

DR. SHAWN M. MILRAD, ASSOCIATE PROFESSOR OF METEOROLOGY, EMBRY-RIDDLE AERONAUTICAL UNIVERSITY

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EDUCATION

McGill University Ph.D., Atmospheric and Oceanic Sciences Dissertation advisor: John R. Gyakum	2010
McGill University M.Sc., Atmospheric and Oceanic Sciences Thesis advisor: John R. Gyakum	2006
Cornell University B.S., Atmospheric Science	2002

ACADEMIC AND RELATED WORK EXPERIENCE

Embry-Riddle Aeronautical University (ERAU) Associate Professor, Meteorology	2019–present
ERAU Assistant Professor, Meteorology	2013–2019
University of Kansas Visiting Assistant Professor, Atmospheric Science	2010–2012
McGill University Postdoctoral Fellow	2010, 2012
Atmospheric and Environmental Research, Inc. Staff Scientist	2010
McGill University Instructor	2009–2010

AWARDS

U.S. Department of State Fulbright Scholar Award to Norway	2023–2024
ERAU College of Aviation Researcher of the Year Award	2022–2023
ERAU Applied Aviation Sciences Department Outstanding Performance Award	2016–2017
McGill University Graduate Studies Fellowship	2005–2006

SERVICE

Journal of Applied Meteorology and Climatology Associate Editor	2023–present
University of Oklahoma WxChallenge Advisory Board Member and Local Manager	2023–present
Columbus State University Earth and Space Sciences Department M.Sc. Thesis Committee Member	2022–present
ERAU Faculty Senate Benefits Committee Member	2021–present

University Corporation for Atmospheric Research (UCAR) ERAU Member Representative	2016–present
Mon. Wea. Rev., Wea. Forecasting, J. Climate, J. Appl. Meteor. Climatol., Int. J. Climatol., Climate Dyn., National Science Foundation (NSF), National Science and Engineering Research Council (NSERC) Manuscript and Proposal Peer Reviewer	2010–present
ERAU College of Aviation Research Council Member	2014–2021; 2022–2023
American Meteorological Society (AMS) Weather and Forecasting Committee Member	2016–2022
ERAU Chapter of the American Meteorological Society/National Weather Association Faculty Advisor	2013–2019
ERAU Faculty Senate Research Committee Member	2014–2018
ERAU Department of Physical Sciences, College of Arts and Sciences Ph.D. Dissertation Committee Member	2016–2017
GRANTS AND CONTRACTS (\$507,927 TOTAL SINCE 2014)	
U.S. Department of State Fulbright Scholar Award to Norway. Heat Stress Observations and Trends across Europe Using Wet Bulb Globe Temperature. Amount: \$15,000	2023–2024
NOAA Climate Program Office (co-PI). Evaluation and development of a Southeast U.S. heat vulnerability index using a wet bulb globe temperature approach. Amount: \$308,349	2022–2025
ERAU Faculty Innovative Research in Science and Technology (FIRST) Program (PI). Is Florida becoming uncomfortable? Observations and trends of heat stress indicators in a changing climate. Amount: \$10,354	2020–2021
UCAR COMET National Weather Service Partners Program (PI). Environmental analysis of convective initiation events in Central Florida using integrated mobile observations. Amount: \$14,862	2020–2021
ClimaCell Inc. Independent forecast verification (contract). Amount: \$12,755	2019–2020
National Science Founding (NSF) Lower Atmosphere Observing Facilities (LAOF) for Education (PI). Embry-Riddle Aeronautical University Convective-Boundary Research Engaging Educational Student Experiences 2.0 (ERAU C-BREESE 2). Amount: \$33,919	2018
Bermuda Institute of Ocean Sciences (BIOS) Risk Prediction Initiative (RPI) 2.0 (PI). The Extreme Flood Index: Climatology, historical trends, and a predictive metric for the relationship between atmospheric blocking and heavy precipitation. Amount: \$63,072	2017
ERAU FIRST Program (PI). Floridian heatwaves in a warming world: Frequency, intensity, duration, and connections to extreme precipitation events. Amount: \$10,000	2016–2017
NSF LAOF for Education (PI). Embry-Riddle Aeronautical University Convective-Boundary Research Engaging Educational Student Experiences (ERAU C-BREESE). Amount: \$27,116	2015
ERAU FIRST Program (PI). On the synoptic-dynamic characteristics of extreme precipitation events: Understanding and quantifying the role of anticyclones. Amount: \$12,500	2014–2015
TEXTBOOK	
Milrad, S.: <i>Synoptic Analysis and Forecasting: An Introductory Toolkit</i> . Elsevier, 246 pp.	2018
REFEREED PUBLICATIONS (33 TOTAL SINCE 2009; *INDICATES STUDENT FIRST AUTHOR)	
*Ennis, K. E., and S. M. Milrad: Man, it's a hot one: Trends and extremes in Florida autumn heat stress. <i>Int. J. Climatol.</i> , revised.	2024

- *Chavez, I., S. M. Milrad, D. J. Halperin, B. Mroczka, and K. Tyle: Environmental analysis of warm-season first cloud-to-ground lightning events over the western Florida peninsula. *Wea. Forecasting*, **37**, 1867–1883, <https://doi.org/10.1175/WAF-D-22-0005.1>. **2022**
- Hanesiak, J., and Coauthors: The severe multi-Day October 2019 snow storm over Southern Manitoba, Canada. *Atmos. Ocean*, **60**, 65–87, <https://doi.org/10.1080/07055900.2022.2060794>. **2022**
- *McAllister, C., A. Stephens, and S. M. Milrad: The heat is on: Observations and trends of heat stress metrics during Florida summers. *J. Appl. Meteor. Climatol.*, **61**, 277–296, <https://doi.org/10.1175/JAMC-D-21-0113.1>. **2022**
- *Melamed-Turkish, K., S. Milrad, J. Gyakum, and E. Atallah: A conceptual synoptic model approach to the development of a precipitation climatology as applied to Montreal, Québec. *Wea. Forecasting*, **37**, 1221–1238, <https://doi.org/10.1175/WAF-D-21-0139.1>. **2022**
- *Raghavendra, A., and S. M. Milrad: On the relationship between heatwaves and extreme precipitation in a warming climate. *Extreme Events and Climate Change: A Multidisciplinary Approach*, F. Castillo, M. Wehner, and D. Stone, Eds., Wiley, 183–203, <https://doi.org/10.1002/9781119413738.ch12>. **2021**
- *Klepatzki, J. P., and S. M. Milrad: Composite analysis of cool-season Florida tornado outbreaks. *Electron. J. Severe Storms Meteor.*, **15**, 1–34, <https://doi.org/10.55599/ejssm.v15i1.75>. **2020**
- *Raghavendra, A., L. Zhou, P. E. Roundy, Y. Jian, S. M. Milrad, and W. Hua: The impact of the MJO on precipitation variability and trends over the Congo Rainforest. *Climate Dyn.*, **54**, 2683–2695, <https://doi.org/10.1007/s00382-020-05133-5>. **2020**
- Barlow, M., and Coauthors: North American extreme precipitation events and related Large-Scale Meteorological Patterns: a review of statistical methods, dynamics, modeling, and trends. *Climate Dyn.*, **53**, 6835–6875, <https://doi.org/10.1007/s00382-019-04958-z>. **2019**
- *Cloutier-Bisbee, S. R., A. Raghavendra, and S. M. Milrad: Heatwaves in Florida: Climatology, trends, and related precipitation events. *J. Appl. Meteor. Climatol.*, **58**, 447–466, <https://doi.org/10.1175/JAMC-D-18-0165.1>. **2019**
- Milrad, S. M., E. H. Atallah, J. R. Gyakum, R. N. Ispording, and J. Klepatzki: The Extreme Precipitation Index (EPI): A coupled dynamic-thermodynamic metric to diagnose mid-latitude floods associated with flow reversal. *Wea. Forecasting*, **34**, 1257–1276, <https://doi.org/10.1175/WAF-D-18-0156.1>. **2019**
- *Raghavendra, A., A. Dai, S. M. Milrad, and S. R. Cloutier-Bisbee: Floridian heatwaves and extreme precipitation: Future climate projections. *Climate Dyn.*, **52**, 495–508, <https://doi.org/10.1007/s00382-018-4148-9>. **2019**
- *Raghavendra, A., and S. M. Milrad: A new dynamically-based metric to diagnose precipitation distribution in transitioning tropical cyclones. *J. Operat. Meteor.*, **7**, 61–77. **2019**
- *Klepatzki, J., and S. M. Milrad: A diagnostic metric for predicting tropical cyclone and mid-latitude floods. *Beyond: Undergraduate Research Journal*, **2**(2). **2018**
- Evans, C., and Coauthors: The extratropical transition of tropical cyclones: Cyclone evolution and direct impacts. *Mon. Wea. Rev.*, **145**, 4317–4344, <https://doi.org/10.1175/MWR-D-17-0027.1>. **2017**
- Milrad, S. M., and C. G. Herbster: Mobile radar as an undergraduate education and research tool: The ERAU C-BREESE field experience with the Doppler-on-Wheels. *Bull. Amer. Meteor. Soc.*, **98**, 1931–1948, <https://doi.org/10.1175/BAMS-D-15-00281.1>. **2017**
- Milrad, S. M., K. Lombardo, E. H. Atallah, and J. R. Gyakum: Numerical simulations of the 2013 Alberta Flood: Dynamics, thermodynamics, and the role of orography. *Mon. Wea. Rev.*, **145**, 3049–3072, <https://doi.org/10.1175/MWR-D-16-0336.1>. **2017**

- Milrad, S. M., and D. Schaum: Forecasting the Air Race Classic: Lessons in interdisciplinary aviation weather support and decision-making. *J. Aviation Aerospace Res.*, **26**(2). 2017
- *Teufel, B., and Coauthors: Investigation of the 2013 Alberta Flood from weather and climate perspectives. *Climate Dyn.*, **48**, 2881–2899, <https://doi.org/10.1007/s00382-016-3239-8>. 2017
- Milrad, S. M., J. R. Gyakum, and E. H. Atallah: A meteorological analysis of the 2013 Alberta Flood. Antecedent large-scale flow pattern and synoptic-dynamic characteristics. *Mon. Wea. Rev.*, **143**, 2817–2841, <https://doi.org/10.1175/MWR-D-14-00236.1>. 2015
- Milrad, S. M., E. H. Atallah, J. R. Gyakum, and G. Dookhie: Synoptic-scale precursors and typing of warm-season precipitation events at Montreal, Quebec. *Wea. Forecasting*, **29**, 419–444, <https://doi.org/10.1175/WAF-D-13-00030.1>. 2014
- Milrad, S. M., J. R. Gyakum, K. Lombardo, and E. H. Atallah: On the dynamics, thermodynamics, and forecast model evaluation of two snow burst events in southern Alberta. *Wea. Forecasting*, **29**, 725–749, <https://doi.org/10.1175/WAF-D-13-00099.1>. 2014
- *Hryciw, L. M., E. H. Atallah, J. R. Gyakum, and S. M. Milrad: A meteorological analysis of important contributors to the 1999–2005 Canadian Prairie drought. *Mon. Wea. Rev.*, **141**, 3593–3609, <https://doi.org/10.1175/MWR-D-12-00261.1>. 2013
- Milrad, S. M., E. H. Atallah, and J. R. Gyakum: Precipitation modulation by the Saint Lawrence River Valley in association with transitioning tropical cyclones. *Wea. Forecasting*, **28**, 331–352, <https://doi.org/10.1175/WAF-D-12-00071.1>. 2013
- Milrad, S. M., and C. M. Kelly: Synoptic-scale precursors, characteristics, and typing of nocturnal Mesoscale Convective Complexes in the Great Plains. *Electron. J. Severe Storms Meteor.*, **8**, 1–59, <https://doi.org/10.55599/ejssm.v8i4.49>. 2013
- *Turner, J. K., J. R. Gyakum, and S. M. Milrad, 2013: Thermodynamic and moisture analyses of an intense North American arctic air mass. *Mon. Wea. Rev.*, **141**, 166–181, <https://doi.org/10.1175/MWR-D-12-00176.1>. 2013
- *Razy, A., S. M. Milrad, E. H. Atallah, and J. R. Gyakum: Synoptic-scale environments conducive to orographic impacts on cold-season surface wind regimes at Montreal, Quebec. *J. Appl. Meteor. Climatol.*, **51**, 598–616, <https://doi.org/10.1175/JAMC-D-11-0142.1>. 2012
- *Ressler, G. M., S. M. Milrad, E. H. Atallah, and J. R. Gyakum: Synoptic-scale analysis of freezing rain events in Montreal, Quebec. *Wea. Forecasting*, **27**, 362–378, <https://doi.org/10.1175/WAF-D-11-00071.1>. 2012
- Milrad, S. M., J. R. Gyakum, E. H. Atallah, and J. F. Smith: A diagnostic examination of the eastern Ontario and western Quebec wintertime convection of 28 January 2010. *Wea. Forecasting*, **26**, 301–318, <https://doi.org/10.1175/2010WAF2222432.1>. 2011
- Milrad, S. M., E. H. Atallah, and J. R. Gyakum: A diagnostic examination of consecutive extreme cool-season precipitation events at St. John's, Newfoundland in December 2008. *Wea. Forecasting*, **25**, 997–1026, <https://doi.org/10.1175/2010WAF2222371.1>. 2010
- Milrad, S. M., E. H. Atallah, and J. R. Gyakum: Synoptic typing of extreme cool-season precipitation events at St. John's, Newfoundland, 1979–2005. *Wea. Forecasting*, **25**, 562–586, <https://doi.org/10.1175/2009WAF2222301.1>. 2010
- Milrad, S. M., E. H. Atallah, and J. R. Gyakum: Synoptic-scale characteristics and precursors of cool-season precipitation events at St. John's, Newfoundland, 1979–2005. *Wea. Forecasting*, **24**, 667–689, <https://doi.org/10.1175/2008WAF2222167.1>. 2009
- Milrad, S. M., E. H. Atallah, and J. R. Gyakum: Dynamical and precipitation structures of poleward-moving tropical cyclones in eastern Canada, 1979–2005. *Mon. Wea. Rev.*, **137**, 836–851, <https://doi.org/10.1175/2008MWR2578.1>. 2009

CONFERENCE PROCEEDINGS (*INDICATES STUDENT FIRST AUTHOR)

- *Cloutier-Bisbee, S., S. M. Milrad, and A. Raghavendra: Floridian heatwaves in a warming world: Frequency, intensity, and duration. 16th AMS Student Conference, 21–22 January, Seattle, WA. **2017**
- *Klepatzki, J., and S. M. Milrad: Microbursts within landfalling tropical cyclones, and the associated environmental conditions. 16th AMS Student Conference, 21–22 January, Seattle, WA. **2017**
- *Raghavendra, A., and S. M. Milrad: A new metric for defining the time and intensity of extratropical transition of tropical cyclones. 32nd AMS Conference on Hurricanes and Tropical Meteorology, 18–22 April, San Juan, PR. **2016**
- *Dillahunt, B. D., and S. M. Milrad: Synoptic-scale precursors and characteristics of high-end tornado outbreaks in the southeastern region of the United States. 15th AMS Student Conference, 9–10 January, New Orleans, LA. **2016**

SELECT RECENT CONFERENCE PRESENTATIONS (*INDICATES STUDENT PRESENTATION)

- *Knight, D. A., and S. M. Milrad: Assessing vulnerability to heat stress trends in the Southeast United States. 23rd Student Conference, 104th American Meteorological Society Annual Meeting, 28 January–1 February, Baltimore, MD. **2024**
- *Ennis, K., S. M. Milrad, K. Dello, S. P. Heuser, and S. Saia: It's getting hot out here: Metrics, trends, and extremes of Southeast U.S. heat stress using wet bulb globe temperature. 14th Conference on Environment and Health, 103rd American Meteorological Society Annual Meeting, 8–12 January, Denver, CO. **2023**
- Milrad, S. M., C. M. McAllister, K. Ennis, and A. Stephens: Man, it's a hot one: Trends, extremes, and physical mechanisms for severe heat stress days in Florida. 36th Conference on Climate Variability and Change, 103rd American Meteorological Society Annual Meeting, 8–12 January, Denver, CO. **2023**
- Milrad, S. M., I. Chavez, D. J. Halperin, and B. Mroczka: Environmental analysis of warm-season convective initiation events in west-central Florida. 31st Conference on Weather Analysis and Forecasting, 102st American Meteorological Society Annual Meeting, 24–27 January, Houston, TX. **2022**
- *Rosolino, L. S., and S. M. Milrad: Lightning-sparked wildfires in the Arctic: Recent events and associated meteorological conditions. 21st Annual Student Conference, 102st American Meteorological Society Annual Meeting, 21–23 January, Houston, TX. **2022**
- *Chavez, I., D. J. Halperin, and S. M. Milrad: Environmental analysis of convective initiation events in Central Florida. 20th Annual Student Conference, 101st American Meteorological Society Annual Meeting, 10–15 January, New Orleans, LA. **2021**
- *McAllister, C., A. Stephens, and S. M. Milrad: Is Florida becoming more uncomfortable? Observations and trends of heat stress indicators in a changing climate. 20th Annual Student Conference, 101st American Meteorological Society Annual Meeting, 10–15 January, New Orleans, LA. **2021**
- Milrad, S. M., (*Invited Speaker*): Extreme heat in Florida: Trends, health, and agriculture. CLEO Institute 8 July, Tallahassee, FL. **2021**
- Milrad, S. M., T. A. Guinn, C. H. Herbster, D. J. Halperin, and D. Schaum: From storm chasing to air racing: How experiential learning courses have enhanced the Embry-Riddle Meteorology undergraduate experience. 29th AMS Symposium on Education, 100th AMS Annual Meeting, 13–16 January, Boston, MA. **2020**

UNDERGRADUATE RESEARCH ASSISTANTS

Embry-Riddle Aeronautical University (14 total since 2014)

Knight, Desiree (2023–present); Siegel, Rachel (2023–present); Ennis, Kelsey (2022–2023); Kimes, McKenzie Piper (2023); Rosolino, Lynnlee (2021–2022, *honors*); Chavez, Ivan (2019–2021); Bejete, Endri (2020–2021); McAllister, Caitlyn (2020–2021); Stephens, Aaron (2020–2021); Russell, Matthew (2019–2020); Flannery, Austen (2018–2019); Klepatzki, Jonathon (2016–2019); Cloutier-Bisbee, Shealynn (2016–2018); Dillahunt, David (2014–2016); Raghavendra, Ajay (2014–2016, *honors*)

University of Kansas (5 total during 2011–2012)

Gerber, Brianne (2011–2012); Kelly, Cailee (2011–2012, *honors*); Robinson, Michael (2011–2012);
Sanderson, Matthew (2011–2012); White, Aaron (2011–2012)

SKILLS

ArcGIS; AWIPS2; GEMPAK; IDV; Metpy; MS Office; NCL; Python 3; R & R Studio

MEMBERSHIPS

American Meteorological Society; American Geophysical Union; National Weather Association