Ronald David Leeper ronnieleeper@cicsnc.org

Educational Experience

Western Kentucky University	Bowling Green, KY	Geography	M.S. 2009
Western Kentucky University	Bowling Green, KY	Geography	B.S. 2006
Western Kentucky University	Bowling Green, KY	Geography	GIS Certificate 2006

Professional Experience

Research Associate	North Carolina Institute for Climate Studies	2010 - Present
Research Associate	Western Kentucky University	2009 - 2010
GIS Analyst	Connected Nation	2008 – 2009

Skill Sets

- R, ArcGIS, ArcGIS-Online, Geoserver, Python, Bash-Shell scripting, numerical modeling, and Linux environment

Geospatial Projects

- 2024 Solar Eclipse Viewability Map http://tinyurl.com/ycxhtern
- 2017 Great American Solar Eclipse Viewability Map
- 20th Century Reanalysis Extra Tropical Cyclone tracks
- U.S. Drought Monitor Climatology http://tiny.cc/rk_esuz

Reports

Woloszyn, M., S. Reeves, M. Skumanich, E. Hasenbeck, A. Lang, J. Lisonbee, R. D. Leeper, M. Muth, E. Ossowski, J. Otkin, H. Wang 2024: 2nd National Flash Drought Workshop Report: Building on Progress and Looking Forward.

Peer Reviewed Publications

Leeper R. D., R. Bilotta, J. Rennie, J. E. Bell, J. D. Berman, A. M. Abadi, S. Munde, Y. Gwon, and B. J. Fard 2024: On the Variability of Drought Frequency, Duration, and Intensity from Commonly Used Drought Indicators, *Submitted to Journal of Applied Meteorology and Climatology*

Anand K. Inamdar and Leeper, R. D., 2024: A novel approach combining satellite and in situ observations to estimate the daytime variation of land surface temperatures for all sky conditions. *Science of Remote Sensing*, *In Press*.

Abadi, A. M., Y. Gwon, M. J. Smith, J. D. Berman, A. Rau, **R. D. Leeper**, J. Rennie, S. Munde, B. J. Fard, and J. E. Bell, 2024: The Lethal Connection: Investigating the Relationship of Drought Conditions on Firearm and Nonfirearm Suicides among U.S. Adults. *Submitted to Environmental Health Perspectives.*

Wilson, T., J. Kochendorfer, H. Diamond, T. Meyers, M. E. Hall, T. Lee, R. Saylor, P. Krishnan, **R. D. Leeper**, M. A. Palecki, A. Verhoef, 2023: Determination of soil bulk electrical conductivity across the U.S. Climate Reference Network using dielectric permittivity sensors. *Vadose Zone Journal, In Press*. https://doi.org/10.1002/vzj2.20336

Leeper, R. D., M. A. Palecki, M. Watts, and H. Diamond, 2023: On the Detection of Remotely Sensed

Soil Moisture Extremes. *J. Appl. Meteor. Climatol*., **62**, 1611 – 1626, https://doi.org/10.1175/JAMC-D-23-0059.1.

Leeper, R. D., T. Harrington, M. A. Palecki, K. DePolt, E. Scott, J. Runkle, and H. Diamond, 2023. The Influence of Drought on Heatwave Intensity, Duration, and Exposure. *Submitted to JAMC*.

Sewell, K., S. Paul, K. De Polt, M. M. Sugg, **R. D. Leeper**, D. Rao, J. D. Runkel, 2023: Impacts of compounding drought and heatwave events on child mental health: insights from a spatial clustering analysis. *Discovery Mental Health*, **4,** https://doi.org/10.1007/s44192-023-00055-0.

Lee, R. T., S. Pal, **R. D. Leeper**, T. Wilson, H. J. Diamond, T. P. Meyers, and D. D. Turner, 2024. On the Importance of Regime-Specific Evaluations for Numerical Weather Prediction Models as Demonstrated using the High Resolution Rapid Refresh (HRRR) Model. *Weather and Forecasting*. https://doi.org/10.1175/WAF-D-23-0177.1, in press

Gown Y., N. Y. Richard, Y. Ji, A. M. Abadi, A. Rau, J. Berman, **R. D. Leeper**, J. Rennie, J. Bell, 2023. The effect of heterogeneous severe drought pattern on all-cause and cardiovascular mortality in the Northern Rockies and Plains of the United States. *Science of the Total Environment.* http://dx.doi.org/10.2139/ssrn.4510896

Gown, Y., Y. Ji, J. Bell, A. Abadi, J. Berman, A. Rau, **R. D. Leeper**, and J. Rennie, 2023. The association between drought exposure and respiratory-related mortality in the United States from 2000 to 2018. *International Journal of Environmental Research and Public Health*, https://doi.org/10.3390/ijerph20126076.

Lee, T., **Leeper R. D.**, T. Wilson, H. Diamond, T. P. Meyers, and D. D. Turner, 2023: Using the US Climate Reference Network to Identify Biases in Near- and Sub-Surface Meteorological Fields in the High-Resolution Rapid Refresh (HRRR) Weather Prediction Model, *Journal of Weather and Forecasting*, https://doi.org/10.1175/WAF-D-22-0213.1.

Leeper, R. D., R. Bilotta, B. Petersen, C. J. Stiles, R. Heim, B. Fuchs, O. P. Prat, M. Palecki, and S. Ansari, 2022: Characterizing U.S. Drought over the Past Twenty Years using the U.S. Drought Monitor. *International Journal of Climatology*, https://doi.org/10.1002/joc.7653.

Moreno, C., J. Sugg, J. Runkel, **R. D. Leeper**, B. L. Perry, and M. Sugg, 2022: Examining spatiotemporal trends of drought in the conterminous United States using self-organizing maps, *Physical Geography*, https://doi.org/10.1080/02723646.2022.2035891

Nelson, B. R., O. Prat, and **R. D. Leeper**, 2021: An investigation of NEXRAD based Quantitative Precipitation Estimates. Remote Sensing, 13, 3202. https://doi.org/10.3390/rs13163202.

Handwerger; L. R., J. D. Runkle, **R. D. Leeper,** E. Shay, K. Dempsey, M. M. Sugg, 2021: An Assessment of Social and Physical Vulnerability to Hydroclimate Extremes in Appalachia. *Submitted to Natural Hazards*.

Leeper, R. D., B. Petersen, M. A. Palecki, and H. Diamond, 2021: Exploring the use of Standardized Soil Moisture as a Drought Indicator. **Journal of Applied Meteorology and Climatology**, 60, https://doi.org/10.1175/JAMC-D-20-0275.1

Leeper, R. D., J. L. Matthews, M. S. Cessarini, J. E. Bell, 2021: Evaluation of air and soil temperatures for determining the onset of growing season. Journal of Geophysical Research: Biogeosciences, 126, e2020JG006171. https://doi.org/10.1029/2020JG006171

Sugg, M., H. Bagil, A. Golden, L. H. Handwerger, M. Tatiana, C. Moreno, R. Reed-Kelly, M. Taylor, S. Woolard, **R. Leeper**, J. Runkle, 2020. A Scoping Review of Drought Impacts on Health and Society in North America, **Climatic Change**, https://doi.org/10.1007/s10584-020-02848-6

Runkle, J. D., M. M. Suggs, **R. D. Leeper**, Y. Rao, J. L. Matthews, J. J. Rennie, 2020. Short-term effects of weather parameters on COVID-19 morbidity in select US cities. **Science of the Total Environment**, 740, https://doi.org/10.1016/j.scitotenv.2020.140093.

Prat, O. P., B. R. Nelson, E. Nickl, and **R. D. Leeper**, 2020. Global evaluation of gridded satellite precipitation products from the NOAA Climate Data Record program. **Journal of Hydrometeorology**, 22, https:// doi.org/10.1175/JHM-D-20-0246.1.

Nelson, B., O. P. Prat, and **R. D. Leeper**, 2020. Using Ancillary information from Radar-based observations and Rain Gauges to Identify Error and Bias. **Journal of Hydrometeorology,** 22, 1249 – 1258, https://doi.org/10.1175/JHM-D-20-0193.1

Lawrimore, J., D. Wuertz, S. Stevens, B. Koreniewski, M. A. Palecki, **R. D. Leeper**, T. Trunk, 2020. Quality Control and Processing of Cooperative Observer Program Hourly Precipitation Data. **Journal of Hydrometeorology,** 21, https://doi.org/10.1175/JHM-D-19-0300.1.

Wilson, T. B., H. J. Howard, J. Kochendorfer, T. P. Meyers, M. Hall, N. W. Casey, C. B. Baker, **R. D. Leeper**, M. A. Palecki, 2020. Evaluating Time Domain Reflectometry and Coaxial Impedance Sensors for Soil Observations by the U.S. Climate Reference Network. **Vadose Zone Journal**,19, https://doi.org/10.1002/vzj2.20013

Leeper, R. D., J. Kochendorfer, T. Henderson, M. A. Palecki, 2019. Impacts of small-scale urban encroachment on air temperature observations. **Journal Applied Meteorology and Climatology**, 58, 1369 – 1380. http://dx.dio.org/ 10.1175/JAMC-D-19-0002.1

Leeper, R. D., J. E. Bell, and M. A. Palecki, 2019. A description and evaluation of U.S. Climate Reference Network Standardized Soil Moisture Dataset. **Journal Applied Meteorology and Climatology,** 58, 1417 - 1428. http://dx.dio.org/10.1175/JAMC-D-18-0269.1

Rodgers, W., R. Mahmood, **R. Leeper**, J. Yan, 2018. Land cover change, surface mining, and their impacts on a heavy rain event in the Appalachia. Annals of American Association of Geographers. http://dx.doi.org/10.1080/24694452.2018.1460249

Lee, R. T., M. Buban, M. A. Palecki, **R. D. Leeper**, H. J. Diamond, E. Dumas, T. P. Meyers and C. B. Baker, 2018. Great American Eclipse data may fine-tune weather forecasts. Earth Observing System, 99, 18 - 22. https://doi.org/10.1029/2018EO103931

Leeper, R. D., J. E., Bell, C. Vines, M. Palecki, 2017. An Evaluation of the North American

Regional Reanalysis Simulated Soil Moisture Conditions during the 2011 to 2013 Drought Period. **Journal of Hydrometeorology**, 18, 515-527. **http://dx.doi.org/10.1175/JHM-D-16-0132.1**

Kochendorfer, J., R. Rasmussen, M. Wolff, B. Baker, M. E. Hall, T. Meyers, S. Landolt, A. Jachcik, K. Isaksen, R. Brækkan, **R. Leeper**, 2016. The Quantification and Correction of Wind-Induced Precipitation Measurement Errors. **Hydrology Earth System Sciences**,. **http://dx.doi.org/doi:10.5194/hess-2016-415**

Quintanar, A. I., R. Mahmood, A. Suarez, **R. Leeper**, 2016. Atmospheric sensitivity to roughness length in a regional atmospheric model over the Ohio–Tennessee River Valley. **Meteorology and Atmospheric Physics**, 128, 315 – 330. **http://dx.doi.org/doi:10.1007/s00703-015-0415-z**

Klotzbach, P. J., E. C. J. Oliver, **R. D. Leeper**, and C. J. Schreck, III, 2016. The relationship between the Madden–Julian Oscillation (MJO) and southeastern New England snowfall. **Monthly Weather Review**, 144**,** 1355-1362. **http://dx.doi.org/doi:10.1175/MWR-D-15-0434.1**

Leeper, R. D., M. A. Palecki, and E. Davis, 2015. Methods to Calculate Precipitation from Weighing-Bucket Gauges with Redundant Depth Measurements. **Journal of Atmospheric and Oceanic Technology**, **32**, 1179 – 1190, **http://dx.doi.org/10.1175/JTECH-D-14-00185.1**

Leeper, R. D., J. Rennie, and M. A. Palecki, 2015. Observational perspectives from U.S. Climate Reference Network (USCRN) and Cooperative Observer Program (COOP) Network: Temperature and precipitation comparison. **Journal of Atmospheric and Oceanic Technology**, 32, 703-721. **http://dx.doi.org/10.1175/JTECH-D-14-00172.1**

Leeper, R. D., and J. Kochendorfer, 2015. Evaporation from weighing precipitation gauges: Impacts on automated gauge measurements and quality assurance methods. **Atmospheric Measurement Techniques**, 8**,** 2291-2300. **http://dx.doi.org/10.5194/amt-8-2291-2015**

Quintanar, A. I., R. Mahmood, A Suarez, **R Leeper,** 2015. Atmospheric sensitivity to roughness length in a regional atmospheric model over the Ohio–Tennessee River Valley. **Meteorology and Atmospheric Physics**, 128, 315 – 330. **http://dx.doi.org/ 10.1007/s00703-015-0415-z**

Bell, J. E., **R. D. Leeper**, M. A. Palecki, E. Coopersmith, T. Wilson, R. Bilotta, and S. Embler, 2015. Evaluation of the 2012. Drought with a Newly Established National Soil Monitoring Network. **Vadose Zone Journal,** 14 **http://dx.doi.org/10.2136/vzj2015.02.0023**

Leeper, R. D., M. A. Palecki, and E. Davis, 2015. Methods to calculate precipitation from weighing bucket gauges with redundant depth measurements. **Journal of Atmospheric and Oceanic Technology**, 32**,** 1179-1190. **http://dx.doi.org/10.1175/JTECH-D-14-00185.1**

Bell, B. E., M. A. Palecki, B. C. Baker, W. G. Collins, J. H. Lawrimore, **R. D. Leeper**, M. E.

Hall, J. Kochendorfer, T. P. Meyers, T. Wilson, and H. J. Diamond. 2013. U.S. Climate Reference Network soil moisture and temperature observations. **Journal of Hydrometeorology**, 14**,** 977-988. **http://dx.doi.org/10.1175/JHM-D-12-0146.1**

Diamond, H., T. R. Karl, M. A. Palecki, C. B. Baker, J. E. Bell, **R. D. Leeper**, D. R. Easterling, J. H. Lawrimore, T. P. Meyers, M. R. Helfert, G. Goodge, P. W. Thorne. 2013. U.S. Climate Reference Network after a decade of operations. **Bulletin of The American Meteorological Society**, 94, 485-498.

Leeper, R., R. Mahmood, A.I. Quintanar. 2011. Influence of karst landscape on planetary boundary layer atmosphere: A Weather Research and Forecast (WRF) model-based investigation. **Journal of Hydrometeorology**, 12, 1512-1529.

Mahmood, R., **R. Leeper**, A.I. Quintanar. 2011. Sensitivity of planetary boundary layer atmosphere to historical and future changes of land use/land cover, vegetation fraction, and soil moisture in Western Kentucky, USA. **Global and Planetary Change**, 78: 36-53

Mahmood, R., R.A. Pielke Sr., K.G. Hubbard, D. Niyogi, G. Bonan, P. Lawrence, B. Baker, R. McNider, C. McAlpine, A. Etter, S. Gameda, B. Qian, A. Carleton, A. Beltran-Przekurat, T. Chase, A.I. Quintanar, J.O. Adegoke, S. Vezhapparambu, G. Conner, S. Asefi, E. Sertel, D.R. Legates, Y. Wu, R. Hale, O.N. Frauenfeld, A. Watts, M. Shepherd, C. Mitra, V.G. Anantharaj, S. Fall, R. Lund, A. Nordfelt, P. Blanken, J. Du, H-I. Chang, **Leeper. R**, U.S. Nair, S. Dobler, R. Deo, J. Syktus. 2010. Impacts of land use land cover change on climate and future research priorities. **Bulletin of American Meteorological Society**,91:37-46.

Quintanar, A. I., R. Mahmood, A. Gonzalez and **Leeper. R**. 2010. Atmospheric sensitivity to roughness length in a regional atmospheric model over the Ohio-Tennessee river valley. **Boundary-Layer Meteorology**, (in revision).

Leeper, R. D., Walker, J. M., and Goodrich, G. B. 2010. Teleconnective relationships to the Kentucky Snowfall Impact Scale. **Journal of Kentucky Academy of Science**, 71(1):36-46.

Leeper, R., R. Mahmood, A.I. Quintanar. 2009. Near surface atmospheric response to simulated changes in land-cover, vegetation fraction, and soil moisture over Western Kentucky. **Monograph, in Climatology**, 62(2). 41 pp.

Walker, J. M., **Leeper, R. D**., Petrina, S., Johns, M. L., Biache, B. M., William, N., and Batson, K. J., and Goodrich, G. B. 2008. Development of a Kentucky Snowfall Impact Scale. ***Focus on Geography*****,** 50: 15 – 21. (Special issue Kentucky)

Mahmood, R., Hubbard, K. G., **Leeper, R.**, and Foster, S. A. 2008. Increase in near surface atmospheric moisture content due to land use changes: Evidence from the observed dew point temperature data. ***Monthly Weather Review,*** 13:1554-1561.

Mahmood R., Foster, S. A., Keeling, T., Hubbard, K. G., Carlson, C., and **Leeper, R.** 2006. Impacts of irrigation on 20th century temperature in the Northern Great Plains. ***Global and Planetary Change,*** 54: 1-18. (Special issue on LULCC and its impacts on Climate)

Funded Projects

2021 NOAA MAPP - Century-scale variations and trends in heat stress metrics: $446,948

2020 NOAA NVDIA GPU Hackathon – Development of a hybrid Variational Auto Encoder (VAR) LSTM to quality control soil moisture data.

2020 NOAA MAPP - Coping with Drought: $582,568

2020 NCEI Innovates - Machine Learning as a Quality Control Strategy: $87,166

Professional Presentations

Poster, titled, Characterization of Rapid Drought Change Across the United States at the **Flash Drought Workshop**, May 2023

Oral, titled, Using the El Niño-Southern Oscillation and Madden Julian Oscillation Modes of Variability to Predict Rapid Drought Change at the **Flash Drought Workshop**, May 2023

Oral, titled, Near-real Time Daily Drought Monitoring Using Remotely Sensed and In-situ Gridded Precipitation Datasets at the **American Geophysical Union (AGU) Fall Meeting**, Chicago, IL, December 15, 2022.

Oral, titled, An Evaluation of Remotely Sensed Soil Moisture Extremes at the **American Geophysical Union (AGU) Fall Meeting**, Chicago, IL, December 12, 2022.

Oral, titled, Evaluations of Soil Moisture During Extreme Conditions at the **National Soil Moisture Workshop**, Columbus, OH, August 9, 2022.

Poster, titled, An evaluation of Machine Learning Techniques to Quality Control Soil Moisture Observations for U.S. Climate Reference Network at the **11th International Conference on Climate Informatics**, Asheville, NC, May 10, 2022.

Poster, titled, Exploring the use of Standardized Soil Moisture as a Drought Indicator, at the **101st American Meteorological Society Annual Meeting**, Virtual, January 2021.

Oral, titled, Development and Characterization of U.S. Drought Monitor Based Drought Events, at the **100th American Meteorological Society Annual Meeting**, Boston, MA, January 2020.

Oral, titled, Evaluating Flash Drought Detection Utilizing In Situ Soil Moisture Observations, at the **100th American Meteorological Society Annual Meeting**, Boston, MA, January 2020.

Oral, titled, Efficacy of Drought Indices Derived from In Situ Soil Moisture Observations, at the **U.S. Drought Monitor Forum**, September 2019.

Invited Talk, titled, U.S. Climate Reference Network Soil Moisture Collection and Processing, to the **National Soil Moisture Network Soil Moisture Working Group**, Asheville, NC, June 2019.

Oral, titled, Evaluating the Linkages between Soil Moisture and Drought, at the **National Soil Moisture Workshop**, May 2019.

Poster, titled, The Sensitivity of Temperature Measurements to Built-Up Environments: A Case Study In Oak Ridge, TN, at the **99th American Meteorological Society Annual Meeting**, Phoenix, AZ, January 2019.

Poster, titled, On the Inter-relationship Between Land Surface Air Temperature and Skin Temperature, at the **99th American Meteorological Society Annual Meeting**, Phoenix, AZ, January 2019.

Invited Talk, titled, Standardizing short-term soil moisture datasets, at **The 5th Satellite Soil Moisture Validation and Application Workshop**, Fairfax, VA, October 2018.

Poster, titled, Standardizing short-term satellite soil moisture datasets, at the **SMAP Cal/Val Workshop #9**, Fairfax, VA, October 2018.

Oral, titled, Standardizing USCRN Soil Moisture Observations for Near-Real time applications, at the **MOISST Conference**, June 2018.

Oral, titled, Toward Earlier Drought Detection Using Remotely Sensed Precipitation Data from the Reference Environmental Data Record (REDR) CMORPH at the **European Geophysical Union**, Vienna, Austria, April, 2018.

Poster, titled, An Evaluation of Recent U.S. Drought Events Using a Newly Available Standardized Soil Moisture Dataset at the **98th American Meteorological Society Annual Meeting**, Austin, TX, January, 2018.

Oral, titled, Use of NEXRAD radar-based observations for quality control of in-situ rain gauge measurements at the **American Geophysical Union**, New Orleans, LA, December, 2017.

Oral, titled, Improved Hourly and Sub-Hourly Gauge Data for Assessing Precipitation Extremes in the US at the **American Geophysical Union**, New Orleans, LA, December, 2017.

Oral, titled, Standardizing In-Situ Soil Moisture Observations to Improve Hydrological Monitoring. **American Meteorological Society 23rd Conference on Applied Climatology**, Asheville, NC, June 26-28, 2017.

Oral, titled, Evaluation of In-Situ Soil Moisture Metrics to Monitoring Hydrological Extremes. 31th Conference of Hydrology at the **97th American Meteorological Society Annual Meeting**, Seattle, WA, January, 2017.

Poster, titled, Evaluating Precipitation Extremes from a Sparse Network: the NOAA U.S. Climate Reference Network. 31th Conference of Hydrology at the **97th American Meteorological Society Annual Meeting**, Seattle, WA, January, 2017.

Poster, titled, Analysis of Soil Moisture Metrics to Assess Societal Risks to Hydrological Extremes. Carolinas Climate Resilience Conference, Charlotte, NC, September, 2016.

Oral, titled, An investigation of soil moisture extremes over the 2012 drought. 30th Conference of Hydrology at the **96th American Meteorological Society Annual Meeting**, New Orleans, LA, January 2016 (Coauthored with Bell, J. and Palecki, M. A.).

Poster, titled, An Exploratory Analysis of the 20th Century Reanalysis Extra-Tropical Cyclone Track Density. Wednesday 13th Poster Session at the **96th American Meteorological Society Annual Meeting**, New Orleans, LA, January, 2016.

Oral, titled, The Evolution of In Situ Climate Observations and Impacts on Observations and Climate Metrics. **UNC Asheville Department of Atmospheric Sciences**, Asheville, NC, February 2015 (Co. Presenter Rennie, J.).

Oral, titled, Evaluating the Evolution of the California Drought and Monitoring Societal Risks with NOAA's U.S. Climate Reference Network at the **95th Annual Meeting of the American Meteorological Society meeting**, Phoenix, AZ 4-8 January 2015 (coauthor Bell, J.)

Oral, titled, Computation, Analysis and Visualization of In-Situ and Remote Sensing Data using Python at the **95th AMS Annual Meeting**, Phoenix, AZ, 4-8 January 2015 (coauthors Rennie J., Buddenberg, A., Gassert, K., Stevens, L. E., Stevens, S. E.)

Oral, titled, "Impact of Network Design on Daily Temperature and Precipitation and their application: USCRN and COOP" at the **93rd American Meteorological Society Annual Meeting**, Austin, TX 6-10 January, 2013 (Coauthored with Jared Rennie).

Poster, titled, "Understanding the hydrological affects of Tropical Cyclones over the Carolinas from an observational and modeling based perspective" at the **American Meteorological Society Annual Meeting**, Austin, TX 6-10 January, 2013 (Coauthored with Olivier P. Pratt and Brian O. Blanton).

Oral, titled, "Precipitation Quality Assurance Methods for Weighing Bucket Precipitation Gauges Having Three Redundant Measurements" at the **92nd American Meteorological Society Annual Meeting**, New Orleans, LA 22-26 January, 2012 (Co-authored with Egg Davis and Dr. Michael Palecki)

Oral, titled, "The role of network architecture in surface-based in-situ climate observations" at the **19th Annual Conference on Applied Climatology**, Asheville, NC 18 – 20 July, 2011.

Paper, titled, "Does Karst Hydrology Matter" at the **105th Annual Meeting of the Association of American Geographers**, Las Vegas, NV 22 – 27 March, 2009. (Co-authored with Dr. Arturo Quintanar and Dr. Rezaul Mahmood)

Paper, titled, "Near-surface and Atmospheric Response to Modeled Land-Use and Fractional Vegetation Coverage Changes" at the **104th Annual Meeting of the Association of American Geographers**, Boston, MA 15-19 April, 2008. (Co-authored with Dr. Arturo Quintanar and Dr. Rezaul Mahmood)

Poster, titled, "Increase in Near Surface Atmospheric Moisture Content Due to Land Use Changes", was presented at the **103rd Annual Meeting of the Association of American Geographers**, San Francisco, CA, 17-21 April, 2007. (Co-authored with Dr. Rezaul Mahmood)

Paper, titled, "Numerical Modeling of Near-Surface and Atmospheric Response to Land-Use and Fractional Vegetation Coverage Change" was presented at the NSF funded Workshop on **Detecting the**

Atmospheric Response to the Changing Face of the Earth: A Focus on Human-Caused Regional Climate Forcings, Land-Cover/Land-Use Change, and Data Monitoring, August 27-29, 2007 Boulder, CO. (Co-authored with Dr. Rezaul Mahmood and Dr. Arturo Quintanar)

Poster, titled, "Development of a Kentucky Snowfall Impact Scale" was presented at the **32nd Annual Meeting of the National Weather Association**, Reno, NV 13-18 October, 2007 (Co-authored with Dr. Gregory Goodrich and John Walker)

Paper, titled, "Near-surface and atmospheric response to modeled land-Use and vegetation fraction changes", was presented at the **93rd Annual Meeting of the Kentucky Academy of Sciences,** Lousiville, KY 8-10 November, 2007. (Co-authored with Dr. Rezaul Mahmood and Dr. Arturo I. Quintanar)

Poster, titled, "Near-surface and atmospheric response to modeled land use and vegetation fraction changes", was presented at the **62nd Annual meeting of Southeastern Division, The Association of American Geographers,** Charleston, SC 18-20, November, 2007. (Co-authored with Dr. Rezaul Mahmood and Dr. Arturo Quintanar)

Poster, titled, "The Influence of Land Use Change on Near Surface Atmospheric Moisture Content" was presented at the **92nd Annual Meeting of the Kentucky Academy of Sciences,** Morehead, KY 9-11 November, 2006. (Co-authored with Dr. Rezaul Mahmood)

Poster, titled, "Increase in Near Surface Atmospheric Moisture Content Due to Land Use Changes" was presented at the **61st Annual meeting of Southeastern Division, The Association of American Geographers,** Morgantown, WV 19-21, November, 2006. (Co-authored with Dr. Rezaul Mahmood)

Awards and Achievements

2021 **NOAA's NESDIS** Outstanding Science and Research Team

2020 **NOAA's NESDIS** Outstanding Information Technology and Engineering Employee(s) of the Year

2018 **NOAA's NCEI** Outstanding Information Technology and Engineering Employee Award

2014 **NOAA's NCEI** Special Service Award

2014 **Award for Excellence** Office of Research, Innovation, and Economic Development North Carolina State University

2009 **Outstanding Graduate Student** Department of Geography and Geology Western Kentucky University

2002 **President's Scholar** at Western Kentucky University