Alex M. Haberlie, Ph.D.
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Education:

Northern Illinois University	DeKalb, IL	Ph.D. (Geography)	2018
Dissertation title: "Observed and Future Dynamically Downscaled Estimates of Precipitation Associated with Mesoscale Convective Systems" Advisor: Dr. Walker Ashley			
Northern Illinois University	DeKalb, IL	M.S. (Geography)	2014
Thesis title: "Convective initiation climatology for the Atlanta, Georgia region" Advisors: Dr. Walker Ashley, Dr. Thomas Pingel			
University of Wisconsin – Platteville	Platteville, WI	B.S. (Computer Science)	2010

Research interests:

Climate change, land use/land cover effect on thunderstorm occurrence, organized thunderstorm clusters, hydrometeorological and hydroclimatological extremes (flood and drought), image processing, machine learning, severe and hazardous weather.

Professional appointments:

Assistant Professor 2021-Present
Department of Geographic and Atmospheric Sciences, Northern Illinois University, DeKalb, IL
Assistant Professor 2018-2021
Department of Geography and Anthropology, Louisiana State University, Baton Rouge, LA

Peer-reviewed publications:

S. M. Strader, **A. M. Haberlie**, and A. Loitz, 2021: Assessment of NWS County Warning Area Tornado Risk, Exposure, and Vulnerability. *Weather, Climate, and Society*, **12**, 189-209

Haberlie, A. M., W. S. Ashley, and M. Karpinski, 2021: Mean storms: Composites of radar reflectivity images during two decades of severe thunderstorm events. *International Journal of Climatology*, **41**, E1738-E1756.

Ashley, W. S., **A. M. Haberlie**, and V. A. Gensini, 2020: Reduced frequency and size of late-twenty-first-century snowstorms over North America. *Nature Climate Change*, **10**, 539-544.

Gensini, V. A., **A. M. Haberlie**, and P. T. Marsh, 2020: Practically Perfect Hindcasts of Severe Convective Storms. *Bulletin of the American Meteorological Society*, **101**, E1259-E1278.

Ashley, W. S., **A. M. Haberlie**, and J. Strohm, 2019: A Climatology of Quasi-Linear Convective Systems and Their Hazards in the United States. *Weather and Forecasting*, **34**, 1605-1631.

Haberlie, A. M., and W. S. Ashley, 2019: A radar-based climatology of mesoscale convective systems in the United States. *Journal of Climate*, **32**, 1591-1606.

Haberlie, A. M., and W. S. Ashley, 2019: Climatological representation of mesoscale convective systems in a dynamically downscaled climate simulation. *International Journal of Climatology*, **39**, 1144-1153.

Haberlie, A. M., and W. S. Ashley, 2018: A Method for Identifying Mesoscale Convective Systems in Radar Mosaics. Part I: Segmentation and Classification. *Journal of Applied Meteorology and Climatology*, **57**, 1575-1598.

Haberlie, A. M., and W. S. Ashley, 2018: A Method for Identifying Midlatitude Mesoscale Convective Systems in Radar Mosaics. Part II: Tracking. *Journal of Applied Meteorology and Climatology*, **57**, 1599–1621.

Haberlie, A. M., W. S. Ashley, A. Fultz, and S. Eagan, 2016: The effect of reservoirs on the climatology of warm-season thunderstorms in Southeast Texas, USA. *International Journal of Climatology,* **36**, 1808-1820.

Haberlie, A. M., W. S. Ashley, and T. Pingel, 2015: The effect of urbanization on the climatology of thunderstorm initiation. *Quarterly Journal of the Royal Meteorological Society*, **141**, 663-675.

Ashley, W. S., S. Strader, D. Dziubla, and **A. M. Haberlie,** 2015: Driving blind: Weather-related vision hazards and fatal motor vehicle crashes. *Bulletin of the American Meteorological Society*, **96**, 755-778.

Haberlie, A. M., K. Gale, D. Changnon, and M. Tannura, 2014: Climatology of tropical system rainfall on the eastern Corn Belt. *Journal of Applied Meteorology and Climatology*, **53**, 395-405.

Invited Presentations:

Haberlie, A. M., 2020: An analysis of half a million radar reflectivity snapshots centered on severe weather reports from 1996 to 2017. Central Louisiana Chapter of the American Meteorological Society, Baton Rouge, LA.

Haberlie, A. M., 2018: Classifying Rainfall Areas with Machine Learning. 2018 Unidata Users Workshop, Boulder, CO.

Haberlie, A. M., 2018: The Past, Present, and Future of Organized Thunderstorms. Department of Geography and Anthropology Friday Forum, Baton Rouge, LA.

Haberlie, A. M., D. Changnon, 2013: Climatology of tropical system rainfall on the eastern Corn Belt. American Meteorological Society, Chicago Chapter, DeKalb, IL.

Grants:

2021-2024 – Vortex Southeast (NOAA), “Faster, Clearer, Stronger Communication and Action: Building IWT and Vulnerable Resident Connections to Improve Severe Weather Literacy and Outcome”, $166,851

2021-2023 – The Adaptation Sciences Program (NOAA), “Planning a Flood Resilient Future for New Orleans, LA.”, $25,729

2019-2022 – National Science Foundation, “The Role of Mesoscale Convective System Precipitation in the Hydroclimate of the Conterminous United States”, $60,382

2019-2021 – Louisiana Board of Regents Research Competitiveness Subprogram, “Building a Climatology of Mesoscale Convective Processes Using Image-Classification and Machine-Learning Techniques on Sequences of Radar Data”, $86,157

2018-2020 – National Sea Grant College Program (NOAA), “Communicating Climate Tools to Coastal Stakeholders”, $200,000

2014-2014 – United States Geological Survey, “Hydro-meteorological responses to tropical system precipitation in Illinois”, $8,663

Conference presentations:

Haberlie, A. M., W. S. Ashley, V. A. Gensini, and C. Battisto, 2021: Performance of Continental-Scale Regional Climate Simulations for High-Impact Weather Events. 34th Conference on Climate Variability and Change. American Meteorological Society, Virtual Meeting.

Haberlie, A. M., W. S. Ashley, V. A. Gensini, and M. Karpinski, 2021: SVRIMG: Radar Reflectivity Images Centered on Severe Weather Reports. 11th Symposium on Advances in Modeling and Analysis Using Python. American Meteorological Society, Virtual Meeting.

Haberlie, A. M., W. S. Ashley, V. A. Gensini, and M. Karpinski, 2020: Analysis and Application of Mesoscale Radar Scenes during Severe Weather Events. 19th Conference on Artificial Intelligence for Environmental Science, American Meteorological Society, Boston, MA.

Haberlie, A. M., and W. S. Ashley, 2019: Using Machine Learning Techniques to Construct a Climatology of Mesoscale Convective Systems in the United States. 18th Conference on Artificial and Computational Intelligence and Its Application to the Environmental Sciences, American Meteorological Society, Phoenix, AZ.

Haberlie, A. M., W. S. Ashley, and J. Strohm, 2018: A Climatology of Quasi-linear Convective Systems in the U.S. 2018 SWAAG Meeting, American Association of Geographers, Baton Rouge, LA.

Haberlie, A. M., and W. S. Ashley, 2018: Using Scikit-Learn to Increase the Precision of an Automated Mesoscale Convective System Segmentation and Tracking Procedure. 8th Symposium on Advances in Modeling and Analysis Using Python, American Meteorological Society, Austin, TX.

Haberlie, A. M., and R. May, 2017: Implementation and Comparison of Interpolation Techniques for the Meteorological Python (MetPy) Package, 7th Symposium on Advances in Modeling and Analysis Using Python, American Meteorological Society, Seattle, WA.

Haberlie, A. M., and W. S. Ashley, 2017: A Comparison of Machine Learning Approaches for Classification of Radar-derived Convective Clusters, 7th Symposium on Advances in Modeling and Analysis Using Python, American Meteorological Society, Seattle, WA.

Haberlie, A. M., and W. S. Ashley, 2016: A U.S. climatology of mesoscale convective systems: 1997-2013. 15th Annual Student Conference, American Meteorological Society, New Orleans, LA.

Haberlie, A. M., and W. S. Ashley, 2014: A U.S. climatology of mesoscale convective systems: 1997-2013. 27th Conference on Severe Local Storms, American Meteorological Society, Madison, WI.

Haberlie, A. M., W. S. Ashley, and T. J. Pingel, 2014: Comparison of Methodologies for Detecting Convective Initiation Due to Differences in Land Use. 11th Symposium on the Urban Environment, American Meteorological Society, Atlanta, Georgia.

Teaching Appointments:

Instructor 2014-2015, 2016-2017

Department of Geography, Northern Illinois University, DeKalb, IL

- Prepared lectures and in-class and online activities for 10-50 undergraduates
- Created and graded in-class and online homework assignments, papers, and exams
- Guided and mentored students preparing and leading forecast discussions
- *GEOG 105, MET 475*

Graduate Teaching Assistant 2012-2014

Department of Geography, Northern Illinois University, DeKalb, IL

- Prepared lectures and in-class and online activities for 10-50 undergraduates
- Guided and mentored students preparing and leading forecast discussions
- *GEOG 102, MET 300, MET 320, MET 421, MET 444*

Research appointments:

Dissertation Completion Fellowship

Department of Geographic and Atmospheric Sciences, Northern Illinois University, 2017-2018

- Conduct and publish research associated with proposed dissertation work
- Complete dissertation by summer of 2018

Great Journeys Research Assistant

Department of Geography, Northern Illinois University, 2015-2016

- Developed a research proposal to submit to NSF
- Submitted to Physical and Dynamical Meteorology and Climate and Large Scale Dynamics Programs
- Proposal was funded and is currently an ongoing grant

Honors and Awards:

- Dissertation Completion Fellowship (2017-2018)
- Great Journeys Graduate Assistantship (2015-2016)
- Outstanding Thesis Award (2013-2014)
- Outstanding Graduate Student Award (2013-2014)
- 3rd Place, Sigma Xi Graduate Student Research Association Poster Contest

Association or Society Membership:

- American Meteorological Society (AMS)
- American Association of Geographers (AAG)
- Gamma Theta Upsilon (GTU)

External Experience:

Python Developer Internship 2016 (Summer)

Unidata, University Corporation for Atmospheric Research, Boulder, CO

- Developed an interpolation and gridding module for the Meteorological Python Package (MetPy)
- Implemented testing functions to verify code accuracy and function (pytest)
- Used source control to maintain code integrity (Github)

Contract Python Developer 2014-2017

T-Storm Weather, Chicago, IL

- Collect and interpret project requirements from client
- Download applicable modeled and observed meteorological data
- Process data and display on maps
- Generate iterative prototypes
- Deploy production code
- Maintain and document projects

Service:

- Associate Editor, *Monthly Weather Review* (2021-Present)
- Unidata Users Committee (2020-Present)
- LSU Department of Geography and Anthropology Undergraduate Coordinator (2020-2021)
- LSU Department of Geography and Anthropology Speakers Committee (2020-2021)
- Session Co-Chair, AMS Annual AI for Environmental Science Conference (2020)
- LSU Department of Geography and Anthropology Technology Committee (2018-2020)
- SWAAG Planning Committee (2018)
- NIU Department of Geography Website Committee (2016-2018)
- NIU WxChallenge Manager (2016-2017)
- NIU Graduate Colloquium Committee Vice-President (2013-2014)
- STEMfest Volunteer (2012, 2013, 2017)
- American Meteorological Society Severe Local Storms Conference Volunteer (2012)
- Peer-review for the following journals: *International Journal of Climatology*, *Journal of Climate*, *Remote Sensing*, *Remote Sensing Letters*, *Journal of Applied Meteorology and Climatology*, *Monthly Weather Review*, and *Urban Climate.*
- External reviewer for NSF-GSS.

Synergistic activities:

- I have taught courses in meteorology, climatology, and physical geography. Many of these courses have incorporated computer programming to expose students to useful skills and to demonstrate concepts explored in those classes.
- I have participated in STEM recruiting activities while at NIU and LSU (STEMfest, LSU Recruitment Days).
- I have worked with private industry to assist them in generating products needed to inform their clients and produce regular agriculture-focused forecasts.
- Formally as a part of the Unidata Users Committee, and informally through social media, I regularly produce products and tutorials that help people learn the Python programming language.

- I am the creator, developer, and maintainer of the SVRIMG (SeVere IMaGes) dataset that provides data and examples to beginners and experts alike for the purposes of making machine learning easier and more accessible.
- I have worked closely with the Southern Regional Climate Center to help generate products requested by users and tools used by the employees to perform their daily tasks.

Thesis / Dissertation Committee Member:

Bienvenu Massamba (LSU, M.S., 2020), Rupsa Bhowmick (LSU, Ph.D., 2020), Marisa Karpinksi (LSU, M.S., 2020), Ashley Autore (LSU, M.S., 2021), Chris Battisto (NIU, M.S., 2021)