

K. Arthur Endsley

Curriculum Vitae

415 Interdisciplinary Science Building, 32 Campus Dr

University of Montana, Missoula, MT, 59801

E-mail: arthur.endsley@ntsg.umt.edu

www.karthur.org

Education

- **Ph.D.** Natural Resources and Scientific Computing, May 2019
University of Michigan (Ann Arbor, MI)
- **B.S.** Applied Geophysics, December 2009
Michigan Technological University (Houghton, MI)
Department Scholar, Geological and Mining Engineering and Sciences, 2008

Awards and Funding

Grants

- **Rackham Predoctoral Fellowship** (2018-19): **\$44,394**
Awarded by Rackham Graduate School, Univ. of Michigan, to “outstanding doctoral students”
- **Environmental Sustainability Doctoral Fellowship** (2016-17): **\$50,000**
Awarded by Graham Sustainability Institute, Univ. of Michigan

- **Sloan & Moore Foundation and the University of Michigan (2014-16): \$67,500**
MCubed Diamond Big Data Challenge 3: “Measuring the Pace of Neighborhood Change from Satellites”
Co-authored proposal with Dr. Dan Brown
- **British Columbia Centre for Disease Control (2015): \$26,000**
“Data Mining Tools for Assessing Public Health Targets in British Columbia”
Co-authored proposal; Michigan Tech Research Institute (MTRI), Ann Arbor, MI
- **NASA (Grant no. NNX12AB90G), Carnegie Inst. for Science (2010): \$149,000**
“Assessing the Impact of a Combined In-situ and Satellite CO2 Monitoring Network on Constraining Biospheric and Anthropogenic Fluxes for North America”
PI (Sub-award); Michigan Tech Research Institute (MTRI), Ann Arbor, MI

Honors and Awards

- **2018 MIDAS Symposium “Best Overall” Poster**
Poster: *Comparing and timing business cycles and land development trends across U.S. metropolitan housing markets*
[2018 Michigan Institute for Data Science \(MIDAS\) Annual Symposium](#)
- **Courtney Wilson First-Year PhD Student Award (2015)**
School of Natural Resources and Environment, University of Michigan
- **Social Impact Challenge 2015 Winning Team (\$2,500; February 2015)**
Center for Social Impact, Ross School of Business, University of Michigan ([Link](#))
- **2008 Department Scholar**
Dept. of Geological and Mining Eng. and Sciences, Michigan Technological University

Appointments and Experience

Research & Professional Experience

- **Numerical Terradynamic Simulation Group (NTSG), University of Montana**
Research Scientist (2019 - Present)
Technical lead on maintenance and science applications for the operational NASA Soil Moisture Active/Passive (SMAP) Level 4 Carbon product. Currently comparing alternative soil respiration models and developing new light-use efficiency models that support both C3 and C4 photosynthesis.
- **Aspen Global Change Institute, Carbondale, CO**
Consultant (2017 - Present)
Currently developing a data collection and management system for remote monitoring of snowpack and meteorological conditions in the Roaring Forks Valley.
- **University of Michigan, Ann Arbor, MI**
Graduate Student Research Assistant (2014 - 2019)
- **Michigan Tech Research Institute, Ann Arbor, MI**
Research Scientist I (2012 - 2014)
Assistant Research Scientist (2010 - 2012)
Research Intern (2008 - 2009)

Teaching & Mentoring Experience

- **University of Michigan, Ann Arbor, MI** (2015 - 2018)
Graduate Student Instructor, "Natural Resource Statistics"
Graduate Student Instructor, "Urban Sustainability"
- **The Carpentries** (2015 - Present)
Certified Instructor, Data Carpentry and Software Carpentry
Trained to teach Python, R, Git, Mercurial, and SQL to beginners, particularly scientists and students of science. Have taught workshops at [Boston College](#), the [Federal Reserve Board in Washington D.C.](#), the [Aspen Global Change Institute](#), [West Virginia University](#), [Lawrence Berkeley National Laboratory](#), the [Woods Hole Oceanographic Institution](#), and

[NASA Langley](#).

- **University of Michigan**, Ann Arbor, MI (2017-2018)
Instructor, Wolverine Pathways Program, “Prove It!”
Over 2 summers, taught critical media and data analysis to under-represented High School Seniors from Southeast Michigan aspiring to enter college.
- **Michigan Tech Research Institute**, Ann Arbor, MI (2012 - 2014)
Research Scientist I (Mentor and supervisor for interns)
- **Ontonagon Area Elementary School**, Ontonagon, MI (2007)
After-School Science Educator
Western Upper Peninsula Center for Science, Mathematics, and Environ. Education

Courses Taught

- **“Natural Resource Statistics”** (2018)
University of Michigan, Ann Arbor, MI
Course content: Elementary statistics, Linear models, R and statistical computing
- **“Urban Sustainability”** (2016)
University of Michigan, Ann Arbor, MI
Course content: Urban sustainability, Urban metabolism, Industrial ecology, Political ecology, Critical reading and discussion of the literature.
- **“Understanding the Earth”** (2008 - 2009)
Michigan Technological University (MTU), Houghton, MI
Course content: GPS wayfinding and field mapping, Rock and mineral identification, Sub-surface plumes, Erosional and depositional systems, Natural hazards, and Bedrock lithology and structural geology.

Field Experience

- **Bering Glacier, Alaska U.S.A.** (2007 - 2012)
Experience in boreal and karst landscapes: August 2007 (geophysical surveys); August 2008 (field equipment maintenance); May 2010 (ablation monitoring installation); August 2010

(field equipment maintenance); May 2011 (installation); May 2012 (Eddie Bauer-funded surge research).

- **Fairbanks, Alaska, U.S.A.** (2012)
Remote sensing field validation at Bonanza Creek LTER; soil moisture measurement.
- **Ngöbe-Bugle Comarca, Panama** (2009)
Elevation surveying by transit and field interviews in preparation for designing a catchment for clean water provision.

Publications

Refereed Publications

- 2020** N. Madani, N.C. Parazoo, J.S. Kimball, A. Chatterjee, S. Saatchi, Z. Liu, B.M. Rogers, T. Magney, C.E. Miller, J.D. Watts, **K.A. Endsley**, T. Tagesson, J.A. Wang, A. Xu. *Submitted*. The impacts of climate and wildfire on ecosystem gross primary productivity in Alaska. *Journal of Geophysical Research: Biogeosciences*.
- Endsley, K.A.** *Submitted*. Common factors driving change in neighborhood vegetation depend on metropolitan context and historical conditions. *Applied Geography*.
- Endsley, K.A.**, J.S. Kimball, R.H. Reichle, J.D. Watts. *Accepted*. Satellite monitoring of global surface soil organic carbon dynamics using the SMAP Level 4 Carbon product. *Journal of Geophysical Research: Biogeosciences*.
- Wurster, P., M.P. Maneta, J.S. Kimball, **K.A. Endsley**, S. Beguería. 2020. [Monitoring crop status in the Continental United States using the SMAP Level 4 Carbon product.](#) *Frontiers in Big Data*.
- Seymour, E., **K.A. Endsley**, R. Franklin. 2020. [“Differential drivers of cost burden in growing and shrinking cities.”](#) *Applied Geography* **125**.
- 2019** Osenga, E.C., J.C. Arnott, **K.A. Endsley**, J. Katzenberger. 2019. [“Bioclimatic and soil moisture monitoring across elevation in a mountain watershed: Opportunities for research and resource management.”](#) *Water Resources Research* **55**(3): 2493-2503.
- 2018** **Endsley, K.A.**, D.G. Brown, E. Bruch. 2018. [“Housing market activity is associated](#)

- with disparities in urban and metropolitan vegetation.” *Ecosystems* **21**(8): 1593-1607.
- Endsley, K.A.** 2018. “Remote Sensing of Socio-Ecological Dynamics in Urban Neighborhoods,” in Reference Module in Earth Systems and Environmental Sciences, **9**: 90-105. Elsevier.
- 2016** Miller, M.E., W.J. Elliot, M. Billmire, P.R. Robichaud, **K.A. Endsley**. 2016. “Rapid-response tools and datasets for post-fire remediation: linking remote sensing and process-based hydrological models.” *International Journal of Wildland Fire* **25**, 1061-1073.
- Gonzalez, A., B.J. Cardinale, G.R.H. Allington, J. Byrnes, **K.A. Endsley**, D.G. Brown, D.U. Hooper, F. Isbell, M. Loreaue, M.I. O’Connor. 2016. “Estimating local biodiversity change: A critique of papers claiming no net loss of local diversity.” *Ecology* **97**(8): 1949–1960.
- Endsley, K.A.**, M.G. Billmire. 2016. “Distributed visualization of gridded geophysical data: the Carbon Data Explorer, version 0.2.3” *Geoscientific Model Development* **9**:383-392.
- 2014** French N.H.F., D. McKenzie, T. Erickson, B. Koziol, M. Billmire, **K.A. Endsley**, N.K.Y. Scheinerman, L. Jenkins, M.E. Miller, R. Ottmar, S. Prichard. 2014. “Modeling regional-scale fire emissions with the Wildland Fire Emissions Information System.” *Earth Interactions* **18**(16).
- Josberger, E.G., R.A. Shuchman, L.K. Jenkins, and **K.A. Endsley**. 2014. “Melt water input from the Bering Glacier Watershed into the Gulf of Alaska.” *Geophysical Research Letters*. **41**(3): 886-890.
- 2013** **Endsley, K.A.** and J.L. McCarty. 2013. “Mapping prescribed burns and wildfires from Twitter with natural language processing and information retrieval techniques.” In Proceedings of the International Smoke Symposium. Hyattsville, Maryland, U.S.A.: International Association of Wildland Fire.
- 2012** Vaghefi, K., R.C. Oats, D.K. Harris, T.M. Ahlborn, C.N. Brooks, **K.A. Endsley**, C. Roussi, J.W. Burns, and R. Dobson. 2012. “Evaluation of commercially available remote sensors for highway bridge condition assessment.” *Journal of Bridge Engineering* **17**(6):886-895.
- Brooks, C.N., H. Kourous-Harrigan, M.G. Billmire, P. Metz, D.E. Keefauver, R.A. Shuch-

- man, R. Dobson, **K.A. Endsley**, M. Taylor. 2012. “[Expanding Alaska-Canada rail: Jointly visualizing revenue freight, development, mineral commodity value, and impact of carbon dioxide.](#)” *Transportation Research Record: Journal of the Transportation Research Board*, No. 2261, pp.95-105.
- 2010** Andrus, A.B., **K.A. Endsley**, S. Espino, J.S. Gierke. 2010. [Mapping the Freshwater-Saltwater Interface in the Terminal Moraine of the Bering Glacier](#). Ch. 19. *Bering Glacier: Interdisciplinary Studies of Earth’s Largest Temperate Surging Glacier*. Special Paper 462. Geological Society of America.

Invited Talks

- Department of Mathematical Sciences Seminar, University of Montana. “**Neighborhood change and differential drivers in weak housing markets: Are shrinking cities exceptional?**” September 24, 2019.
- Geography Week, Miami University Department of Geography, Oxford, Ohio. “**What are the social and economic drivers of uneven vegetation growth across U.S. metropolitan areas?**” November 15, 2018.

Conference Presentations and Talks

- “**Satellite monitoring of global soil health attributes using the SMAP Level 4 Carbon product**” (Talk H53E-04) at American Geophysical Union 2019 in San Francisco, CA, December 13, 2019.
- “**Understanding the processes of neighborhood change in Detroit through a satellite-based land-cover change proxy.**” April 8, 2017. American Association of Geographers Annual Meeting. Boston, MA.
- “**Assessment of urban socio-economic change in southeast Michigan neighborhoods through a land-cover change proxy.**” April 1, 2016. American Association of Geographers Annual Meeting. San Francisco, CA.
- “**Visualization of XCO₂ and flux data with applications for the web.**” January 30, 2014. OCO-2 Algorithm and Science Team Meeting. Caltech, Pasadena, CA.

“**Mapping prescribed burns and wildfires on Twitter with data mining and information retrieval techniques.**” International Association of Wildland Fire (IAWF)’s 2013 International Smoke Symposium. October 23, 2013. University of Maryland, MD.

“**Prescribed burn and wildfire communication on Twitter: Identifying and mapping with data mining techniques.**” Association for Fire Ecology (AFE) Fire Congress. December 5, 2012. Portland, OR.

“**Utilization of remote sensing data for bridge condition in operational decision support**” at the ASNT Nondestructive Evaluation/Nondestructive Testing (NDE/NDT) for Highways and Bridges: Structural Materials Technology (SMT) 2012 Conference. American Society for Nondestructive Testing (ASNT). August 23, 2012. New York, NY.

“**Measurements of velocity and ablation from Bering Glacier During the recent surge**” (Session C41G, Talk 7, Glacier Surging and Ice Streaming: Fast Flow and Instabilities II) at American Geophysical Union 2011 in San Francisco, CA, December 8, 2011. ([Presentation.](#))

“**Real-time web-based satellite tracking**” at Free and Open Source Software for Geospatial (FOSS4G) 2011 in Denver, CO, September 15, 2011. ([Abstract.](#))

“**Clarus road-weather routing for crash risk aversion**” at the Road Weather Management Stakeholder Meeting in Albuquerque, NM, September 7, 2011. ([Presentation.](#))

Other Publications

McCarty, J.L., E. Levin, **K.A. Endsley**, S.T. Aden, J. Bialas. 2015. “[Relating big data to local natural hazards: Lessons learned from data mining the Twitter API for volunteered geographic information on earthquakes, wildfires, and prescribed fires in the contiguous United States.](#)” in Proceedings of ISPRS WG IV/2 Workshop, “Global Geospatial Information and High Resolution Global Land Cover/Land Use Mapping.” April 21, 2015, Novosibirsk, Russian Federation.

Miller, M.E., M.G. Billmire, W.J. Elliot, **K.A. Endsley**, P.R. Robichaud. 2015. “[Rapid response tools and datasets for post-fire modeling: Linking Earth Observations and process-based hydrological models to support post-fire remediation.](#)” The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Volume XL-7/W3,

2015. 36th International Symposium on Remote Sensing of Environment, 11-15 May 2015, Berlin, Germany.

Endsley, K.A., C.N. Brooks, T.M. Ahlborn, K. Vaghefi. “Decision support system for integrating remote sensing in bridge condition assessment and preservation.” *SPIE Proceedings, NDE/NDT for Highways and Bridges: Structural Materials Technology (SMT)* 2012. March 11-15, 2012, San Diego, CA, U.S.A.

Ahlborn, T.M., D.K. Harris, C.N. Brooks, **K.A. Endsley**, D.C. Evans, R.C. Oats. 2010. “Evaluation of remote sensing technologies for detecting bridge deterioration and condition assessment.” p.498-505. *NDE/NDT for Highways and Bridges*. Structural Materials Technology. 16-20 August 2010. New York City, New York, U.S.A.

Service and Outreach

- **Reviewer:** *Landscape and Urban Planning* (2016-2019); *Journal of Environmental Planning and Management* (2016); *Journal of Environmental Management* (2018-2019); *Environment and Planning B: Urban Analytics and City Science* (2018); *Sustainability* (2020); *ISPRS Journal of Photogrammetry and Remote Sensing* (2019); *ISPRS International Journal of Geo-Information* (2020); *Remote Sensing* (2020); *Land* (2020)
- **Reviewer (Grant Proposals):** *Canadian Space Agency* (2020)
- **Editorial Board:** *Michigan Journal of Sustainability* (2016-18)
- **Chair, Doctoral Organizing Committee, School of Natural Resources and Environment** (Univ. Michigan, 2017)

Students Advised

- **Nasiru Ajibade**, Ph.D. Department of Geography, University of Lagos, Nigeria (2019-2020)
- **Yang Zijun**, M.S. Natural Resources, University of Michigan (2016-18)

Other Service

- **Housing Advocate** Missoula Housing Advocacy Network (2020 - Present)
- **Esri GeoMentor** (2016 - Present)
- **Web Administrator**, Jim Toy Community Center (JimToyCenter.org)
- **Educator, Web Designer** for U.P. Seismology (www.geo.mtu.edu/UPSeis/)
- **MichiganView** (2010-14, www.MichiganView.org) Design, develop, and maintain web-based educational resources on remote sensing for K-12 and post-secondary students.

Professional Memberships

- **American Society for Photogrammetry and Remote Sensing** (ASPRS)
- **American Association of Geographers** (AAG)
- **American Geophysical Union** (AGU)
- **The Rocky Mountaineers**, Missoula, Montana