

# Zack Leasor

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## Education:

**The Ohio State University**                      **Columbus, Ohio**

*Doctor of Philosophy (Geography):* 2021 (exp)  
Advisor: Dr. Steven Quiring

**The Ohio State University**                      **Columbus, Ohio**

*Master of Arts (Geography):* August 2017  
Advisor: Dr. Steven Quiring  
*Thesis:* Spatiotemporal Variations of Drought Persistence in the South-Central U.S.

**Western Kentucky University**                      **Bowling Green, KY**

*Bachelor of Science:* May 2015  
*Major:* Meteorology  
*Minor:* Water Resources

## Research Areas

Hydroclimatology  
Land-Atmosphere Interactions  
Applied Climatology

Drought Monitoring  
Seasonal Forecasting  
Water Resources

## Professional Experience

**Research Assistant**    **August 2019 – Present**

*NIDIS funded project:* National Coordinate Soil Moisture Monitoring Network (PI: Dr. Steven Quiring)

- Responsible for creating and maintaining a national soil moisture database
- Developed and disseminated experimental soil moisture products through web portal at [nationalsoilmoisture.com](http://nationalsoilmoisture.com)

**Teaching Assistant**    **August 2019 – May 2020**

*Department of Geography, The Ohio State University*

**Research Assistant**    **August 2017 - August 2019**

*NOAA MAPP funded project:* Developing National Soil Moisture Products to Improve Drought Monitoring (PI: Dr. Trent Ford)

- Utilized cloud computing to automate the daily retrieval of soil moisture data from numerous federal and state climate monitoring networks
- Produced and distributed daily blended soil moisture products on [nationalsoilmoisture.com](http://nationalsoilmoisture.com) using in situ, model-derived, and remote sensing data

**Research Assistant**

**August 2015 - December 2016**

*NOAA/RISA funded project: Improved Seasonal Climate/Drought Forecasting in the SCIPP Region (PI: Dr. Steven Quiring)*

- Analyzed a high resolution temperature dataset to quantify the utility of persistence-based seasonal temperature forecasts across the south-central US
- Developed experimental seasonal forecast models using antecedent soil moisture to predict temperatures

**Intern**

**January 2014 - May 2015**

*Wx Or Not forecasting enterprise, Bowling Green, KY*

- Produced regular 3-day forecasts for Warren and Butler counties on [wxornotbg.com](http://wxornotbg.com)

**Director**

**January 2014 - January 2015**

*Stormtopper Network, Western Kentucky University, Bowling Green, KY*

- Served as director for a student-led storm spotting organization affiliated with Western Kentucky University and Warren County Emergency Management

**Tour Guide**

**May 2013 - May 2014**

*Lost River Cave, Bowling Green, KY*

- Provided boat tours educating guests on the local history, biology, and geology of Lost River Cave

**Volunteer**

**Summer 2012 - 2014**

*National Weather Service, Louisville, KY*

- Assisted the NWS Louisville office with many tasks including research for ASOS site assessments and historical weather events

**Peer-Reviewed Publications**

Ford, T., Quiring, S. M., Zhao, C., **Leasor, Z. T.**, and C. Landry (2020): Triple Collocation Evaluation of In Situ Soil Moisture Observations from 1,200+ Stations as part of the U.S. National Soil Moisture Network. *Journal of Hydrometeorology*. (In Press).

Tian, L., **Leasor, Z. T.**, and S. M. Quiring (2020): Developing a new drought index: Precipitation Evapotranspiration Difference Condition Index. *Climate Risk Management*. (In Press).

Zhao, C., Quiring, S.M., Yuan, S., McRoberts, D.B., Zhang, N., and **Z.T. Leasor** (2020): Developing and Evaluating National Soil Moisture Maps. *Soil Science Society of America Journal*, **84**, 443-460, <https://doi.org/10.1002/saj2.20045>.

**Leasor, Z.T.**, Quiring, S.M., and M.D. Svoboda (2020): Utilizing Objective Drought Severity Thresholds to Improve Drought Monitoring. *Journal of Applied Meteorology and Climatology*, **59**, 455-475, <https://doi.org/10.1175/JAMC-D-19-0217.1>.

**Leasor, Z.T.**, Quiring, S.M., Ford, T.W., and D.B. McRoberts (2019): Spatiotemporal variations in temperature persistence in the south-central United States. *Climate Research*, **77**, 181-192, <https://doi.org/10.3354/cr01550>.

Tian, L., **Leasor, Z.T.**, and S.M. Quiring (2017): Potential to improve precipitation forecasts in Texas through the incorporation of multiple teleconnections. *International Journal of Climatology*, **37**, 3863-3872, <https://doi.org/10.1002/joc.4960>.

***Under review:***

Yuan, S., Quiring, S. M., and **Z. T. Leasor** (2020): Historical changes in soil moisture over the contiguous United States: an assessment of CMIP6. *Geophysical Research Letters*. (Under Review).

**Theses & Dissertation**

**Leasor, Z. T.** (2017): Spatiotemporal Variations of Drought Persistence in the South-Central United States. M.A. Thesis, *The Ohio State University*.

**Grants and Contracts**

***Funded:***

**Exploring the Benefits of Displaying High Resolution Drought Maps in Near Real-Time.** *Sharpe Innovation Commons Seed Grant*, \$5,000. **Z. T. Leasor** (Team Leader); Team Members: C. Zhao, L. Liu, 2020.

**Conference Paper Presentations**

**Leasor, Z.T.**, Quiring, S.M. (2019) “Utilizing Objective Drought Severity Thresholds to Improve Drought Monitoring.” Eleventh Biennial U.S. Drought Monitor Forum, September 17-19, 2019, Western Kentucky University, Bowling Green, KY.

**Leasor, Z.T.**, Quiring, S.M. (2017) “Utilizing Objective Drought Thresholds to Improve Drought Monitoring with the SPI.” 2017 American Geophysical Union Fall Meeting, December 11-15, Ernest N. Morial Convention Center, New Orleans, LA.

**Leasor, Z.T.**, Quiring, S.M. (2016) “Improved Seasonal Forecasting in the SCIPP Region.” Southern Climate Impacts Planning Program Annual Stakeholder Services Committee Meeting, May 25-26, 2016, Tulsa, OK.

**Leasor, Z.T.**, Quiring, S.M. (2016) “Temperature persistence in the south-central United States.” The 19th Annual Student Research Week Symposium April 1, 2016, Texas A&M University, College Station TX.

**Leasor, Z.T.,** Durkee, J. (2015) "The potential influence of cyclogenesis on precipitation banding in winter storms: A local-scale analysis of a heavy snow event across the Ohio Valley during 22-23 December 2004." 45<sup>th</sup> Annual WKU Student Research Conference, March 28, 2015, Western Kentucky University, Bowling Green, KY.

### **Poster Presentations**

**Leasor, Z.T.,** Quiring, S.M. (2020) "Examining the Sensitivity of Monthly Forecast Models to Multiple Sources of Soil Moisture Data." Midwest Student Conference on Atmospheric Research, September 26-27, University of Illinois at Urbana-Champaign, *Virtual Presentation*.

**Leasor, Z.T.,** Quiring, S.M. (2020) "Examining the Sensitivity of Monthly Forecast Models to Multiple Sources of Soil Moisture Data." National Soil Moisture Workshop, August 12-13, USDA-Agricultural Research Service, *Virtual Presentation*.

**Leasor, Z.T.,** Quiring, S.M., and C. Zhao (2019) "Developing Daily Blended Soil Moisture Products in Near Real-Time." 2019 National Soil Moisture Workshop, May 22-24, Kansas State University, Manhattan, KS.

**Leasor, Z.T.,** Quiring, S.M. (2019) "Improvements in Monthly Temperature Forecasts Utilizing Antecedent Soil Moisture: A Comparison of Observational and Modeled Soil Moisture Products." Byrd Center Symposium: Climate Change Research at Ohio State, March 22, Byrd Polar & Climate Research Center, Columbus, OH.

**Leasor, Z.T.,** Quiring, S.M. (2018) "Improvements in Monthly Temperature Forecasts Utilizing Antecedent Soil Moisture: A Comparison of Observational and Modeled Soil Moisture Products." 2018 American Geophysical Union Fall Meeting, December 10-14, Walter E. Washington Convention Center, Washington, DC.

**Leasor, Z.T.,** Quiring, S.M. (2018) "Improved Seasonal Forecasts Utilizing Antecedent Soil Moisture: A Comparison of Observational and Modeled Monthly Soil Moisture Products." 2018 GeoWeek Graduate Student Forum, November 15, The Ohio State University, Columbus, OH.

**Leasor, Z.T.,** Quiring, S.M. (2018) "Improved Seasonal Forecasts Utilizing Antecedent Soil Moisture: A Comparison of Observational and Modeled Monthly Soil Moisture Products." The 2018 MOISST Workshop: From Soil Moisture Observations to Actionable Decisions, June 4-7, University of Nebraska-Lincoln, Lincoln, NE.

**Leasor, Z.T.,** Quiring, S.M. (2017) "Improvements in Monthly Temperature Forecasts Utilizing Antecedent Soil Moisture in the South-Central U.S." The 2017 Workshop at MOISST: Integrating Diverse Sources of Soil Moisture Information, May 23-25, Oklahoma State University, Stillwater, OK.

**Leasor, Z.T.,** Quiring, S.M. (2016) “Spatial Variations of Drought Persistence in the South-Central United States.” 2016 American Geophysical Union Fall Meeting, December 12-18, Moscone Convention Center, San Francisco, CA.

**Leasor, Z.T.,** Quiring, S.M. (2016) “A Monthly-to-Seasonal Temperature Forecast Utilizing Antecedent Soil Moisture Conditions in the SCIPP region.” The 2016 Workshop at MOISST: The Growing Science of Soil Moisture Sensing, May 17-18, Oklahoma State University, Stillwater, OK.

**Leasor, Z.T.,** Quiring, S.M. (2016) “Temperature Persistence in the South-Central United States.” Third Annual Symposium of the Association of Geography Graduate Students, March 4, 2016, Texas A&M University, College Station, TX.

### Invited Talks and Seminars

Quiring, S.M., **Z.T. Leasor**, and C. Zhao (2018) “Introduction to Cloud Computing”. Ohio State Department of Geography Sharpe Innovation Commons Workshop Series. October 23, 2018. Columbus, OH.

Quiring, S.M., **Z.T. Leasor** (2018) “Developing a National Soil Moisture Network (NSMN)”. Aurora Fall Board Meeting Research Lightning Talks. October 16, 2018. Columbus, OH.

### Awards and Honors

2020-2021 E. Willard and Ruby S. Miller Fellowship, Department of Geography, The Ohio State University

2015-2016 Lechner Scholarship, Office of Graduate Studies, Texas A&M University

### Memberships

American Association of Geographers (AAG) **Oct 2019 - Present**

American Geophysical Union (AGU) **Jun 2016 - Present**

Geography Graduate Organization (OSU) **Sep 2016 - Present**

### Service

#### *University Service:*

**Spring Panel Planning Committee Member** **October 2019 – March 2020**  
Geography Graduate Organization (GGO), The Ohio State University, Columbus, OH

**Committee Member** **October 2018 - April 2019**  
Graduate Studies Committee Plus (Curriculum Development), The Ohio State University

**Graduate Studies Committee Representative** **June 2018 - June 2019**  
Geography Graduate Organization (GGO), The Ohio State University, Columbus, OH

**Judge** **September 2016**  
2016 Fall Student Poster Forum, The Ohio State University

*External Service:*

**Peer Reviewer**  
Nature Scientific Reports  
Physical Geography

**Professional Development**

**US Forest Service Workshop** **May 15-17, 2018**  
*Monitoring Forest Soil Moisture for a Changing World*, Michigan Tech Research  
Institute, Ann Arbor, MI

**Midwest DEWS Workshop** **December 7-8, 2016**  
*NIDIS Midwest Drought Early Warning System Regional Workshop*, Cincinnati, OH

**Teaching Orientation** **August 2016**  
*University Center for the Advancement of Teaching (UCAT)*, The Ohio State University

**Teaching Experience**

**Lab Instructor** **Fall 2019 – May 2020**  
Geography 1900: Extreme Weather and Climate  
Department of Geography, The Ohio State University, Columbus, OH

**Guest Lecture** **Spring 2020**  
Geography 5921: Boundary Layer Climatology  
Department of Geography, The Ohio State University, Columbus, OH

**Guest Lecture** **Fall 2019 - Present**  
Geography 5900: Weather, Climate, and Global Warming  
Department of Geography, The Ohio State University, Columbus, OH

**Technical Skills**

**Programming:** Matlab, R, Python

**GIS & Geospatial software:** ArcGIS, Panoply GISS, SaTScan

**Other software:** SPSS, IDV, PuTTY, GR2Analyst, AWS, MS Office Suite