

CHEYENNE LEI

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EDUCATION

Ph.D. in Geography

Michigan State University

Dissertation: “Albedo on Biofuel Ecosystems: Impact Assessment for Climate & Global Warming Impact”

May 2021

Master of Arts in Geography - Environmental & Resource Analysis

Western Michigan University

Thesis: “Spatial, Temporal Variability & Trends Within the Tributaries of the Huron River: Effects on the Frequency of Flooding”

May 2016

Geographical Information Science Certificate

Western Michigan University

May 2016

Bachelor of Science - Earth Science

Northern Michigan University

Major: Earth Science; Minor: Geomatics

May 2014

RESEARCH

Graduate Research Assistant

Michigan State University, Landscape Ecology & Ecosystem Science Lab (LEES)

- Assess carbon sequestration of biofuel crops using root biomass and eddy covariance methods.
- Determine changes in carbon allocation, root growth, net primary production and ecosystem variation temporally.
- Construct and maintain portable albedo towers at multiple biofuel crop ecosystems for the monitoring and analysis of albedo.
- Determine variation in albedo and global warming potential on multiple biofuel ecosystems.

Aug 2016 – Present

Flux Tower Technician

Michigan State University, Landscape Ecology & Ecosystem Science Lab (LEES)

- Construct, install and maintain eddy covariance and albedo towers in urban, agricultural, and forest ecosystems including KBS (i.e. BCSE, Scale-Up), MSU Campus & W.K. Kellogg Forest (KEF).
- Create programs for multiple dataloggers, collect, QA/QC and analyze data at multiple sites (i.e. LTER, Scale-Up, BCSE, KEF) for eddy covariance, radiation and automatic weather stations.

June 2016 – Present

Graduate Research Assistant

Western Michigan University

W.E. Upjohn Center for the Study of Geographical Change

- Created and published high resolution hybrid aerial and topographic maps to be distributed by Avenza Systems Inc.
- Imported raw map data, prepared master indices, verified data integrity.

Aug 2014 – Aug 2016

Western Michigan University

United States Department of Transportation Grant: Collaboration between Geography & Engineering Departments

- Conducted research to determine the equity of access to bike share programs in the United States.

- Sampled approximately 60 bike share programs, and examined factors such as socioeconomic status of the nearby areas, performance and quality of bikes, funding source, revenue, profit, and cost for consumer.

Watershed Management Intern

Huron River Watershed Council

July 2013 –
Aug 2014

- Monitored local water quality by recording stream depth, stream width, water temperature, water conductivity, and corresponding GPS and chronological metadata.
- Monitored and removed invasive species alongside the Huron River.

Watershed Management Intern

Alger County Conservation District

May 2013
– June
2013

- Monitored invasive plant species, and removed them with mechanical and herbicidal methods, where all sightings and removals were recorded with time and GPS metadata.
- Collected water quality data, such as stream depth, stream width, water temperature, water conductivity, and inventoried micro invertebrate in streams.

TEACHING

Guest Lecturer

Integrative Biology (IBIO) 357 - Global Change Biology

Feb 2020

- Title: “Albedo and eddy covariance: Effects on climate & land use change”

Graduate Teaching Assistant

Integrative Biology (IBIO) 355 – Ecology

May 2018
– Aug 2018

- Taught class of junior and senior undergraduates at the Kellogg Biological Station in evolutionary and community ecology, population biology and climate change.

PUBLICATIONS

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*, 19, 35-47.
<https://doi.org/10.1016/j.crm.2017.09.002>

Scott-Smith, C., Oh, J.S., & **Lei, C.** (2015). Exploring the equity dimensions of US bicycle sharing systems. Transportation Research Center for Livable Communities.
<https://doi.org/10.13140/RG.2.2.30941.72163>

Sciusco, P., Chen, J., Abraha, M., **Lei, C.**, Robertson, G.P., Laforteza, R., Shirkey, G., Ouyang, Z., Zhang, R., & John, R. (2020). Spatiotemporal variations of albedo in managed agricultural landscapes: Inferences to global warming impacts (GWI). *Landscape Ecology*. <https://doi.org/10.1007/s10980-020-01022-8>

Chen, J., C. Lei and P. Sciusco. (In press, 2020). *Chapter 5: Modeling Ecosystem Global Warming Potentials*. Pages xxx-xxx, IN: Chen., J. Biophysical Models for Ecosystem studies. HEP/MSU press.

Under Review

Dahlin, K.M., Akanga, D., Lombardozzi, D.L., Reed, D.E., Shirkey, G., **Lei, C.**, Abraha, M., & Chen, J. (Sept 2020). Challenging a global land surface model in a local socio-environmental system. *Journal of Advances in Modeling Earth Systems*.

Lei, C., Abraha, M., Chen, J., & Su, YJ. (July 2020). Long term variability of root production in bioenergy systems using ingrowth cores and eddy covariance. *Journal of Plant Ecology*.

Reed, D., **Lei, C.**, Baule, W., Shirkey, G., Chen, J., Czajkowski, K. P., & Ouyang, Z. (Sept 2020). Impacts of an urban density gradient on land-surface thermodynamic fluxes. *Urban Forestry & Urban Greening*.

In preparation

Lei, C., Chen, J., & Robertson, P. (Final preparation). Spatial and temporal variations in albedo of biofuel croplands on Biofuel Cropping System Experiment, Kellogg Biological Station.

Lei, C., Chen, J., & Robertson, P. (Final preparation). Cooling impact of albedo in perennial bioenergy croplands.

Ouyang, Z., Chen, J., Sciusco, P., Tong, J., **Lei, C.**, Li, F., John, R., Fan, P., & Williams, C. (In draft). Global warming or cooling? Albedo changes caused by urban expansion in the past and future.

Lei, C., Chen, J., & Robertson, P. (In draft). Albedo-induced global warming potential in bioenergy cropping systems.

Lei, C.; Chen, J., Robertson, G. P., Lindback, E., & Arrocha, I. (In draft). Temporal variations of albedo on bioenergy crops: Effects on global warming potential during two cultivation seasons.

INVITED TALKS

Chen, C., **Lei, C.**, Abraha, M., Robertson, G.P., Hamilton, S., Sciusco, P. (2020) Long-term changes in ecosystem carbon production and the role of albedo in regulating climate. *GLBRC Virtual Sustainability Meeting*. Oct 7-9. Virtual Conference.

Reed, D., **Lei, C.**, Baule, W.J., and Shirkey., G. 2019. Impacts of an urban density gradient on land-surface thermodynamic fluxes. February 2019, Wayne State University, MI.

Stewart, C. (2016). Spatial, temporal variability & trends within the tributaries of the Huron River: Effects on the frequency of flooding. *Landscape Ecology & Ecosystem Science Lab & Center for Global Change and Earth Observations*, March 2016, Michigan State University, East Lansing, MI.

ORAL PRESENTATION

Lei, C., Chen, J., Robertson. G.P. (2020). The climate cool impact of albedo in perennial bioenergy croplands. *KBS-LTER Midterm Meeting*. September 9th-11th. Virtual Conference.

Lei, C., Chen, J., Robertson. G.P. (2020). The climate cool impact of albedo in perennial bioenergy croplands. *Ecological Society of America Conference*, August 3rd – August 8th, Virtual Conference. <https://eco.confex.com/eco/2020/meetingapp.cgi/Paper/84459>

Lei, C. (2019). Albedo induced global warming potential in bioenergy cropping systems. *9th Annual Geography Graduate Student Presentation Competition*. March 29th, Geography Building, East Lansing, MI.

Lei, C. (2017). Analysis of ingrowth cores and flux variables on the variability of root production within agricultural regions. *Association of American Geographers Conference*, April 4th – April 9th, Boston, MA.

Lei, C. (2017). Analysis of ingrowth cores and flux variables on the variability of root production within agricultural regions. *7th Annual Geography Graduate Student Presentation Competition*, March 31st, Michigan State University, East Lansing, MI.

Lei, C. (2016). Spatial, temporal variability & trends within the tributaries of the Huron River: Effects on the frequency of flooding. *Association of American Geographers: East Lakes & West Lakes Geography Conference*, October 13th – 15th, Marquette, MI.

Stewart, C. (2016). Spatial, temporal variability & trends within the tributaries of the Huron River: Effects on the frequency of flooding. *Association of American Geographers Conference*, March 30th – April 3rd, San Francisco, CA.

POSTER PRESENTATION

Lei, C., Chen, J., Robertson, P. (2020). Spatiotemporal variability in albedo of biofuel cropping systems. *Department of Energy Annual Review Conference*, Jan 14th – 16th, Madison, WI.

Lei, C., Chen, J., Robertson, P. (2019). Albedo induced global warming potential in bioenergy cropping systems. *Great Lakes Bioenergy Research Center Annual Science Meeting Poster Session*, May 21st – 23rd, Lake Geneva, WI.

Lei, C., Chen, J., Robertson, P. (2019). Albedo induced global warming potential in bioenergy cropping systems. *Department of Energy Annual Review Conference*, Jan 22nd – 24th, Madison, WI.

Shirkey, G., Sciusco, P., John, R., Reed, R., O'Brien, K., **Lei, C.,** Cooper, L., Chen, J., Dahlin, K. (2018). Integrating historical land cover and land management in Michigan's Kalamazoo Watershed: A story of carbon flux impact. *Great Lakes Bioenergy Research Center Annual Science Meeting Poster Session*, May 7th – 9th, Lake Geneva, WI.

Lei, C., Abraha, M., Kahmark, K., Chen, J. Robertson, P., Hamilton, S. (2018). Spatiotemporal variability of albedo in diverse biofuel cropping systems. *Great Lakes Bioenergy Research Center Annual Science Meeting Poster Session*, May 7th – 9th, Lake Geneva, WI.

Lei, C. (2017). Analysis of ingrowth cores and flux variables on the variability of net ecosystem exchange and root production within ecosystem regions. *Council of Graduate Students Academic Conference*, February 25th, Michigan State University, East Lansing, MI.

Scott-Smith, C., Oh, J.S., **Stewart, C.** (2015). Explorations into the equitable performance of U.S. bicycle sharing systems. *Association of American Geographers Conference*, April 21st – 25th, Chicago, IL.

PROFESSIONAL SERVICE

Rapporteur

LTAR Annual Science Meeting Program

April 2020

- Title: "Great Plains and Florida Rangelands"
- Title: "Ecosystem Exchanges of Carbon, Water, and Energy across Diverse Agricultural Systems"

Co-field Presenter

Oct 2019

Great Lakes Bioenergy Research Center (GLBRC) Environmental Sustainability Meeting

- Title: "GLBRC BCSE: Albedo"

- Field Presenter** Sept 2019
Kellogg Biological Station LTER All Scientist Meeting
 • Title: “Surface reflectivity: Spatiotemporal variability of albedo in bioenergy cropping systems”
- Evaluator** July 2019
Mid-Michigan Symposium for Undergraduate Research Experiences Conference
- Field Presenter** June 2019
Tour of the Kellogg Biological Station: GLBRC REUs from MSU Main Campus & UW
 • Title: “Albedo in bioenergy cropping ecosystems”
- Educational Outreach - Interactive science exploration station** Apr 2019
University of Wisconsin Science Expeditions: Destination for Exploration
 • Collaboration with Wisconsin Energy Institute outreach team on helping develop an interactive educational activity on land-use/albedo research.
- Vice President** 2019
Geography Graduate Group
Department of Geography, Environment & Spatial Sciences
 • Foster community and a unified voice for graduate students within a diverse department.
- Chairperson** 2018 - 2019
Geography Graduate Group Colloquium Committee
Department of Geography, Environment & Spatial Sciences
 • Develop an annual seminar series for hosting professionals from multiple disciplines to promote professional connections for undergraduates, graduates and faculty.
- Career Panelist** July 2018
Kellogg Biological Station Undergraduate Career Panel
 • Dialogue with undergraduate students about their research and offer advice to pursuing advance degrees in geography, ecology and chemistry fields.
- Evaluator** April 2018
University Undergraduate Research and Arts Forum (UURAF)
- Exam Proctor** Sept 2016 - Present
Michigan State University
Department of Geography, Environment & Spatial Sciences
 • Oversee classes (20 to 100) of undergraduate and graduate students through temporary teaching, exam proctoring, media and classroom supervision.
- Canvasser** May 2016 - Aug 2016
Clean Water Action
 • Mobilized the community to raise awareness on environmental and public health issues, through the use of public education and organizing.
- Journal Reviewer**
 • Journal of Geophysical Research – Biogeosciences (Group peer review) (12/2017, 02/2018)
 • Environmental Systems Research (02/2018)
 • International Journal of Applied Geospatial Research (02/2019, 12/2019)
 • The International Journal of River Basin Management (02/2019, 04/2019, 07/2019)

- The Journal of Mountain Science (07/2019)
- Ecological Indicators (02/2020, 07/2020)
- International Journal of Applied Geospatial Research (07/2020)

Memberships

- Gamma Theta Upsilon – Honorary Society in Geography
- Association of American Geographers
- American Geophysical Union
- Ecological Society of America

MENTORSHIPS

Kaitlyn O'Brien

Department of Community Sustainability, Michigan State University, East Lansing, MI.

Apr 2017 –
May 2018

Kaylee Peterson

Department of Community Sustainability, Michigan State University, East Lansing, MI.

Apr 2018 –
July 2019

Pedro Kuyenga

Department of Geography, Environment & Spatial Sciences, Michigan State University, East Lansing, MI.

May 2018
– July 2018

Emily Lindback

Department of Earth and the Environment, Franklin & Marshall College, Lancaster, PA.

May 2018
– Aug 2018

- Project: “Comparing albedo, foliar nitrogen content, and global warming potential of fertilized and unfertilized croplands at the Great Lakes Bioenergy Research Center”.
- Citation: Lindback, E., **Lei, C.**, & Chen, J. (2018). Comparing albedo, foliar nitrogen content, and global warming potential of fertilized and unfertilized croplands at the Great Lakes Bioenergy Research Center. Poster Presentation. August 1st, 2018. *Kellogg Biological Station Annual Symposium*, Kellogg Biological Station, MI.

Isabel Arrocha

Department of Biological and Agricultural Engineering, University of Arkansas, Fayetteville, AR.

June 2019
– Aug 2019

- Project: “Albedo on perennial versus annual biofuel croplands”.
- Citation: Arrocha, I., **Lei, C.**, & Chen, J. (2019). Albedo on perennial versus annual biofuel croplands. Poster Presentation. July 24th, 2019. *Mid-Michigan Symposium for Undergraduate Research Experiences*, Michigan State University, East Lansing, MI.

Ezequiel Mussambe

Department of Geography, Environment & Spatial Sciences, Michigan State University, East Lansing, MI.

June 2019
– Aug 2019

Maximilian Mihaylov

Interdisciplinary Studies in Social Science, Michigan State University, East Lansing, MI.

June 2019
– Aug 2019

AWARDS & SCHOLARSHIPS

Graduate Office Fellowship <i>Graduate College, Michigan State University</i>	\$1,200	Mar 2020
The Charles P. and Linda A. Thompson Endowment for Social Science Research <i>College of Social Science, Michigan State University</i>	\$1,000	Apr 2019
Research Scholars Award <i>College of Social Science, Michigan State University</i>	\$3,367	Apr 2019
Kellogg Biological Station LTER Fall 2019 Fellowship <i>National Science Foundation & Michigan State University</i>	\$6,500	Mar 2019
Graduate Office Fellowship <i>Graduate College, Michigan State University</i>	\$550	Feb 2019
Kellogg Biological Station Graduate Teaching Assistantship <i>Doctoral Program, Michigan State University</i>	\$9,000	Summer 2018
Graduate Office Fellowship <i>Graduate College, Michigan State University</i>	\$1,000	Apr 2018
Research Scholars Award <i>College of Social Science, Michigan State University</i>	\$5,814	Apr 2018
Kenneth E. and Marie J. Corey Research Endowment Fund <i>College of Social Science, Michigan State University</i>	\$1,000	Apr 2018
Kellogg Biological Station Summer Fellowship <i>Kellogg Biological Station, Michigan State University</i>	\$2,500	Mar 2018
Academic Achievement Graduate Assistantship Award <i>Graduate College, Michigan State University</i>	\$8,000	Spring 2017
Geography Scholarship <i>Department of Geography, Michigan State University</i>	\$250	Sept 2017
Department of Geography Travel Fund <i>Department of Geography, Michigan State University</i>	\$400	Jan 2017
Graduate Student Affairs Travel Fund <i>Associate Dean, Michigan State University</i>	\$300	Jan 2017
Graduate College Travel Fellowship <i>Graduate College, Michigan State University</i>	\$200	Jan 2017
Lucius Harrison Geography Travel Fund <i>Department of Geography, Western Michigan University</i>	\$1,000	April 2016
Michigan Department of Transportation Grant Travel Fund <i>College of Engineering, Western Michigan University</i>	\$750	April 2015

Track & Field Scholarship <i>Northern Michigan University</i>	\$60,000	2012- 2014
Track & Field Scholarship <i>Missouri State University</i>	\$36,000	2010- 2011

TECHNICAL SKILLS

Unmanned Aerial Systems

FAA Part 107 Drone Test Prep & Beyond (Specialization course)

Department of Geography, Environment & Spatial Sciences, Michigan State University

- Remote Pilot Training Level 1 & 2: UAS components, multi-copter control, principles of flight and hands-on flight.
- Drone to GIS Level 1& 2: Multi-spectral processing using Pix4D, mobile GIS tools, drone data GIS processing.

Mandarin Chinese:

Conversational – Beginner; Writing – Beginner

United States Environmental Protection Agency

Agricultural Worker Protection Standard Training Compliance (May 2018 – Present)