

Jamie L. Dyer

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EDUCATION

- Ph.D. Geography, University of Georgia, Athens, GA, 2005
- Graduate certificate in Atmospheric Science.
 - Dissertation: *Spatial and temporal trends in snow cover in North America and the relationships with streamflow and rapid ablation* (Dr. Thomas Mote, major professor).
- M.S. Geography, University of Georgia, Athens, GA, 2001
- Undergraduate certificate in Atmospheric Science.
 - Thesis: *Simulating the 1997 Red River floods utilizing a coupled snowpack and hydrologic model* (Dr. Thomas Mote, major professor).
- B.S. Physics, University of Georgia, Athens, GA, 1999
- A.S. Young Harris Junior College, Young Harris, GA, 1997

RESEARCH INTERESTS

Precipitation generation processes and patterns
Surface-atmosphere interactions
Surface hydrologic processes
Hydrologic and meteorologic applications of uncrewed aerial systems
Climatological extremes and environmental impacts
Numerical weather prediction (NWP)
Aviation weather hazards and prediction

PROFESSIONAL EXPERIENCE

Mississippi State University, Mississippi State, MS, Department of Geosciences

<i>Professor</i>	2017 - present
<i>Associate Professor</i>	2011 - 2017
<i>Assistant Professor</i>	2005- 2011

Northern Gulf Institute (NGI), Mississippi State, MS

<i>Associate Director</i>	2021 – present
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Mississippi State University, Mississippi State, MS, Office of the Provost and Executive Vice President
Interim Dean, Interdisciplinary Studies 2022 - present
Assistant VP Intern 2020 - 2022

Mississippi State University, Mississippi State, MS, Gulf Scholars Program (GSP), National Academies of Science, Engineering, and Medicine (NASEM)
Director 2023 - present

Maria-Curie Skłodowska University, Lublin, Poland, Faculty of Earth Science
Fulbright Scholar 2018
Visiting Professor 2015

National Weather Service, Southeast River Forecast Center, Peachtree City, GA
Hydrometeorologist (SCEP) 2001-2003

EarthCast Technologies, LP
Chief Science Officer 2020 – present

University of Georgia, Athens, GA, Department of Geography
Lecturer 2005
Teaching Assistant 2000-2001
Research Assistant 1999-2005

PROFESSIONAL SERVICE

University (Mississippi State University):

- Office of the Provost and Executive Vice President administrative intern (2020-2022)
 - o Health Science/Disparity Task Force (co-chair and liaison to Office of the Provost)
 - Member of follow-up Health Science Working Group (chaired by Dan Gadke).
 - o Data Science Task Force (co-chair and liaison to Office of the Provost)
 - Member of follow-up Data Science Working Group (chaired by Mimmo Parisi).
 - o Unmanned Vehicular Systems Task Force (chair and liaison to Office of the Provost)
 - Led successful application effort for inclusion of MSU in the FAA Unmanned Aircraft Systems – Collegiate Training Initiative (UAS-CTI).
 - o Quantum Information Science / Quantum Computing (QuTF) Task Force (chair and liaison to Office of the Provost)
- University promotion and tenure committee (2014 – 2020)
 - o Committee chair, 2018 – 2020
- College of Arts & Sciences promotion and tenure committee (2012 – 2015)
- College of Arts & Sciences faculty senate (2008 – 2009)

Departmental (Dept. of Geosciences, MSU):

- Meteorology team leader (2013 – 2019)
- Departmental promotion and tenure committee
 - o Committee chair, 2017 – 2020
- Job search committees:
 - o Search head for one tenure-track position

- Committee member on five tenure-track positions
- Committee member on two clinical faculty (non tenure-track) positions
- Administrative committees:
 - Distance learning oversight committee (2013 – 2017)
 - Budget committee (2015 – 2019)
 - Strategic Planning Committee (2018 – 2022)
- Administrative representative for UCAR membership (2016 – 2021)
 - Led effort for new membership application (2016)

External:

- Member of US Department of Energy Atmospheric Radiation Measurement (ARM) Uncrewed Aerial Systems (UAS) Advisory Group (2023 – present)
- Reviewer for Fulbright Core program: “Environmental Science: Satellite imagery analysis and atmospheric science” committee
- Member of faculty advisory panel for dynamic meteorology COMET initiative
- Session chair, 100th Annual Meeting, Association of American Geographers, Philadelphia, Pennsylvania (2004)
- Adjunct Faculty of Natural Sciences at North-West University, Potchefstroom Campus, South Africa
 - Served as external reviewer on two doctoral committees
- Book reviews:
 - Introductory-level meteorology laboratory text, “Exercises for Weather and Climate”, 6th Ed., by Greg Carbone, Prentice Hall publisher (2007)
 - “Hydroclimatology – Perspectives and Applications” by Marlyn L. Shelton, for Bulletin of the American Meteorological Society (2010)
- Manuscript reviews:
 - Advances in Geosciences
 - Atmosphere
 - Climate Research
 - Climatic Change
 - Frontiers of Earth Science
 - Geografiska Annaler
 - Hydrological Processes
 - International Journal of Climatology
 - Journal of Applied Meteorology and Climatology
 - Journal of Atmospheric and Oceanic Technology
 - Journal of Biometeorology
 - Journal of Climate
 - Journal of Geophysical Research – Atmospheres
 - Journal of Hydrometeorology
 - Journal of Operational Meteorology
 - Natural Hazards
 - Physical Geography
 - Polish Journal of Soil Science
 - Quaestiones Geographicae
 - Remote Sensing
 - Remote Sensing of Environment
 - Water
 - Water Resources Management
 - Water Resources Research
 - Weather and Forecasting
 - Zeitschrift fur Geomorphologie

- Proposal reviews:
 - o US Civilian Research and Development Foundation (CRDF) Cooperative Grants Program (CGP)
 - o National Institutes for Water Resources (NIWR)
 - o National Science Foundation (NSF)
 - o National Academies of Science, Engineering, and Medicine (NASEM) Gulf Research Program (GRP)
- Associate editor (physics), Polish Journal of Soil Sciences (2014 – 2020)
- Interviews for public media:
 - o Clarion Ledger, “Mississippi is seeing more tornadoes, hail and flooding. Here’s why” (2023)
 - o Starkville Daily News, “We dodged a bullet” (2008)
 - o The Commercial Dispatch, “Global Warming Talks” (2007)
 - o The Reflector, “Scientists Split on Global Climate” (2006)

COURSES AND TEACHING

Courses taught at Mississippi State University

On-campus (course number/name):

- GR 4623/6623 (Physical Meteorology)
- GR 4633/6633 (Statistical Climatology)
- GR 4733/6733 (Synoptic Meteorology)
- GR 4753/6753 (Satellite and Radar Meteorology)
- GR 4823/6823 (Dynamic Meteorology I)*
- GR 4933/6933 (Dynamic Meteorology II)*
- GR 4943/6943 (Tropical Meteorology)*
- GR 4553/6553 (Computer Methods in Meteorology)*
- GR 4990/6990 (Hurricane Dynamics)*
- GR 4563/6563 (Aviation Meteorology)*
- GR 8613 (Hydrometeorology)*
- GR 8990 (Visualization and Geoscience Data)*
- GR 8990 (Computer Applications in Atm. Science)*

Distance learning (course number/name):

- GR 4473/6473 (Numerical Weather Prediction)*
- GR 4823/6823 (Dynamic Meteorology I)*
- GR 4933/6933 (Dynamic Meteorology II)*
- GR 4943/6943 (Tropical Meteorology)*
- GR 8143 (Advanced Forecasting Techniques)*
- GR 8400 (Field Methods in Geoscience)
- GR 8573 (Research in Applied Meteorology)
- GR 8613 (Hydrometeorology)*

Directed Individual Study (DIS) and guest lectures

- GR 4000 (undergraduate DIS) – four sections
- GR 7000 (graduate DIS) – five sections
- GR 8990 (Research Readings) – guest lectures for five sections

Field Methods in Geoscience (GR 8400) field courses

- Yellowstone / Grand Tetons
- Upstate New York
- Southern California / Sierra Nevada
- Bahamas (San Salvador)

Instructional presentations at distance learning capstone conferences:
(Includes Broadcast Meteorology Program (BMP) and Applied Meteorology Program (AMP))

- Quantitative precipitation forecasting
- Numerical weather prediction

Courses taught at University of Maria-Curie Skłodowska

- Numerical Weather Prediction*
- Surface-Atmosphere Interactions*
- Tourism of the United States*

* Course developed as new offering.

ADVISING

Current students:

Undergrad: advisor [14]
Masters*: major professor [1] ; committee [3]
Doctoral: major professor [0] ; committee [1]

Graduate students (as major advisor):

Masters*:

	<i>Year</i>	<i>Student</i>	<i>Thesis title</i>
[16]	2025	Gordon, Kailah	Influence of Horizontal Grid Spacing in Numerical Weather Model Estimates of Clear Air Turbulence
[15]	2024	Kamba, Holley	Trends and Patterns in General Aviation Ceiling and Visibility Hazards over the Southern Appalachians
[14]	2023	O'Rourke, Mackenzie	Verification of the Localized Aviation MOS Program (LAMP) at Major US Airports for IFR Conditions
[13]	2023	Moore, Rose	Using Geostationary Lightning Mapper (GLM) Information to Estimate Convective Turbulence
[12]	2022	Kavanagh, Jolie	Defining Viable Solar Resource Locations in the Southeast United States Using the Satellite-Based GLASS Product
[11]	2019	Rosseau, Derek	Estimating Near-Surface Vertical Heat Fluxes Over Agricultural Areas Using a Small Unmanned Aerial Vehicle (sUAV)
[10]	2018	Raborn, Amanda	Identifying Patterns of Warm-Season Convective Initiation over Northwest Mississippi
[9]	2016	Churchill, William	Discrimination of the Formation and Intensity of Progressive Derechos Based on the Environmental Conditions of Simulated Events
[8]	2016	Van Horn, John	Potential of Unmanned Aerial Systems imagery relative to Landsat 8 imagery in the Lower Pearl River Basin
[7]	2014	Maldonado, Janice	Sea Breeze Frequency and Patterns along the US Gulf Coast
[6]	2013	Roop, Charles	Geographic Analysis of Tornadogenesis from Landfalling Tropical Cyclones in the State of Florida
[5]	2012	Battalio, Michael	Quantitative Analysis and 3D Visualization of NWP Data Using Quasi-Geostrophic Equations
[4]	2012	Schlotzhauer, David	Quantification of Storm Surge Probability Using Ensemble SLOSH Model Data
[3]	2010	Hyre, Heather	An Investigation of Warm-Season Cloud Patterns and Related Precipitation across Maryland and the Delmarva Peninsula

[2]	2009	Wood, Amy	Analysis of Extratropical Transition of Cyclones in the North Atlantic Ocean Using Geostationary Satellite Imagery
[1]	2008	Aylward, Ryan	Synoptic Conditions Necessary for Convective Extreme Precipitation Training Events

* Does not include graduate students in non-thesis track MS programs (either on-campus or distance learning), which number 60+

Doctoral:			
	Year	Student	Thesis title
[2]	2022	Lotfi, Hossein	Quantifying Numerical Weather and Surface Model Sensitivity to Land Use and Land Cover Changes
[1]	2017	Zarzar, Christopher	Assessment of Remotely Sensed Image Processing Techniques for Small Unmanned Aerial System (sUAS) Applications

PUBLICATIONS (PEER-REVIEWED)

- [-] Baker, B. H., A. G. Firth, A. Lucre, C. A. Aldridge, A. R. Omer, J. Dyer, and R. Kroger, 2023: A field-scale investigation of cover crop effects on runoff water quality in the mid-south. *Agriculture, Ecosystems and Environment*, submitted.
- [55] Russell, B. T., Y. Ding, W. K. Huang, and J. L. Dyer, 2023: Characterizing asymptotic dependence between a satellite precipitation product and station data in the Northern US Rocky Mountains via the tail dependence regression framework with a Gibbs posterior inference approach. *Environmetrics*, revised and resubmitted 5/23/2024.
- [54] Raczynski, K. and J. Dyer, 2024: Harmonic Oscillator Seasonal-Trend Model for Analyzing the Reoccurring Nature of Extreme Events. *SoftwareX*, accepted.
- [53] Raczynski, K. and J. Dyer, 2024: Utilizing waveform synthesis in harmonic oscillator seasonal-trend model for short- and long-term streamflow extremes modelling and forecasting. *Journal of Hydroinformatics*, **26** (4), 800-818, <https://doi.org/10.2166/hydro.2024.229>.
- [52] Sun, Y., J. Dyer, and J. Harris, 2024: Preparing teachers for teaching spatial computational thinking with Integrated Data Viewer visualization of weather data: A discipline-based perspective of computational thinking. *Journal of Educational Computing Research*, <https://doi.org/10.1177/07356331241226746>
- [51] Raczynski, K. and J. Dyer, 2023: Changes in streamflow drought and flood distribution over Poland using trend decomposition. *Acta Geophysica*, <https://doi.org/10.1007/s11600-023-01188-0>
- [50] Raczynski, K. and J. Dyer, 2023: Quantifying patterns of streamflow peaks over the Southeastern United States using a long-term retrospective dataset. *Hydrological Processes*, **37**(8), <http://dx.doi.org/10.1002/hyp.14960>.
- [49] Jia, Y., R. Lund, J. Kong, J. Dyer, J. Woody, and J. S. Marron, 2023: Trends in Northern Hemispheric snow presence. *J. Hydromet.*, **24**(6), 1137-1154. <https://doi.org/10.1175/JHM-D-22-0182.1>
- [48] Raczynski, K. and J. Dyer, 2023: Harmonic oscillator seasonal trend (HOST) model for hydrological drought pattern identification and analysis. *J. Hydro.*, **620** (B), 129514, <https://doi.org/10.1016/j.jhydrol.2023.129514>
- [47] Raczynski, K. and J. Dyer, 2022: Variability of annual and monthly streamflow droughts over the Southeastern United States. *Water*, **14**(23), 3848; <https://doi.org/10.3390/w14233848>
- [46] Mercer, A. and J. Dyer, 2022: A Southeastern United States warm season precipitation climatology using unsupervised learning. *Climate*, **11**(1), 2; <https://doi.org/10.3390/cli11010002>
- [45] Sankar, M. S., P. Dash, Y. Lu, X. Hu, A. Mercer, S. Wickramaratna, W. Beshah, L. Sanders, Z. Arslan, J. Dyer, and R. Moorhead, 2022: Seasonal changes of trace elements, nutrients, dissolved organic matter, and coastal acidification over the largest oyster reef in the Western Mississippi Sound, USA. *Environmental Monitoring and Assessment*, **195**, 175; <https://doi.org/10.1007/s10661-022-10719-z>

- [44] Mohammadi-Aragh, M. J., Y. Sun, J. L. Dyer, J. G. Harris, C. A. Robinson, M. Bai, J. K. Kavanagh, and K. E. Ball, 2022: Teaching computational thinking and spatial visualization in K-12 with 3D weather visualizations. *2022 IEEE Frontiers in Education Conference (FIE)*, Uppsala, Sweden, pp.1-6. <https://doi.org/10.1109/FIE56618.2022.9962465>
- [43] Raczynski, K. and J. Dyer, 2022: Development of an objective low flow identification method using breakpoint analysis. *Water*, **14**, 2212. <https://doi.org/10.3390/w14142212>
- [42] Dyer, J., A. Mercer, and K. Raczynski, 2022: Identifying spatial patterns of hydrologic drought over the southeast US using retrospective National Water Model simulations. *Water*, **14**(10), 1525. <https://doi.org/10.3390/w14101525>
- [41] Gabitov, R., A. Sadekov, J. Dyer, A. Perez-Huerta, H. Xu, and A. Migdisov, 2021: Sectoral and growth rate control on elemental uptake by individual calcite crystals. *Chemical Geology*, **505**, 120589. <https://doi.org/10.1016/j.chemgeo.2021.120589>
- [40] Raczynski, K. and J. Dyer, 2021: Simulating low flows over a heterogeneous landscape in southeastern Poland. *Hydrologic Processes*, **35**(8), e14322. <https://doi.org/10.1002/hyp.14322>
- [39] Delia, K, C. Haney, J. Dyer, and V. Paul, 2021: Spatial analysis of a Chesapeake Bay sub-watershed: How land use and precipitation patterns impact water quality in the James River. *Water*, **13** (11), 1592. <https://doi.org/10.3390/w13111592>
- [38] Woody, J., Y. Xu, J. Dyer, R. Lund, and H. A. Priyadarshani, 2021: A statistical analysis of daily snow depth trends in North America. *Atmosphere*, **12**, 820. <https://doi.org/10.3390/atmos12070820>
- [37] Mercer, A. and J. Dyer, 2021: Identification of dominant warm-season latent heat flux patterns in the lower Mississippi River alluvial valley. *Procedia Comp. Sci.*, **185**, 1-8. <https://doi.org/10.1016/j.procs.2021.05.001>
- [36] Raczynski, K. and J. Dyer, 2020: Multi-annual and seasonal variability of low flow river conditions in southeastern Poland. *Hydrological Sciences Journal*, <https://doi.org/10.1080/02626667.2020.1826491>
- [35] Dyer, J. L. and J. R. Rigby, 2020: Assessing the sensitivity of lower-atmospheric characteristics to agricultural land use classification over the lower Mississippi River alluvial valley. *Theoretical and Applied Climatology*, <https://doi.org/10.1007/s00704-020-03318-w>
- [34] Dyer, J. L. R. Moorhead, and L. Hathcock, 2020: Identification and analysis of microscale hydrologic flood impacts using unmanned aerial systems. *Remote Sensing*, **12**(10), 1549. <https://doi.org/10.3390/rs12101549>
- [33] Zarzar, C., P. Dash, J. Dyer, L. Hathcock, and R. Moorhead, 2020: Development of a simplified radiometric calibration framework for water-based and rapid deployment unmanned aerial system (UAS) operations. *Drones*, **4**(17), <https://doi.org/10.3390/drones4020017>
- [32] Zarzar, C., J. Dyer, 2019: Influence of synoptic scale airmass conditions on seasonal precipitation patterns over North Carolina. *Atmosphere*, **10** (10), 624. <https://doi.org/10.3390/atmos10100624>
- [31] Kociuba, W., G. Janicki, and J. L. Dyer, 2019: Contemporary transformation of a gravel-bed proglacial river under rapid small valley glacier recession. *Geomorphology*, **328**, 79-92. <https://doi.org/10.1016/j.geomorph.2018.12.008>
- [30] Zarzar, C., H. Hosseiny, R. Siddique, M. Gomez, V. Smith, A. Mejia, and J. Dyer, 2018: A hydraulic multi-model ensemble framework for visualizing flood inundation uncertainty. *Journal of the American Water Resources Association*, <https://doi.org/10.1111/1752-1688.12656>
- [29] Krzyżewska, A. and J. Dyer, 2018: The August 2015 mega-heatwave in Poland in the context of past events. *Weather*, <https://doi.org/10.1002/wea.3244>
- [28] Krzyżewska, A. and J. Dyer, 2018: Local-scale analysis of temperature patterns over Poland during heatwave events. *Theoretical and Applied Climatology*. Published online: 20 January 2018. <https://doi.org/10.1007/s00704-017-2364-6>
- [27] Omer, A., J. Dyer, J. Czarniecki, R. Kroger, and P. Allen, 2018: Development of a water budget for tailwater recovery systems. *J. Irrig. Drain Eng.*, **144** (6): 05018001. [https://doi.org/10.1061/\(ASCE\)IR.1943-4774.0001302](https://doi.org/10.1061/(ASCE)IR.1943-4774.0001302)

- [26] Russell, B. T. and J. Dyer, 2017: Investigating the link between PM_{2.5} and atmospheric profile variables via penalized functional quantile regression. *Environmental and Ecological Statistics*, **24**, 363-384. <https://doi.org/10.1007/s10651-017-0374-2>
- [25] Battalio, M. and J. Dyer, 2017: The minimum length scale for evaluating QG-omega using high resolution numerical model data. *Monthly Weather Review*, <https://doi.org/10.1175/MWR-D-16-0241.1>
- [24] Czarnecki, J. P., A. R. Omer, and J. L. Dyer, 2017: Quantifying capture and use of tailwater recovery systems. *J. Irrig. Drain Eng.*, **143** (1), 05016010. [https://doi.org/10.1061/\(ASCE\)IR.1943-4774.0001124](https://doi.org/10.1061/(ASCE)IR.1943-4774.0001124)
- [23] Dyer, J., P. Amburn, R. Dumais, J. Raby, J. Smith, and C. Zarzar, 2016: Defining the influence of horizontal grid spacing on ensemble uncertainty within a regional modeling framework. *Weather and Forecasting*, **31** (6), 1997-2017. <https://doi.org/10.1175/WAF-D-16-0030.1>
- [22] Woody, J., Y. Wang, and J. L. Dyer, 2016: Application of a multivariate storage model to quantify trends in seasonally frozen soil. *Open Geosci.*, **8**(1), 310-322. <https://doi.org/10.1515/geo-2016-0036>
- [21] Dyer, J. L., A. Mercer, J. R. Rigby, and A. Grimes, 2015: Identification of surface recharge zones in the lower Mississippi River alluvial aquifer utilizing high-resolution precipitation estimates. *J. Hydrology*, **531** (2), 360-369. <https://doi.org/10.1016/j.jhydrol.2015.07.016>
- [20] Mercer, A. and J. Dyer, 2014: A new scheme for daily peak wind gust prediction using machine learning. *Procedia Comp Sci*, **36**, 593-598. <https://doi.org/10.1016/j.procs.2014.09.059>
- [19] Janicki, G., J. Rodzik, L. Chabudziński, L. Franczak, M. Siłuch, K. Stępniewski, J. Dyer, G. Kołodziej, and E. Maciejewska, 2013: Monitoring of fluvial transport in small upland catchments – methods and preliminary results. *Annales UMCS*, **69** (B). <https://doi.org/10.2478/v10066-012-0037-0>
- [18] Mercer, A., J. Dyer, and S. Zhang, 2013: Warm-season thermodynamically-driven rainfall prediction with support vector machines. *Procedia Comp. Sci.*, **20**, 128-133. <https://doi.org/10.1016/j.procs.2013.09.250>
- [17] Dyer, J. L. and A. Mercer, 2013: Assessment of rainfall variability and trends over the lower Mississippi River alluvial valley using NEXRAD precipitation estimates. *Journal of Hydrometeorology*, **14** (6), 1826-1843. <https://doi.org/10.1175/JHM-D-12-0163.1>
- [16] Sherman-Morris, K., Brown, M.E., Dyer, J.L., McNeal, K.S., Rodgers, J.C., 2013: Teachers' Geoscience Career Knowledge and Implications for Enhancing Diversity in the Geosciences. *Journal of Geoscience Education*, **61**, 326-333. <https://doi.org/10.5408/11-282.1>
- [15] Mercer, A.E. and J.L. Dyer, 2012: Physical assessment of hurricane rapid intensification using kernel principal component analysis. *NWA Newsletter*, **12-2**, 2.
- [14] Sherman-Morris, K., Rodgers, J.C., McNeal, K.S., Brown, M.E., Dyer, J.L., 2012: Professional Development Strategies to Enhance Diversity in the Geosciences, *The Science Educator*, **21**(2), 31-38.
- [13] Dyer, J. L., 2011: Analysis of a warm-season convective rainfall event along an abrupt land use / land cover boundary in northwest Mississippi. *Journal of Hydrometeorology*, **12** (5), 1007-1023. <https://doi.org/10.1175/2011JHM1326.1>
- [12] Sanyal, J., S. Zhang, J. Dyer, A. Mercer, P. Amburn, and R. J. Moorhead, 2010: Noodles: A tool for visualization of numerical weather model ensemble uncertainty. *IEEE Transactions on Visualization and Computer Graphics*, November 2010, 1421-1430. <https://doi.org/10.1109/TVCG.2010.181>
- [11] Dyer, J. L. and E. P. Amburn, 2010: Desktop visualization of meteorological data using ParaView. *Kitware Source*, **14**, 7-10.
- [10] Aylward, R.P. and J.L. Dyer, 2010: Synoptic environments associated with the training of convective cells. *Weather and Forecasting*, **25**, 466-484. <https://doi.org/10.1175/2009WAF2222275.1>
- [9] Dyer, J. L., 2009: Evaluation of Surface and Radar Estimated Precipitation Data Sources over the Lower Mississippi River Alluvial Plain. *Physical Geography*, **30**, 430-452.
- [8] Dyer, J. L., 2008: Basin-scale precipitation analysis for southeast US watersheds using high-resolution radar precipitation estimates. *Physical Geography*, **29**, 320-340. <https://doi.org/10.2747/0272-3646.29.4.320>

- [7] Dyer, J., 2008: Snow depth and streamflow relationships in large North American watersheds. *J. Geophys. Res.*, **113**, D18113, <https://doi.org/10.1029/2008JD010031>
- [6] Sanyal, J., P. Amburn, S. Zhang, J. Dyer, P. J. Fitzpatrick, and R. J. Moorhead II, 2008: User Experience of Hurricane Visualization in an Immersive 3D Environment. *Lecture Notes in Computer Science*, Springer-Verlag, ISVC (1) 2008: 867-878. https://doi.org/10.1007/978-3-540-89639-5_83
- [5] Dyer, J. L. and T. L. Mote, 2007: Trends in snow ablation over North America. *International Journal of Climatology*, **27** (6), 739-748. <https://doi.org/10.1002/joc.1426>
- [4] Dyer, J. L., and T. L. Mote, 2006: Spatial variability and trends in observed snow depth over North America. *Geophysical Research Letters*, **33**, L16503, <https://doi.org/10.1029/2006GL027258>
- [3] Scott, H. M., D. J. Stewart, and J. L. Dyer, 2006: TETRASAT: A program for the population analysis of allotetraploid microsatellite data. *Molecular Ecology Notes*. <https://doi.org/10.1111/j.1471-8286.2006.01345.x>
- [2] Dyer, J.L. and R. Garza, 2004: A Comparison of Precipitation Estimation Techniques over Lake Okeechobee, Florida. *Weather and Forecasting*, **19**, 1029-1043. <https://doi.org/10.1175/824.1>
- [1] Dyer, J.L. and T.L. Mote, 2002: Role of Energy Budget Components on Snow Ablation from a Mid-Latitude Prairie Snowpack. *Polar Geography*, **26**, 4, 87-115. <http://dx.doi.org/10.1080/789610133>

CONFERENCE PROCEEDINGS (PEER-REVIEWED)

- [18] Sun, Y, J. Dyer, J. Harris, and J. Mohammadi-Aragh, J. Nuatomue, and C. Robinson, 2023: Measuring spatial computational thinking: IDV visualization of weather data. *2023 Hawaii University International Conferences STEM/STEAM and Education Conference*. June 7-8, 2023, Honolulu, Hawaii.
- [17] Sun, Y, J. Dyer, J. Harris, and J. Mohammadi-Aragh, J. Nuatomue, and C. Robinson, 2023: Teaching and learning spatial computational thinking with IDV visualization of weather data: An epistemic cognition perspective. *2023 Hawaii University International Conferences STEM/STEAM and Education Conference*. June 7-8, 2023, Honolulu, Hawaii.
- [16] Sun, Y, J. Dyer, J. Harris, and J. Mohammadi-Aragh, 2022: Preparing teachers to teach spatial computational thinking with IDV visualization of weather data. *2022 Hawaii University International Conferences STEM/STEAM and Education Conference*. June 8-10, 2022, Honolulu, Hawaii.
- [15] Harris, J. G., J. Dyer, G. Turnage, and A. Skarke, 2022: Initial benefits and outcomes of experiential learning program in complex field sciences. *2022 Hawaii University International Conferences STEM/STEAM and Education Conference*. June 8-10, 2022, Honolulu, Hawaii.
- [14] Sun, Y., P. Ko, J. Dyer, J. Harris, and J. Mohammadi-Aragh, 2021: Preparing teachers to teach computational thinking with 3D weather data visualization. *2021 Hawaii University International Conferences. Arts. Humanities, Social Sciences, STEM/STEAM and Education*. June 9-11, 2021, Honolulu, Hawaii.
- [13] Ko, P, J. Mohammadi-Aragh, Y. Sun, J. Dyer, 2021: Work-in-Progress: Incorporating Computational Thinking Instruction into K-12 using 3D Weather. *American Society for Engineering Education (ASEE) Annual Conference & Exposition*, Long Beach, California, July 26-29, 2021. Paper ID #33308.
- [12] Dyer, J. L., L. Wasson, and R. Moorhead II, 2016: Invited Presentation: Boundary layer measurements over land use/cover discontinuities using a small UAS. ASE-07ATIO.ATM-09. Characterization of the Atmospheric Environment using UAS, *American Institute of Aeronautics and Astronautics (AIAA) Aviation and Aeronautics Forum and Exposition*, 13-17 June 2016, Washington, D.C. (invited, paper and presentation)

- [11] Anreddy, S., S. Zhang, A. Mercer, J. Dyer, and J. E. Swan, 2015: Visual scalability of spatial ensemble uncertainty. *IEEE Symposium on Visual Analytics Science and Technology*, 25-30 October, Chicago, IL.
- [10] van der Zwaag, John, S. Zhang, R. Moorhead, D. Welch, and J. Dyer, 2015: Visualizing Uncertainty of River Model Ensembles. *Conference on Visualization and Data Analysis*, February 2015, San Francisco.
- [9] Rodzik, J., G. Janicki, Ł. Chabudziński, Ł. Frznczak, M. Siłuch, K. Stepniewski, J. Dyer, G. Kołodziej, and E. Maciejewska, 2013: Monitoring program of sediment flux in small upland catchments, SE Poland. *8th International Conference on Geomorphology (AIG)*, August 27-31, 2013, Paris, France, p. 717.
- [8] Janicki, G., J. Rodzik, Ł. Chabudziński, Ł. Frznczak, M. Siłuch, K. Stepniewski, J. Dyer, and G. Kołodziej, 2012: Research program on the rainfall-runoff relationship in small upland catchments (SE Poland). *Studies of Hydrological Processes in Research Basins: Current Challenges and Prospects*, 14th Biennial Conference ERB, September 17-20, 2012, St. Petersburg, Russia, pp. 218-221.
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- [6] Amburn, P., M. Berberich, R. J. Moorhead II, J. Dyer, and M. Brill, 2009: Geospatial visualization using hardware accelerated real-time volume rendering. *Proceedings: IEEE Oceans*, Biloxi, MS.
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- [4] Lim, E., Q. Xiao, J. Sun, P.J. Fitzpatrick, Y. Li, and J.L. Dyer, 2008: The impact of Doppler radar data on rainfall forecast: a case study of a convective rainband event in Mississippi Delta using WRF 3D-Var. *88th Annual Meeting of the American Meteorological Society*, New Orleans, LA.
- [3] Cooke, W.; Anantharaj, V.; Wax, C.; Choi, J.; Grala, K.; Jolly, M.; Dixon, G.P.; Dyer, J.; Evans, D.L.; Goodrich, G.B. 2007. Integrating climatic and fuels information into National Fire Risk Decision Support Tools. *The fire environment--innovations, management, and policy; conference proceedings*. U.S. Department of Agriculture, Destin, FL.
- [2] Dyer, J.L. and R. Garza, 2003: A Comparison of Precipitation Estimation Techniques over Lake Okechobee, Florida. *Proceedings of the 2003 Georgia Water Resources Conference*, University of Georgia, Athens, Georgia.
- [1] Mote, T.L., A.J. Grundstein, and J.L. Dyer, 2000: A comparison of modeled, remotely sensed, and measured snow water equivalent in the northern Great Plains. Preprints, *12th Conference on Applied Climatology*. Amer. Meteor. Soc., paper 1A.2.

CONFERENCE PRESENTATIONS

- [98] Dyer, J. and J. Harris, 2024: Lessons in experiential learning from the MSU-SEAS program. *2024 Gulf Scholars Program Conference*, April 11-12, Rice University, Houston, TX.
- [97] Buys, D. C. Jackson, R Boddie-Forbes, J. Dyer, B. Fountain, G. Jackson, M. Ralston, and S. Seal, 2024: Mississippi State University leverages land-grant mission to pursue age-friendly status. *Gerontological Society of America*.
- [96] Dyer, J., L. Hathcock, H. Kamba, and R. Moorhead, 2024: Detecting water features over diverse land surfaces using uncrewed aerial system (UAS) imagery and the normalized difference water index (NDWI). *104th Annual Meeting, American Meteorological Society*, Baltimore, MD.
- [95] Krzysztof, R. and J. Dyer, 2024: Detection of extreme streamflow reoccurrence patterns over the Southeast United States. *104th Annual Meeting, American Meteorological Society*, Baltimore, MD.
- [94] Mercer, A. and J. Dyer, 2024: Identifying Dominant Southeastern United States Warm-Season Precipitation Features from Numerical Weather Prediction Forecasts. *104th Annual Meeting, American Meteorological Society*, Baltimore, MD.

- [93] Buys, D. C. Jackson, R Boddie-Forbes, J. Dyer, B. Fountain, G. Jackson, M. Ralston, and S. Seal, 2024: Mississippi State University leverages land-grant mission to pursue age-friendly status. *Gerontological Society of America*.
- [92] Raczynski, K. and J. Dyer, 2023: Assessment of Improved HOST Model for Analysis of Hydrologic Drought. *2023 Alabama Water Resources Conference*, Sept. 6-8, 2023, Orange Beach, AL.
- [91] Raczynski, K. and J. Dyer, 2023: HOST model framework for analysis of hydrologic drought patterns over the Southeast US. *2023 Mississippi Water Resources Conference*, March 28-30, 2023, Starkville, MS.
- [90] Raczynski, K. and J. Dyer, 2023: Development of a harmonic model for temporal assessment of hydrologic drought. *103rd Annual Meeting, American Meteorological Society, 37th Conference on Hydrology*, Denver, CO.
- [89] Mercer, A. and J. Dyer, 2023: Support vector regression applied to Southeastern US warm season rainfall prediction. *103rd Annual Meeting, American Meteorological Society, 22nd Conference on Artificial Intelligence for Environmental Science*, Denver, CO.
- [88] Krzyzewska, A., J. Dyer, and C. Fuhrmann, 2022: [In Polish] Humid Heat Waves. Weather and Climate – Past, Present and Future, Jagiellonian University Department of Climatology, Cracow, Poland, 20-23 September 2022.
- [87] Raczyński, R. and J. L. Dyer, 2022: Multiannual variability of low flow events over the Southeastern United States. *2022 Mississippi Water Resources Conference*, April 12-14, 2022, Starkville, MS.
- [86] Dyer, J. L., A. Mercer, and K. Raczyński, 2022: Analysis of local-scale hydrologic drought over the southeast United States using retrospective National Water Model data. *102nd Annual Meeting, American Meteorological Society, 36th Conference on Hydrology*, Houston, TX.
- [85] Mercer, A. E. and J. Dyer, 2022: Sensitivity of warm-season precipitation forecasts to variations in land use/land cover characterization. *102nd Annual Meeting, American Meteorological Society, 36th Conference on Hydrology*, Houston, TX.
- [84] Sun, Y., J. Dyer, J. Mohammadi-Aragh, J. Harris, M. Bai, and P. Ko, 2021: Preparing teachers to teach Computational Thinking with 3D weather data visualization. *Hawaii University International Conferences (HUIC), 2021 STEM/STEAM & Education Conference*, June 9-11, 2021, Honolulu, Hawaii.
- [83] Ko, P., Mohammadi-Aragh, M. J., Harris, J. G., Dyer, J. L., and Sun, Y., 2021, July. Work-in-Progress: Incorporating Computational Thinking Instruction into K-12 Using 3D Weather. Paper presented at 2021 ASEE Virtual Annual Conference Content Access, Virtual Conference. July, 2021 <https://peer.asee.org/38216>,
- [82] Sun, Y., J. Dyer, J. Mohammadi-Aragh, J. Harris, M. Bai, and P. Ko, 2021: Using IDV to Promote Computational Thinking in Atmospheric Science Learning. *Association for Educational Communications & Technology (AECT), Chicago, IL*, November 2021.
- [81] Sun, Y., J. Dyer, J. Mohammadi-Aragh, J. Harris, M. Bai, and P. Ko, 2021: 3D Weather Data Visualization with IDV: Computational Thinking Contextualized in Atmospheric Science. *Association for Educational Communications & Technology (AECT), Chicago, IL*, November 2021.
- [80] Mercer, A. and J. Dyer, 2021: Identification of dominant warm-season latent heat flux patterns in the lower Mississippi River alluvial valley. *Complex Adaptive Systems*.
- [79] Wiley, J., J. Dyer, and A. Mercer, 2021: Evaluating the sensitivity of simulated river discharge to lake configuration and parameterization over the Chattahoochee River watershed. *101st Annual Meeting, American Meteorological Society, 35th Conference on Hydrology*, New Orleans, LA.
- [78] Lotfi, H. and J. Dyer, 2021: Machine learning applications to improve Noah-MP land surface model output. *101st Annual Meeting, American Meteorological Society, 35th Conference on Hydrology*, New Orleans, LA.
- [77] Dyer, J. and R. Moorhead, 2020: Identification and analysis of microscale hydrologic impacts and hazards using Unmanned Aerial Systems. *100th Annual Meeting, American Meteorological Society, 36th Conference on Environmental Information Processing Technologies*, Boston, MA.

- [76] Lotfi, H. and J. Dyer, 2020: Improving mesoscale weather simulations through updated land use and vegetation information. *100th Annual Meeting, American Meteorological Society, Robert Dickinson Symposium*, Boston, MA.
- [75] B. Baker, C.A. Aldridge, A. Lucore, J. Dyer, R. Kroger, 2019: Effects of cover crops on edge-of-field runoff in row-crop production systems. Southern Region Water Conference, July 23-25, 2019, College Station, TX.
- [74] Moorhead, R. S. van Cooten, L. Hathcock, J. Dyer, D. Rosseau, A. Wingo, K. Cantrell, B. Alexander, J. Walker, and P. Hall, 2019: Using a group 3 UAS for flood forecasting and model verification. Federal Users UAS Workshop, NASA Ames Research Center, Moffett Field, Mountain View, CA, May 14-16, 2019.
- [73] Grote, T., G. S. Springer, S. A. Thurkettle, and J. Dyer, 2019: Floods and paleofloods in the Greenbrier River basin, West Virginia. *Geological Society of America, Northeastern Section 54th Annual Meeting*, Portland by the Bay, NH, March 19, 2019.
- [72] Rosseau, D. J. Dyer, and L. Wasson, 2019: Estimating near-surface vertical heat fluxes over agricultural areas using weather sensors on unmanned aerial vehicles. *99th Annual Meeting, American Meteorological Society*, Phoenix, AZ.
- [71] Dyer, J. L., L. Wasson, and R. J. Moorhead, 2018: Observations of the diurnal evolution of the lower boundary layer in a subtropical environment using a small unmanned aerial system (sUAS). *98th Annual Meeting, American Meteorological Society*, Austin, TX.
- [70] Gabitov, R. I., A. Sadekov, J. Dyer, and H. Xu, 2018: Visualization of elemental uptake by individual calcite crystals. *Goldschmidt2018 abstract*.
- [69] Dyer, J. L., 2017: Small UAS with meteorological sensors (SUMS). *2nd Annual NOAA Emerging Technologies Workshop*, College Park, MD, August 22-23, 2017.
- [68] Dyer, J. L. and L. Wasson, 2017: Assessment of lower boundary layer characteristics during pre- and post-harvest conditions using unmanned aerial systems. *97th Annual Meeting, American Meteorological Society*, Seattle, WA.
- [67] Grote, T. and J. L. Dyer, 2017: Preliminary assessment of the hydrometeorology and hydrology of the June 2016 Greenbrier River flooding, West Virginia. *97th Annual Meeting, American Meteorological Society*, Seattle, WA.
- [66] Zarzar, C. M. and J. L. Dyer, 2017: Quantifying and visualizing uncertainty in flood inundation forecasts. *97th Annual Meeting, American Meteorological Society*, Seattle, WA.
- [65] Battalio, J. M. and J. L. Dyer, 2017: The minimum horizontal length scale when evaluating quasi-geostrophic omega. *97th Annual Meeting, American Meteorological Society*, Seattle, WA.
- [64] Zarzar, C. M., P. Dash, J. L. Dyer, and R. J. Moorhead, 2017: Quantifying atmospheric effects on unmanned aerial system imagery. *97th Annual Meeting, American Meteorological Society*, Seattle, WA.
- [63] Elmore, M. A., A. E. Mercer, J. L. Dyer, C. Fuhrmann, and M. E. Brown, 2017: Sensitivity of physical parameterization schemes to stochastic initial conditions in WRF tornado outbreak simulations. *97th Annual Meeting, American Meteorological Society*, Seattle, WA.
- [62] Zarzar, C.M., J. Dyer, P. Dash, R. Moorhead, and G. Turnage, 2016: Understanding coastal changes using high resolution imagery from unmanned aerial systems. *2016 State of the Coast Conference*, New Orleans, LA, June 1-3, 2016.
- [61] Zarzar, C.M., P. Dash, R. Moorhead, J. Dyer, and, G. Turnage, 2016: Defining surface land cover features using high resolution imagery from unmanned aerial systems. *2016 Gulf of Mexico Oil Spill and Ecosystem Science Conference*, Tampa, FL.
- [60] Zarzar, C.M., J. Dyer, P. Dash, R. Moorhead, and G. Turnage, 2016: Defining surface land cover features using high resolution unmanned aerial system imagery. *14th Annual Southeast Severe Storms Symposium*, Starkville, MS.
- [59] Zarzar, C. M., P. Dash, J. Dyer, G. Turnage, and R. J. Moorhead II, 2016: Defining surface land cover features using high resolution imagery from unmanned aerial systems. *30th Conference on Hydrology, 96th Annual Meeting, American Meteorological Society*, New Orleans, LA.

- [58] Dyer, J. L., L. Wasson, and R. J. Moorhead II, 2016: Exploring the use of unmanned aerial systems for local-scale boundary layer observations in a coastal environment. *18th Symposium on Meteorological Observation and Instrumentation, 96th Annual Meeting, American Meteorological Society, New Orleans, LA.*
- [57] Thead, E. A., A. E. Mercer, and J. L. Dyer, 2016: Impacts of microphysics and PBL physics schemes on tornado outbreak prediction. *23rd Conference on Probability and Statistics in the Atmospheric Sciences, 96th Annual Meeting, American Meteorological Society, New Orleans, LA.*
- [56] Thead, E. A., A. E. Mercer, and J. L. Dyer, 2016: Impacts of physics parameterization and data assimilation on synoptic feature modeling in severe weather outbreaks. *23rd Conference on Probability and Statistics in the Atmospheric Sciences, 96th Annual Meeting, American Meteorological Society, New Orleans, LA.*
- [55] Mercer, A. E., J. Dyer, and S. Zhang, 2016: Compositing parameterization ensemble simulations of static stability in east coast winter storms using kernel principal component analysis. *14th Conference on Artificial and Computational Intelligence and its Applications to Environmental Sciences, 96th Annual Meeting, American Meteorological Society, New Orleans, LA.*
- [54] Dyer, J. L., 2016: Experiences and opportunities in atmospheric observation using unmanned aerial systems. *15th Annual Student Conference, 96th Annual Meeting, American Meteorological Society, New Orleans, LA.*
- [53] Byrd, J.D., M. Brown, J. Dyer, and D.G. Thompson, 2016: Watchdog sprayer doesn't reliably measure wind parameters. *2016 Annual Meeting, Weed Science Society of America, San Juan, Puerto Rico.*
- [52] Zarzar, C.M., P. Dash, J. Dyer, G. Turnage, and R. Moorhead, 2015: Application of Unmanned Aerial Systems (UAS) in Aquatic Plant Identification. *MidSouth Aquatic Plant Management Society 34th Annual Meeting, Mobile, AL, September 2015.*
- [51] Zarzar, C., P. Dash, J. Dyer, and L. Hathcock, 2015: Development of spectral-based classification schemes using unmanned aerial system imagery. *2015 Annual Meeting, Association of American Geographers, Chicago, IL.*
- [50] Van Horn, J., P. Dash, J. Dyer, and L. Hathcock, 2015: Potential of unmanned aerial systems imagery relative to Landsat imagery. *2015 Annual Meeting, Association of American Geographers, Chicago, IL.*
- [49] Byrd, J.D., M. Brown, J. Dyer, and D.G. Thompson, 2015: Watchdog sprayer doesn't reliably measure wind parameters. *National Roadside Vegetation Management Association, Roanoke, VA.*
- [48] Maguigan, M. A., J. C. Rodgers III and J. L. Dyer, 2014: Controls on primary productivity in southern Appalachian wetlands. *First Annual Joint Aquatic Sciences Meeting, May 2014, Portland, OR.*
- [47] Dyer, J., 2014: An assessment of grid resolution on numerical simulations of precipitation. *28th Conference on Hydrology, 95th Annual Meeting, American Meteorological Society, Atlanta, GA.*
- [46] Mercer, A. and J. Dyer, 2014: Formulating model output statistics using support vector regression. *12th Conference on Artificial and Computational Intelligence and its Applications to the Environmental Sciences, 95th Annual Meeting, American Meteorological Society, Atlanta, GA.*
- [45] Thead, E., A. Mercer, and J. Dyer, 2014: Assimilation of POES radiance observations and NCEP conventional observations in GSI for tornado outbreak prediction. *22th Conference on Numerical Weather Prediction, 95th Annual Meeting, American Meteorological Society, Atlanta, GA.*
- [44] Dyer, J. and A. Mercer, 2013: Influence of spatial precipitation patterns on seasonal recharge in the lower Mississippi River alluvial aquifer. *Mississippi Water Resources Conference, Jackson, MS.*
- [43] Dyer, J.L. and A. E. Mercer, 2013: Assessment of warm-season rainfall variability and trends over the lower Mississippi River alluvial valley. *27th Conference on Hydrology, 94th Annual Meeting, American Meteorological Society, Austin, TX.*
- [42] Baldwin, W. and J.L. Dyer, 2013: Quantifying precipitation depth using cloud-to-ground lightning strikes in the southeast US. *6th Conference on the Meteorological Application of Lightning Data, 94th Annual Meeting, American Meteorological Society, Austin, TX.*

- [41] Mercer, A.E. and J.L. Dyer, 2013: Assessing numerical weather prediction uncertainty in warm-season rainfall ensemble simulations. *Symposium on the Role of Statistical Methods in Weather and Climate Prediction, 94th Annual Meeting, American Meteorological Society*, Austin, TX.
- [40] Dyer, J.L., 2012: Visual analytics for assessment and interpretation of simulated river flooding. *Northern Gulf Institute Annual Conference*, Stennis Space Center, MS..
- [39] Dyer, J.L., 2012: Precipitation patterns over the lower Mississippi River alluvial plain. *Professional Soil Classifiers Association of Mississippi (PSCAM) Annual Meeting*, Indianola, MS.
- [38] Dyer, J.L., 2012: Determining the optimal parameter scheme for numerical prediction of warm-season rainfall in the southeast US. *26th Conference on Hydrology, 93rd Annual Meeting, American Meteorological Society*, New Orleans, LA.
- [37] Baldwin, W. and J.L. Dyer, 2012: An analysis of the seasonal, spatiotemporal cloud-to-ground lightning-precipitation relationship in the southeast US. *26th Conference on Hydrology, 93rd Annual Meeting, American Meteorological Society*, New Orleans, LA.
- [36] Battalio, J.M. and J.L. Dyer, 2012: Quantitative analysis and 3D visualization of NWP data using quasi-geostrophic equations. *28th Conference on Interactive Information Processing Systems, 93rd Annual Meeting, American Meteorological Society*, New Orleans, LA.
- [35] Schlotzhauer, D.S. and J.L. Dyer, 2012: Calculation of hurricane storm surge probability using SLOSH data. *26th Conference on Hydrology, 93rd Annual Meeting, American Meteorological Society*, New Orleans, LA.
- [34] Sherman-Morris, K., B. Bell, M. Brown, J. Dyer, K. McNeal, and J. Rodgers, 2012. Minority student knowledge of and interest in geoscience careers. *21st Symposium on Education, 93rd Annual Meeting, American Meteorological Society*, New Orleans, LA.
- [33] Battalio, M. and J. Dyer, 2011: Three-dimensional visualization of divergence and vorticity. *36th Annual Meeting, National Weather Association*, Birmingham, AL.
- [32] Mercer, A. and J. Dyer, 2011: Physical assessment of hurricane rapid intensification using kernel principal component analysis. *36th Annual Meeting, National Weather Association*, Birmingham, AL.
- [31] Baldwin, W. M. and J. Dyer, 2011: An analysis of cloud-to-ground lightning and precipitation in convective events in the lower Mississippi River Valley. *2011 Annual Meeting, Association of American Geographers*, Seattle, WA.
- [30] Sherman-Morris, K., K. McNeal, M. Brown, J. Rodgers, J. Dyer, 2011: Teaching and learning about geoscience: A survey of Mississippi science teachers. *2011 Annual Meeting, Association of American Geographers*, Seattle, WA.
- [29] Mercer, A., and J. Dyer, 2011: Identification of Synoptic-Scale Hurricane Intensification Factors Using Advanced Statistics. *Northern Gulf Institute Annual Conference*, Mobile, AL.
- [28] Sanyal, J., S. Zhang, P. Amburn, J. Dyer, A. Mercer, and R. Moorhead, 2011: Uncertainty visualization of weather ensembles. *Northern Gulf Institute Annual Conference*, Mobile, AL.
- [27] Mercer, A. E., and J. Dyer, 2011: Physical Assessment of Hurricane Rapid Intensification using Kernel Principal Component Analysis, *36th Annual Meeting, National Weather Association*, Birmingham, AL.
- [26] Dyer, J.L., P. Amburn, D. Reed, and D. Welch, 2011: Utility of 2D/3D visualization methods in analyzing and disseminating flood information. *92nd Annual Meeting, American Meteorological Society*, Seattle, WA.
- [25] Sanyal, J., S. Zhang, P. Amburn, J. Dyer, J. van der Zwaag, D. Irby, and R. J. Moorhead,, 2011: FloodViz – An Ensemble Enabled Tool for River Flood and Inundation Mapping, *IEEE Visweek 2011*. Providence, RI.
- [24] Sanyal, J., S. Zhang, J. Dyer, A. Mercer, P. Amburn, and R. J. Moorhead, 2010: Noodles: A tool for visualization of numerical weather model ensemble uncertainty. *IEEE Visweek 2010*. Salt Lake City, UT.
- [23] Sanyal, J., P. Amburn, J. Dyer, A. Mercer, R. Moorhead, and S. Zhang, 2010: Uncertainty visualization of ensemble weather forecasts. *Bays and Bayous Symposium*, Mobile, AL.

- [22] Dyer, J.L., 2010: Effect of land cover boundaries on warm-season precipitation generation in northwest Mississippi. *2010 Annual Conference, Mississippi Water Resources Association*, Bay St. Louis, MS.
- [21] Sanyal, J., S. Zhang, J. Dyer, A. Mercer, P. Amburn, and R.J. Moorhead, 2010: Visualizing uncertainty of WRF parameter ensembles. *Northern Gulf Institute Annual Meeting*, Mobile, AL.
- [20] Amburn, P., J. Dyer, R. Moorhead, S. Zhang, D. Irby, J. van der Zwaag, J. Sanyal, D. Reed, J. Grascchel, D. Welch, and D. Ramirez, 2010: FloodViz: Visual analytics for assessment and interpretation of simulated river flooding. *Northern Gulf Institute Annual Meeting*, Mobile, AL.
- [19] Dyer, J.L., 2010: Four-dimensional visualization and analysis of convective rainfall generation along an abrupt land use / land cover boundary in northwest Mississippi. *91st Annual Meeting / 24th Conference on Hydrology, American Meteorological Society*, Atlanta, GA.
- [18] Dyer, J.L., 2009: Influences of land surface characteristics on precipitation over the lower Mississippi River alluvial plain. *2009 Annual Conference, Mississippi Water Resources Association*, Tunica, MS.
- [17] Berberich, M., P. Amburn, R. Moorhead, J. Dyer, and M. Brill, 2009: HurricaneVis – Geospatial visualization using hardware accelerated real-time volume rendering. *Eurographics / IEEE-VGTC Symposium on Visualization*.
- [16] Dyer, J.L., 2009: Comparison of multi-sensor precipitation estimates over the lower Mississippi River alluvial plain. *90th Annual Meeting / 23rd Conference on Hydrology, American Meteorological Society*, Phoenix, AZ.
- [15] Carlson, G. S., C. E. Konrad II, and J. Dyer, 2009: Spatial and temporal patterns of summer season precipitation across the Carolina coastal region. *105th Annual Meeting, Association of American Geographers*, Las Vegas, Nevada.
- [14] Johnston, J. G., B. L. Kirkland, and J. Dyer, 2008: A quantitative analysis of the effectiveness of directed discovery teaching methods and weekly quizzes in a standardized introductory earth science laboratory course. *2008 Meeting of the Geological Society of America (GSA)*, Houston, Texas.
- [13] Dyer, J. L., 2007: Rainfall analysis over southeast US watersheds using high resolution radar precipitation estimates. *10th Annual Meeting, The Commission for Water Sustainability, International Geographical Union (IGU)*, Asheville, North Carolina.
- [12] Dyer, J. L., 2007: Evaluation and comparison of current precipitation data sources over northwest Mississippi. *103rd Annual Meeting, Association of American Geographers*, San Francisco, California.
- [11] Lim, E., Q. Xiao, J. Sun, P.J. Fitzpatrick, Y. Li, J.L. Dyer, and D.M. Barker, 2007: The impact of Doppler radar data on rainfall forecast: a case study of a convective rainband event in Mississippi Delta using WRF 3D-Var. *22nd Conference on Weather Analysis and Forecasting/18th Conference on Numerical Weather Prediction*, Park City, Utah.
- [10] Fitzpatrick, P. J., Q. Xiao, J. Sun, E. Lim, C. M. Hill, Y. Li, and J. L. Dyer, 2006: The impact of assimilating radar and SCAN data on a WRF simulation of a Mississippi Delta squall line. *87th Annual Meeting, American Meteorological Society*, San Antonio, Texas.
- [9] Mote, T.L., J.L. Dyer, A.J. Grundstein, D.A. Robinson, and D.J. Leathers, 2005: Evaluation of new snow depth and mass data sets for North America. *15th Conference on Applied Climatology, 86th Annual Meeting, American Meteorological Society*.
- [8] Garza and J.L. Dyer, 2004: Water Level Data in the St. Johns River Due to Hurricane Charley. Hydrologic Program Managers Conference, New Orleans, Louisiana.
- [7] Dyer, J.L. and T.L. Mote, 2004: Spatial variability and patterns of snow cover over North America. *100th Annual Meeting, Association of American Geographers*, Philadelphia, Pennsylvania.
- [6] Sylvestre, J., A. Momo, J. Dyer, and R. C. Garza, 2004: National Weather Service tools for dam break analysis and presentation of results: A case study for the Manatee Dam in Florida. ASDSO Southeast Regional Conference, Norfolk, Virginia.
- [5] Durkee, J.D., T.L. Mote, W.S. Ashley, and J.L. Dyer, 2003: The precipitation efficiency of warm-season mesoscale convective complexes in the United States. *28th Annual Meeting of the National Weather Association*, Jacksonville, FL.
- [4] Ashley, W. S., M. L. Bentley, T. L. Mote, and J. L. Dyer, 2003: A preliminary investigation into derecho families. *28th Annual Meeting of the National Weather Association*, Jacksonville, FL.

- [3] Dyer, J.L., 2003: The Distribution of Tropical Storm and Hurricane Precipitation in the Southeast U.S. *2nd Annual Meeting, Southeast Severe Storms Symposium*, Starkville, Mississippi.
- [2] Dyer, J.L. and T.L. Mote, 2002: Using SNTHERM to Simulate the Extreme Snow Melt Event that led to the 1997 Red River Floods. *59th Annual Meeting, Eastern Snow Conference*, Stowe, Vermont.
- [1] Dyer, J.L. and T.L. Mote, 2002: Using a Complex Snowpack Energy and Mass Balance Model to Simulate the Extreme Snow Melt Event that Led to the 1997 Red River Floods. *98th Annual Meeting, Association of American Geographers*, Los Angeles, California.

INVITED PRESENTATIONS

- [17] Dyer, J.L., 2023: Assessment, Identification, and Analysis of Hydrological Processes in the Southeast USA. *American Society of Civil Engineers – Environmental & Water Resources Institute, Watershed Management Technical Committee* monthly meeting. May 8, 2023. Virtual presentation.
- [16] Dyer, J.L. and A. Mercer, 2021: HPC Applications in Tropical Cyclone Forecasting. *Dell Technologies HPC Community Event*, Nov. 10, 2021. Virtual presentation.
- [15] Dyer, J.L., 2021: Climate at the Local Scale: Connections between the surface and the atmosphere. Research Seminar Series, Department of Wildlife, Fisheries, and Aquaculture, MSU. March 23, 2021, Mississippi State, MS.
- [14] Dyer, J. L., 2019: Exploring career options in the field of meteorology. Invited panelist, Southeast Severe Storms Symposium, March 24, 2019, Mississippi State, MS.
- [13] Dyer, J. L., 2018: Let's do It Together: Climate Talk. Invited panelist, MSU Office of Sustainability, October 16, 2018, Mississippi State, MS.
- [12] Dyer, J. L., 2017: The local climate: A quick overview and what to look forward to. Noxubee County Cattleman's Association, August 8, 2017, Macon, MS.
- [11] Dyer, J. L., 2017: Drought... It happened last summer. Is it happening now? Oktibbeha County Cattleman's Association, April 18, 2017, Mississippi State, MS.
- [10] Dyer, J. L., 2017: Panel speaker on Climate Change. The Future of Water: Regional Collaboration on Shared Climate, Coastlines, and Watersheds, SEC Academic Conference, March 27-28, 2017, Starkville, MS.
- [9] Dyer, J. L., 2016: Precipitation? Just a Theory... Oktibbeha County Agriculture Club, MSU Extension Office, Starkville, MS, November 3, 2016.
- [8] Dyer, J. L., 2013: Global Warming – Is it Real? What Causes It? What If Anything Can We Do About It?, Panel discussion member, MSU Maroon Edition Global Warming event, Mississippi State, MS, November 14, 2013
- [7] Dyer, J. L., 2013: An Overview of Precipitation Over the Lower Mississippi River Alluvial Valley: Sources, patterns, and Surface Interactions. USDA National Sedimentation Laboratory, November 15, 2013
- [6] Dyer, J.L., 2011: Precipitation over the lower Mississippi River alluvial valley: measurement, analysis, and applications. Invited speaker, *Water for Fish and Farmers, YMD Joint Water Management District*, Stoneville, MS.
- [5] Dyer, J.L., 2011: Warm season rainfall in northwest Mississippi. Invited speaker, *Water and Watersheds Working Group*, Mississippi State University, Starkville, MS.
- [4] Dyer, J. L. and P. Amburn, 2010: 4D visualization techniques for efficient analysis and examination of NWP model output. Army Research Laboratory (ARL), White Sands Missile Range (WSMR), White Sands, NM, May 24, 2010
- [3] Dyer, J. L., 2010: Climate change to visualization: Now you see it, now you don't. GRI Monthly Seminar Series, Mississippi State, MS, March, 2010
- [2] Dyer, J. L., 2010: Analysis of Surface Influences on Localized Convection and Precipitation. University of Marie Curie Sklodowska, Lublin, Poland, May 11, 2010
- [1] Dyer, J. L., 2010: 3D Visualization and Analysis of Tropical and Extratropical Cyclones. University of Marie Curie Sklodowska, Lublin, Poland, May 13, 2010

FUNDED PROJECTS

National Academies of Sciences, Engineering, and Medicine (NASEM) Gulf Research Program (GRP)

Mississippi State University [PI]

- Title: “Designing for Resiliency: Building leaders for the Gulf Coast”
- Amount awarded: \$474,974
- Project length: 9/1/2023 – 8/31/2027
- Collaborators: Brian Williams (co-PI), Kenya Cistrunk (co-PI), James Giesen (co-PI), Jonathan Harris (senior personnel), Bimal Balakrishnan (senior personnel), Joe Fratesi (senior personnel), John Poros (senior personnel), Anastasia Elder (senior personnel)
- Credit: 70%

National Science Foundation (NSF)

Mississippi State University [co-PI]

- Title: “RII Track-2 FEC: An interdisciplinary program for research, education, and outreach on climate change and adaptive resilience in the Yazoo – Mississippi Delta”
- Amount awarded: \$3,999,169
- Project length: 8/1/2023 – 7/31/2027
- Collaborators: Shrinidhi Ambinakudige (PI), Brian Williams (co-PI), Christy Hyman (co-PI), Fikriyah Winata (co-PI), Renee Clary (co-PI), Jameese Sims (co-PI), K. Raja Reddy (co-PI)
- Credit: 10%

National Oceanic and Atmospheric Administration (NOAA)

Mississippi State University [PI]

- Title: “Improving Flood Inundation Mapping Using UAS-Based Optical Imagery”
- Amount awarded: \$591,582
- Project length: 8/1/2021 – 7/31/2023
- Collaborators: Robert Moorhead (co-PI)
- Credit: 70%

National Science Foundation (NSF)

Mississippi State University [co-PI]

- Title: “Integrating Computational Science Practice, Weather Data Analysis, and 3D Visualization in the Secondary Earth and Environmental Science Curriculum”
- Amount awarded: \$1,632,209
- Project length: 1/1/2020 – 12/31/2022
- Collaborators: Yan Sun (PI), Jean Mohammadi-Aragh (co-PI), Jonathan Harris (co-PI)
- Credit: 25%

National Oceanic and Atmospheric Administration (NOAA)

Mississippi State University [PI]

- Title: “Developing New Capabilities and Research Applications for the National Water Model Over the Southeastern US”
- Amount awarded: \$1,477,676
- Project length: 9/1/2019 – 8/31/2021 (extended through 8/31/2023)
- Collaborators: Andrew Mercer (co-PI)
- Credit: 70%

Schillig Special Teaching Projects Program

Mississippi State University [PI].

- Title: “Applications of Small Unmanned Aerial Vehicles (sUAV) in the Geosciences”
- Amount awarded: \$2,900
- Project length: 05/01/2018 – 04/30/2019
- Credit: 100%

National Oceanic and Atmospheric Administration (NOAA) / Northern Gulf Institute (NGI)

Mississippi State University [co-PI]

- Title: “Sensing hazards with operational unmanned technology for the river forecasting centers (SHOUT4Rivers), phase 2”
- Amount awarded: \$1,600,000
- Project length: 10/1/2017 – 6/30/2020
- Collaborators: Robert Moorhead (PI)
- Credit: 30%

National Oceanic and Atmospheric Administration (NOAA) / Northern Gulf Institute (NGI)

Mississippi State University [co-PI]

- Title: “Sensing hazards with operational unmanned technology for the river forecasting centers (SHOUT4Rivers), phase 1”
- Amount awarded: \$1,191,101
- Project length: 5/1/2014 – 6/30/2017
- Collaborators: Robert Moorhead (PI)
- Credit: 30%

US Department of Agriculture (USDA) Agricultural Research Service (ARS)

Mississippi State University [PI]

- Title: “Assessment and development of hydro-meteorological technologies for long-term monitoring in Goodwin Creek experimental watershed”
- Amount awarded: \$127,075.33 (through eight individual awards)
- Project length: 8/1/2014 – 6/30/2018
- Credit: 100%

Department of Defense (DoD) Army Research Laboratory (ARL), BAA Section 3.5.2

Mississippi State University [PI]

- Title: “Atmospheric modeling and decision aids: Field-based numerical weather simulations and analysis support tools”
- Amount awarded: \$146,000
- Project length: 6/30/2014 – 12/31/2015
- Collaborators: Philip Amburn (contractor/project scientist)
- Credit: 100%

Mississippi Department of Transportation

Mississippi State University [co-PI]

- Title: “Evaluation of the watchdog weather station to reduce drift from MDOT spray trucks”
- Amount awarded: \$49,696.00
- Project length: 10/1/2013 – 9/30/2014
- Collaborators: John Byrd (PI)

Mississippi Water Resources Research Institute (MWRRI)

Mississippi State University [PI]

- Title: “Identification of recharge zones in the lower Mississippi River alluvial aquifer using isotopic characterization of precipitation and groundwater”
- Amount awarded: \$61,815.00

- Project length: 1 year (3/1/2013 – 2/28/2014)
- Collaborators: J.R. Rigby (co-PI)

Mississippi Water Resources Research Institute (MWRRI)
Mississippi State University [PI]

- Title: “Analysis of Precipitation Variability and Related Groundwater Patterns over the Lower Mississippi River Alluvial Valley”
- Amount awarded: \$62,422.00
- Project length: 1 year (3/1/2012 – 2/28/2013)
- Collaborators: Andrew Mercer (co-PI)

National Science Foundation (NSF)
Mississippi State University [co-PI]

- Title: “Quantification and visualization of ensemble uncertainty”
- Amount awarded: \$475,174.00
- Project length: 3 years (Aug. 2011 – July 2014)
- Collaborators: Song Zhang (PI), J. Edward Swan II (co-PI), Andrew Mercer (co-PI), Justin Shows (co-PI)

Polish National Science Center

University of Marie Curie-Skłodowska / Mississippi State University [co-PI]

- Title: “Rainstorm prediction and mathematical modeling of their environmental and social-economical effects”
- Amount awarded: \$196,600 PLN (złoty) [~\$49,150 US]
- Project length: 30 months (3/2011 – 9/2013)
- Collaborators: Grzegorz Janicki (PI), Jan Rodzik (co-PI), Marcin Siłuch (co-PI), Łukasz Chabudziński (co-PI), Łukasz Frznczak (co-PI), Justyna Pastwa (co-PI)

National Oceanic and Atmospheric Administration (NOAA) / Northern Gulf Institute (NGI)
Mississippi State University [co-PI]

- Title: “Visual analytics for assessment and interpretation of simulated river flooding”
- Amount awarded: \$500,000.00
- Project length: 2 years (1/1/2010 – 12/31/2012)
- Collaborators: Phil Amburn (PI), Robert Moorhead (co-PI)

National Science Foundation (NSF), Opportunities for Enhancing Diversity in the Geosciences (OEDG)
Mississippi State University [co-PI]

- Title: “Fueling the geosciences educational pipeline: The development of a K-12 network to support minority participation”
- Amount awarded: \$39,828.00
- Project length: 1 year (10/1/2009 – 9/31/2010)
- Collaborators: Kathy Sherman-Morris (PI), Karen McNeal (co-PI), Mike Brown (co-PI), John Rodgers (co-PI)

Mississippi Water Resources Research Institute (MWRRI)
Mississippi State University [PI]

- Title: “Influences of Land surface / Land Use Characteristics on Precipitation Patterns over the Lower Mississippi Alluvial Plain”
- Amount awarded: \$34,138.00
- Project length: 1 year (3/1/2009 – 2/28/2010)

Mississippi Water Resources Research Institute (MWRRI)

Mississippi State University [PI]

- Title: "Multi-scale Evaluation and Analysis of Precipitation Patterns over the Mississippi Delta"
- Amount awarded: \$54,884.00
- Project length: 1 year (3/1/2008 – 2/28/2009)

Schillig Special Teaching Projects Program

Mississippi State University [PI].

- Title: "Surface Energy Budget Calculations Using Micrometeorological Instrumentation"
- Amount awarded: \$2,982.00
 - o Funds used for purchase of meteorological equipment for use in classroom demonstrations and exercises

National Oceanic and Atmospheric Administration (NOAA)

Engineering Resource Center, Mississippi State University, 2006 [Research associate]

- Title: "Simulation of a squall line through the Mississippi Delta by assimilating radar data and SCAN mesonet data into the WRF model"
- Amount paid: \$10,825.99
- Principal investigator: Pat Fitzpatrick

National Aeronautics and Space Administration (NASA)

Mississippi State University [Research associate]

- Title: "Integrating climatic and fuels data into national fire risk decision-support tools"
- Amount paid: \$16,000
- Principal investigator: Bill Cooke

PROFESSIONAL MEMBERSHIPS

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| - Member, American Meteorological Society | 1999 |
| - Member, American Geophysical Union | 2004 |
| - Member, International Geographical Union | 2007 |
| - Member, Association of American Geographers | 2001 |
| - Associate member, Sigma Xi Scientific Research Society | 2002 |
| - Phi Kappa Phi Honor Society | 2001 |

PROFESSIONAL DEVELOPMENT

- FAA Unmanned Aerial General (Part 107) certification (May 31, 2018 – present)
- MM5 (Mesoscale Model v.5) Workshop, Boulder, Colorado (June, 2000)
- Operational use and development of the National Weather Service River Forecast System (NWSRFS) (2001)
- Operational use of the AWIPS computer system (2001)
- Teaching workshop, "Effective Teaching for Graduate Students and Early Career Faculty", University of Georgia (2004)

HONORS, AWARDS AND CERTIFICATIONS

- Member, Fulbright Specialists Program, 2015-present

- Geosystems Research Institute (GRI) research fellow
- Northern Gulf Institute (NGI) research fellow
- MSU State Pride Award (2010)
- Certified Sedimentation and Erosion Control Specialist, Clarke County, GA