

Mace L. Bentley

Professor & Fulbright Scholar
School of Integrated Sciences
James Madison University
Harrisonburg, VA 22807 USA
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Educational Background

Ph.D.	1999	The University of Georgia Department of Geography Doctoral Minor: Physical Oceanography
M.A.	1995	University of Nebraska-Lincoln Department of Geography
B.A./B.S.	1991	Northern Kentucky University Department of Geography/Department of Mathematics and Statistics (Double Major)

Experience

Academic

Professor	2015-present	James Madison University
Faculty Affiliate	2020-present	JMU, Asian Studies
Program Director	2019-2021	JMU, Geographic Science
Associate Professor	2013-2015	JMU
Contributing Editor	2008-present	<i>Weatherwise</i> Magazine
Associate Professor	2006-2013	Northern Illinois University
Faculty Associate	2008-2013	NIU, Center SE Asian Studies
Assistant Professor	2000-2006	NIU
Assistant Professor	1999-2000	Western Kentucky University
Assistant State Climatologist	1999-2000	WKU, Kentucky Climate Center

Professional

Forecast Meteorologist	1995	The Weather Channel Atlanta, GA
Quantitative Analyst	1991-1992	Aviation Planning Associates Cincinnati, OH
Research Climatologist	1988-1991	Weather Research and Communication Cincinnati, OH
Weather Intern	1988-1991	WLWT/WKRC-TV Cincinnati, OH

Research Profile

h-index: 17

i10-index: 20

Citations: 1,000+ (Google Scholar)

International Peer-Reviewed Articles (since 2010 listed; **bold text** indicates student authors)

Sae-Jung, J., Bentley, M., Gerken, T., and Z. Duan, 2024: Thermodynamic-Aerosol Relationships of Thunderstorm Environments in the Bangkok Metropolitan Region. *Earth Systems and Environment*, submitted.

Bentley, M. L., Gerken, T., Duan, Z., Bonsal, D., Way, H., **Szakai, E., Pham, M., Donaldson, H., and L. Griffith**, 2024: Toward Untangling Thunderstorm-Aerosol Relationships: An Observational Study of Regions Centered on Washington D.C. and Kansas City, MO. *Atmospheric Research*, <https://doi.org/10.1016/j.atmosres.2024.107402>.

Sae-Jung, J., Bentley, M., Duan, Z., and **E. Szakai**, 2024: Developing an Urban Thunderstorm Climatology for the Bangkok Metropolitan Region. *Singapore Journal of Tropical Geography*, <https://doi.org/10.1111/sjtg.12552>.

Bentley, M. L., Sae-Jung, J., **Kaminski, S., and C. Terry**, 2021: A spatiotemporal analysis of lightning in the Bangkok Metropolitan Region. *Asian Geographer*, <https://doi.org/10.1080/10225706.2021.2010579>.

Bentley, M. L., Sae-Jung, J., **Kaminski, S.**, and P. Kesavawong, 2020: Documenting the Expansion of Urban-augmented Heat in the Bangkok Metropolitan Region, 2000 - 2019. *Asian Geographer*, <https://doi.org/10.1080/10225706.2020.1745251>.

Bentley, M. L., **Riley, C. and E. Mazur**, 2018: A Winter Season Lightning Climatology for the Contiguous United States. *Meteorology and Atmospheric Physics*, <https://doi.org/10.1007/s00703-018-0641-2>.

Bentley, M. L., **Franks, J. R., Suranovic, K., Barbachem, B.**, Cooper, S. R. and D. Cannon, 2015: Lightning characteristics of derecho producing mesoscale convective systems. *Meteorology and Atmospheric Physics*, <https://doi.org/10.1007/s00703-015-0417-x>.

Chang, I., Bentley, M. L., and J. M. Shepherd, 2014: A global climatology of extreme rainfall rates in the inner core of intense tropical cyclones. *Physical Geography*, <https://doi.org/10.1080/02723646.2014.964353>.

Stallins, J. A., Carpenter, J., Bentley, M. L., Ashley, W. S., and J. A. Mulholland, 2012: Weekend-weekday aerosol variability and regional changes in cloud-to-ground lightning for an urban region: A conceptual model for the scaling of weekly weather signals. *Regional Environmental Change*, <https://doi.org/10.1007/s10113-012-0327-0>.

Ashley, W. S., Bentley, M. L. and J. A. Stallins, 2011: Urban-induced thunderstorm modification in the Southeast United States. *Climatic Change*, <https://doi.org/10.1007/s10584-011-0324-1>.

Bentley, M. L., Stallins, J. A. and W. S. Ashley, 2011: Synoptic environments favorable for urban convection in Atlanta, Georgia. *International Journal of Climatology*, <https://doi.org/10.1002/joc.2344>.

Bentley, M. L., Ashley, W. and J. A. Stallins, 2010: Climatological radar delineation of urban convection for Atlanta, Georgia. *International Journal of Climatology*, <https://doi.org/10.1002/joc.2020>.

20 additional peer-reviewed articles in 11 international journals: *The Bulletin of the American Meteorological Society*; *Climate Research*; *Climatic Change*; *Earth Interactions*; *International Journal of Climatology*; *Journal of Applied Geography*; *Journal of Hydrometeorology*; *Meteorological Applications*; *National Weather Digest*; *Physical Geography* and *Weather & Forecasting*. Plus, 10 additional articles and numerous book reviews written and published in *Weatherwise* magazine as a contributing editor.

Grants, Fellowships, and Leaves of Absence (*indicates awards with instructional component; competitively-funded, external grant awards totaling \$1,037,850)

National Science Foundation, Physical & Dynamic Meteorology, Characterization of Aerosol Effects within an Urban Lightning Climatology across a North American Climatic Gradient, lead-PI with Bonsal, D., Duan, Z., Gerken, T., and H. Way, 2021-2025, \$449,955.

College of Integrated Science and Engineering, James Madison University, Academic Leave Award, Urban GeoInformatics: Interdisciplinary Research Centered on the UN Sustainability Development Goals, Spring Semester, 2024.

*Office of the Provost, James Madison University, Faculty Senate Mini-Grant. "Cinematic Representation of Gender, Culture, and Identity in Film: A Focus on Asian Documentaries." K. Yurco, M. Khemthong, G. Murton, and M. Bentley. Spring 2022. \$4,928.

*Office of the Provost, James Madison University, Faculty Grant, Request for Student Support: Urban Climate Change: Impacts, Mitigation, and Sustainability A Multi-scaled Examination of the Bangkok Metropolitan Area, lead-PI with Khemthong, M. and H. Way, 2018, \$4,400.

*College of Integrated Science and Engineering, James Madison University, Faculty Development Grant, Urban Climate Change: Impacts, Mitigation, and Sustainability. An Examination of the Bangkok Metropolitan Area, lead-PI with Khemthong, M. and H. Way, 2018, \$4,005.

J. William Fulbright Foreign Scholarship Board, Bureau of Education and Cultural Affairs of the U.S. Department of State, and the Council for International Exchange of Scholars, Fulbright Specialist Grant, Climate Change: Science, Impacts, & Mitigation in SE Asia, Faculty of Agriculture, Kasetsart University, Bangkok, Thailand, 2014-2015, \$12,000.

*College of Integrated Science and Engineering, James Madison University, Faculty

Development Grant, Development of a Relational Database to Facilitate High-Resolution Analyses of Lightning Metrics and Distributions across the United States, 2014, \$1,800.

*4-VA mini grant, Virginia Governor's Higher Education Commission, Bringing an Understanding of Southeast Asia Environments & Hazards to Virginia, 2014, \$5,000.

Geospatial Technology Steering Committee, James Madison University, Spatial Research Faculty Mini Grant, Utilizing TRMM Multi-satellite Precipitation Analysis (TMPA) Data to Identify Spatial Distributions of Extreme Rainfall in Intense Tropical Cyclones, 2013, \$795.

*Office of Student Engagement and Experiential Learning, Northern Illinois University, Course Transformation Project, CTP Fellow, 2012-2013, \$12,000.

*Committee for the Improvement of Undergraduate Education, Northern Illinois University, Employing Emerging Technology to "Flip" the Classroom, 2012, \$3,500.

National Science Foundation, Geography & Spatial Sciences/Physical & Dynamic Meteorology, Climatological and Event-based Radar Delineation of UHI Convection for Urban Corridors within the Southeastern U.S., lead-PI with Ashley, W. S. and J. A. Stallins, 2008-2012, \$221,128.

Northern Illinois University, College of Liberal Arts and Sciences, Radar and Lightning Delineation of Urban-enhanced Thunderstorms for Atlanta, Georgia, sabbatical proposal, awarded, spring semester 2008.

Graduate Council Research and Artistry Grant, Northern Illinois University, Analysis of Thunderstorm Enhancement due to the Urban Heat Island of Atlanta, Georgia and its Associated Hazards, 2008, \$6,500.

National Science Foundation, Geography & Regional Science, Changes in the Frequency of Extreme Warm Season Surface Dewpoints in the Midwestern U.S.: Implications for Weather-related Hazards, lead-PI with Changnon, D. and J. A. Stallins, 2004-2007, \$100,000.

National Science Foundation, Geography & Regional Science, Complex Controls on the Distribution of Lightning Characteristics and Property Damage in an Urbanized Region, co-PI with J. A. Stallins, 2003-2007, \$180,000.

Conference Presentations (since 2010 listed; **bold text** indicates student authors)

Gerken, T., **Abbot, H., Lang, C.**, Bentley, M., Duan, Z., Bonsal, D., and H. Way, 2024: Validation and Sensitivity Testing of a Lightning Grouping Algorithm on Thunderstorm Climatologies. The 104th Annual Meeting of the American Meteorological Society, Baltimore, MD, January.

Griffith, L., Bentley, M., Bonsal, D., Gerken, T., Duan, Z., and H. Way, 2023: Exploring Patterns of Thunderstorm Initiation Using Cluster Analysis: A Case Study of the Washington D.C. Region. 78th Annual Meeting of the Southeastern Division of the AAG, Norfolk, VA, November.

Bentley, M. L., Duan, Z., Gerken, T., Bonsal, D., Way, H., **Szkal, E., Pham, M., Donaldson, H., Lang, C., Abbott, H.,** and **L. Wilczynski**, 2023: Using Geospatial Analysis to Reconstruct the Thunderstorm Climatology for the Washington DC Metropolitan Region. The 28th General Assembly of the International Union of Geodesy and Geophysics, Berlin, Germany, July.

Bentley, M. L., Duan, Z., Bonsal, D., Sae-Jung, J., and **Szkal, E.**, 2023: Using Geospatial Analysis to Reconstruct the Thunderstorm Climatology for the Bangkok Metropolitan Region. The 13th International Conference on Environmental and Agricultural Engineering, Bangkok, Thailand.

Pham, M., Szkal, E., Duan, Z., Bentley, M., Gerken, T., and D. Bonsal, 2023: A Parallel Spatiotemporal Clustering Algorithm with MPI in Analyzing Ground-lightning Dataset. ACM Capital Region Celebration of Women in Computing Annual Meeting, Richmond, VA, March.

Donaldson, H., Wilczynski, L., Szkal, E., Pham, M., Abbott, H., Lang, C., Bentley, M., Bonsal, D., Gerken, T., Duan, Z., and H. Way, 2023: Visualizing Urban Thunderstorms: A Data-Mining Approach to Analyzing Relationships with Atmospheric Conditions. American Association of Geographers, Annual Meeting, Denver, CO, March.

Bonsal, D., Bentley, M., Duan, Z., Gerken, T., Way, H., **Szkal, E., Donaldson, H., Wilczynski, L., Lang, C., Abbott, H.,** and **M. Pham**, 2023: Analysis of the Climatological Factors that Promote and Inhibit Thunderstorm Activity in the Washington, DC Region. American Association of Geographers, Annual Meeting, Denver, CO, March.

Gerken, T., Bentley, M. L., Bonsal, D., Duan, Z., Way, H., **Pham, M., Szkal, E., Tucker, A.,** and **Wilczynski, L.**, 2023: Impact of Urbanization on Thunderstorm Climatology - A Case Study of the Washington, DC Region. The 103rd Annual Meeting of the American Meteorological Society, Denver, CO, January.

Wilczynski, L., Szkal, E., Duan, Z., **Tucker, A.**, Bonsal, D., Bentley, M. L., Gerken, T., **Pham, M., Donaldson, H.,** and H. Way., 2023: Impact of Urbanization on Thunderstorm Climatology: A Case Study of the Kansas City Region. The 103rd Annual Meeting of the American Meteorological Society, Denver, CO, January.

Bentley, M. L., 2022: *Keynote Address: Impacts of Urbanization on Climate; A Case Study of the Bangkok Metropolitan Region.* Faculty of Liberal Arts, Thammasat University (LATU) 60th Anniversary National and International Conference, Thammasat University, Bangkok, Thailand, July.

Bonsal, D., **Tucker, A.**, Duan, Z., Bentley, M. L., Gerken, T., Way, H., **Szkal, E.**, and **Wilczynski, L.**, 2022: Visualization of Lightning for Documenting the Spatiotemporal Patterns of Thunderstorms in Washington, DC. American Association of Geographers, Annual Meeting, New York City, NY, March.

- Duan, Z., **Szkal, E., Phamm, M.**, Bentley, M. L., Gerken, T., Bonsal, D., Way, H., **Tucker, A.**, and **Wilczynski, L.**, 2022: Development of a Lightning Flash Clustering Algorithm to Identify Thunderstorm Events within the Washington, DC Metropolitan Area. ACM Capital Region Celebration of Women in Computing Annual Meeting, Washington, DC, March.
- Wilczynski, L., Szkal, E.**, Bentley, M. L., Duan, Z., **Phamm, M.**, Gerken, T., Bonsal, D., Way, H., and **Tucker, A.**, 2022: Development of a Lightning Grouping Algorithm for Thunderstorm Event Analysis in the Washington D.C. Region. Southern Appalachian Weather and Climate Workshop, March.
- Bentley, M. L. and **E. Mazur**, 2018: An Observational Investigation of Long-lived Bow Echo Produced Meteotsunamis in Lake Erie, USA. 2018 Global Conference on Engineering and Applied Science, Tokyo, Japan, July.
- Bentley, M. L. Stallins, J. A., **Burdick, K. M., Gibb, N.** and **C. Sonnenfeld**, 2016: Weekend-weekday geographic variability in cloud-to-ground lightning for the urban regions of Atlanta, GA and Nashville, TN, USA. International Conference on Geographies of Health and Living in Cities: Making Cities Healthy for All, Hong Kong, China, July.
- Miles, J., Bentley, M. L., **Gellings, J. M., McArdle, S. M.** and **P. D. White**, 2016: Offshore wind resource characterization using cross-calibrated, multi-platform ocean surface wind data along the East Coast of the United States. Offshore Energy and Storage Symposium and Industry Connector Event, Malta, June.
- Bentley, M. L. and J. A. Stallins, 2014: Identifying urban lightning augmentation using flash-defined thunderstorm tracks. National Council for Science and the Environment, Building Climate-Solutions Conference, Washington D. C., January.
- Bentley, M. L. and J. A. Stallins, 2012: Methodologies providing observational evidence of urban thunderstorm modification. Asia-Oceania Geosciences Society-AGU, Western Pacific Geophysics Joint Meeting, Singapore, August.
- Bentley, M. L., 2012: Bringing social engagement and development into the curriculum through emerging technology: A tropical environmental hazards approach. University-Community Engagement for Empowerment and Knowledge Creation Conference, Chiang Mai, Thailand, January.
- Chang, I.** and M. L. Bentley, 2011: Global oceanic rainfall extremes of intense tropical cyclones' inner regions from the TRMM multi-satellite precipitation analysis (TMPA) data. Fall Meeting, American Geophysical Union, San Francisco, CA, December.
- Ashley, W. S., M. L. Bentley, and J. A. Stallins, 2011: Urban augmentation of thunderstorm frequency and severity. 107th Annual Association of American Geographers Meeting, Seattle, WA, March.

Bentley, M. L., Ashley, W. S. and J. A. Stallins, 2011: Radar identification of urban-enhanced thunderstorm activity for Atlanta, Georgia, USA. Joint Urban Remote Sensing Event, Geoscience and Remote Sensing Society, Munich, Germany, April.

Ashley, W. S., M. L. Bentley, and J. A. Stallins, 2010: Do cities encourage thunderstorm formation and intensification? 25th Conference on Severe Local Storms, Denver, CO.

Bentley, M. L., Ashley, W. S. and J. A. Stallins, 2010: A climatology of urban augmented thunderstorms for cities in the Southeastern U.S. Western Pacific Geophysics Meeting, American Geophysical Union, Taipei, Taiwan.

Ashley, W. S., M. L. Bentley, and J. A. Stallins, 2010: Do cities encourage thunderstorm formation and intensification? The case of Atlanta, GA. 14th Annual NWA Severe Storms and Doppler Radar Conference, Des Moines, IA.

Ashley, W. S., M. L. Bentley, and J. A. Stallins, 2010: Radar and lightning delineation of urban-enhanced thunderstorms for Atlanta, Georgia. 22nd Conference on Climate Variability and Change, 90th AMS Meeting, Atlanta, GA.

20 additional conference presentations with 17 student co-authors presented in eight countries (Australia; China; France; Germany; Japan; Malta; Thailand; USA)

Advisor for Undergraduate Research Apprenticeship Projects, Independent Research Projects, Capstone Theses, Honors Theses, International Research Trips (since 2010 listed)

- Exploring patterns of thunderstorm initiation using cluster analysis: A case study of the Washington D.C. region, Lucie Griffith (2023-2024)
- Natural disaster communication: A comparative case study of major tsunamis in Japan and Indonesia, Mia Larsen (reader, 2022-2023)
- The relationship between economic status and water quality of Blacks Run Creek, Taylor Gryder (2022-2023)
- The impacts of coastally-trapped waves on the ocean state of the US West Coast, Leah Wilczynski (2022-2023)
- Visualization of lightning for documenting the spatiotemporal patterns of thunderstorms in Washington, DC., Allison Tucker, co-advisor with D. Bonsal (2021-2022)
- Urban climate change: An examination of lightning within and surrounding the Bangkok Metropolitan Area, Sara Kaminski (2019-2020)
- Lightning activity in the continental United States on an ENSO time scale, 2002- 2015, Tyler Gingrich (2019-2020)
- Identifying vulnerable urban populations in Bangkok, Thailand in the context of the urban heat island effect, Rebekah Everett (2018-2019)

- Lasting legacies of European colonization on the Brazilian political landscape: Environmental degradation as a catalyst for bilateral relations and economic gain, Jordan McCray (2018-2019)
- Urban climate change: impacts, mitigation, and sustainability; A multi-scaled examination of the Bangkok Metropolitan Area - 5-week field trip to Thailand, Rebekah Everett, Emily Lund, Chris Davidson, Katherine Stankard, co-advisor with M. Khemthong (2018)
- The impact of climate change on the urban poor. A case study of El Paso, TX, Whitney Ricker (2017-2018)
- An examination of derecho produced meteotsunamis in Lake Michigan, Elise Mazur (2016-2017)
- Vulnerability of Tampa Bay, Florida to storm surge and sea-level rise, Kara Chipiwalt, Hannah Smith, and Marcus Roe (2016-2017)
- An Examination of Tornado Warning Siren Coverage in Mississippi with Respect to Socio-economics, Daniel Katleman (2016-2017)
- A Winter-time Lightning Climatology for the United States, Collin Riley (2016-2017)
- Development of an Off-Shore Wind Climatology using CCMP data for Wind Energy, Sean McArdle, Preston White, Jon Gellings (2015-2016)
- Urban Lightning Augmentation Surrounding Nashville, TN, Kellie Burdick and Casey Sonnenfeld (2015-2016)
- A Climatology of Lightning Outbreaks Surrounding Nashville, TN, Nicholas Gibb (2015-2016)
- A Lightning Climatology of Derecho-Producing Mesoscale Convective Systems, John R. Franks and Katelyn Suranovic (2014-2015)
- Aquaponics For Triage and Emergency Response (A.F.T.E.R.), Emily Northup and Kellie Burdick (2014-2015)
- Driving Blind: Vehicular Accidents due to Weather-related Visibility Impairment, John Barmann & Doug Dziubla (2012)

Advisor for 10 additional undergraduate research projects including undergraduate research apprenticeships, independent research projects, capstone theses, and honors theses

Director of six master's theses/committee member of 11 additional master's theses

Courses Offered (*indicates courses created)

GEOG 105 Introduction to the Atmosphere (3 credit hours)
GEOG 200 Global Dimensions (3 credit hours)
GEOG 210 Physical Geography (4 credit hours)
GEOG 230 Spatial Thinking & Problem Solving (3 credit hours)
*GEOG 310 Environmental Issues: Urban Climates (3 credit hours)
GEOG 327 Climatology (3 credit hours)
*GEOG 329 Global Climate Change (3 credit hours)
*GEOG 330 Weather, Climate & Society (3 credit hours)
*GEOG 336 Environmental Hazards: A Focus on Southeast Asia (3 credit hours)
*GEOG 350 Special Topics: Climate & Society (3 credit hours)
*GEOG 350 Special Topics: Musical Geography of Protest (co-taught; 1 credit hour)
*GEOG 368 Climate Change: Science, Impacts, and Mitigation (3 credit hours)
*GEOG 408/508 Tropical Environmental Hazards (3 credit hours)
*GEOG 410/436 Geography & Film (3 credit hours)
*GEOG 430 Dynamics of the Atmosphere (3 credit hours)
GEOG 460/560 Remote Sensing of the Environment (3 credit hours)
*GEOG 470 Senior Seminar in Atmospheric Science (3 credit hours)
*GEOG 470 Senior Seminar in Critical Physical Geography (3 credit hours)
GEOG 498 Seminar in Severe Storms (3 credit hours)
MET 320 Synoptic Meteorology (4 credit hours)
MET 421/521 Advanced Synoptic Meteorology (4 credit hours)
MET 444/544 Mesoscale Meteorology (3 credit hours)

Professionally Significant Achievements (since 2010 listed)

Contributing Editor (2008-present), *Weatherwise* - The only magazine devoted to weather in the United States. Duties include: writing book reviews, fact-checking submissions, answering public feedback, writing popular articles, working with the Chief Editor in developing new story ideas

Board Member (nominated 2011 & 2013), International Association of Urban Climatology
- Nominated with support letters from the President of the American Meteorological Society to serve as one of ten board members

Course Transformation Fellow (2012-2013), Northern Illinois University
- One of seven faculty recognized University-wide

Manuscript Reviewer

*Urban Climate**
*Boundary Layer Meteorology**
*Atmospheric Research**
*Asian Geographer**
*Journal of Applied Meteorology & Climatology**
*International Journal of Climatology**
*Weather, Climate, and Society**
*Journal of Climate**
*Weather & Forecasting**

*Geophysical Research Letters**
*Journal of Geophysical Research: Atmospheres**
The Southeastern Geographer
*Physical Geography**
*Journal of Remote Sensing**
*Climate Research**

* Internationally-recognized journal

Grant reviewer for the National Science Foundation: Mesoscale Dynamics Group; Geography and Spatial Sciences and Physical and Dynamic Meteorology

Keith Runcom Travel Award, American Geophysical Union. Awarded to scientists presenting at the AGU/EGU/EGS Joint Assembly.

Memberships

European Geophysical Union
International Association of Urban Climatology
American Geophysical Union
Asia-Oceania Geosciences Society
Association of American Geographers