmos. Sci.* **76**, 1521 – 1546. **Most read articles in last 12 months.** <https://doi.org/10.1175/JAS-D-18-0279.1>
- Bruick, Z., S., K. L. Rasmussen, A. K. Rowe, L. A. McMurdie, 2018: Characteristics of intense convection in subtropical South America as influenced by El Niño/Southern Oscillation. *Mon. Wea. Rev.*, **147**, 1947 – 1966, <https://doi.org/10.1175/MWR-D-18-0342.1>.
- Riihimaki, L., R. A. Houze, Jr., L. A. McMurdie, K. Dorsey, 2019: Training a new generation of data-savvy atmospheric researchers. *EOS*, 100, <https://doi.org/10.1029/2019/EO114793>. Published on 30 January 2019.
- McMurdie, L. A., A. K. Rowe, J. P. Zagrodnik, R. A. Houze, Jr., S. Brodzik, T. Schuldt, 2018: Terrain Impacted Precipitation Processes above the Melting Layer: Results from OLYMPEX,. *J. Geophys. Res.*, 123. <https://doi.org/10.1029/2018JD029161>.
- Barnes, H. C. J. P. Zagrodnik, L. A. McMurdie, A. K. Rowe, R. A. Houze, Jr., 2018: Kelvin-Helmholtz waves in precipitating midlatitude cyclones. *J. Atmos. Sci.*, **75**, 2763-2785.
- Zagrodnik, J., L. A. McMurdie, R. A. Houze, Jr., 2018: Stratiform precipitation processes in cyclones passing over the Olympic Mountains. *J. Atmos. Sci.*, **75**, 983-1004.
- Houze, R. A., Jr., L. A. McMurdie, W. A. Petersen, M. R. Schwaller, W. Baccus, J. Lundquist, C. Mass, B. Nijssen, S. A. Rutledge, D. Hudak, S. Tanelli G. G. Mace., M. Poellot, D. Lettenmaier, J. Zagrodnik., A. Rowe, J. DeHart, L. Madaus, H. Barnes, 2017: The Olympic Mountains Experiment (OLYMPEX), *Bull. Amer. Meteor. Soc.*, **98**, 2167-2188.
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- McMurdie, L. A., and C. Mass, 2004: Major Numerical Forecast Failures over the Northeast Pacific. *Wea. Forecasting*, **19**, 338-356.

- Claud, C., G. Heinemann, E. Raustein, L. McMurdie, 2003: Polar Low "Le Cygne": Satellite Observations and Numerical Simulations. *Quart. J. of Roy. Met. Soc.*, **104**, 1075-1102.
- McMurdie, L. A., C. Claud, and S. Atakturk, 1997: Satellite-derived atmospheric characteristics of spiral and comma-shaped southern hemisphere mesocyclones. *J. Geophys. Res.*, **102**, 13889-13905.
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- Rabin, R. M., L. A. McMurdie, C. M. Hayden, and G. S. Wade, 1991: Monitoring precipitable water and surface wind over the Gulf of Mexico from microwave and VAS satellite imagery. *Wea. and Forecasting*, **6**, 227-243.
- McMurdie, L. A., and K. B. Katsaros, 1991: Satellite-derived integrated water vapor distribution in oceanic midlatitude storms: Variation with region and season. *Mon. Wea. Rev.*, **119**, 589-605.
- McMurdie, L. A., 1989: Interpretation of integrated water vapor patterns in oceanic midlatitude cyclones derived from the Scanning Multichannel Microwave Radiometer. Ph. D. Thesis, University of Washington, 223pp.
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- McMurdie, L. A. and G. Levy, and K. B. Katsaros, 1987: On the relationship between scatterometer-derived convergence and atmospheric moisture. *Mon. Wea. Rev.*, **115**, 1281-1294.
- McMurdie, L. A. and K. B. Katsaros, 1985: Atmospheric water distribution in a midlatitude cyclone observed by the Seasat Scanning Multichannel Microwave Radiometer. *Mon. Wea. Rev.*, **113**, 584-598.
- Katsaros, K. B., L. A. McMurdie, R. J. Lind, and D. E. DeVault, 1985: Albedo of a water surface, spectral variation, effects of transmittance, sun angle and wind speed. *J. Geophys. Res.*, **90**, 7313-7321.
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