

CHEYENNE I. LEI

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Postdoctoral Research Scholar

Iowa Institute of Hydraulic Research (IIHR) — Hydrosience & Engineering /
School of Earth, Environment & Sustainability
The University of Iowa

EDUCATION

| | | |
|------------------------------|---|------|
| Michigan State University | Ph.D. – Geography | 2022 |
| Western Michigan University | M.A. – Geography: Environmental & Resource Analysis | 2016 |
| Northern Michigan University | B.S. – Earth Science w/ Geomatics minor | 2014 |

Professional Certificates:

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| University of Michigan | College Teaching in Science, Technology, Engineering and Mathematics (STEM) | April 2023 |
| Western Michigan University | Geographical Information Science | May 2016 |
| GIS Certification Institute | GISP® (Certified GIS Professional) – <i>In Progress, Expected Completion: Dec 2026</i> | |

APPOINTMENTS

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| Adjunct Assistant Professor | 2026 - Present |
| Adjunct Instructor | Summer 2025; Summer 2026 |
| Postdoctoral Research Scholar | 2024 - Present |
| IIHR— Hydrosience and Engineering / School of Earth, Environment & Sustainability, University of Iowa | |
| Postdoctoral Research Fellow | 2022 - 2024 |
| Institute for Global Change Biology, School for Environment and Sustainability, University of Michigan | |
| On-Call Research Technician | 2022 - Present |
| Doctoral Graduate Student | 2016 - 2022 |
| Landscape Ecology & Ecosystem Science Lab Department of Geography, Environment, and Spatial Sciences, Michigan State University | |
| Masters Graduate Student | 2014 - 2016 |
| School of Environment, Geography, and Sustainability, Western Michigan University | |

PUBLICATIONS

h-index: 12; i10-index: 13; Citations: 529 (via Google Scholar)

Published:

- Falvo, G., Zhang, Y., Abraha, M., Mosier, S., Su, Y., **Lei, C.**, Chen, J., Cotrufo, M. F., Robertson, G.P. (2025). Combining eddy covariance towers, field measurements, and the MEMS 2 ecosystem model improves confidence in the climate impacts of bioenergy with carbon capture and storage. *Global Change Biology: Bioenergy*. [DOI](#).
- Reed, D. E., **Lei, C.**, Baule, W., Shirkey, G., Chen, J., Czajkowski, K. P., & Ouyang, Z. (2024). Impacts of an urban density gradient on land-atmosphere thermodynamic fluxes across seasonal timescales. *Theoretical and Applied Climatology*, [DOI](#).

14. Chen, J., **Lei, C.**, Chu, H., Li, X., Torn, M., Wang, Y., Sciusco, P., & Robertson, G. P. (2024). Overlooked cooling effects of albedo in terrestrial ecosystems. *Environmental Research Letters*. [DOI](#).
13. **Lei, C.**, Chen, J., Ibanez, I., Sciusco, P., Shirkey, G., Lei, M., ... & Robertson, G. P. (2024). Albedo of crops as a nature-based climate solution to global warming. *Environmental Research Letters*. [DOI](#).
12. Li, Y., Fang, L., Cao, G., Mi, W., Zhu, K., **Lei, C.**, & Bi, Y. (2024). Reservoir regulation-induced variations in water level impacts cyanobacterial bloom by the changing physiochemical conditions. *Water Research*, 121836. [DOI](#).
11. **Lei, C.**, Chen, J., & Robertson, G. P. (2023). Climate cooling benefits of cellulosic bioenergy crops due to elevated albedo. *Global Change Biology: Bioenergy*. [DOI](#).
10. Shirkey, G., John, R., Chen, J., Dahlin, K., Abraha, M., Sciusco, P., **Lei, C.**, & Reed, D. E. (2022). Fine resolution remote sensing spectra improves estimates of gross primary production of croplands. *Agricultural and Forest Meteorology*, 326, 109175. [DOI](#).
9. Ouyang, Z., Sciusco, P., Jiao, T., Feron, S., **Lei, C.**, Li, F., ... & Chen, J. (2022). Albedo changes caused by future urbanization contribute to global warming. *Nature Communications*, 13(1), 1-9. [DOI](#).
8. Sciusco, P., Chen, J., Giannico, V., Robertson, G.P., Abraha, M., **Lei, C.**, Shirkey, G., Yuan, J. (2022). Albedo-induced global warming impact (GWI $\Delta\alpha$) of an Upper Midwest USA watershed — A significantly undermined regulator in climate mitigations. *Land*, 11(2), 283. [DOI](#).
7. **Lei, C.**, Abraha, M., Chen, J., & Su, YJ. (2021). Long term variability of root production in bioenergy systems using ingrowth cores and eddy covariance. *Journal of Plant Ecology*. [DOI](#).
6. Abraha, M., Chen, J., Hamilton, S. K., Sciusco, P., **Lei, C.**, Shirkey, G., Yuan, J., Hamilton, S.K., & Robertson, G. P. (2021). Albedo-induced global warming impact of Conservation Reserve Program grasslands converted to annual and perennial bioenergy crops. *Environmental Research Letters*, 16(8), 084059. [DOI](#).
5. Chen, J., **Lei, C.**, & Sciusco, P. (2021). Modeling Ecosystem Global Warming Potentials. In Chen J. (Author), *Biophysical Models and Applications in Ecosystem Analysis* (pp. 119-150). East Lansing: Michigan State University Press. [DOI](#).
4. Dahlin, K. M., Akanga, D., Lombardozzi, D. L., Reed, D. E., Shirkey, G., **Lei, C.**, Abraha, M. & Chen, J. (2020). Challenging a global land surface model in a local socio-environmental system. *Land*, 9(10), 398. [DOI](#).
3. 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*, 35(6), 1385-1402. [DOI](#).
2. **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. [DOI](#).
1. Scott-Smith, C., Oh, J.S., & **Lei, C.** (2015). Exploring the equity dimensions of US bicycle sharing systems (No. TRCLC 14-01). Western Michigan University. Transportation Research Center for Livable Communities. [DOI](#).

Publications under review (available upon request):

1. Li, Y., Reich, P., **Lei, C.**, Michalak, A.M., Li, L., Ombadi, M., Zhu, K., & Bi, Y. (Jan 2025). Seasonal shifts in climate influence the spatial distribution of nutrients in inland waters. *Submitted to Communications: Earth and Environment*.

2. Dai, J., Chen, J., **Lei, C.**, Falvo, G., Robertson, G.P. (April 2025). Estimating fine resolution daily shortwave broadband albedo of croplands from harmonized Landsat and Sentinel-2 data. *Rejected, under revision.*

Publications with full working draft in preparation (available upon request):

1. **Lei, C.**, Secchi, S., (Final Preparation). Analysis of Cadastral, Aerial and Satellite Data on 100 Years of Agricultural Consolidation in Winnebago County, Iowa.
2. **Lei, C.**, Sciusco, P., Chen, J., Robertson, G. P., Lindback, E., Lei, M., Shirkey, G., & Arrocha, I. (Final preparation). Temporal variations of albedo on bioenergy crops: Effects on global warming potential during three cultivation seasons.
3. **Lei, C.**, Raubenheimer, S., Falvo, G. (Draft manuscript). Estimating Surface Albedo within Burned Successional Plots at Kreuger State Park, South Africa.
4. **Lei, C.**, Falvo, G. Ibanez, I., Chen, J. (Draft manuscript). An Evaluation of Surface Albedo Change Driven by Land Use.

TEACHING EXPERIENCE

Summary: Instructed courses in Geography, GIS, Climatology and Ecology, and guest lectured at multiple high schools, symposiums and universities in physical geography, global climate change, remote sensing, micrometeorological instrumentation, and environmental sustainability. My work has also been applied to Grab-and-Go Outreach activities featuring research developed into activities catered to elementary and middle school educational application. Within the community, I am an active Instructor at multiple community colleges in professional learning and community engagement.

Instructor Courses:

Adjunct Assistant Professor

Spring 2026

School of Earth, Environment & Sustainability, The University of Iowa

- Course: SEES:2050 – Foundations of GIS
Lecture Section – 80 students; Laboratory Sections – 4; Teaching Assistants – 4.

Adjunct Instructor

Summer 2025; Summer 2026

Blank Summer Institute for the Arts & Sciences

Department of Civil & Environmental Engineering, The University of Iowa

- Course: Field Science: Application of Meteorology in Field Ecology
Lecture Section (2025) – 27 students; Lecture Section (2026) – TBD

Instructor of Record

Summer 2024

Michigan Math and Science Scholars

College of Literature, Science, & the Arts, The University of Michigan

- Course: An Introduction to Ecological & Micrometeorological Instrumentation
Lecture Section – 25 students

Teaching Assistant

Summer 2018

W.K. Kellogg Biological Station

- Course: Integrative Biology (IBIO) 355 – Ecology
Lecture Section – 24 students

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| Workshop | Nov 2021 |
| <i>East China Normal University, Shanghai, China.</i> | |
| Short-Term Postgraduate Course | |
| • Title: “Biophysical Models and Applications in Ecosystem Analysis” (<i>Virtual</i>) Lecture Section – ~ 600 attendees | |
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| <i>Guest Lectures:</i> | |
| * <i>Co-Guest Lecturer</i> | |
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| <i>College of Wooster, Wooster, OH</i> | Jan 2026 |
| Climate Change Symposium – Spring 2026 | |
| • Title: “Climate Change Impacts on Surface Reflectivity” | |
| | |
| <i>Augustana College, Rock Island, IL</i> | Dec 2025 |
| • Title: “Understanding What is in a Map” | |
| | |
| <i>University of Iowa, Iowa City, IA</i> | April 2025 |
| Geography (GEOG) 2050 - Foundations of GIS | |
| • Title: “Careers in Geographic Information Science” | |
| | |
| <i>Monmouth University, West Long Branch, NJ</i> | Mar 2024 |
| • Title: “What’s in a Map?” | |
| | |
| <i>Queens University of Charlotte, Charlotte, NC</i> | Feb 2024 |
| • Title: “Connecting Climate Change to Conservation & Biodiversity” | |
| | |
| <i>University of Michigan Young Science Innovators (U-MYScI)</i> | Dec 2023 |
| <i>Eastern Washtenaw Multicultural Academy, Ann Arbor, MI</i> | |
| • Title: “Grade 9-12 Class: Photosynthesis” | |
| | |
| <i>Beijing Normal University, Beijing, China</i> | Dec 2020 |
| • Title: “Understanding Global Warming Impact” (<i>Virtual</i>) | |
| | |
| <i>Michigan State University, East Lansing, MI.</i> | Feb 2020 |
| Integrative Biology (IBIO) 357 - Global Change Biology | |
| • Title: “Albedo and eddy covariance: Effects on climate & land use change” | |
| | |
| <i>* Great Lakes Bioenergy Research Center (GLBRC) Environmental Sustainability Meeting</i> | Oct 2019 |
| <i>Hickory Corners, MI.</i> | |
| • Title: Great Lakes Bioenergy Research Center Biofuel Cropping System Experiment: Albedo | |
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| <i>W.K. Kellogg Biological Station LTER All Scientist Meeting</i> | Sept 2019 |
| <i>Hickory Corners, MI.</i> | |
| • Title: “Surface reflectivity: Spatiotemporal variability of albedo in bioenergy cropping systems” | |
| | |
| <i>GLBRC REUs from MSU Main Campus & UW, W.K. Kellogg Biological Station</i> | June 2019 |
| <i>Hickory Corners, MI.</i> | |
| • Title: “Albedo in bioenergy cropping ecosystems” | |
| | |
| <i>Michigan State University, East Lansing, MI.</i> | Fall 2017 |
| Geography (GEO) 892 – Micrometeorological Instrumentation & Measurements | |
| • Title: Micrometeorological Instrumentation & Use of LoggerNet. | |

Educational Research, Teaching & Outreach:

Teaching Facilitator

2023-2024

Center for Research on Learning and Teaching

University of Michigan

- Facilitator for practice teaching sessions for incoming graduate student instructors and instructional aide teaching orientations.

Grab-and-Go Exploration Station

July 2023

GLBRC Outreach & GLBRC Education

Exploring Albedo: Exploration Station Activity Guide

- Overview: "Exploring Albedo" is an activity designed to introduce learners to the concept of albedo. Visitors learned about the albedo of different surfaces, formed a hypothesis about the connection between land use, temperature, and albedo, and tested their predictions using laser temperature sensors.

Keynote Speaker

Mar 2023

Battle Creek Area Math and Science Center, Battle Creek, MI.

4th Annual High School Climate Change Symposium

- Title: "Understanding Albedo: What is it? How can it affect climate change?"

Keynote Speaker

Oct 2022

China University of Geosciences, Wuhan, China.

United States-China Carbon Consortium

- Title: "Understanding Global Warming Potential"

Educational Outreach - Interactive Science Exploration

Apr 2019

University of Wisconsin - Madison

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.

Assistant Watershed Scientist

Summer 2013

Alger County Conservation District, Alger, MI.

Summer 2013; 2014

Huron River Watershed Council, Ann Arbor, MI.

- Collaboration with multiple watershed councils within Michigan in hydrology, performing water quality monitoring, stream assessment, and recording of water chemistry within urban rivers, remote rivers, and streams.
- Educational outreach to community, stakeholders and high schools on environmental sustainability and science education.
- Monitored invasive plant species, and removed them with mechanical and herbicidal methods.
- Collected water quality data (i.e., stream depth, stream width, water temperature, water conductivity) and inventoried micro invertebrate in streams.

Other Adjunct positions:

July 2023 - Present

United States Motorcycle Safety Foundation - Certified Riding Instructor

Washtenaw Community College, Ann Arbor, MI

Department of Personal Enrichment

Schoolcraft College, Livonia, MI

Department of Personal & Professional Learning

Lansing Community College, Lansing, MI
Department of Community Engagement & Adult Enrichment

Eastern Iowa Community Colleges, Bettendorf, IA
Continuing Education

Kirkwood Community College, Cedar Rapids & Coralville campuses, IA
Continuing Education – Driving & Transportation

RESEARCH

Summary: My research investigates the practical applications of the drivers of climate change, with a particular focus on the intersection of agriculture, surface reflectivity, and climate warming/cooling. I am well versed within the interdisciplinary science of geographic information science, remote sensing, physical geography, atmospheric physics, quantitative tools including machine learning, data manipulation from field observations, and spatio-temporal modeling.

Research Scholar

Department of Geographical and Sustainability Sciences, the University of Iowa

Advisor: Silvia Secchi

- Model alternative landscapes in the Corn Belt region based on existing productivity patterns, land characteristics and infrastructure by integrating historical data, cadastral maps, current remote sensing products, and Census data.
- Evaluate the impact of solar radiation modification, weather, soil, and agricultural practices across Iowa, Indiana and Illinois on agricultural commodities and landscapes.
- Integrate farmer surveys, focus groups and stakeholders to research economic and social barriers to change along the current dominant corn-soybean system.
- Connect landscape scenarios to solar, water and air quality models, to help identify potential policies alternatives to the current dominant paradigm in Midwestern agriculture.
- Provide leadership, scientific expertise and mentorship to undergraduate students, teams, and interns in field surveying, modeling and research design.

Research Fellow

Institute for Global Change Biology, School for Environment and Sustainability, University of Michigan

Advisors: Peter Reich; Ines Ibanez

- Develop techniques and methods integrating the effects of surface reflectivity over multiple scales, landscape dynamics, and agronomic practices for terrestrial sustainability and management.
- Investigation into biogeochemical and physical plant responses to the changing environment and climate.
- Use of instrument testing and precision for measuring radiative forcing effects of global warming potential over agricultural, forest, wetland and suburban ecosystems using field, laboratory, and remote sensing instrumentation.
- Collaboration with multiple stockholders at university, farmer, scientific and educational positions to publish journal articles from field scale (i.e., eddy covariance, meteorological) to remotely sensed (i.e., Landsat, MODIS, Venus) applications of surface reflectivity.

Graduate Research Assistant

Landscape Ecology & Ecosystem Science Lab, Department of Geography, Environment & Spatial Sciences, Michigan State University

Advisor: Jiquan Chen

- Assess the global warming impact of terrestrial ecosystems using surface-induced reflectance and climate-based modelling.
- Process satellite data using geospatial methodologies, perform ground-based measurements of irradiance, soil properties, plant dynamics (chlorophyll, moisture, nitrogen), and climate.

- Construct and maintain micrometeorological and eddyflux covariance tower networks within agricultural, grassland, wetland and forest ecosystems for the monitoring and analysis of surface reflectivity, climate, and soil dynamics.
- Performed supervisory and mentorship duties for multiple undergraduate interns during field research, and project management.

Flux Tower Technician

Landscape Ecology & Ecosystem Science Lab, Michigan State University

- Implemented new methodologies of research through the construction and maintenance of eddy covariance and meteorological tower networks at multiple ecosystems (i.e. urban, agricultural, and forest) for the monitoring and analysis of albedo, climate, and soil.
- Quality controlled and analyzed large spatial and temporal data at the plot scale (i.e., field survey instrumentation), field scale (i.e., eddy covariance, meteorological), local scale (i.e., UAV) and regional scale (i.e., Landsat, MODIS, Venµs).
- Calibrated and repaired weather, climate and eddy covariance sensors including LI-7500, Li-7700s, Apogee SN500s, data acquisition systems (CR1000x, CR3000, CR5000).
- Data acquisition and processing of raw high frequency flux eddy covariance data using software including EdiRe Software for Micrometeorological Applications, and RFlux.

Graduate Research Assistant

W.E. Upjohn Center for the Study of Geographical Change, Department of Geography & Department of Civil and Construction Engineering, Western Michigan University

Advisors: Laiyin Zhu; Scott C. Smith

- Provided remote sensing support and cartographic design at the W.E. Upjohn Center for the Study of Geographical Change for GIScience applications.
- Imported raw map data, prepared master indices, verified data integrity by pairing aerial imagery with legacy topographic maps for the entire United States.
- Created high resolution hybrid aerial and topographic maps distributed by Avenza Systems Inc.

PRESENTATIONS

Summary: Participation in seminars as educational outreach and research at high schools, community stakeholders, universities, annual science meetings and conferences including American Association of Geographers and Ecological Society of America.

Invited research talks:

Lei, C. Secchi, S. (2025). 100 years of land use cropping consolidation in Iowa: Can we reverse this trend? Diverse Corn Belt Annual Science Meeting. May 21, 2025. Davenport, IA.

Lei, C. (2024). The role of albedo in climate and agriculture. Department of Geographical and Sustainability Sciences Colloquium. September 13, 2024. University of Iowa, Iowa City, IA.

Lei, C. (2024). The role of albedo in Geography and climate. Department of History & Anthropology talk. March 21, 2024. Monmouth University, West Long Branch, NJ.

Lei, C. (2024). Connecting climate change to conservation & biodiversity. Department of Biology & Chemistry talk. Feb 7, 2024. Queens University of Charlotte, Charlotte, NC.

Lei, C. (2023). Understanding Albedo: What is it? How can it affect climate change? School of Environment, Geography, and Sustainability 2023 Distinguished Alumni talk. October 27, 2023. Western Michigan University, Kalamazoo, MI.

Lei, C. (2023). Climate change impacts on agriculture and food supply. Knox College Environmental Studies talk. August 6, 2023. Knox College, Galesburg, IL.

Lei, C. (2023). Understanding Albedo: What is it? How can it affect climate change? 4th Annual High School Climate Change Symposium. March 1, 2023. Battle Creek Area Math and Science Center, Battle Creek, MI.

Lei, C., Sciusco, P., Chen, J., Robertson, G. P., Lindback, E., Lei, M., Shirkey, G., & Arrocha, I. (2022). Land Cover and Climate alters surface albedo during cultivation seasons. United States-China Carbon Consortium. October 28-30, 2022. China University of Geosciences, Wuhan, China. Hybrid Meeting.

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. October 7-9, 2020, 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 presentations:

Lei C., Secchi, S. (2025). 100 years of land use cropping consolidation in Iowa: Can we reverse this trend? Advancing agricultural monitoring through remote sensing III. American Association of Geographers, March 24-28. Detroit, MI.

Lei, C., Ibanez, I., Chen, J., Reich, P., Robertson, G. P., Sciusco, P., Lei, M., & Shirkey, G. (2023). Evaluating Surface Reflectivity of Crops as Contribution to a Nature-Based Climate Solution. Ecological Society of America Conference, August 6–13. Portland, OR.

Chen, J., **Lei, C.,** Robertson. G.P. (2023). Likely undervalued climate benefits of radiative forcing from altered land surface albedo during land conversions. The National Aeronautics and Space Administration 2023 AMS Annual Meeting. May 8-12. Virtual.

Lei, C., Chen, J., Robertson. G.P. (2022). Land cover and climate alters surface albedo during cultivation season. Great Lakes Bioenergy Research Center Annual Science Meeting. May 17–19, Lake Geneva, WI.

Lei, C., Chen, J., Robertson. G.P. (2021). Global warming impacts of converting forest into bioenergy croplands: Case study at the Kellogg Biological Station. KBS-LTER Annual Science Meeting. September 23, Hickory Corners, MI.

Lei, C., Chen, J., Robertson. G.P. (2020). The climate cooling impact of albedo in perennial bioenergy croplands. KBS-LTER Midterm Meeting. September 9-11. 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 3–8, 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 29, Geography Department, 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 4–9, 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 31, 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. American Association of Geographers: East Lakes & West Lakes Geography Conference, October 13–15, 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 30–April 3, San Francisco, CA.

Poster presentations:

*** indicates student-mentored*

Falvo, G., **Lei, C.**, Chen, J., Robertson, G.P. (2023). Radiative forcing from deforestation is partially offset by soil conservation, surface albedo modification, and ecosystem restoration. American Geophysical Union Conference, Dec 11-15, San Francisco, CA.

Lei, C., Reich, P., Ibanez, I., Chen, J., Robertson, G. P., Sciusco, P., Lei, M., & Shirkey, G. (2023). Evaluating surface reflectivity of crops as contribution to a nature-based climate solution. LICOR Connect 2023 Conference. November 7, Atlanta, GA.

Lei, C., Reich, P., Ibanez, I., Chen, J., Robertson, G. P., Sciusco, P., Lei, M., & Shirkey, G. (2023). Evaluating surface reflectivity of crops as contribution to a nature-based climate solution. University of Michigan Institute for Global Change Biology Mini Symposium. October 26, Ann Arbor, MI.

****Kenney, R., Lei, C.** (2023). Investigation of albedo through varying degrees of tillage and fertilization in order to reflect on their effects on warming or cooling based on radiative forcing. Kellogg Biological Station Annual Symposium, August 1, Kellogg Biological Station, MI.

Lei C., Reich, P., Ibanez, I., Chen, J., Sciusco, P., Shirkey, G., Lei, M. (2023). Evaluating surface reflectivity of crops as contribution to a nature-based climate solution. 2023 Great Lakes Bioenergy Research Center Annual Science Meeting. May 15–17, Lake Geneva, WI.

Lei, C., Chen, J., Robertson, G.P. (2022). Global warming potential of modelling the conversion of forest into bioenergy croplands: Case study at the Kellogg Biological Station. 2022 Great Lakes Bioenergy Research Center Annual Science Meeting. May 17–19, Lake Geneva, WI.

Lei, C., Chen, J., Robertson, G.P. (2022). Global warming impacts of converting forest into bioenergy croplands: Case study at the Kellogg Biological Station. 2022 Great Lakes Bioenergy Research Center Sustainability Meeting. Feb 14–16. Virtual Conference.

Lei, C., Chen, J., Robertson, P. (2022). Long-term variability of root production in bioenergy crops from ingrowth core measurements. Department of Energy Annual Review, Jan 19–21. Virtual Conference.

Lei, C., Chen, J., Robertson, G.P. (2021). Global warming impacts of converting forest into bioenergy croplands: Case study at the Kellogg Biological Station. KBS-LTER All-Scientist Meeting. September 23, Kellogg Biological Station, MI.

Lei, C., Chen, J., Robertson, G.P. (2021). Temporal variations of albedo on bioenergy crops: Effects of agronomic practices during three cultivation seasons. Great Lakes Bioenergy Research Center Annual Science Meeting. May 6-10. Virtual Conference.

Lei, C., Chen, J., Robertson, P. (2020). Spatiotemporal variability in albedo of biofuel cropping systems. Department of Energy Annual Review, Jan 14–16, 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 21– 23, Lake Geneva, WI.

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

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

** Lindback, E., Abraha, M., Kahmark, K., **Lei, C.**, & Chen, J., Robertson, G.P. (2018). Albedo, foliar nitrogen, and global warming potential of fertilized and unfertilized biofuel croplands. Poster Presentation. Kellogg Biological Station Annual Symposium, August 1, Kellogg Biological Station, MI.

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 7– 9, 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 7–9, 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 25, 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 21–25, Chicago, IL.

ADVISING & MENTORSHIP

Summary: Fourteen (14) undergraduate students and two (2) graduate student mentored, many of which have gone onto master's programs, become research scientists, and hired at engineering firms.

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| 16. Abigail Bielecki Department of Geographical and Sustainability Sciences <i>Current position: Senior undergraduate student, University of Iowa</i> | Jan 2025 – Aug 2025 |
| 15. Finley, Bickford Department of Geographical and Sustainability Sciences <i>Current position: Senior undergraduate student, University of Iowa</i> | Jan 2025 – May 2025 |
| 14. Bethany Richardson Department of Geographical and Sustainability Sciences <i>Current position: Senior undergraduate student, University of Iowa</i> | Jan 2025 – May 2025 |
| 13. Sylvie Heard Department of Geographical and Sustainability Sciences <i>Current position: Senior undergraduate student, University of Iowa</i> | Jan 2025 – May 2025 |
| 12. Caleb Jelsma-Cale School for Environment & Sustainability, University of Michigan <i>Current position: Teaching Assistant, 2nd year Masters student, University of Michigan</i> | June 2024 – July 2024 |

11. Rose Lizzo Oct 2023 – Mar 2024
University of Wisconsin-Madison, Great Lakes Bioenergy Research Center (GLBRC) /
Wisconsin Energy Institute (WEI) Mentorship Program.
Current position: 2nd year PhD student, Kiley Lab, UW-Madison
10. Julia Seay May 2023 – Aug 2023
Environmental Studies and Earth & Environmental Geoscience, Washington and Lee University, VA.
Current position: Senior undergraduate, Washington and Lee University.
9. Renae Kenney May 2023 – Aug 2023
College of Engineering, Michigan State University, East Lansing, MI.
Current position: Water/Wastewater Engineer, C2AE, Lansing, MI.
8. Michael Collins May 2022 – Aug 2022
Department of Environment and Sustainability, Michigan State University, East Lansing, MI.
7. Maximilian Mihaylov June 2019 – Aug 2019
Interdisciplinary Studies in Social Science, Michigan State University, East Lansing, MI
6. Ezequiel Mussambe June 2019 – Aug 2019
Dept. of Geography, Environment & Spatial Sciences, Michigan State University, East Lansing, MI.
Current position: GIS Developer & Analyst, Hydrosimulatics, Haslett, MI
5. Isabel Arrocha June 2019 – Aug 2019
Department of Biological and Agricultural Engineering, University of Arkansas, Fayetteville, AR.
Current position: Junior Engineer, Malone/Wheeler Inc.
4. Emily Lindback May 2018 – Aug 2018
Department of Earth and the Environment, Franklin & Marshall College, Lancaster, PA
Current position: Agricultural Stewardship Specialist, Cornell Cooperative Extension of Suffolk County.
3. Pedro Kuyenga May 2018 – July 2018
Dept. of Geography, Environment & Spatial Sciences, Michigan State University, East Lansing, MI.
Current position: Geospatial Data Analyst, Infrastructure Planning & Facilities, Michigan State Univ.
2. Kaylee Peterson Apr 2018 – July 2019
Department of Community Sustainability, Michigan State University, East Lansing, MI.
Current position: Community Outreach Coordinator, Friends of the Detroit River.
1. Kaitlyn O'Brien Apr 2017 – May 2018
Department of Community Sustainability, Michigan State University, East Lansing, MI.

FUNDING, AWARDS & SCHOLARSHIPS

Awards:

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|---|------|
| School of Environment, Geography & Sustainability Distinguished Alumnus Achievement Award, Western Michigan University. https://wmich.edu/arts-sciences/alumni/alumni-awards | 2023 |
| UMPDA Conference Award, University of Michigan Postdoctoral Association | 2023 |
| Jennifer L. Reed Award in Bioenergy Science, Great Lakes Bioenergy Research Center https://www.glbrc.org/research/reed-bioenergy-award | 2023 |
| Research Fellow, Institute for Global Change Biology, University of Michigan | 2022 |

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| Department of Energy Research Publication Highlight, Great Lakes Bioenergy Research Center Year 4 Narrative | 2021 |
| BFSAA Historical and Emerging Leaders Nomination, Black Faculty, Staff and Administrators Association (BFSAA), Michigan State University | 2021 |
| GLBRC Early Career Women in Bioenergy Science Nomination, W.K. Kellogg Bio. Station Research Scholars Award, College of Social Science, Michigan State University | 2020 2018 & 2019 |
| W.K. Kellogg Biological Station Fellowship, W.K. Kellogg Biological Station | 2018 |
| Academic Achievement Graduate Assistantship Award, Michigan State University | 2017 |

Submitted grants:

American Association for the Advancement of Science (AAAS) L'Oréal USA For Women in Science Fellowship. PI: **Lei, C.** \$60,000. *Rejected September 2024.*

DE-FOA-0002849 – Synthesis Research for Transferable Insights.

Dilemma of Global Terrestrial Ecosystems: An Undervalued Forcing in Climate Change Science, Department of Energy: Biological and Environmental Research, Earth, and Environmental Systems Sciences. Chen, J. (PI), Chu, H. (DOE PI), Robertson, G.P. (COI), Torn, M.S. (COI), Collaborators: Keenan, T., Papale, D., Reichstein, M., Wang, Y., Roy, D., **Lei, C.**, Scott, R.S., Loescher, H.W., Metzger, S., McNulty, S. \$400,000. *Rejected February 2023, reviewed as High Priority.*

National Academy of Sciences, Engineering and Medicine Ford Foundation Dissertation Fellowship. PI: **Lei, C.** \$28,000. *Rejected March 2020.*

Funding:

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| School of Earth, Environment & Sustainability Teaching Award – University of Iowa: \$3097 | 2025 |
| Blank Summer Institute Summer 2025 Program – University of Iowa College of Education: \$4,000 | 2025 |
| Michigan Math and Science Scholars Summer 2024 Program – University of Michigan College of Literature, Science, and the Arts: \$11,000 | 2023 |
| Postdoctoral Association Conference Travel Award – University of Michigan Postdoctoral Association, University of Michigan: \$500 | 2023 |
| Dissertation Completion Fellowship – Graduate College, College of Social Science, Michigan State University: \$7,500 | 2020 |
| Graduate Office Fellowship – Graduate College, Michigan State University: \$1,200 | 2020 |
| The Charles P. and Linda A. Thompson Endowment for Social Science Research – College of Social Science, Michigan State University: \$1,000 | 2019 |
| Research Scholars Award – College of Social Science, Michigan State University: \$3,367 | 2019 |
| W.K. Kellogg Biological Station LTER Fall 2019 Fellowship – National Science Foundation & Michigan State University: \$6,500 | 2019 |
| Graduate Office Fellowship – Graduate College, Michigan State University: \$550 | 2019 |
| Graduate Teaching Assistantship – W.K. Kellogg Biological Station: \$9,000 | 2018 |
| Graduate Office Fellowship – Graduate College, Michigan State University: \$1,000 | 2018 |

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|---|-----------|
| Research Scholars Award – College of Social Science, Michigan State University: \$5,814 | 2018 |
| Kenneth E. and Marie J. Corey Research Endowment Fund – College of Social Science, Michigan State University: \$1,000 | 2018 |
| Graduate Summer Fellowship – W.K. Kellogg Biological Station & Michigan State University: \$2,500 | 2018 |
| Academic Achievement Graduate Assistantship Award – Graduate College, Michigan State University: \$8,000 | 2017 |
| Geography Scholarship – Department of Geography, Michigan State University: \$250 | 2017 |
| Department of Geography Travel Fund – Department of Geography, Michigan State University: \$400 | 2017 |
| Graduate Student Affairs Travel Fund – Associate Dean, Michigan State University: \$300 | 2017 |
| Graduate College Travel Fellowship – Graduate College, Michigan State University: \$200 | 2017 |
| Lucius Harrison Geography Travel Fund – Dept. of Geography, Western Michigan University: \$1,000 | 2016 |
| Michigan Department of Transportation Grant Travel Fund – College of Engineering, Western Michigan University: \$750 | 2015 |
| Scholarship – Track & Field, Northern Michigan University: \$60,000 | 2012-2014 |
| Scholarship – Track & Field, Missouri State University: \$36,000 | 2010-2011 |

PUBLIC SERVICE & CONTRIBUTIONS TO DIVERSITY

Invited Panels:

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|---|-----------|
| Great Lakes Bioenergy Research Center / Wisconsin Energy Institute Mentorship Networking Event – Postdoctoral Panelist | Nov 2023 |
| Michigan State University Geography Club – Graduate Student Panelist | Nov 2022 |
| Great Lakes Bioenergy Research Center (GLBRC) – Graduate School Panelist | July 2022 |
| Great Lakes Bioenergy Research Center (GLBRC) National Clean Energy Week 2021 – Panelist • https://energy.wisc.edu/events/power-plants-how-bioenergy-benefits-world | Sept 2021 |
| Kellogg Biological Station Undergraduate Career Panel – Panelist | July 2018 |

University Service:

Mentor

Faculty mentor in multiple programs for students interested in research opportunities, laboratory, and field research.

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|---|------------------|
| University of Iowa Undergraduate Senior Research Mentorship | 2024 - Present |
| Great Lakes Bioenergy Research Center / Wisconsin Energy Institute Mentorship Program | 2023 - 2024 |
| University of Michigan Young Science Innovators (U-MYSci) <i>Outreach program fostering science and innovation in middle school students</i> | 2023 - 2024 |
| National Science Foundation Research Experiences for Undergraduates | 2018, 2019, 2022 |
| Long-term Ecological Research (LTER) Program Research Experiences for Undergraduates, W.K. Kellogg Biological Station | 2022, 2023 |
| GLBRC's Summer Undergraduate Research Program (SURP), Michigan State University | 2019, 2023 |

LTERR Grad-Postdoc Leadership Council

Mar 2023 - 2024

W.K. Kellogg Biological Station Long Term Ecological Research Network

- Co-chair of executive committee aimed to provide community, professional development and networking for graduate students and research fellows at Michigan State, University of Michigan, and Kellogg Biological Station.

Rapporteur

Apr 2020

LTERR Annual Science Meeting Program

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

Evaluator*Mid-Michigan Symposium for Undergraduate Research Experiences Conference*

July 2019

Michigan State University, University Undergraduate Research and Arts Forum (UURAF)

Apr 2018

Vice President

June 2019 – Dec 2019

Geography Graduate Group

Michigan State University Department of Geography, Environment & Spatial Sciences

Chairperson

2018 - 2019

Geography Graduate Group Colloquium Committee

Michigan State University 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.

Exam Proctor

Sept 2016 – Aug 2022

Michigan State University

Department of Geography, Environment & Spatial Sciences

*Peer Review:**Editorial Review Board:*

- The International Journal of Applied Geospatial Research

Sept 2023

Journal Reviewer:

Each line represents a unique reviewed journal submission. Multiple dates indicate acceptance to continue reviewing author resubmitted manuscripts.

- Climate Research 06/2025
- Nature Communications 12/2024, 06/2025
- Nature Communications 12/2024; 07/2025
- Ecological Processes 11/2024
- Agricultural & Forest Meteorology 07/2024
- Agricultural & Forest Meteorology 08/2024
- International Journal of Applied Geospatial Research 09/2023
- International Journal of Applied Geospatial Research 02/2022
- International Journal of Applied Geospatial Research 07/2020
- Ecological Indicators 02/2020, 07/2020
- The Journal of Mountain Science 07/2019
- The International Journal of River Basin Management 02/2019, 04/2019, 07/2019
- International Journal of Applied Geospatial Research 02/2019, 12/2019
- Environmental Systems Research 02/2018
- Journal of Geophysical Research – Biogeosciences (Group peer review) 12/2017, 02/2018

News:

WILEY Global Change Biology: Bioenergy. "Congratulations, you are one of our most-cited authors published by the journal in 2023*": [Climate cooling benefits of cellulosic bioenergy crops from elevated albedo](#)". March 2025.

GLBRC. "Cheyenne Lei wins GLBRC early career award". May 2023, Great Lakes Bioenergy Research Center, (<https://www.glbrc.org/news/cheyenne-lei-wins-glbrc-early-career-award>)

GLBRC. "Jennifer L. Reed Bioenergy Science Award". May 2023, Great Lakes Bioenergy Research Center, (<https://www.glbrc.org/research/reed-bioenergy-award>)

WEI. "Propelling Women in Power: Highlighting the stories of women in Research". Wisconsin Energy Institute. October 2022, (<https://energy.wisc.edu/news/podcast-breaking-barriers-building-bridges-cheyenne-lei>)

GLBRC. "Bioenergy Crops Create Local Cooling That Can Increase Climate Benefit." Great Lakes Bioenergy Research Center, Oct. 2021, (<https://www.glbrc.org/research/highlights/bioenergy-crops-create-local-cooling-can-increase-climate-benefit>)

WEI. "Power from Plants: How Bioenergy Benefits the World." Wisconsin Energy Institute, 4 Aug. 2021, (<https://energy.wisc.edu/events/power-plants-how-bioenergy-benefits-world>)

Griffin, Mark E. "A Geographer's-Eye View with Cheyenne Lei." Great Lakes Bioenergy Research Center, June. 2021, (<https://www.glbrc.org/news/geographers-eye-view-cheyenne-lei>)

Other Service:

Cartographic design services

Carneiro, P. A., Zimpel, C. K., Pasquatti, T. N., Silva-Pereira, T. T., Takatani, H., Silva, C. B., ... & Kaneene, J. B. (2021). Genetic Diversity and Potential Paths of Transmission of *Mycobacterium bovis* in the Amazon: The Discovery of *M. bovis* Lineage Lb1 Circulating in South America. *Frontiers in Veterinary Science*, 8.

[DOI](#).

- Compiled geographic data, provided GIS support and cartographic design services for research.

Special Events Support Services

Sept 2019- Aug 2022

Michigan State University Police & Public Safety

- Civilian law enforcement providing leadership and assistance and assisting emergency personnel as needed during special events and emergencies.

Moderator

Apr 2020 – Oct 2021

FunPlus Kings Group – State of Survival

- Moderated discussion topics, removal of inappropriate content, answered questions, and updated the platform for State of Survival official Discord consisting of 180,000 members.

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.

TECHNICAL EXPERTISE

Unmanned Aerial Systems

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

2017

- FAA Part 107 Drone Test Prep & Beyond (Specialization course) Remote Pilot Training Level 1 & 2: UAS components, multi-copter control, principles of flight and hands-on flight.

- FAA Part 107 Drone Test Prep & Beyond (Specialization course) Drone to GIS
Level 1 & 2: Multi-spectral processing using Pix4D, mobile GIS tools, drone data GIS processing.

Languages

English

- Conversational – Fluent
- Writing – Fluent
- Professional – Fluent

Mandarin Chinese

- Conversational – Intermediate
- Writing – Beginner
- Professional – Beginner

Software Proficiency

ESRI: ArcGIS Pro, ArcMap, ArcCatalog

R Project for Statistical Computing: R, R Studio

Microsoft Office: Word, Excel, PowerPoint

MathWorks: MATLAB

NV5 Geospatial Solutions: Environment for Visualizing Images (ENVI)

Campbell Scientific Inc.: LoggerNet, ShortCut, CRBasics

Eddy Covariance: EdiRe Software for Micrometeorological Applications, EddyPro

Pix4D: Professional photogrammetry and drone mapping software

INTERESTS

I am an avid motorcyclist! As a certified United States Motorcycle Safety Foundation Instructor, I often teach and demonstrate the basics of motorcycle safety and riding to beginner and advanced riders. In my spare time, I love to ride, and have ridden the western Pacific coasts of Oregon and Washington, the natural beauty of the Midwestern states, to the twisty curves in North Carolina and Tennessee.