

Curriculum Vitae

Laiyin Zhu Ph.D.

Assistant Professor, Department of Geography, Western Michigan University

WORK ADDRESS

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EDUCATION

Ph.D. (2013) Geography, Texas A&M University, College Station, TX, USA. *Graduated with Distinguished Graduate Student Award for Excellence in Research Dissertation: Investigation of variations and impacts of tropical cyclone precipitation in Texas (1950-2009).*

Advisor: Dr. Steven M. Quiring.

M.S. (2008) Geography, Beijing Normal University, Beijing, China.

Thesis: Observation and analysis of Sea-Land Breeze in the western coast of Bohai Sea in China.

Advisor: Dr. Wei Gu.

International Exchange Student (2006) California State University, Long Beach, CA, USA

B.S. (2004) Environmental Science, Nanjing Forestry University, Nanjing, China *Thesis: El Niño/Southern Oscillation (ENSO) and regional disaster responses* *Advisor: Dr. Chuan Li.*

PROFESSIONAL APPOINTMENTS

Assistant Professor (2015-Present), Western Michigan University, Department of Geography, College of Art and Science.

Postdoctoral Research Fellow (2013-2015), Johns Hopkins University, Department of Geography and Environmental Engineering.

Graduate Research Assistant (2010-2012), Texas A&M University, Department of Geography.

Field Research Assistant (2004-2008), Beijing Normal University, College of Resources & Technology.

Professional Recognition

PEER-REVIEWED PUBLICATIONS

Published

(14) Filbin, R.; Zhu, L; DeChango-Cook, L; and Meng, L (2019) "Implications of Dam Removal: Modeling Streamflow in Lansing, Michigan Using the Soil and Water Assessment Tool," *International Journal of Geospatial and Environmental Research: Vol. 6 : No. 1* , Article 1. Available at: <https://dc.uwm.edu/ijger/vol6/iss1/1> (Paper from graduate student)

(13) Lei, C., **Zhu, L.** (2018) Spatio-temporal variability of land use/land cover change (LULCC) within the Huron River: Effects on stream flows. *Climate Risk Management (Impact Factor IF 1.138)*, doi: <https://doi.org/10.1016/j.crm.2017.09.002> (Paper from graduate student)

(12) Reilly, A., **Zhu, L.**, Igusa, T, Guikema, T. (2017) "Evolution of vulnerability of communities facing repeated hazards" *PLoS ONE (IF 2.766)*, doi: <https://doi.org/10.1371/journal.pone.0182719>

(11) Wang, R., **Zhu, L.** et al. (2016) "Automatic Type Recognition and Mapping of Global Tropical Cyclone Disaster Chains (TDC)" *Sustainability (IF 2.177)*, doi: 10.3390/su8101066

(10) **Zhu, L.,** S. Quiring. (2017) An extraction method for long-term tropical cyclone precipitation from daily rain gauges. *Journal of Hydrometeorology (IF 3.790)*, doi: 10.1175/JHM-D-16-0291.1.

(9) **Zhu, L.,** S. Quiring, I. Guneralp, W. Peacock. (2015) Variations in tropical cyclone-related discharge in four watersheds near Houston, Texas. *Climate Risk Management (IF 1.138)*, doi:10.1016/j.crm.2015.01.002

(8) **Zhu, L.,** S. Quiring, K. Emanuel. (2013) Estimating tropical cyclone precipitation risk in Texas. *Geophysical Research Letters (IF 4.34)*, doi: 10.1002/2013GL058284.

(7) **Zhu, L.,** O. Frauenfeld, and S. Quiring. (2013) Seasonal Tropical Cyclone Precipitation (TCP) in Texas: A Statistical Modeling Approach based on a 60-year Climatology. *Journal of Geophysical Research–Atmospheres (IF 3.38)*, doi: 10.1002/jgrd.50663.

(6) **Zhu, L.,** and S. Quiring. (2013) Variations in Tropical Cyclone Precipitation in Texas (1950 to 2009). *Journal of Geophysical Research–Atmospheres (IF 3.38)*, doi: 10.1029/2012JD018554.

(5) Quiring, S. M., Schumacher, A. B., Labosier, C., and **Zhu, L.** (2011) Variations in mean annual tropical cyclone size in the Atlantic. *Journal of Geophysical Research–Atmospheres (IF 3.38)*, 116, D09114, doi: 10.1029/2010JD015011.

(4) Quiring, S. M., **Zhu, L.,** and Guikema, S. (2011) Importance of soil and elevation characteristics for modeling power system outages due to hurricanes. *Natural Hazards (IF*

I.901), 58: 365-390, doi: 10.1007/s11069-010-9672-9.

(3) Gu, W., **Zhu, L.**, Cui, W., Li, N., Cong, J., Xu, Y., Huang, S., Yu, H. and L. Li. (2011) The research of sea-land breeze (SLB) on the west coast of Bohai Bay based on field observation. *Sciences in Cold and Arid Regions*, 3(3): 264-273, doi: 10.3724/SP.J.1226.2011.00264.

(2) **Zhu, L.**, Xu, Y., Cui, W., Gu, W., and S. Huang. (2009) The observation research of temperature impacted by the sea land breeze in the coastal area of Western Bohai bay. *Scientia Meteorologica Sinica*, 29: 694-699. (In Chinese).

(1) Wang, J., Shi, P., Yi, X., Jia, H., and **Zhu, L.** (2007) The regionalization of urban natural disasters in China. *Natural Hazards (IF 1.901)*, 44: 169-179, doi: 10.1007/s11069-006-9102-1.

Submitted or in Preparation

Zhu, L., S. Guikema, B. Liu. Predicting cassava yield in southern China from statistical models and CMIP5 model outputs. Submitted to *Climatic Change*.

Filbin, R., **Zhu, L.** et al. Implications of Dam Removal: Modeling of Streamflow in Lansing, Michigan, Using the Soil and Water Assessment Tool (SWAT). Submitted to *Environmental Earth Sciences*.

Zhu, L., S. Yuan. Comparing Tropical Cyclone Precipitation from GPM and Rain Gauges.

GRANTS & PROPOSALS

Granted Funding:

(4) Support for Faculty Scholars Award (SFSA): “Analyzing Power Outages in Hurricanes”, The Office of the Vice President for Research, Western Michigan University, Nov 2018 to Nov 2019, \$1,961 awarded.

(3) Association of Geography Graduate Students (AGGS) Type I Grant, Department of Geography, Texas A&M University, 2011, \$500 awarded.

(2) Research and Presentation Grants, Office of Graduate Studies, Texas A&M University, 2010, \$500 awarded.

(1) Association of Geography Graduate Students (AGGS) Type I Grant, Department of Geography, Texas A&M University, 2009, \$500 awarded.

Grant Proposals submitted but not funded:

(3) Support for Faculty Scholars Award (SFSA): “River flooding risk and Tropical Cyclone Precipitation in the North America”, submitted to The Office of the Vice President for Research, Western Michigan University, Oct 2017, \$2,000 requested.

(2) Support for Faculty Scholars Award (SFSA): “Impact of Climate Change in Tanzania”, submitted to The Office of the Vice President for Research, Western Michigan University, Jan

2017, \$2,000 requested.

(1) Interdisciplinary Research Initiative Award: “Determining factors for increased inland flooding risk from tropical cyclones in U.S. cities”, by Laiyin Zhu, Chansheng He, Greg Veeck, submitted to College of Arts and Sciences, Western Michigan University, \$5,000 requested.

AWARDS AND HONORS

(4) Distinguished Graduate Student Award for Excellence in Research, Association of Former Students, Texas A&M University, 2014.

(3) John Russell Mather Paper of the Year Award, Climate Specialty Group of the Association of American Geographers, 2014.

(2) First Class Scholarship for academic excellence, College of Resources Science and Technology, Beijing Normal University, 2005, 2006.

(1) Outstanding student of Beijing Normal University for Academic excellence, Beijing Normal University, 2005.

CONFERENCE PROCEEDINGS

Zhu, L., Lv H., Zhang J., et al. (2005) Analysis of traffic vulnerability based on college campus security, Proceedings of Asia Pacific Safety Symposium 2005, Part B: 1567-1572.

Zhu, L. (2005) Regional Disasters Responses of El Niño, Proceedings of the 5th IIASA- DPRI Forum.

NEWSPAPERS & OTHERS

Labosier, C., **Zhu, L.**, Quiring, S. (2012) Engaging the public through writing an op-ed. *Transactions of the AGU*, 93 (40): 389. doi:10.1029/2012EO400008.

Labosier, C., **Zhu, L.**, Quiring, S. (2012) Tight budgets posing threat to Texas hurricane research. *Houston Chronicle*, June 1, 2012, B9.

CONFERENCE PRESENTATIONS

Zhu, L (2018) Estimating Tropical Cyclone Precipitation Risk over the Continental North America, 33rd Conference on Hurricanes and Tropical Meteorology, Ponte Vedra, FL, April, 2018.

Zhu, L (2017) Estimation of Tropical Cyclone Precipitation Risk for the Continent of North America, 6th International Summit on Hurricanes and Climate Change: From Hazard to Impact, Heraklion, Crete, Greece, June, 2017.

Zhu, L (2017) Modeling Power Outages in Hurricane Mathew: The Role of Precipitation, Annual Meeting of the Association of American Geographers, Boston, MA, April, 2017.

Zhu, L (2016) Variation in 93 years of Tropical Cyclone Precipitation (TCP) for North America, San Francisco, CA, March 2016.

Zhu, L (2015) Reconstruction of Tropical Cyclone for North American in 93 years. Poster presentation given at American Geophysical Union Fall Meeting, San Francisco, CA, Dec 2015.

Zhu, L. (2015) Extracting Daily Tropical Cyclone Precipitation Climatology from the Daily Rain Gauges for North America (2014) Annual Meeting of the Association of American Geographers, Chicago, IL, April 2015.

Zhu, L., S. M. Quiring, S. Guikema (2014) A New Method to estimate Daily Tropical Cyclone Precipitation from the GHCND Rain Gauges. Poster presentation given at American Geophysical Union Fall Meeting, San Francisco, CA, Dec 2014.

Zhu, L., S. Guikema, T. Igusa (2014) People's decisions and hurricane wind damages: An Agent-Based Model (ABM) approach. Paper presentation given at Society for Risk Analysis Annual Meeting, Denver, CO, Dec 2014.

Zhu, L., S. M. Quiring, S. Guikema (2014) A New Method to estimate Daily Tropical Cyclone Precipitation from the GHCND Rain Gauges. Poster. presentation given at American Geophysical Union Fall Meeting, San Francisco, CA, Dec 2014.

Zhu, L. (2014) A Statistical Modeling Approach Based on a 60 Year Climatology (2014) John Russell Mather Paper Presentation (invited) at Annual Meeting of the Association of American Geographers, Tampa, Florida, April 8–12.

Zhu, L., S. M. Quiring, I. Guneralp, and W. G. Peacock (2013) Trends in Tropical Cyclone Precipitation and Discharge in Watersheds near Houston, Texas. Paper presentation given at American Geophysical Union Fall Meeting, San Francisco, CA, Dec 2013.

Zhu, L. (2013) Diagnosing and forecasting seasonal Tropical Cyclone Precipitation (TCP) in Texas. Paper presentation given at the Annual Meeting of the Association of American Geographers, Los Angeles, CA, April 2013.

Zhu, L. (2012) Tropical Cyclone Precipitation (TCP) in Texas. Paper presentation given at the Annual Meeting of the Association of American Geographers, New York City, NY, Feb 2012.

Zhu, L. (2011) Modeling Tropical Cyclone induced inland flooding for Houston. Presentation given at the Fall Meeting of the American Geophysical Union, San Francisco, CA, Dec 2011.

Zhu, L. (2011) Climate change and Tropical Cyclone precipitation of Texas in 1950-2010. Paper presentation given at the Annual Meeting of the Association of American Geographers, Seattle, WA, Apr 2011.

Zhu, L. (2010) An analysis for Tropical Cyclone precipitation in Texas from 1950 to 2010. Poster presentation given at the Fall Meeting of the American Geophysical Union, San Francisco, CA, Dec 2010.

Zhu, L. (2010) Spatial and temporal variations of Tropical Cyclone (TC) precipitation in Texas. Interactive short paper presentation given at the Annual Meeting of the Association of American Geographers, Washington, D.C., Apr 2010.

Zhu, L. (2009) An observational study of sea-land breeze (SLB) on the West Coast of Bohai Sea in China. Interactive short paper presented at the Annual Meeting of the American Association of Geographers, Las Vegas, NV, Mar 2009.

Zhu, L. (2008) The Observational Study of Air Temperature on the Southwestern Coast of Bohai Sea in China. Paper presentation given at the Annual Conference of the Southwest Division of the Association of American Geographers, San Marcos, TX, Oct 2008.

Zhu, L. (2005) Analysis of traffic vulnerability based on college campus security, Paper presentation given at the Asia Pacific Safety Symposium 2005, Shaoxing, Zhejiang Province, Oct 2005.

INVITED PRESENTATIONS/LECTURES

Zhu, L. (2016) Tropical Cyclone Disasters and Climate Change, Invited Talk, Department of Environmental Science, Nanjing University.

Zhu, L. (2016) Tropical Cyclone and Climate Change, Invited Talk, Department of Geography, Beijing Normal University.

Zhu, L. (2016) Hurricanes in U.S. and Climate Change, Invited Talk, Department of Geography, Fujian Normal University.

Zhu, L. (2012) Tropical Cyclone Precipitation in Texas (1950-2009). GEOG 434 Hydrology & Environment Invited Talk, Texas A&M University.

Zhu, L. (2011) Tropical Cyclone precipitation in Texas and its hydrological modeling. Texas A&M Geography Society Lecture Series, Department of Geography, Texas A&M University.

Zhu, L. (2011) HEC-HMS modeling of flash floods event in Houston area in 2001. GEOG 434 Hydrology & Environment Invited Talk, Texas A&M University.

Professional Competence in Teaching

TEACHING EXPERIENCE

Course Taught at Western Michigan University, Department of Geography

- (9) GEOG 3070 - Extreme Weather under Changing Climate (Spring 2018, self-developed course)
- (8) *GEOG 4685/6685 - Internet GIS (10 students, Fall 2018, self-developed course).
- (7) GEOG 2250 - Introduction to Meteorology and Climatology (Spring 2018).
- (6) GEOG 3010/5010 - Fund/Intro to GIS (Spring 2017, Fall 2017, Spring 2018, Spring 2019).
- (5) GEOG 1000 - World Ecology Problems (Fall 2016, Fall 2017, Fall 2018).
- (4) GEOG 3060 - Climate Change: Atmospheric Perspectives (Spring 2016, Spring 2017).
- (3) GEOG 5530 - Water Resources Management (Spring 2016).
- (2) GEOG 3500 - Conservation and Environmental Management (Fall 2015).
- (1) GEOG 5820 - Remote Sensing of the Environment (Fall 2015).

New Course developed at Western Michigan University, Department of Geography

- (2) GEOG 4685/6685 (self-developed new course) – Internet GIS/GIS and Internet Applications (10 students, Fall 2018)
- (1) GEOG 4280 – Data Analysis in Climate Science (will be taught in future)

Course Taught at Texas A&M University, Department of Geography

- Instructor (Summer 2012): GEOG 390 ‘Principles of GIS’.
- Lab Instructor (Spring 2013): GEOG 475 ‘Advanced GIS’.
- Lab Instructor (Fall 2012 & Spring 2010): GEOG 434 ‘Hydrology and Environment’.
- Lab Instructor (Spring 2012): GEOG 339 ‘Principles of GIS’.
- Lab Instructor (Fall 2010): GEOG 332 ‘Thematic Cartography’.

THESES SUPERVISION

Chair

- (3) Samuel Nimako Nyarko (graduated in 2018), M.S., **Title:** *Spatial-Temporal Variability of Precipitation and Drought in the State of Arizona, USA.*
- (2) Ryan Filbin (graduated in 2017, now PhD student at University of Wisconsin, Milwaukee), M.S., **Title:** *Modeling Channel Response to Dam Removal in Lansing Michigan, using SWAT.*
- (1) Cheyenne Lei (graduated in 2016, now PhD student at Michigan State University), M.S., **Title:** *Spatial, Temporal Variability and Trends within the Tributaries of the Huron River.*

Committee Member

- (6) Danielle Molenaar (graduated in 2018), Committee Member, **Title:** *Determinants of Household Water Use in the City of Kalamazoo, Michigan: The Role of Climate and Socioeconomic Factors.*

(5) Nirjala Koirala (graduated in 2018), Committee Member, **Title:** *Interannual Variations of Snowfall in the Lower Peninsular of Michigan and Impacts of Large Scale Oscillations.*

(4) Bandhan Ayon (graduated in 2017, now PhD student of Civil Engineering Program at WMU), M.S. Committee Member, **Title:** *Snow and Non-snow Events Based Winter Traffic Crash Pattern Analysis.*

(3) Skye Leake (in progress, expect graduation in 2020), M.S. Committee Member, **Topic:** *Volumetric Soil Moisture Availability Related to Intensification of Mesoscale Convective Complex Thunderstorm Events Across the Dakotas.*

(2) Nathalie Woloszyn (in progress, expect graduation in 2019), M.S. Committee Member, **Topic:** *Forest Disease and Climate Change in Canada.*

(1) Rajesh Sigdel (in progress, expect graduation in 2019), M.S. Committee Member, **Topic:** *Do better economic opportunities drive land cover change? A case study using remote sensing and personal interviews to understand Land use and land cover change in Sunsari district, Nepal.*

Professional Service

EXTERNAL SERVICES

CONFERENCE SERVICES

(4) **Session Chair (Co-organizing with Christopher Labosier and Trent Ford)**, Annual Conference of Annual Conference of American Association of Geographers (AAG), Los Angeles, 2013. Hydroclimatology Sessions.

(3) **Session Chair (Co-organizing with Christopher Labosier and Trent Ford)**, Annual Conference of Annual Conference of American Association of Geographers (AAG), New York City, 2012. Hydroclimatology Sessions: 2159, 2259, and 2559.

(2) **Session Chair (Co-organizing with Christopher Labosier and Steven Quiring)**, Annual Conference of Annual Conference of American Association of Geographers (AAG), Seattle, 2011. Hydroclimatology Sessions: 3129 and 3229.

(1) **Session Chair**, Annual Conference of American Association of Geographers (AAG), Las Vegas, 2009. Session: 4517 Water and Hazards.

PEER-REVIEW SERVICES

Paper reviewer for:

Journal of Geophysical Research-Atmospheres (3)

International Journal of Climatology (2)

Journal of Hydrometeorology (1)

Journal of Applied Meteorology and Climatology (1)

Risk Analysis (3)

Global and Planetary Change (1)

Stochastic Environmental Research and Risk Assessment (2)

Physical Geography (2)
Atmospheres (7)
Acta Meteorologica Sinica (1)
Climate (4)
Water (3)
Journal of Marine Science and Engineering (1)
Catena (1)
Earth system science data discuss (1)
Sustainability (1)
Science China D (1)
Anthropocene (2)

Book chapter reviewer for:

Oxford Research Encyclopedia of Natural Hazard Science

INTERNAL SERVICES

- (2) Lucia Harrison Funding Committee, Department of Geography, Western Michigan University, 2016-2018.
- (2) Gamma Theta Upsilon (GTU) advisor, Department of Geography, Western Michigan University, 2016-2018.
- (1) Department Colloquium organizer, Department of Geography, Western Michigan University, 2016-2017.

OTHER RECORDS

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

American Geophysical Union (since 2010)
Association of American Geographers (since 2009)

SKILLS

Languages: English (fluent), Chinese (fluent), German (basic), Japanese (basic) Operating Systems: Windows & Linux
Programming Languages: FORTRAN (very proficient), MATLAB (very proficient)
Software Packages: ArcGIS (very proficient), ENVI 4.x (proficient), Microsoft Office Series (proficient)
Statistic Packages: R (proficient) and SPSS Models: WRF, HEC-HMS, Agent-Based Models