Curriculum Vitae

NAME: Jamie L. Dyer

ADDRESS: Department of Geosciences
Mississippi State University
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Mississippi State, MS 39762-5448
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jamie.dyer@msstate.edu

EDUCATION:

Ph.D. Geography, University of Georgia, Athens, GA, 2005
- Dissertation: *Spatial and temporal trends in snow cover in North America and the relationships with streamflow and rapid ablation* (Dr. Thomas Mote, major professor).
- Graduate certificate in Atmospheric Science.

M.S. Geography, University of Georgia, Athens, GA, 2001
- 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
- Emphasis on theoretical mechanics and kinetics.

A.S. Young Harris Junior College, Young Harris, GA, 1997

RESEARCH INTERESTS:

Precipitation generation and patterns, tropical meteorology, surface-atmosphere interactions, numerical weather prediction, meteorological data visualization.

PROFESSIONAL EXPERIENCE:

Mississippi State University, Starkville, MS, Department of Geosciences.
Associate Professor 2011 - present
Assistant Professor 2005- 2011

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

University of Georgia, Athens, GA, Department of Geography, Spring, 2005.
Lecturer

- GEOG 1112: *Introduction to Weather and Forecasting*

University of Georgia, Athens, GA, Climatology Research Laboratory, 2001-2005.
Research Assistant

- Worked under grant, "A Hybrid Approach for Evaluating and Predicting Interactions between the Seasonal Snow Pack and the Atmosphere." National Aeronautics and Space Administration, GCIP program.

National Weather Service, Southeast River Forecast Center, Peachtree City, GA, 2001-2003.
SCEP Hydrologist

University of Georgia, Athens, GA, Department of Geography, Fall 2000-2001.
Teaching Assistant

- GEOG 1111L: *Introduction to Physical Geography Laboratory*
- GEOG 1112L: *Introduction to Weather and Forecasting Laboratory*
- GEOG 3120L: *Weather Analysis and Forecasting*

University of Georgia, Athens, GA, Climatology Research Laboratory, 1999-2001.
Research Assistant

- Worked under grant, "Evaluation of Snow Water Equivalent across Grasslands Regions", National Aeronautics and Space Administration, Office of Hydrology.

PUBLICATIONS:

Dyer, J. L., A. Mercer, and A. Grimes, 2015: Identification of surface recharge zones in the lower Mississippi River alluvial aquifer utilizing high-resolution precipitation estimates. *J. Hydrology*, in press.

Mercer, A., J. Dyer, 2014: A new scheme for daily peak wind gust prediction using machine learning. *Procedia Comp Sci*, **36**, 593-598.

Thead, E., A. Mercer, and J. Dyer, and S. Zhang, 2014: Assimilation of POES radiance observations and NCEP conventional observations in GSI for tornado outbreak prediction. *Weather and Forecasting*, in revision.

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). DOI: 10.2478/v10066-012-0037-0.

Mercer, A., J. Dyer, and S. Zhang, 2013: Warm-season thermodynamically-driven rainfall prediction with support vector machines. *Procedia Comp. Sci.*, **20**, 128-133.

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.

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.

Mercer, A.E. and J.L. Dyer, 2012: Physical assessment of hurricane rapid intensification using kernel principal component analysis. *NWA Newsletter*, **12-2**, 2.

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.

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.

Sanyal, J., P. Amburn, K. Wu, S. Zhang, J. Dyer, P. Fitzpatrick, and R. Moorhead, 2010: On immersive virtual environments facilitating hurricane modeling and analysis. *Computers and Geosciences*, accepted pending revisions.

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.

Dyer, J. L. and E. P. Amburn, 2010: Desktop visualization of meteorological data using ParaView. *Kitware Source*, **14**, 7-10.

Aylward, R.P. and J.L. Dyer, 2010: Synoptic environments associated with the training of convective cells. *Weather and Forecasting*, **25**, 466-484.

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.

Dyer, J. L., 2008: Basin-scale precipitation analysis for southeast US watersheds using high-resolution radar precipitation estimates. *Physical Geography*, **29**, 320-340. DOI: 10.2747/0272-3646.29.4.320.

Dyer, J., 2008: Snow depth and streamflow relationships in large North American watersheds. *J. Geophys. Res.*, **113**, D18113, doi:10.1029/2008JD010031.

Dyer, J. L. and T. L. Mote, 2007: Trends in snow ablation over North America. *International Journal of Climatology*, **27** (6), 739-748.
Published online 10 October 2006 in Wiley InterScience (www.interscience.wiley.com) DOI: 10.1002/joc.1426

Dyer, J. L., and T. L. Mote, 2006: Spatial variability and trends in observed snow depth over North America. *Geophysical Research Letters*, **33**, L16503, doi:10.1029/2006GL027258.

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*. DOI: 10.1111/j.1471-8286.2006.01345.x

Dyer, J.L. and R. Garza, 2004: A Comparison of Precipitation Estimation Techniques over Lake Okeechobee, Florida. *Weather and Forecasting*, **19**, 1029-1043.

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.

CONFERENCE PROCEEDINGS:

van der Zwaag, John, S. Zhang, R. Moorhead, D. Welch, and J. Dyer. Visualizing Uncertainty of River Model Ensembles. *Conference on Visualization and Data Analysis*, February 2015, San Francisco.

Rodzik, J., G. Janicki, Ł. Chabudziński, Ł. Frznczak, M. Siłuch, K. Stepniewski, J. Dyer, G. Kołodziej, and E. Maciejewska, 2013: Monitoring programme of sediment flux in small upland catchments, SE Poland. *8th International Conference on Geomorphology (AIG)*, August 27-31, 2013, Paris, France, p. 717.

Janicki, G., J. Rodzik, Ł. Chabudziński, Ł. Frznczak, M. Siłuch, K. Stepniewski, J. Dyer, and G. Kołodziej, 2012: Research programme 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.

Dyer, J.L., 2010: Influences of land surface characteristics on precipitation over the lower Mississippi River alluvial plain. *Proceedings: 2009 Mississippi Water Resources Conference*, Tunica, MS.

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.

Sanyal, J., P. Amburn, S. Zhang, J. Dyer, P.J. Fitzpatrick, and R.J. Moorhead, 2008: User experience of hurricane visualization in an immersive 3D environment. *Proceedings: 4th International Symposium on Visual Computing*, Las Vegas, Nevada, USA.

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.

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.

Dyer, J.L. and R. Garza, 2003: A Comparison of Precipitation Estimation Techniques over Lake Okeechobee, Florida. *Proceedings of the 2003 Georgia Water Resources Conference*, University of Georgia, Athens, Georgia.

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:

Byrd, J.D., M. Brown, J. Dyer, and D.G. Thompson, 2016: Watchdog sprayer doesn't reliably measure wind parameters. *Weed Science Society of America*, Puerto Rico.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

Mercer, A.E. and J.L. Dyer, 2013: Assessing numerical weather prediction uncertainty in warm-season rainfall ensemble simulations. *Synmposium on the Role of Statistical Methods in Weather and Climate Prediction, 94th Annual Meeting, American Meteorological Society,* Austin, TX.

Dyer, J.L., 2012: Visual analytics for assessment and interpretation of simulated river flooding. *Northern Gulf Institute Annual Conference,* Stennis Space Center, MS..

Dyer, J.L., 2012: Precipitation patterns over the lower Mississippi River alluvial plain. *Professional Soil Classifiers Association of Mississippi (PSCAM) Annual Meeting,* Indianola, MS.

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.

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.

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.

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.

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.

Battalio, M. and J. Dyer, 2011: Three-dimensional visualization of divergence and vorticity. *36th Annual Meeting, National Weather Association*, Birmingham, AL.

Mercer, A. and J. Dyer, 2011: Physical assessment of hurricane rapid intensification using kernel principal component analysis. *36th Annual Meeting, National Weather Association*

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.

Dyer, J.L., 2011: Warm season rainfall in northwest Mississippi. Invited speaker, *Water and Watersheds Working Group*, Mississippi State University, Starkville, MS.

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.

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.

Mercer, A., and J. Dyer, 2011: Identification of Synoptic-Scale Hurricane Intensification Factors Using Advanced Statistics. *Northern Gulf Institute Annual Conference*, Mobile, AL.

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.

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.

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.

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.

Sanyal, J., P. Amburn, J. Dyer, A. Mercer, R. Moorhead, and S. Zhang, 2010: Uncertainty visualization of ensemble weather forecasts. 2010 *Bays and Bayous Symposium*, Mobile, AL.

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.

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.

Amburn, P., J. Dyer, R. Moorhead, S. Zhang, D. Irby, J, van der Zwaag, J. Sanyal, D. Reed, J. Graschel, D. Welch, and D. Ramirez, 2010: FloodViz: Visual analytics for assessment and interpretation of simulated river flooding. *Northern Gulf Institute Annual Meeting*, Mobile, AL.

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.

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.

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*.

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.

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.

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.

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.

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.

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.

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.

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*.

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.

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.

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.

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.

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.

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.

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.

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.

FUNDED PROJECTS:

US Department of Agriculture (USDA) Agricultural Research Service (ARS)
Mississippi State University, 2014 [PI]

- Title: "assessment and development of hydro-metoeorlogical technologies for long-term monitoring in Goodwin Creed experimental watershed"
- Amount requested:
- Project length: 8/1/2014 – 7/31/2016
- Time commitment: 2% FTE

Department of Defense (DoD) Army Research Laboratory (ARL), BAA Section 3.5.2
Mississippi State University, 2014 [PI]

- Title: "Atmospheric modeling and decision aids: Field-based numerical weather simulations and analysis support tools"
- Amount requested: $146,000
- Project length: 6/30/2014 – 12/31/2015
- Collaborators: Philip Amburn (project scientist)
- Time commitment: 2 summer months

Mississippi Department of Transportation
Mississippi State University, 2013 [co-PI]

- Title: "Evaluation of the watchdog weather station to reduce drift from MDOT spray trucks"
- Amount requested: $49,696.00
- Project length: 10/1/2013 – 9/30/2014
- Collaborators: John Byrd (PI)
- Time commitment: 1 summer month (11% FTE)

Mississippi Water Resources Research Institute (MWRRI)
Mississippi State University, 2013 [Principal investigator].

- 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, 2012 [Principal investigator].

- 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, 2011 [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-Skłodowski / Mississippi State University, 2011 [co-PI]

- Title: "Rainstorm prediction and mathematical modeling of their environmental and social-economical effects".
- Amount awarded: $196,600 PLN (złoty)
- 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, 2009 [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, 2009 [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, 2009 [Principal investigator].

- 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, 2008 [Principal investigator].

- 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, 2006 [Principal investigator].

- Title: "Surface Energy Budget Calculations Using Micrometeorological Instrumentation".
- Amount awarded: $2,982.00.
    - 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

TEACHING:

Courses currently/previously taught:

- Dynamic Meteorology I (thermodynamics)
- Dynamic Meteorology II (kinematics)
- Synoptic Meteorology
- Physical Meteorology
- Statistical Climatology
- Tropical Meteorology
- Numerical Weather Prediction
- Hydrometeorology
- Graduate seminars:
    - Hurricane Dynamics
    - Computational Meteorology and Visualization
    - Research Methods in Geosciences

Instructor for Teachers in Geoscience (TIG) summer field courses:

- Yellowstone/Grand Tetons
- Upstate New York
- Southern California/Sierra Nevadas
- Bahamas

Instructor for Broadcast Meteorology Program (BMP) distance learning keystone conference:

- Numerical weather prediction (NWP)
- Quantitative precipitation forecasting (QPF)

ADVISING:

Masters:	major professor [6] ; committee [12]
Doctoral:	major professor [3] ; committee [3]

PROFESSIONAL MEMBERSHIPS:

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

HONORS, AWARDS AND CERTIFICATIONS:

- MSU State Pride Award (2010).
- Geosystems Research Institute (GRI) research fellow.
- Certified Sedimentation and Erosion Control Specialist, Clarke County, GA, 2001-present.

UNIVERSITY SERVICE:

- Member of MSU University Promotion and Tenure Committee, 2014 – present.
- Member of MSU College of Arts and Sciences Promotion and Tenure Committee, 2012 – present.
- Member of MSU College of Arts and Sciences faculty senate, 1/2008 – 12/2009.
- Member of three job search committees for MSU Department of Geosciences:
    - Three tenure-track positions in meteorology
        - Search head for one position
    - One instructor-level position in meteorology

PROFESSIONAL SERVICE:

- Invited talk at USDA National Sedimentation Laboratory – November 15, 2013
    - "An Overview of Precipitation Over the Lower Mississippi River Alluvial Valley: Sources, patterns, and Surface Interactions"
- Panel discussion member, MSU Maroon Edition Global Warming event. "Global Warming – Is it Real? What Causes It? What If Anything Can We Do About It?" November 14, 2013.
- Member of faculty advisory panel for dynamic meteorology COMET initiative.
- Adjunct Faculty of Natural Sciences at North-West University, Potchefstroom Campus, South Africa.
    - Served as external reviewer on two doctoral committees.
- Presented at GRI Monthly Seminar Series – March, 2010
    - Won prize for "best presentation".

- Presented twice at the University of Marie Curie Sklodowska, Lublin, Poland.
    - Analysis of Surface Influences on Localized Convection and Precipitation (5/11/2010).
    - 3D Visualization and Analysis of Tropical and Extratropical Cyclones (5/13/2010).
- Reviewed book for Bulletin of the American Meteorological Society, July 2010.
    - "Hydroclimatology – Perspectives and Applications" by Marlyn L. Shelton.
- Manuscript reviewer for: *International Journal of Climatology, Journal of Applied Meteorology, Journal of Atmospheric and Oceanic Technology, Journal of Climate, Physical Geography, Remote Sensing of Environment, Water Resources Research, Weather and Forecasting.*
- Interview for newspaper "*Starkville Daily News*", 2008:
    - Article titled: "We dodged a bullet".
- Collaboration with National Weather Service (NWS) forecast office in Jackson, MS.
    - Development of operational website to disseminate output from real-time simulations from the Weather Research and Forecast (WRF) model.
- Reviewer for introductory-level meteorology laboratory text, "Exercises for Weather and Climate", 6th Ed., by Greg Carbone, Prentice Hall publisher (2007).
- Interview for newspaper "*The Commercial Dispatch*", 2007:
    - Article titled: "Global Warming Talks".
- Reviewer for US Civilian Research and Development Foundation (CRDF) grant proposal to the Cooperative Grants Program (CGP) (2006).
    - Title: Landscape-zonal features of long-term and seasonal variability of snow storage over Northern Eurasia on the ground and space data.
- Interview for newspaper "*The Reflector*, 2006.
    - Article titled: "Scientists Split on Global Climate".
- Session chair, 100th Annual Meeting, Association of American Geographers, Philadelphia, Pennsylvania, 2004

PROFESSIONAL DEVELOPMENT:

- 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.