

LYDIA J. S. VAUGHN

Energy and Resources Group • University of California, Berkeley
Earth and Environmental Sciences • Lawrence Berkeley National Laboratory
lydiajsmith@lbl.gov
Tel: (603) 728-8067 Fax: (510) 486-7897

EDUCATION

Ph.D., Energy and Resources Group, UC, Berkeley, expected May 2017

Committee: Margaret Torn (chair), John Harte, Todd Dawson

M.S., Energy and Resources Group, UC, Berkeley, May 2012

B.S., Dartmouth College, Summa Cum Laude, June 2004

RESEARCH AND PROFESSIONAL EXPERIENCE

2011-Present Margaret Torn Lab, Lawrence Berkeley National Laboratory Climate And Ecosystem Sciences Division, Berkeley, CA, *Graduate Student Research Assistant*

2015 UC Berkeley Energy and Resources Group, Berkeley, CA, *Graduate Student Instructor in Quantitative Approaches to Global Environmental Problems*

2011 Pacific Ecoinformatics and Computational Ecology Lab, Berkeley, CA, *Graduate Student Researcher*

2009-2010 Matteo Garbelotto Lab, University of California Berkeley, Department of Environmental Science Policy and Management, *Field and Laboratory Research Associate*

2008-2009 Mills College Department of Biology, Oakland, CA, *Graduate and Undergraduate Teaching Assistant*

2004-2005 Dartmouth College Department of Studio Art, Hanover, NH, *Special Instructor*

RESEARCH FOCUS

Terrestrial biogeochemistry, high latitude carbon dynamics, global change, soil microbial ecology

PUBLICATIONS (*Published as Lydia J. Smith before 2016*)

Hi, Y., Trumbore, S.E., Torn, M.S., Harden, J.W., **Vaughn, L.J.S.**, Allison, S.D., Randerson, J.T. (2016) Radiocarbon constraints imply reduced carbon uptake by soils during the 21st century. In review at Science.

Vaughn, L.J.S., Conrad, M.E., Bill, M., and M.S. Torn (2016) Isotopic insights into methane production, oxidation, and emissions in Arctic polygon tundra. *Global Change Biology*. doi: 10.1111/gcb.13281

Throckmorton, H.M., Heikoop, J.M., Newman, B.D., Altmann, G.L., Conrad, M.S., Muss, J.D.,

Perkins, G.B., **Smith, L.J.**, Torn, M.S., Wullschleger, S.D., and C.J. Wilson (2015) Pathways and transformations of dissolved methane and dissolved inorganic carbon in Arctic tundra watersheds: Evidence from analysis of stable isotopes. *Global Biogeochemical Cycles*, 2014GB005044. doi: 10.1002/2014GB005044

Wainwright, H.M., Dafflon, B., **Smith, L.J.**, Hahn, M.S., Curtis, J.B., Wu, Y., Ulrich, C., Peterson, J.E., Torn, M.S., and S.E. Hubbard (2015) Identifying multiscale zonation and assessing the relative importance of polygon geomorphology on carbon fluxes in an Arctic Tundra Ecosystem. *J Geophys Res Biogeosciences* 2014JG002799. doi: 10.1002/2014JG002799

Smith L.J., and M.S. Torn (2013) Ecological limits to terrestrial biological carbon dioxide removal. *Climatic Change* 118:89-103. doi: 10.1007/s10584-012-0682-3

Trumbore, S.E., Torn, M.S., and **Smith, L.J.** (2011) Constructing a database of terrestrial radiocarbon measurements. *Eos, Transactions American Geophysical Union* 92:376–376. DOI: 10.1029/2011EO430006

PRESENTATIONS

“Microtopographic controls on methane production, oxidation, and emissions across polygon tundra gradients.” **Vaughn, L.J.S.**, Conrad, M., Bill, M., Curtis, J.B., Chafe, O., and M.S. Torn. Interagency Arctic Research Policy Committee (IARPC Collaborations) Public Webinar: “Funding Effective Interdisciplinary Collaborations: NGEE as a Case Study,” June 2016. (*Invited*)

“Soil carbon inputs and ecosystem respiration: a field priming experiment in Arctic coastal tundra.” **Vaughn, L.J.S.**, Zhu, B., Bimüller, C., Curtis, J.B., Chafe, O., Bill, M., Abramoff, R.Z., and M.S. Torn. Poster presented at the Department of Energy Environmental Systems Science PI Meeting, Potomac, MD, April 2016.

“Global age distribution of soil carbon – a meta-analysis of radiocarbon profiles.” He, Y., Randerson, J.T., Allison, S.D., Torn, M.S., Harden, J.W., **Smith, L.J.**, Treat, C., van der Voort, T., and S.E. Trumbore. American Geophysical Union Annual Meeting, San Francisco, CA, December 2015.

“Methane production, oxidation, and emissions across Arctic ice wedge polygon features,” **Smith, L.J.**, Conrad, M.E., Bill, M., Curtis, J.B., Chafe, O., and M.S. Torn. Mark Waldrop lab seminar, USGS Menlo Park, CA, September 2015. (*Invited*)

“Process-level measurements of methane production, oxidation, and efflux across geomorphic and geochemical gradients in Arctic polygon tundra.” **Smith, L.J.**, Conrad, M.E., Torn, M.S., Bill, M., Curtis, J.B., Chafe, O., and R.C. Porras. Poster presented at the Department of Energy Program Review, Rockville, MD, August 2015.

“Process-level measurements of methane production, oxidation, and efflux across geomorphic gradients in Arctic polygon tundra.” **Smith, L.J.**, Conrad, M.E., Torn, M.S., Bill, M., Curtis, J.B., Chafe, O., and M.S. Hahn. Poster presented at the American Geophysical Union Annual Meeting, San Francisco, CA, December 2014.

“Ecological limits to terrestrial biological carbon dioxide removal.” Torn, M.S., **Smith, L.J.**, Mishra, U., Sanchez, D., and J. Williams. American Geophysical Union Annual Meeting, San

Francisco, CA, December 2014.

“Methane processes in the ModEx framework: bridging the measurement-model divide.” **Smith, L.J.** NGEE-Arctic all-hands meeting, San Francisco, CA, December 2014. (*Invited*)

“Multi-scale controls on CH₄ and CO₂ in Barrow, Alaska: evidence from stable isotopes.” **Smith, L.J.**, Throckmorton, H., Conrad, M.E., Bill, M., Curtis, B., Chafe, O., and M.S. Torn. NGEE-Arctic science talk, October 2014. (*Invited*)

“Radiocarbon measurements to assess soil carbon vulnerability in Arctic coastal tundra.” **Smith, L.J.**, Torn, M.S., Conrad, M.E., Curtis, J.B., Porras, R.C., and O. Chafe. Poster presented at the Department of Energy Terrestrial Ecosystem Science and Subsurface Biogeochemical Research Join Investigators Meeting, Potomac, MD, May 2014.

“Soil carbon vulnerability in Arctic coastal tundra: seasonal and spatial variations in ¹⁴C-CO₂.” **Smith, L.J.**, Torn, M.S., Conrad, M.E., Curtis, J.B., Chafe, O., Porras, R.C., and M.S. Hahn. American Geophysical Union Annual Meeting, San Francisco, CA, December 2013.

“Assessment of the effects of longer thaw seasons on subsurface methane production and consumption in the Arctic.” Conrad, M.E., **Smith, L.J.**, Curtis, J.B., Hahn, M.S., Bill, M., and M.S. Torn. Poster presented at the American Geophysical Union Annual Meeting, San Francisco, CA, December 2013.

“Soil carbon vulnerability in Arctic coastal tundra: seasonal and spatial variations in ¹⁴C-CO₂.” **Smith, L.J.**, Torn, M.S., Conrad, M.E., Curtis, J.B., Chafe, O., and R.C. Porras. Poster presented at the NGEE-Arctic All-Hands Meeting, San Francisco, CA, December 2013.

“Process Level Controls on Greenhouse Gas Emissions in Arctic Coastal Tundra.” **Smith, L.J.**, Torn, M.S., Conrad, M.E., Hahn, M.S., and N. Raz Yaseef. Poster presented at the Department of Energy Terrestrial Ecosystem Science and Subsurface Biogeochemical Research Join Investigators Meeting, Potomac, MD, May 2013.

“Ecological Limits to Terrestrial Biological Carbon Dioxide Removal.” **Smith, L.J.** Graduate Climate Conference, Pack Forest, WA, October 2012.

“A Radiocarbon Database for Improving Understanding of Global Soil Carbon Dynamics.” **Smith, L.J.** and colleagues. Poster presented at the International Radiocarbon Conference, Paris, July 2012.

“Biological Carbon Dioxide Removal: Ecological Constraints.” Torn, M.S. and **Smith, L.J.** Planet Under Pressure Conference, London, March 2012.

“Trophic Interconnectedness in Southwestern Colorado: Studying Archaeological Food-Webs in Ancestral Puebloan Society.” Crabtree, S.A., and **L.J. Smith**. Poster presented at the AAAS annual meeting, Vancouver, February 2012.

“Ecological Considerations for Terrestrial Carbon Dioxide Removal Strategies.” **Smith, L.J.**, Torn, M.S., and A.D. Jones. Poster presented at the American Geophysical Union Annual Meeting, San Francisco, CA, December 2011.

“A Radiocarbon Database for Improving Understanding of Global Soil Carbon Dynamics: Part 1.” M.S. Torn, **L.J. Smith**, *et al.* Poster presented at the American Geophysical Union Annual Meeting, San Francisco, CA, December 2011.

HONORS, FELLOWSHIPS, AND AWARDS

Philomathia Graduate Student Fellowship in the Environmental Sciences (\$13,500)

University of California Dissertation-Year Fellowship (\$23,500).

Outstanding Graduate Student Instructor Award. UC Berkeley Graduate Division, Berkeley, CA, 2016.

Department of Energy 2016 Environmental Systems Science PI Meeting Student Travel Fellowship. (\$1,500)

AAAS Student Poster Competition. Best poster, social sciences category. AAAS annual meeting, Vancouver, 2012.

Phi Beta Kappa. Dartmouth College, Hanover, NH, 2004.

INSTITUTIONAL SERVICE

Quantitative Environmental Sciences Faculty Search Committee, UC Berkeley Energy and Resources Group, 2015-2016.

Sustainable Economies Faculty Search Committee, UC Berkeley Energy and Resources Group, 2012-2013.

MEDIA COVERAGE

Wheeling, K. (2016), Tracking carbon in the Alaskan arctic, *Eos*, 97, doi:10.1029/2016EO045297. Published on 8 February 2016.

Arctic Research Consortium of the United States, Witness the Arctic, Fall 2015 Issue 3. <https://www.arcus.org/witness-the-arctic/2015/3/article/24511>

SPECIALIZED TRAININGS

Alaska Soil Geography Field Trip Class. Taught by Chien-Lu Ping at the University of Alaska, Fairbanks. Course attended July-August 2013.

Radiocarbon in Ecology and Earth System Science. Taught by S. Trumbore, T. Schuur, J. Southon, E. Druffel, and C. Sierra at the Max-Planck Institute for Biogeochemistry, Jena, Germany. Course attended July 2012.

Complex Systems Summer School. Taught by faculty of the Santa Fe Institute at St. John's College and the Santa Fe Institute, Santa Fe, NM. Course attended June 2011.

PROFESSIONAL MEMBERSHIPS

American Geophysical Union

Permafrost Carbon Network