

# CURRICULUM VITAE MARK J. LARA

## EDUCATION

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- 2008- 2012     Ph.D. Department of Biology, Ecology and Evolutionary Biology Program. University of Texas at El Paso.
- 2003-2008     B.Sc. Department of Biology. University of Texas at El Paso.

## PROFESSIONAL EXPERIENCE

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- 2019 – Present     **Assistant Professor:** Department of Plant Biology, University of Illinois, Urbana, Illinois.
- 2019 – Present     **Assistant Professor:** Department of Geography, University of Illinois, Urbana, Illinois.
- 2016 – 2019     **Postdoctoral Research Associate:** Department of Plant Biology, University of Illinois, Urbana, Illinois.
- 2013 – 2016     **Postdoctoral Research Fellow:** Institute of Arctic Biology, University of Alaska Fairbanks, Fairbanks, Alaska.
- 2007 – 2012     **Research Assistant:** Systems Ecology Laboratory, University of Texas at El Paso, El Paso, Texas
- 2007             **Research Assistant:** Global Change Research Group, San Diego State University, San Diego, California

## RESEARCH GRANTS

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- 2020-2023: \$740,000. Collaborative Proposal: Navigating Arctic Disturbances in the New Arctic.  
**PI: Mark J. Lara**, co-PI: Melissa Chipman  
Funding agency: National Science Foundation.
- 2016-2021: \$720,000. Land Carbon Project, modeling thermokarst & carbon dynamics in the Yukon Flats, Alaska, implications for wildlife habitat.  
PI: Helene Genet, co-I: A. David McGuire, co-I: Scott Rupp, **co-I: Mark J. Lara**.  
Funding agency: Dept. of Int.: United States Geological Survey.
- 2017-2018: \$300,000. Modeling change in landscape geomorphology associated with thawing permafrost.  
PI: Helene Genet, **co-I: Mark J. Lara**, co-I: William Bolton.  
Funding agency: Dept. of Int.: Western Alaska Landscape Conservation Cooperative.
- 2015-2016: \$100,000. Mapping polygonal tundra across the Arctic Coastal Plain of Alaska.  
**PI: Mark J. Lara**.  
Funding agency: Dept. of Int.: Arctic Landscape Conservation Cooperative.

## AWARDS/HONORS

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- 2019: Research featured in Chemical & Engineering News, “Permafrost thaw spurs methane emissions” (<https://cen.acs.org/environment/climate-change/Permafrost-thaw-spurs-methane-emissions/97/i26>).
- 2019: Article “Lara et al., 2018” was in the Top 100 Scientific Reports Earth science papers in 2018 (#SREPTop100).
- 2017: Research featured in SciVit Science News. Are lemmings driving carbon sequestration in arctic ecosystems? Climate Change, Ecology, News ([www.scivit.de/lang/news](http://www.scivit.de/lang/news))

- 2016: Research featured in EOS. Aquatic plants may accelerate methane emissions. (<https://eos.org/articles/aquatic-plants-may-accelerate-arctic-methane-emissions>)
- 2014: Research featured in Nature Geoscience “News and Views”. Hickman J. 2014. Carbon sinks and sinking tundra. Nature Geoscience. (7),784
- 2012: Most Outstanding Doctoral Dissertation for the University of Texas at El Paso graduate school (including Colleges of Engineering, Science, Health Science, Nursing, and Business).
- 2012: Best Dissertation from the College of Science for the University of Texas at El Paso (\$500.00 award)
- 2012: Travel scholarship from the International Arctic Research Center at (UAF) for airfare to the IPY 2012 Montreal Conference. \$1,000.
- 2012: IPY Montreal Accommodation Award
- 2011-2012: Selected for the NSF funded GK-12 fellowship. \$30,000 annual stipend, tuition and health insurance.
- 2010: Travel and accommodation scholarship from National Oceanic and Atmospheric Administration (NOAA), the Arctic Ocean Sciences Board (AOSB), International Arctic Science Committee (IASC), and Arctic Research Consortium of the U.S. (ARCUS) for attendance at the State of the Arctic National Conference in Miami, Florida. \$1,825.53
- 2010: Accommodation and registration scholarship from the Research Council of Norway for attendance at the IPY Oslo Science Conference.
- 2008: Best Antarctic Poster Presentation University of Texas at El Paso SACNAS Chapter conference.
- 2008: Best Poster Presentation University of Texas at El Paso SACNAS Chapter conference.
- 2007-2008: Participant in the IPY-Research and Educational Opportunities in Antarctica for Minorities (IPY-ROAM).
- 2007: Research assistant for San Diego State University’s “Global Change Research Group” during the summer near Barrow, Alaska. Tasks included the operation of multiple portable eddy covariance towers to determine climatic and environmental controls on CO<sub>2</sub> fluxes of Arctic Coastal tundra drained and thawed lake basins.

## **PUBLICATIONS IN REFEREED JOURNALS**

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- Lara MJ**, Chen Y, Jones BM, Genet H. *in prep*. Decadal-time scale Controls on Catastrophic Lake Drainage across northern Alaska. *Remote Sensing of Environment*.
- Lara MJ**, McGuire AD, Euskirchen ES, Genet H, Yi S, Rutter R, Sloan V, Iverson C, Wullschlegler SD. *In revision*. Local-scale Arctic tundra heterogeneity affects regional-scale carbon dynamics. *Nature Communications*.
- Zhang Q, Huemmrich K, **Lara MJ**, Middleton E, Yao T, Lyapustin A, Carroll M, Wang Y, Sun G. *submitted*. Identifying large inter-annual variability of the Utqiagvik tundra ecosystem and assessing the impacts of climate and lemming herbivory on the ecosystem. *Science of the Total Environment*.
- Chen Y, **Lara MJ**, Hu FS. 2020. A robust visible-near-infrared index for fire severity mapping in Arctic tundra ecosystems. *Journal of Photogrammetry and Remote Sensing*.
- Jones BM, Arp CD, Grosse G, Nitze I, Whitman MS, **Lara MJ**, Hinkel KM, Shur Y. *in press*. Remotely sensing historic and future potential lake drainage on the western Arctic Coastal Plain of

northern Alaska. *Permafrost and Periglacial Processes*.

Frost GV, Bhatt US, Epstein HE, Walker DA, Reynolds MK, Berner L, Bjerke J, Breen AL, Forbes B, Goetz S, Iversen CM, **Lara MJ**, Macander MJ, Phoenix G, Rocha A, Salmon VG, Thornton PE, Tommervik H, and Wulschleger SD (2019). [NOAA Arctic Report Card – Tundra Greenness](#).

Natali SM, Watts JD, Potter S, Rogers BM, Ludwig SM, Selbmann AK, Sullivan PF, Abbott BW, Arndt KA, Birch L, Björkman MP, Bloom A, Celis G, Christensen TR, Christiansen CT, Commane R, Cooper EJ, Crill P, Czimczik C, Davydov S, Du J, Egan JE, Elberling B, Euskirchen ES, Friborg T, Genet H, Göckede M, Goodrich JP, Grogan P, Helbig M, Jafarov EE, Jastrow JD, Kalhori AAM, Kim Y, Kimball J, Kutzbach L, **Lara MJ**, Larsen KS, Loranty MM, Lund M, Lupascu M, Madani N, Malhotra A, McFarland J, McGuire AD, Michelsen A, Minions C, Oechel WC, Olefeldt D, Parmentier FW, Pirk N, Poulter B, Quinton W, Rezanezhad F, Risk D, Sachs T, Schaefer K, Schmidt NM, Schuur EAG, Semenchuk PR, Shaver G, Sonnentag O, Starr G, Treat CC, Waldrop MP, Wang Y, Welker J, Wille C, Xu X, Zhang Z, Zhuang Q, Zona D. 2019. Substantial carbon losses from the Arctic during the winter under current and future climates. *Nature Climate Change*.

Salmon VG, Breen A, Kumar J, **Lara MJ**, Thornton P, Wulschleger S, Iversen C. 2019. Alder ecotypes and expansion across a tundra hillslope: implications for local N cycling. *Frontiers in Plant Science*. 10.3389/fpls.2019.01099.

Euskirchen ES, Breen A, Timm K, Gray S, Rupp ST, Martin P, Sesser A, Murphy K, Littell J, Bennett A, Bolton WR, Carman T, Genet H, Griffith B, Kurkowski T, **Lara MJ**, Marchenko S, Nicolsky D, Panda S, Romanovsky V, Rutter R, Tucker C, McGuire AD. *in press*. Co-production of knowledge: Developing the Integrated Ecosystem Model to inform resource management decisions in Arctic Alaska. *Frontiers in Ecology and the Environment*.

**Lara MJ**, Lin DH, Andresen C, Lougheed VL, Tweedie CE. 2019. Nutrient Response from Permafrost Thaw enhances CH<sub>4</sub> emissions from Arctic Tundra Wetlands. *Journal of Geophysical Research-Biogeosciences*. 124. <https://doi.org/10.1029/2018JG004641>.

**Lara MJ**, Chipman ML, Hu FS. 2019. Automated detection of thermoerosion in permafrost ecosystems using temporally dense Landsat image stacks. *Remote Sensing of Environment*, 221, 462-473. <https://doi.org/10.1016/j.rse.2018.11.034>.

Turetsky MR, Baltzer J, Douglas T, Gibson C, Holloway J, Kokelj S, **Lara MJ**, Lewkowicz A, Olefeldt D, Zwanenberg N. 2018. Interdisciplinary approaches to understanding the initiation and lateral expansion of thermokarst in peat-rich regions. *5<sup>th</sup> European Conference on Permafrost – Book of Abstracts*. Deline P, Bodin X, and Ravel L. (Eds.) <hal-01816115>

**Lara MJ**, Nitze I, Grosse G, and McGuire AD. 2018. Tundra landform and vegetation productivity trend maps for the Arctic Coastal Plain of northern Alaska. *Scientific Data*. 5: 180058, doi: 10.1038/sdata.2018.58.

**Lara MJ**, Nitze I, Grosse G, Martin P, and McGuire AD. 2018. Reduced arctic tundra productivity linked with landform and climate change interactions. *Scientific Reports*. 8: 2345, doi:

10.1038/s41598-018-20692-8.

Muster S, Roth K, Langer M, Lange S, Cresto Aleina F, Bartsch A, Morgenstern A, Grosse G, Jones B, Britta A, Sannel K, Sjoeborg Y, Guenther F, Andresen C, Veremeeva A, Lindgren PR, Bouchard F, **Lara MJ**, Fortier D, Charbonneau S, Virtanen TA, Hugelius G, Palmtag J, Siewert MB, Boike J. 2017. PeRL: A Circum-Arctic Permafrost Region Pond and Lake Database. *Earth System Science Data*. doi:10.5194/essd-2016-56.

**Lara MJ**, Johnson DR, Andresen CG, Hollister RD, Tweedie CE. 2017. Lemming Absence over 50+ years Alters Arctic Tundra from a Carbon Sink to a Source. *Journal of Ecology*. doi: 10.1111/1365-2745.12654.

Andresen CG, **Lara MJ**, Tweedie CE, Loughheed VL. 2017. Biomass and thaw depth increase in arctic tundra wetlands over decadal time scales: Implications for methane flux. *Global Change Biology*. doi:10.1111/gcb.13469.

Luo Y, Ahlström A, Allison SD, Batjes N, Brovkin V, Carvalhais N, Chappell A, Ciais P, Davidson E, Finzi A, Georgiou K, Guenet B, Hararuk O, Harden J, He Y, Hopkins F, Jiang L, Koven C, Jackson R, Jones C, **Lara MJ**, Liang J, McGuire AD, Parton W, Peng C, Randerson J, Salazar A, Sierra C, Smith M, Tian H, Todd-Brown KEO, Torn M, van Groenigen KJ, Wang YP, West TO, Wei Y, Wieder WR, Xia J, Xu X, Xu X, Zhou T. 2016. Recommendations towards More Realistic Projections of Soil Carbon Dynamics by Earth System Models. *Global Biogeochemical Cycles*. 30, 40–56, doi:10.1002/2015GB005239.

**Lara MJ**, Genet H, McGuire AD, Euskirchen ES, Zhang Y, Brown D, Jorgenson MT, Romanovsky V, Breen A, Bolton WR. 2016. Thermokarst rates intensify due to climate change and forest fragmentation in an Alaskan boreal forest lowland. *Global Change Biology*. 22, 816–829, doi: 10.1111/gcb.13124.

McGuire AD, Rupp TS, Breen A, Euskirchen ES, Marchenko S, Romanovsky VR, Bennet A, Bolton WR, Carmen T, Genet H, Kurkowski T, **Lara MJ**, Nicolsky D, Rutter R, Timm K. 2016. Integrated Ecosystem Model for Alaska and Northwest Canada Project. *USGS Final Report*.

**Lara MJ**, McGuire AD, Euskirchen ES, Tweedie CE, Hinkel KM, Skurikhin AN, Romanovsky VE, Grosse G, Bolton WR, Genet H. 2015. Polygonal tundra geomorphological change in response to warming alters future CO<sub>2</sub> and CH<sub>4</sub> flux on the Barrow Peninsula. *Global Change Biology*, doi: 10.1111/gcb.12757.

Villarreal SV, Webber PJ, Johnson DR, Hollister BD, **Lara MJ**, Lin DH, Tweedie CE. 2014. Vegetation datasets from Northern Alaska, Baffin Island, Canada, and Beringia. *Proceedings of the Alaska Arctic Vegetation Archive Workshop*. (extended abstracts) CAFF Proceeding Series Report Nr. 11. 68-72.

Elmendorf SC, Henry GHR, Hollister RD, Björk RG, Boulanger-Lapointe N, Cooper EJ, Cornelissen JHC, Day TA, Dorrepaal E, Elumeeva TG, Gill M, Gould WA, Harte J, Hik DA, Hofgaard A, Johnson DR, Johnstone JF, Jónsdóttir IS, Jorgenson JC, Klanderud K, Klein JA, Koh S, Kudo G, **Lara MJ**, Lévesque E, Magnússon B, May JL, Mercado J, Michelsen A, Molau U, Myers-Smith IH, Oberbauer SF, Onipchenko VG, Rixen C, Schmidt NM, Shaver GR, Spasojevic MJ, Þórhallsdóttir ÞE, Tolvanen A, Troxler T, Tweedie CE, Villarreal S, Wahren CH, Walker X, Webber PJ, Welker JM, Wipf S. 2012. Plot-scale evidence of tundra vegetation change and links

to recent summer warming. *Nature Climate Change*. 2, 453-457. doi:10.1038/NCLIMATE1465 .

Villarreal S, Johnson DR, **Lara MJ**, Hollister RD, Webber PJ, Tweedie CE. 2012. Tundra Vegetation change near Barrow, Alaska (1972-2010). *Environmental Research Letters*. 7:015508, doi:10.1088/1748-9326/7/1/015508.

**Lara MJ**, Villarreal S, Johnson DR, Hollister RD, Webber PJ, Tweedie CE. 2012. Estimated change in tundra ecosystem function near Barrow, Alaska between 1972 and 2010. *Environmental Research Letters* 7:015507, doi:10.1088/1748-9326/7/1/015507.

Johnson DR, **Lara MJ**, Shaver GR, Batzli GO, Shaw JD, Tweedie CE. 2011. Exclusion of brown lemmings reduces vascular plant cover and biomass in arctic coastal tundra resampling of a 50+ year herbivore enclosure experiment near Barrow, Alaska. *Environmental Research Letters* 6:045507, doi:10.1088/1748-9326/6/4/04550.

Callaghan TV, Tweedie CE, Åkerman J, Andrews C, Bergstedt J, Butler MG, Christensen TR, Cooley D, Dahlberg U, Danby RK, Daniş FJA, de Molenaar JG, Dick J, Mortensen CE, Ebert-May D, Emanuelsson U, Eriksson H, Hedenås H, Henry GHR, Hik DS, Hobbie JE, Jantze EJ, Jaspers C, Johansson C, Johansson M, Johnson DR, Johnstone JF, Jonasson C, Kennedy C, Kenney AJ, Keuper F, Koh S, Krebs CJ, Lantuit H, **Lara MJ**, Lin D, Loughheed VL, Madsen J, Matveyeva N, McEwen DC, Myers-Smith IH, Narozhniy YK, Olsson H, Pohjola VA, Price LW, Rigét F, Rundqvist S, Sandström A, Tamstorf M, Bogaert RV, Villarreal S, Webber PJ, Zemtsov VA. 2011 Multi-decadal changes in tundra environments and ecosystems: synthesis of the International Polar Year-Back to the Future Project (IPY-BTF) *Ambio* 40 705–16.

## CONTRIBUTED PAPERS

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**Lara MJ**, Chipman M, Chen Y. Navigating Disturbance Regimes in the New Arctic. American Geophysical Union (AGU). San Francisco CA, USA.

Chen Y, **Lara MJ**, Hu FS. Decadal impacts of wildfire and climate change on permafrost degradation in Arctic Alaska. American Geophysical Union (AGU). San Francisco CA, USA.

**Lara MJ**. Navigating Disturbance Regimes in the New Arctic. Next Generation Ecosystem Experiments (NGEE-arctic), All hands meeting. San Francisco CA, USA.

**Lara MJ**. The Evolving Arctic Landscape. University of Illinois at Carbondale. Carbondale IL, USA. Invited Oral presentation.

Salmon VG, Breen A, Kumar J, **Lara MJ**, Thornton P, Wullschleger S, Iversen C. 2019. Alder expansion and consequences for nitrogen availability on the Seward Peninsula. Ecological Society of America (ESA). Louisville KY, USA. Invited Oral presentation.

**Lara MJ**, McGuire AD, Euskirchen ES, Genet H, Wullschleger S. 2019. Importance of local Arctic tundra heterogeneity for regional carbon modelling. Ecological Society of America. Louisville KY, USA. Invited Oral presentation.

Natali S, Selbmann A, **Lara MJ**, et al. 2018. A Pan-Arctic Synthesis of nongrowing season respiration:

Key drivers and response to a changing climate. American Geophysical Union (AGU). Washington DC, USA. Oral presentation.

Gonzalez MO, Villarreal S, **Lara MJ**, Tweedie CE, Hollister RD, Webber PJ. A half-century of biophysical change in polygonised tundra on the Coastal Plain of Northern Alaska. American Geophysical Union (AGU). Washington DC, USA. Poster presentation.

Bolton W, Genet H, **Lara MJ**, Romanovsky VE, Riley WJ. Simulation of Landscape changes on the Alaskan Arctic Coastal Plain with the Alaska thermokarst Model. American Geophysical Union (AGU). Washington DC, USA. Poster presentation.

Chen Y, **Lara MJ**, Hu FS. 2018. A robust visible-near-infrared burn severity index for tundra ecosystems. American Geophysical Union (AGU). Washington DC, USA. Poster presentation.

**Lara MJ**, Jones BM, Genet H. 2018. Decadal-time scale Controls on Catastrophic Lake Drainage across northern Alaska. International Circumpolar Remote Sensing Symposium. Potsdam, Germany. Oral presentation.

Salmon VG, Iversen C, **Lara MJ**, Kumar J, Breen A, Thornton P, Wulfschleger S. 2018. Symbiotic N-fixation by Alder Impacts Nitrogen Availability on a Landscape Scale. Ecological Society of America (ESA). New Orleans LA, USA. Oral presentation.

Hu FS, Chen Y, M Chipman, **Lara MJ**. 2018. Novel disturbance regimes in a warming Arctic. Ecological Society of America (ESA). New Orleans LA, USA. Invited Oral presentation.

**Lara MJ**. 2018. Detecting Permafrost Degradation from Space. University of Illinois Urbana-Champaign, Department of Plant Biology Seminar. Oral presentation.

**Lara MJ**. 2018. Permafrost thaw in arctic tundra wetlands, a positive feedback to climate warming? University of Illinois Urbana-Champaign, Program in Ecology, Evolution, and Conservation Biology Seminar. Oral presentation.

Turetsky MR, Baltzer J, Douglas T, Gibson C, Holloway J, Kokelj S, **Lara MJ**, Lewkowicz A, Olefeldt D, Zwanenberg N. 2018. Interdisciplinary approaches to understanding the initiation and lateral expansion of thermokarst in peat-rich regions. European Conference on Permafrost (EUCOP 2018). Chamonix-Mont Blanc, France. Oral presentation.

Genet H, **Lara MJ**, McGuire AD, Bolton WR, Euskirchen ES, Romanovsky V. 2018. Modeling vulnerability to thermokarst disturbance in boreal Alaska. POLAR 2018. Davos, Switzerland. Poster presentation

Genet H, **Lara MJ**, McGuire AD, Bolton WR, Euskirchen ES, Romanovsky V. 2017. Integrated evaluation of the vulnerability to thermokarst disturbance and its implications for the regional carbon balance in boreal Alaska. American Geophysical Union (AGU). New Orleans LA, USA. Oral presentation.

**Lara MJ**, Chipman ML, Hu FS. 2017. Automated Detection of Thermo-Erosion in High Latitude Ecosystems. American Geophysical Union (AGU). New Orleans LA, USA. Oral presentation.

- Lara MJ**, Nitze I, Grosse G, Martin P, McGuire AD. 2017. Arctic Greening and Browning controlled by Landscape Heterogeneity and Regional Climate Change. Ecological Society of America (ESA). Portland OR, USA. Oral presentation.
- Natali S, Selbmann A, **Lara MJ**, et al. 2017. A Pan-Arctic Synthesis of Cold Season Carbon Emissions. North American Carbon Program/ Ameriflux PI meeting. North Bethesda, Maryland, USA. Poster presentation.
- Natali S, Selbmann A, **Lara MJ**, et al. 2017. A Pan-Arctic Synthesis of Cold Season Carbon Emissions. Circum-polar Flux Workshop. Hyytiälä, Finland. Poster presentation.
- Natali S, Selbmann A, **Lara MJ**, et al. 2017. A Pan-Arctic Synthesis of Cold Season Carbon Emissions. Toolik Long Term Ecological Research station (LTER) meeting. Portland, Oregon, USA. Poster presentation
- Natali S, Selbmann A, **Lara MJ**, et al. 2017. A Pan-Arctic Synthesis of Cold Season Carbon Emissions. Arctic and Boreal vulnerability Experiments (ABOVE) meeting. Boulder, Colorado, USA. Poster presentation.
- Bolton WR, Genet H, **Lara MJ**, Romanovsky V, McGuire AD, Breen AL. 2017. Projected change in landscape evolution in response to warming on the Alaskan Arctic Coastal Plain: Progress towards assessing impacts for distributions of shorebirds and waterfowl. International Conference on Arctic Science: Bringing Knowledge to Action. Organized by the Arctic Monitoring and Assessment Program (AMAP). Reston, Virginia, USA. Oral presentation.
- Natali S, Selbmann A, **Lara MJ**, et al. 2016. A Pan-Arctic Synthesis of Cold Season Carbon Emissions. Eleventh International Conference on Permafrost (ICOP), Potsdam, Germany. Poster presentation. American Geophysical Union (AGU). San Francisco, California, USA. Invited presentation
- Heikoop JM, Newman BD, Arendt CA, Andresen CA, **Lara MJ**, Wainwright HM, Throckmorton H, Graham DE, Wilson CJ, Wulschleger SD, Romanovsky VE, Bolton WR, Wales NA, Rowland JC. The Nitrate Inventory of Unsaturated Soils at the Barrow Environmental Observatory: Current Conditions and Potential Future Trajectories. American Geophysical Union (AGU). San Francisco, California, USA. Poster presentation
- Salmon VG, Iversen CM, Breen AL, Childs J, Lara MJ, Thornton P, Vander Stel HM, Wulschleger SD. Shrub traits along the Kougurok Hillslope. American Geophysical Union (AGU). San Francisco, California, USA. Poster presentation
- Iversen CM, Breen AL, Salmon VG, Childs J, Euskirchen ES, **Lara MJ**, Rogers A, Serbin S, Thornton P, Vander Stel HM, Wulschleger SD. 2016. Capturing the variation in Arctic plant functional traits: The Plant Trait Team 2016 field campaigns on the Seward Peninsula, AK. American Geophysical Union (AGU). San Francisco, California, USA. Poster presentation
- Arendt C, Heikoop J, Newman B, Wilson C, Wales N, Andresen C, Wainwright H, **Lara MJ**, Langford Z, Wulschleger S. 2016. The Nitrate Inventory of Unsaturated Soils at the Barrow Environmental Observatory: Current Conditions and Potential Future Trajectories. American

Geophysical Union (AGU). San Francisco, California, USA. Poster presentation

Genet H, **Lara MJ**, Bolton WR, McGuire AD. 2016. Modeling vulnerability to thermokarst disturbance and its consequences on regional land cover dynamics in boreal Alaska. American Geophysical Union (AGU). San Francisco, California, USA. Poster presentation

Bolton WR, **Lara MJ**, Genet H, Romanovsky V, McGuire AD. 2016. Conceptualization and Simulation of the Alaskan Arctic Tundra Landscape Evolution Using the Alaska Thermokarst Model. American Geophysical Union (AGU). San Francisco, California, USA. Oral presentation

**Lara MJ**, Genet H, McGuire AD, Euskirchen ES, Zhang Y, Brown D, Jorgenson MT, Romanovsky V, Breen A, Bolton WR. 2016. Thermokarst rates intensify due to climate change and forest fragmentation in an Alaskan boreal forest lowland. Eleventh International Conference on Permafrost (ICOP), Potsdam, Germany. Oral presentation.

**Lara MJ**, Martin P. 2016. Mapping Polygonal Tundra across the Alaskan Arctic Coastal Plain. Eleventh International Conference on Permafrost (ICOP), Potsdam, Germany. Poster presentation.

Genet H, **Lara MJ**, Bolton WR, McGuire AD, Romanovsky V, Turetsky M. 2016. Modeling landscape vulnerability to thermokarst disturbance in boreal Alaska. Eleventh International Conference on Permafrost (ICOP), Potsdam, Germany. Poster presentation.

Bolton WR, **Lara MJ**, Genet H, Romanovsky VE, McGuire AD. 2016. Initial Conceptual and Application of the Alaska Thermokarst Model. Eleventh International Conference on Permafrost (ICOP), Potsdam, Germany. Poster presentation.

Natali S, Selbmann A, **Lara MJ**, et al. 2016. A Pan-Arctic Synthesis of Carbon Emissions During the Nongrowing Season. Eleventh International Conference on Permafrost (ICOP), Potsdam, Germany. Poster presentation.

Breen AL, McGuire AD, Rupp TS, Euskirchen ES, Marchenko S, Romanovsky VE, **Lara MJ**, et al. 2016. The Integrated Ecosystem Model for Alaska and Northwest Canada: An interdisciplinary decision support tool to inform adaptation to Arctic environmental change. The Ecosystem Approach to Management (EA) International Conference, Fairbanks, Alaska. Poster presentation.

**Lara MJ**, Genet H, McGuire AD, Euskirchen ES, Zhang Y, Brown D, Jorgenson MT, Romanovsky V, Breen A, Bolton WR. 2016. Thermokarst rates intensify due to climate change and forest fragmentation in an Alaskan boreal forest lowland. Alaska Fish and Wildlife Annual Review, Fairbanks, Alaska. Oral Presentation.

Andresen CA, **Lara MJ**, Loughheed VL. 2016. Rising Plant-mediated Methane Emissions from Arctic Wetlands: A Positive Feedback to Climate Warming. Society of Wetlands Scientists (SWS), Corpus Christi, Texas. Oral Presentation.

**Lara MJ**, Genet H, McGuire AD, Euskirchen ES, Zhang Y, Brown D, Jorgenson MT, Romanovsky V, Breen A, Bolton WR. 2015. Thermokarst rates intensify due to climate change and forest fragmentation in an Alaskan boreal forest lowland. Meeting of the American Geophysical



Union, San Francisco, California. Poster presentation.

Bolton WR, **Lara MJ**, Genet H, Romanovsky VE, McGuire AD. 2015. Initial Conceptual and Application of the Alaska Thermokarst Model. Meeting of the American Geophysical Union, San Francisco, California. Oral presentation.

**Lara MJ**, McGuire AD, Euskirchen ES, Genet H, Sloan V, Iversen C, Norby R. 2015. Importance of heterogeneous small-scale arctic polygonal tundra land cover in large-scale terrestrial ecosystem models. Next Generation Ecosystem Experiments phase 2 review, Rockville, Maryland. Poster presentation.

Tweedie CE, **Lara MJ**, Johnson DR, Andresen C, Hollister RH, Oberbauer S. 2015. 50+ years of Lemming Exclusion Alters Arctic Tundra from a Carbon Sink to a Source. Arctic Observing Open Science Meeting, Seattle, Washington. Oral presentation.

**Lara MJ**, McGuire AD, Euskirchen ES, Genet H, Sloan V, Iversen C, Norby R. 2015. Importance of heterogeneous small-scale arctic polygonal tundra land cover in large-scale terrestrial ecosystem models, for reducing uncertainty in carbon balance. Arctic Observing Open Science Meeting, Seattle, Washington. Oral presentation.

Bolton WR, **Lara MJ**, Genet H, Romanovsky VE, McGuire AD. 2015. Initial Conceptual and Application of the Alaska Thermokarst Model. Arctic Observing Open Science Meeting, Seattle, Washington. Oral presentation.

**Lara MJ**. 2015. Progress toward understanding implications of past and projected change in high latitude ecosystems. University of Illinois Urbana-Champaign, Department of Plant Biology Seminar. Invited Speaker.

Bolton WR, Romanovsky VE, McGuire AD, **Lara MJ**. 2015. Conceptualization of Arctic Tundra Landscape Transitions Using the Alaska Thermokarst Model. Next Generation Ecosystem Experiments phase 2 review, Rockville, Maryland. Poster presentation.

**Lara MJ**, McGuire AD, Euskirchen ES, Genet H. 2015. Department of Energy TES/SBR Primary Investigators meeting. Potomac, Maryland. Poster presentation.

Wilson C, Hinzman L, Iwanhona G, **Lara MJ**, Liljedahl A, Painter S, Romanovsky V, Wulfschleger S. 2014. Linking inundation patterns and dynamics in a permafrost landscape to hydrologic, thermal and ecosystem processes. Meeting of the American Geophysical Union, San Francisco, California. Oral presentation.

**Lara MJ**, McGuire AD, Euskirchen ES. 2014. Tundra Geomorphology and Landscape Characterization. Next Generation Ecosystem Experiment (NGEE-Arctic) all hands meeting. San Francisco, California. Invited Oral presentation.

**Lara MJ**, McGuire AD, Euskirchen ES, Genet H, Sloan V, Iversen C, Norby R, Zhang Y, and Yuan F. 2014. Changes in landscape-level carbon balance of an arctic coastal plain tundra ecosystem between 1970-2100, in response to projected climate change. Meeting of the American Geophysical Union, San Francisco, California. Oral Presentation.

- Bolton WR., Romanovsky V, McGuire AD, Grosse G, and **Lara MJ**. 2014. Initial Conceptualization and Simulation of Arctic Tundra Landscape Evolution Using the Alaska Thermokarst Model. Meeting of the American Geophysical Union, San Francisco, California. Oral Presentation.
- Zhang Y, Genet H, **Lara MJ**, McGuire AD, Roach J, Patil VJ, Romanovsky VE, Bolton WR, and Rutter R. 2014. An assessment of thermokarst driven changes in land cover of the Tanana Flats wetland complex of Alaska from 2009-2100 in response to climate warming. Meeting of the American Geophysical Union, San Francisco, California. Poster Presentation.
- Lara MJ**, McGuire AD, Euskirchen ES, Tweedie CE. 2014. Century time-scale change in Arctic Coastal Plain Tundra Geomorphology, carbon flux, and carbon storage. Ecology and Evolutionary Biology (EEB) Seminar, University of Texas at El Paso. El Paso, Texas. Invited Oral presentation.
- Lara MJ**, McGuire AD, and Euskirchen ES. 2014. Century time-scale implications for change in peak growing season carbon flux in ice wedge polygonal tundra on the Barrow, Peninsula. US – International Association of Landscape Ecologists Annual Symposium. Anchorage, Alaska. Invited. Oral Presentation.
- Lara MJ**, McGuire AD, Euskirchen ES, Sloan VL, Iversen CM, Norby RJ, Genet H, Zhang Y, and Yuan F. 2014. Modeled change in carbon balance between 1970-2100 of a polygonal arctic tundra ecosystem near Barrow, Alaska. Meeting for representing soil carbon dynamics in global land models to improve future IPCC assessments. Breckenridge, Colorado. Poster presentation.
- Lara MJ**, McGuire AD, Euskirchen ES, Sloan VL, Iversen CM, Norby RJ, Genet H, Zhang Y, and Yuan F. 2013. Modeled change in carbon balance between 1970-2100 of a polygonal arctic tundra ecosystem near Barrow, Alaska. Meeting of the American Geophysical Union, San Francisco, California. Poster Presentation.
- Zhang Y, McGuire AD, Genet H, Bolton WR, Romanovsky VE, Grosse G, Jorgenson T, and **Lara MJ**. 2013. Modeling thermokarst dynamics in Alaska ecosystems: Description of the Predisposition and Initiation/Expansion sub-models. Meeting of the American Geophysical Union, San Francisco, California. Poster Presentation
- Lara MJ**, McGuire AD, Euskirchen ES. 2013. Carbon cycle modeling in an arctic polygonal tundra ecosystem near Barrow, Alaska between 1970-2100, using the DVMDOSTEM. Meeting for the Terrestrial Ecosystem Model Summit. Oral presentation.
- Lin DH, Johnson DR, **Lara MJ**, Villarreal S, Hollister RD, Webber PJ, Tweedie CE. 2012. Decade time scale plot to landscape scale change in tundra ecosystem structure and function near Barrow, Alaska. Meeting of the American Geophysical Union. San Francisco, California. Oral presentation.
- Lara MJ**, Lin DH, Johnson DR, Loughheed V, Tweedie CE. 2012. Response of ecosystem CO<sub>2</sub> and CH<sub>4</sub> flux to nutrient increase in *Arctophila fulva* dominated tundra. Meeting of the American Geophysical Union. San Francisco, California. Poster presentation
- Lara MJ**, Johnson DR, Tweedie CE. 2012. Long-term Lemming Herbivory Alters Carbon and Energy

Balance of Alaskan Coastal Tundra. International Polar Year (IPY) Montréal conference “From knowledge to action”. Montréal, Canada. Poster presentation.

**Lara MJ**, Villarreal S, Johnson DR, Hollister R, Webber PJ, Tweedie CE. 2011. Estimating decade-time scale plant community change on tundra ecosystem function near Barrow Alaska. Ecological Society of America (ESA) Conference. San Antonio, Texas. Oral presentation.

Johnson DR, **Lara MJ**, Villarreal S, Webber PJ, Shaver GR, Batzli GO, Shaw JD, Tweedie CE. 2011. Lemmings drive short and long term vegetation and carbon dynamics in coastal tundra: resampling historic herbivore exclosures at Barrow, Alaska. Ecological Society of America (ESA) Conference. San Antonio, Texas. Oral presentation.

Johnson DR, **Lara MJ**, Shaver GR, Tweedie CE. 2010. Herbivory and soil moisture drive long-term patterns of vegetation structure and function in Alaskan coastal tundra: results from resampling historic exclosures at Barrow. Meeting of the American Geophysical Union. San Francisco, California. Oral presentation.

Tweedie CE, Ebert-May D, Hollister RD, Johnson DR, **Lara MJ**, Villarreal S, Spasojevic M, Webber PJ. 2010. Decadal Time Scale change in terrestrial plant communities in North American arctic and alpine tundra: A contribution to the International Polar Year Back to the Future Project. Meeting of the American Geophysical Union. San Francisco, California. Oral presentation.

**Lara MJ**, Villarreal S, Johnson DR, Webber PJ, Tweedie CE. 2010. Predicting decade-time scale change in plant productivity at a recently de-glaciated site in the Canadian High Arctic. International Polar Year (IPY) Oslo Science Conference. Oslo, Norway. Oral presentation.

Johnson DR, **Lara MJ**, Villarreal S, Webber PJ, Tweedie CE. 2010. IPY Back to the Future (BTF): Resampling research sites established more than 25 years ago to assess future trajectories of change in high latitude terrestrial ecosystem structure and function. BEO Subcommittee, Barrow Arctic Science Consortium, Ukpeaġvik Iñupiat Corporation and North Slope Borough, Barrow Alaska. Page(s) 56-58.

**Lara MJ**, Villarreal S, Johnson DR, Webber PJ, Tweedie CE. 2010. High Arctic carbon balance and productivity shifts over a multi-decadal time scales. State of the Arctic Conference (SOA). Miami, Florida. Poster presentation.

**Lara MJ**, Villarreal S, Johnson DR, Webber PJ, Tweedie CE. 2010. Impact of decade-time scale plant community change on tundra ecosystem function near Barrow Alaska. Ecological Society of America (ESA) Conference. San Antonio, Texas. Poster presentation.

Johnson DR, Villarreal S, **Lara MJ**, Webber PJ, Callaghan T, Hik D, Tweedie CE. 2009. IPY-Back to the Future: Determining decadal time scale change in ecosystem structure and function in high latitude and high altitude tundra ecosystems. Meeting of the American Geophysical Union. San Francisco, California. Oral presentation.

**Lara MJ**, Villarreal S, Johnson DR, Tweedie CE. 2009: Functional significance of plant community change in the North Eastern American Arctic. Back to the Future (BTF): International meeting. El Paso, Texas. Oral presentation.

- Lara MJ**, Goswami S, Villarreal S, Del Toro I, Olivas P, Tweedie CE. 2009. Out of the frying pan and into the freezer: UTEP advancing our understanding of climate change in the Arctic. University of Texas at El Paso's Centennial Museum IPY-ROAM. El Paso, Texas. Oral presentation.
- Lara MJ**, Lin DH, Tweedie CE. 2009. Radiative forcing quantification for dominant species specific vascular plants and arctic tundra representative land cover types. Society for the Advancement of Chicanos and Native Americans in Science (SACNAS). Dallas, Texas. Poster presentation.
- Rodriguez R, Del Toro I, Goswami S, Herrera J, **Lara MJ**, Olivas P, Renteria S, Villarreal S, Weber K, Tweedie CE, Lougheed VL. 2009. A rapid assessment of Antarctic Peninsula Ecosystems: Impact of nutrient inputs on primary producer communities. Ecological Society of America (ESA). Albuquerque, New Mexico. Oral presentation.
- Johnson DR, Tweedie CE, Villarreal S, **Lara MJ**, Callaghan T. 2008. International Polar Year-Back to the Future (IPY-BTF): Re-Sampling Sites More than 25 Years Old to Assess Change in Arctic Ecosystem Structure and Function. Meeting of the American Geophysical Union. San Francisco, California. Oral presentation.
- Lara MJ**, Goswami S, Villarreal S, Olivas P, Del Toro I, Herrera J, Amendariz A, Tweedie CE. 2008. Variation in Terrestrial Ecosystem Structure and Function along a Latitudinal Gradient in the Maritime Antarctic. Society for the Advancement of Chicanos and Native Americans in Science (SACNAS). Salt Lake City, Utah. Poster presentation.
- Lara MJ**, Goswami S, Villarreal S, Olivas P, Del Toro I, Herrera J, Amendariz A, Tweedie CE. 2008. Antarctic terrestrial flora: Rapid assessment of biomass, vegetation cover, and bryophyte stress level. Ecological Society of America (ESA). Milwaukee, Wisconsin. Poster presentation.
- Goswami S, Olivas P, **Lara MJ**, Villarreal S, Del Toro I, Herrera J, Amendariz A, Tweedie CE. 2008. Hyperspectral reflectance as an indicator of marine-terrestrial nutrient exchange in the Antarctic terrestrial ecosystem in the Antarctic Peninsula at a latitudinal gradient. Ecological Society of America (ESA). Milwaukee, Wisconsin. Poster presentation.
- Del Toro I, Amendariz A, **Lara MJ**, Villarreal S, Herrera J, Goswami S, Olivas P, Tweedie CE. 2008. Terrestrial microarthropod biodiversity analysis of the northern Antarctic Peninsula and South Shetland Islands: With notes on microarthropod biotic and abiotic interactions. Ecological Society of America (ESA). Milwaukee, Wisconsin. Poster presentation.
- Olivas PC, Goswami S, Herrera J, Villarreal S, **Lara MJ**, Amendariz A, Del Toro I, Tweedie CE. 2008. Rapid assessment of ecosystem respiration: Carbon dioxide emissions at several locations of the Antarctic Peninsula. Ecological Society of America (ESA). Milwaukee, Wisconsin. Poster presentation.
- Villarreal S, Goswami S, Herrera J, **Lara MJ**, Olivas PC, Amendariz A, Del Toro I, Tweedie CE. 2008. Lichen diversity and abundance at several penguin-dense sites along the Antarctic Peninsula. Ecological Society of America (ESA). Milwaukee, Wisconsin. Poster presentation.

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## TEACHING EXPERIENCE

2020 Instructor for Geography and GIS 476: Applied GIS to Environmental Studies at Univ. of Illinois.

2017 Instructor for Integrative Biology 203 for Ecology at the Univ. of Illinois.

2015-present Guest lectures: Biogeography at Univ. of Illinois (2019), Ecosystem Ecology at Univ. of Illinois (2017), Ecosystem Modeling at Univ. of Alaska Fairbanks (2016), Remote Sensing in Ecology at Univ. Alaska Fairbanks (2015).

2011-2012 NSF funded GK-12 fellow, teaching science in high school biology classrooms.

2008-present Mentored undergraduate/graduate students, training postdocs/research faculty at UTEP, UAF, and UIUC.

## **WORKSHOPS**

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Bolton, Maryland October 2019 “Drone-based hyperspectral and LIDAR applications”

Urbana, Illinois May 2019 “2<sup>nd</sup> IBM PowerAI workshop” at the National Center for Supercomputing Applications

Potsdam, Germany September 2018 “InSAR: Permafrost thaw subsidence”

Urbana, Illinois June 2018 “Writing/Designing NSF Proposals Workshop”

Urbana, Illinois April 2018 “SAS Visual Analytics Workshop”

Urbana, Illinois April 2017 “Navigating the Tenure Track as Underrepresented Faculty”

Urbana, Illinois June 2017 “Mobile Summer Institutes on Scientific Teaching”

Fairbanks, Alaska September 2015 “Alaska Climate Science Center: Impacts of climate change on Ecological Drought in Alaska”

Rockville, Maryland September 2015 “Next Generation Ecosystem Experiments (NGEE-Arctic) Phase II review”

Potomac, Maryland April 2015 “Department of Energy TES/SBR Primary Investigators meeting”

Breckenridge, Colorado June 2014 “Representing soil carbon dynamics in global land models to improve future IPCC assessments”

San Francisco, California December 2013 “Next Generation Ecosystem Experiment (NGEE-Arctic) all hands meeting”

Fairbanks, Alaska October 2013 “U.S. National Academy of Sciences committee on Opportunities to Use Remote Sensing in Understanding Permafrost and Ecosystems”

Fairbanks, Alaska June 2013 “TEM R&D Summit”

Oak Ridge, Tennessee April 2013 “NGEE Model Scaling Workshop”

San Francisco, California December 2012 “Vulnerability of Permafrost Carbon Research Coordination Network (RCN) meeting”

Montréal, Canada April 2012 “From Knowledge to Careers”

El Paso, Texas January 2012 “20<sup>th</sup> Anniversary of the International Tundra Experiments (ITEX)”

Oslo, Norway June 2010. “IPY Oslo Science workshop”

Vancouver, Canada May 2010 “ITEX community change synthesis”.

Boulder, Colorado March 2009. “Learn to Return” Wilderness first aid, helicopter, and bear safety training.

El Paso, Texas November 2009 “International Polar Year (IPY) Back to the Future (BTF) Project meeting”.

## **PROFESSIONAL SERVICE**

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2019-present Reviewer Board Member for *Remote Sensing*

[https://www.mdpi.com/journal/remotesensing/submission\\_reviewers](https://www.mdpi.com/journal/remotesensing/submission_reviewers)

2016-present Referee for Federal funding agencies: National Science Foundation (2018, 2019), Arctic System Science (ARCSS) research proposal (2016); Department of Energy, Terrestrial Ecosystem Science (TES) program, merit review panel (held in Washington, DC; 2019).

2013-present Referee for the following journals: “*Remote Sensing*” (2019); “*Ecology*” (2019); “*Global Change Biology*” (2019) “*Remote Sensing of Environment*” (2019); “*Nature Communications*”(2018); “*Ecosphere*”(2018); “*Remote Sensing of Environment*” (2018); “*International Journal of Applied Earth Observation and GeoInformation*” (2018); “*Annals of the American Association for Geographers*”(2018); “*Scientific Data*”(2018); “*Ecosphere*”(2017); “*Remote Sensing*”(2017); “*Arctic Science*”(2017); “*JGR-Biogeosciences*”(2017); “*JGR-Biogeosciences*”(2016); “*Global Change Biology*”(2016); “*Forests*”(2016); “*Forests*”(2015); “*Arctic Antarctic and Alpine Research*”(2015); “*Global Change Biology*”(2014); “*Polar Research*”(2014); “*New Phytologist*” (2014); “*New Phytologist*”(2013); <http://publons.com/a/1340585>

2010-2017 Conference Judge: ESA (2017); AGU (2015); AGU (2014); AGU (2013); ESA (2011); Regional Science Fair judge for El Paso, Texas school districts (2012); District Ysleta Independent School District Science Fair judge for El Paso Texas (2012); State of the Arctic (2010).

2010-2013 Committee team member: Postdoc search team, University of Alaska Fairbanks, Institute of Arctic Biology (2013); Educator search team, the Arctic Research Consortium of the U.S. (ARCUS) Polar TREC program. This programs primary goal is to invigorate polar science education and understanding by bringing educators and researchers together (2010);

## **MEMBERSHIP IN PROFESSIONAL SOCIETIES**

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2015-present U. S. Permafrost Association (USPA)

2013-present U. S. International Association of Landscape Ecology (US-IALE)

2012-present American Geophysical Union (AGU)

2010-present Ecological Society of America (ESA)

2009-present Association of Polar Early Career Scientists (APECS)

2008-present Society of the Advancement of Chicanos and Native Americans in Science (SACNAS)