

Susan Hubbard, PhD

Curriculum Vitae

Associate Laboratory Director & Sr. Scientist
Earth and Environmental Sciences
Lawrence Berkeley National Laboratory
Full Professor Adjunct, UC Berkeley ESPM
<http://eesa.lbl.gov/profiles/susan-hubbard/>

Associate Laboratory Director, Earth and Environmental Sciences Area of Berkeley National Laboratory. Lead a premier organization of scientists, faculty, scientists-in-training and operations staff with research spanning fundamental geoscience, subsurface energy geosciences, computational geoscience, climate science, terrestrial ecosystem science, watershed science and environmental and biological system science.

Senior Earth Scientist at Berkeley Lab, with research focus on multi-scale quantification of terrestrial system hydrobiogeochemical dynamics enabled through the use of geophysical methods and relevant to remediation, water resources, agriculture and carbon cycle challenges.

Professional Positions

2015-present, Founding Associate Laboratory Director, [Earth and Environmental Sciences Area](#), Berkeley Lab
2015-present, UC Berkeley, Environmental Science, Policy and Mgmt., Full Professor Adjunct
2013-2015, Director, Earth Sciences Division, Berkeley Lab
2010-2013, Deputy Director for Science, Earth Sciences Division
2010-present, Senior Geological Scientist, Berkeley Lab
2007-2010, Founding Associate Director, UC Berkeley Water Center
2004-2010, Lead, Environmental Remediation & Water Resources Program, Berkeley Lab
2003-present, Lead, Environmental Geophysics Group, Berkeley Lab
1998-2010, Scientist, Berkeley Lab
1990-1993, Geophysicist, ARCO Oil and Gas Co.
1985-1987, Geologist, U.S. Geological Survey, Menlo Park CA

Education

Ph.D., Civil and Env. Engineering, UC Berkeley, 1998.
M.S., Geophysics, Virginia Tech.
B.S., Geology, University of California, Santa Barbara.
Professional Certificates: Enology, UC Davis (2008).

Awards and Recognitions:

2020, Elected Member, National Academy of Engineering
2019, Elected Fellow, American Academy of Arts and Sciences
2019, American Institute of Hydrology Robert G. Wetzel Award on Water Quality
2019, Distinguished Alumni, UC Santa Barbara Earth Sciences Department
2019, Alameda County CA Women's Hall of Fame, Science Award
2018, Honorary Prof, Beijing Normal University
2017, Elected Fellow American Geophysical Union
2016, Hal Mooney Award, Society of Exploration Geophysicists
2014, Distinguished Alumni, Civil and Environmental Engineering Academy, UC Berkeley
2014, Soc. for Technical Communication, Distinguished Technical Communication Award
2013, Outstanding Women @ Berkeley Lab recognition
2011, Elected Fellow Geological Society of America
2010, Birdsall-Dreiss Distinguished Lecturer, Geological Society of America
2009, Frank Frischknecht Leadership Award, Society of Exploration Geophysicists
2009, Top Associate Editor Award, Journal of Hydrology
2008, Most Influential Article, Society of Exploration Geophysicists TLE recognition
1998, Dissertation Award in Water Processes, Univ. Council on Water Resources
1990, Cooper Award for Appalachian Research Advances, Virginia Tech
1988, Aubrey E. Orange Award for Excellent Scholastic Achievement, Virginia Tech
1986, Top Geological Sciences Major Undergraduate Award, UC Santa Barbara
1985, Chevron outstanding Senior in Geological Sciences, UC Santa Barbara
1984, Outstanding Woman in Petroleum, Ventura County Scholarship
1984, Union Oil Outstanding Junior in Geological Sciences, UC Santa Barbara

Professional Service

Editorial Boards:

2010-2015, Associate Editor JGR-Biosciences
2007-2013, Co-Editor Vadose Zone Journal
2007-2010, Associate Editor, Journal of Hydrology
2001-2005, Associate Editor Water Res. Research

Select Advisory Boards / Councils:

2017-present, Advisory Board, International Soil Modeling Consortium
2017-present, Partnership Board, Dept of Energy BER-Env. System Science Cyberinfrastructure
2017-present, Advisory Board, EPA Superfund Program 'Exposome' UCB
2016-present, Scientific Advisory Board, Arctic Data Center UCSB
2016-present, Advisory Board, Civil and Environmental Engineering Dept, UC Berkeley
2015-present, Director's Council, University of California Water Science
2015-present, Council member, California Council on Science and Technology (CCST)
2015-2018, Advisory Board, Interoperable design of extreme scale application software (IDEAS)
2014-2018, Advisory Board, Radionuclide Waste Disposal, EPSCoR Program, South Carolina
2014-2017, Sr Advisor, Dept of Energy Advanced Simulation Capability for Env. Mgmt (ASCEM)

2013, Helmholtz Association Terrestrial Program External Review Committee
2012, Stanford Dept of Energy Resources Engineering External Review Committee
2011, Advisory Board, SmartGeo NSF IGERT, Colorado School of Mines
2010-2015, Dept of Energy Biological & Env Research Program Advisory Committee (BERAC)
2010, DOE Environmental Management Technical Advisory Committee
2006, Forschungszentrum Jülich German National Laboratory Advisory Committee

Select Community Service:

2020-present, Chair-Elect, AAAS Atmospheric and Hydrospheric Section
2019-present, Nominations Committee, American Geophysical Union
2019-present, Steering Committee, Interagency Conference on Research in Watersheds (ICRW)
2019, External Review Committee, Virginia Tech Geosciences
2018- present, Macelwane Award Committee, American Geophysical Union
2018- present, Nominations Committee, Geological Society of America
2018-2019, California AB1281 Produced Water Executive Committee, CCST
2018, California Water-Data AB1755 Governance & Funding Executive Committee
2017, Fall meeting session co-chair, American Geophysical Union
2018, Organizer, Collaborative Watershed Science Workshop, Crested Butte CO
2017, Organizer, Open and Transparent California Water Data Capstone Workshop, Berkeley,
2017, Writer, DOE Grand Challenges in Biological and Environmental Sci. Chapter Report
2017, Co-Organizer, Environmental Knowledgebase Workshop, BIDS, Berkeley
2016, Co-Chair, DOE Basic Research Needs Workshop Water-Energy, Wash DC
2015, Panel Lead and Writer, DOE Basic Research Needs for Environmental Mgmt.
2015, Technical lead for DOE Subsurface Science, National Laboratory Engagement Day,
Washington DC
2015, Committee member and Writer, UC-DOE Basic Research Needs for Water-Energy
2014-2016 UC Global Food Initiative, Berkeley Lab Representative
2014-2018, Co-lead, National Subsurface DOE 'crosscut' Initiative; Cross DOE strategy to transform
the adaptive control of the subsurface for environmentally responsible energy production
and waste storage
2014, Session Chair, Subsurface fracture control, Rock and Fluid Physics Conference,
Shell Technology Center, Amsterdam, 2014
2014, Conference Co-Chair, Complex Soil Systems SSSA/Bouyoucos Conference, Berkeley
2013, Birdsall Dreiss Search Committee Chair
2012, Session Chair, Geophysical Characterization of Permafrost Systems, Fall AGU, San Francisco
2012, Contributor/writer, DOE Technology Innovation 'Virtual Laboratory' Report (DOE/SC-0156)
2010, Contributor/writer DOE "Grand Challenges for Biological and Environmental Research: A
Long-Term Vision" (DOE/SC-1035, 2010)
2010, Co-author and workshop co-lead, Dept of Energy "Complex System Science for Subsurface
Fate and Transport" (DOE/SC0123, 2010)
2010, Writer, DOE Long-Range Deep Vadose Zone Program Plan (DOE/RL-2010-89)
2010, Session chair, Computational Methods in Water Res., Barcelona, June 2010,
2010, Session Chair, Goldschmidt conference, Session Chair Knoxville, TN, June 2010.

2010, Co-author, DOE Scientific Opportunities to Reduce Risk in Groundwater and Soil Remediation (PNNL-18516).
2008, Co-organizer, Computational Methods in Water Resources Conference, San Francisco
2008, Co-organizer, Chapman Conference, Biogeophysics, Portland Maine
2006, Contributor, DOE Basic Research Needs for Geosciences: Facilitating 21st Century Energy Needs
2002-2006, Chair, AGU Hydrogeophysics Technical Committee
2002, Founder, AGU Hydrogeophysics Technical Committee
2002-2006, US representative, International Ass. Hydrological Sci. "2020 "Working Group
2004, Panelist, DOE BES workshop noninvasive monitoring, Houston Tx
2005, Panelist, DOE EM Geop. Characterization and monitoring workshop.
2005, Chair, Watershed Characterization Special Session, Fall AGU, San Fran.
2004, Chair, Hydrogeophysics Special Session, Fall AGU, San Francisco.
2003, Chair, Hydrogeophysics Special Session, Fall AGU, San Francisco
2003, Organizer, Coupled Processes DOE Workshop, Berkeley CA, LBNL
2003, Chair, Coupled Processes DOE Subsurface Science Session, EMSP, WA
2002, Co-Organizer, NATO Hydrogeophysics Advanced Study Inst., Czech Republic
2000, Chair, Breakthroughs in Field Scale Bacterial Transport, Fall AGU, S.F.

Invited Speaking Engagements.

2019, Commencement Speech, Virginia Tech, Geoscience Department
2019, American Geophysical Union Fall Meeting, San Francisco
2019, Stanford University, Geophysics Dept Seminar
2019, CA Contemporary Groundwater Issues Council Panelist, UC Davis
2019, Moderator, Wildfire Panel for CA Legislators, CCST, Sacto CA
2019, University of Wyoming, Laramie, WY
2019, Soil Science Society of America, San Diego, CA
2018, American Geophysical Union Fall Meeting, San Francisco, CA
2018, Tsinghua University, China
2018, Peking University, China
2018, Chinese Academy of Sciences, Tibetan Research Inst Beijing, China
2018, Chinese Academy of Sciences, Env. and Ecosys. Science, Beijing Normal University, China
2017, CA Department of Water Resources, Sacto CA
2017, American Chemical Society, California Water Resiliency, Washington DC
2017, American Geophysical Society Union Fall Meeting, Session H32D, New Orleans, LA
2017, American Geophysical Society Union Fall Meeting, Session H31J, New Orleans, LA
2017, Urbana Champaign Illinois University, Distinguished seminar, Urbana Champaign, Ill
2018, OZCAR France Critical Zone meeting, Frejus, France
2018, Colorado School of Mines Heiland Distinguished Speaker, Golden CA
2018, National Academies Review, Washington DC
2017, UC Berkeley Civil and Environmental Engineering Seminar, Berkeley CA
2017, 27th Annual Intern. Conf. on Soil, Water, Energy, & Air, San Diego, CA
2017, University of Southern California Distinguished Seminar, Los Angeles, CA

2016, American Geophysical Union Fall Meeting, San Francisco
2016, France National Polytechnical Institute, Bordeaux, Distinguished Seminar
2016, University of Saskatchewan Saskatoon Distinguished Lecturer series, Saskatoon, Canada
2016, UC Merced Distinguished Seminar, Merced CA
2016, CUAHSI Big Data Workshop, Shepherdstown, WV
2016, Geotech/Geoengineering Distinguished Lecture, UC Berkeley, CA
2016, KOPRI Polar Science Symposium, Plenary Speaker, Seoul Korea
2016, Waterloo Distinguished 'Watertalks' Lecture Series, Waterloo, Ontario, Canada
2015, Water Resource Sustainability Issues on Tropical Islands Conference, Hawaii
2015, American Geophysical Union Fall Meeting, B52C-04, San Francisco, CA
2015, American Geophysical Union Fall Meeting, Union Session Invited San Francisco, CA
2015, European Geophysical Union Invited Speaker, Vienna Austria
2014, CUAHSI Big Data Bi-Annual Conference, Shepherdstown, WV
2014, University of Wyoming Geology and Geop. Distinguished Lecturer Series, Laramie, WY
2014, Complex Soils Systems 2014 Conference, Berkeley, CA
2014, Jason Group, 'State of Stress in the Engineered Subsurface', Los Angeles, CA
2014, US Energy Association, Research needs in Subsurface Energy Science, Arlington, VA
2014, Shell Subsurface Complexity Workshop, Amsterdam, Netherlands
2014, Env. Science and Policy Mgmt UCB Berkeley Seminar Series, Berkeley CA
2014, DOE Subsurface Biogeochemistry and Terrestrial Ecosystems PI Meeting, Maryland
2013, American Geophysical Union Fall Meeting, San Francisco, CA
2013, Energy Biosciences Institute Seminar Series, Berkeley, CA
2013, Keynote Presentation, Washington Hydrology Symposium, Tacoma, WA
2013, Stanford Environmental Fluid Mechanics and Hydrology Colloquium
2012, American Geophysical Union H53F-1586 AGU, San Francisco, CA
2012, American. Geophysical Union, H33N-01 Fall Meeting, AGU, San Francisco, CA,
2012, Water Research Horizon Conference, Berlin, Germany
2012, European Geophysical Union Vienna, Austria
2012, Battelle Chlorinated Conference Keynote, Monterey CA
2011 Dept of Energy Biological and Env Advisory Committee, Washington DC
2011, New Frontiers in Engineering Science for Sustainability, Texas A&M Water Scholar Seminar
2011, University of Nevada, Seminar Speaker, Las Vegas Nevada
2011, Duke University Distinguished Seminar, North Carolina
2011, Advanced Dept of Energy Simulation Capability Workshop, Washington, DC
2011, Rensselaer University Invited Seminar, NY
2011, NSF Water Scholar Seminar Series Keynote, Texas A&M, College Station TX
2010, University of Wisconsin, Madison Invited Seminar, Wisconsin
2010, Argonne National Laboratory Distinguished Speaker, Illinois
2010, Northern Illinois University, Dekalb, Distinguished Seminar, Illinois
2010, Michigan State, East Lansing Michigan
2010, Grand Valley University, Michigan
2010, Groundwater Research Association Distinguished Speaker, Sacramento, CA
2010, Inland Geological Society Invited Speaker, Riverside, CA
2010, Computational Methods in Water Resources Keynote, Barcelona Spain

2010, UC Davis Hydrological Seminar Series, Davis CA
2010, National Groundwater Summit Keynote, Denver, CO
2010, UC Berkeley Civil and Environmental Eng. Seminar Series, Berkeley CA
2010, Dept of Energy Env Remediation Science Program Platform Presentation, Washington, DC,
2010, Distinguished Environmental Lecture, Florida International University, Miami FLA
2010, University of Florida Spring Seminar Series, Gainesville, FLA
2010, Delaware Environmental Institute Distinguished Lecture
2010, UMass Environmental Lecture Series, Amherst, Massachusetts
2010, K. Douglas Nelson Lecture Series, Syracuse University, New York
2009, Semi-Annual Dawdy Invited Lecture, Department of Geos., San Francisco State University
2010, Oregon State University Geoscience Seminar Series
2010, Portland Environmental Geology Seminar Series, Oregon
2009, New Mexico Tech Hydrology Seminar, Socorro, NM
2009, Frontiers in Geosciences' Distinguished Colloquium, Los Alamos Natl Laboratory
2009, American Geophysical Union Fall Meeting, San Francisco
2009, American Geophysical Union Spring Meeting, Toronto, Canada
2009, Association for Env. Health and Sciences Invited platform speaker, San Diego
2008, Stanford Environmental and Fluid Mechanics Invited Seminar
2008, U.S.G.S. Water Research Division Seminar Series, Menlo Park, CA
2008, Gordon Conference Flow in Porous Media, Oxford England
2007, NRC Workshop on Uncertainty, sensitivity and parameter estimation Wash DC
2007, American Geophysical Union Fall Meeting, San Francisco, CA
2007, UC Davis Engineering Seminar Series, Davis CA
2006 American Geophysical Union, Fall Meeting San Francisco, CA
2006 Geological Society of America, Philadelphia, PA
2006, Groundwater Resources of California, Long Beach, CA
2006, Oregon State University 'World-Class Women in Water' seminar series, Corvallis, OR
2006, Seismological Laboratory Seminar Series, Berkeley CA
2006, Computational Methods in Water Resources (CMWRC), Platform Speaker, Copenhagen
2005, IWAGPR Conference Keynote, Delft, Netherlands
2004, UC Merced Environmental Seminar Series, Merced CA
2004, Univ of Texas at Austin, Austin, TX
2004, Waste Management Conference Keynote, Tuscon AZ
2005, American Geophysical Union Frontier Lecture, Spring Meeting Montreal, Canada
2004, Dept of Energy Characterization and Monitoring Workshop Keynote, Salt Lake City
2004, Univ of Buffalo, UB Geology Pegrem Speaker Series, New York
2004, University of Kansas at Lawrence, Seminar Speaker, Lawrence Kansas
2004, USGS Water Resources Seminar, Menlo Park, CA
2003, Heiland Distinguished Lecturer, Colorado School of Mines, Golden, CO
2003, Vadose zone characterization Series, University of Arizona, Tuscon, AZ
2003, NRC-180 Precision Agriculture Conference, UC Davis, CA
2002, American Geophysical Union Spring Meeting Washington DC
2001, Geological Society of America Annual Meeting, Boston, MA
2001, UC Berkeley Environmental Engineering Series, Berkeley CA

2001, American Geophysical Union Fall Meeting, San Francisco
2001, Kovacs Colloquium Speaker: Groundwater Resources at Risk, IAHS, Paris, France
2001, American Geophysical Union Spring Meeting, Washington, DC
2000, Boise State Geology Seminar Series, Boise, ID
2000, UC Davis Hydrology Seminar Series, Davis, CA

Memberships

National Academy Engineers
American Geophysical Union
American Academy of Arts and Sciences
Geological Society of American
Society of Exploration Geophysicists
American Association for the Advancement of Science
American Association for Women in Science
Soil Science Society of America

Publications

Researcher ID E-9508-2010; Metrics and publications available [HERE](#)

1. Peruzzo, L. et al., (2020) Imaging of Plant Current Pathways for Non-invasive Root Phenotyping using a newly developed Electrical Current Source Density Inversion Approach (iCSD), in press, Plant and Soil.
2. Wan, J., Tokunaga, T. K., Williams, K. H., Brown, W., Dong, W., Hubbard, S.S., (2019) Dependence of shale bedrock weathering fronts and solute exports on the seasonally fluctuating water table, Sci Rep 9, 17198 (2019). <https://doi.org/10.1038/s41598-019-53205-2>
3. Tokunaga, T., et al., (2019) Depth- and time-resolved distributions of snowmelt-driven hillslope subsurface flow and transport, and their contributions to surface waters, Water Resources Research, v55 (11), <https://doi.org/10.1029/2019WR025093>
4. , VaradharajaC.n et al., (2019) Challenges in Building an End-to-End System for Acquisition, Management, and Integration of Diverse Data from Sensor Networks in Watersheds: Lessons from a Mountainous Community Observatory in East River, Colorado , IEEE Access, IEEE Access, vol. 7, pp. 182796-182813,
5. Mary, B. et al., (2019) Time-lapse monitoring of root water uptake using electrical resistivity tomography and Mise-à-la-Masse: a vineyard irrigation experiment, Soil, DOI: 10.5194/soil-2019-28
6. Arora, B., Wainwright, H.M., Dwivedi, D., Vaughn, L.J., Curtis, J.B., Torn, M.S., Dafflon, B., and Hubbard, S.S. (2019) Evaluating temporal controls on greenhouse gas (GHG) fluxes in an Arctic tundra environment: An entropy-based approach: Science of The Total Environment, v. 649, p. 284–299, doi: 10.1016/j.scitotenv.2018.08.251.
7. Wan, J., Tokunaga, T. K., Williams, K. H., Brown, W., Dong, W., Hubbard, S.S. (2019), Predicting sedimentary bedrock subsurface weathering fronts and weathering rate, Sciences Advances, DOI: 10.1038/s41598-019-53205-2.

8. Tokunaga, T., Wan, J., Williams, K.H., Brown, W., Henderson, A., Kim, Y., Tran, A.P., Conrad, M.E., Bill, M., Carroll, R.W.H., Dong, W., Xu, Z., Lavy, A., Gilbert, B., Romero, S., Christensen, J.N., Faybishenko, B., Arora, B., Siirila-Woodburn, E., Versteeg, R., Raberg, J.H., Peterson, J. and Hubbard, S.S. (2019), Depth- and time-resolved distributions of snowmelt-driven hillslope subsurface flow and transport, and their contributions to surface waters, *Water Resources Research*, <https://doi.org/10.1029/2019WR025093>
9. Varadharajan, C., Faybishenko, B., Henderson, A., Henderson, M., Hendrix, V.C., Hubbard, S.S., Kakalia, Z., Newman, A., Potter, B., Steltzer, H., Versteeg, R., Agarwal, D.A., Williams, K.H., Wilmer, C., et al. (2019), Challenges in Building an End-to-End System for Acquisition, Management, and Integration of Diverse Data from Sensor Networks in Watersheds: Lessons from a Mountainous Community Observatory in East River, Colorado: *IEEE Access*, p. 1–1, doi: 10.1109/access.2019.2957793.
10. Léger, E., Dafflon, B., Robert, Y., Ulrich, C., Peterson, J.E., Biraud, S., Romanovsky, V.E., and Hubbard, S.S. (2019), Distributed Temperature Profiling System Provides Spatially Dense Measurements and Insights about Permafrost Distribution in an Arctic Watershed: *The Cryosphere Discussions*, p. 1–24, doi: 10.5194/tc-2018-264.
11. Alexandratos, S.D., Barak, N., Bauer, D., Davidson, F.T., Gibney, B.R., Hubbard, S.S., Taft, H.L., and Westerhof, P. (2019), Sustaining Water Resources: Environmental and Economic Impact: *ACS Sustainable Chemistry & Engineering*, doi: 10.1021/acssuschemeng.8b05859.
12. Falco, N., Wainwright, H., Dafflon, B., Léger, E., Peterson, J., Steltzer, H., Wilmer, C., Rowland, J.C., Williams, K.H. and Hubbard, S.S. (2019), Investigating Microtopographic and Soil Controls on a Mountainous Meadow Plant Community Using High-Resolution Remote Sensing and Surface Geophysical Data, *JGR Biosciences*, doi.org/10.1029/2018JG004394
13. Tran A.P., Rungee J., Faybishenko, B., Dafflon., B, Hubbard, S.S. (2019) Assessment of Spatiotemporal Variability of Evapotranspiration and Its Governing Factors in a Mountainous Watershed. *Water*. 2019; 11(2):243, doi: 10.3390/w11020243. (article)
14. Hubbard et al., (2018) The East River, CO Watershed: A Mountainous Community Testbed for Improving Predictive Understanding of Multi-Scale Hydrological-Biogeochemical Dynamics, *Vadose Zone Journal*, doi:10.2136/vzj2018.03.0061
15. Mary, B., Peruzzo, L., Boaga, J., Schmutz, M., Wu, Y., Hubbard, S.S., and Cassiani, G., (2018), Small scale characterization of vine plant root water uptake via 3D electrical resistivity tomography and Mise-à-la-Masse method: *Hydrology and Earth System Sciences Discussions*, p. 1–30, doi: 10.5194/hess-2018-238.
16. Wan, J., T. K. Tokunaga, W. Dong, K. H. Williams, Y. Kim, M. E. Conrad, M. Bill, W. J. Riley, and S. S. Hubbard (2018), Deep Unsaturated Zone Contributions to Carbon Cycling in Semiarid Environments, *Journal of Geophysical Research: Biogeosciences*, 123(9), 3045–3054, doi:10.1029/2018jg004669.
17. Christensen, J.N., Dafflon, B., Shiel, A., Tokunaga, T., Wan, J., Faybishenko, B., Dong, W., Williams, K.H. Hobson, C., Brown, S.T., Hubbard, S.S. (2018), Isotopic Measurement of the Spatial Variation of Vadose Infiltration to the Aquifer at the Rifle Site, CO, STOTEN
18. Lavy, A., D.G McGrath, P.M. Carnevali, J. Wan, W. Dong, T. Tokunaga, B.C. Thomas, K. Williams, S.S. Hubbard, J. F. Banfield, (2018) Microbial communities across a hillslope-riparian transect shaped by proximity to the stream, groundwater table, and weathered bedrock, *ISME*, 2018 <https://doi.org/10.1101/423368>

19. Taş, N., Prestat, E., Wang, S., Wu, Y., Ulrich, C., Kneafsey, T., Tringe, S.G., Torn, M.S., Hubbard, S.S., and Jansson, J.K., 2018, Landscape topography structures the soil microbiome in arctic polygonal tundra: *Nature Communications*, v. 9, doi: 10.1038/s41467-018-03089-z.
20. Peruzzo, L., Schmutz, M., Franceschi, M., Wu, Y., and Hubbard, S.S. (2018), The Relative Importance of Saturated Silica Sand Interfacial and Pore Fluid Geochemistry on the Spectral Induced Polarization Response: *Journal of Geophysical Research: Biogeosciences*, v. 123, p. 1702–1718, doi: 10.1029/2017jg004364.
21. Wu, Y., Ulrich, C., Kneafsey, T., Lopez, R., Chou, C., Geller, J., Mcknight, K., Dafflon, B., Soom, F., Peterson, J., and Hubbard, S.S. (2018), Depth-Resolved Physicochemical Characteristics of Active Layer and Permafrost Soils in an Arctic Polygonal Tundra Region: *Journal of Geophysical Research: Biogeosciences*, v. 123, p. 1366–1386, doi: 10.1002/2018jg004413.
22. Newcomer, M.E., Hubbard, S.S., Fleckenstein, J.H., Maier, U., Schmidt, C., Thullner, M., Ulrich, C., Flipo, N., and Rubin, Y. (2018), Influence of hydrological perturbations and riverbed sediment characteristics on hyporheic zone respiration of CO₂ and N₂: *Journal of Geophysical Research: Biogeosciences*, doi: 10.1002/2017jg004090.
23. Tran, A.P., Dafflon, B., Bisht, G., and Hubbard, S.S. (2018), Spatial and temporal variations of thaw layer thickness and its controlling factors identified using time-lapse electrical resistivity tomography and hydro-thermal modeling: *Journal of Hydrology*, v. 561, p. 751–763, doi: 10.1016/j.jhydrol.2018.04.028.
24. Wu, Y., Cheng, Y., Hubbard, C.G., Hubbard, S., and Ajo-Franklin, J.B. (2018), Biogenic sulfide control by nitrate and (per)chlorate – A monitoring and modeling investigation: *Chemical Geology*, v. 476, p. 180–190, doi: 10.1016/j.chemgeo.2017.11.016.
25. Wu, Y., Nakagawa, S., Kneafsey, T.J., Dafflon, B., and Hubbard, S. (2017), Electrical and seismic response of saline permafrost soil during freeze - Thaw transition: *Journal of Applied Geophysics*, v. 146, p. 16–26, doi: 10.1016/j.jappgeo.2017.08.008.
26. Dafflon, B., Oktem, R., Peterson, J., Ulrich, C., Tran, A. P., Romanovsky, V. and Hubbard, S. S. (2017), Coincident above- and below-ground autonomous monitoring to quantify co-variability in permafrost, soil and vegetation properties in Arctic Tundra, *Journal of Geophysical Research: Biogeosciences*, doi: 10.1002/2016jg003724.
27. Leger, E., Dafflon, B., Soom, F., Peterson, J., Ulrich, C., and Hubbard, S. (2017), Quantification of Arctic Soil and Permafrost Properties Using Ground-Penetrating Radar and Electrical Resistivity Tomography Datasets, *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, p. 1–12, doi: 10.1109/jstars.2017.2694447.
28. Tran, A.P., Dafflon, B., and Hubbard, S. S. (2017), Coupled Land Surface-Subsurface Hydrogeophysical Inverse Modeling to Estimate Soil Organic Content and explore associated Hydrological and Thermal Dynamics in an Arctic Tundra, *The Cryosphere Discussions*, p. 1–42, doi: 10.5194/tc-2017-1.
29. Tran, A.P., Dafflon, B., and Hubbard, S.S. (2017) Coupled land surface–subsurface hydrogeophysical inverse modeling to estimate soil organic carbon content and explore associated hydrological and thermal dynamics in the Arctic tundra: *The Cryosphere*, v. 11, p. 2089–2109, doi: 10.5194/tc-11-2089-2017
30. Tsang, C., Lippmann, M., Dobson, P., Tsang, Y., Faybishenko, B., Benson, S., Birkholzer, J., Finsterle, S., Hawkes, D., Hubbard, S., Kneafsey, T., Liu, H., Oldenburg, C., Pruess, K., et al.

- (2017) Commemorating Dr. Gudmundur “Bo” Bodvarsson (1951–2006), a Leader of the Deep Unsaturated Flow and Transport Investigations: *Water*, v. 10, p. 18, doi: 10.3390/w10010018.
31. Dafflon, B., Oktem, R., Peterson, J., Ulrich, C., Tran, A. P., Romanovsky, V. and Hubbard, S. S. (2017), Coincident above- and below-ground autonomous monitoring to quantify co-variability in permafrost, soil and vegetation properties in Arctic Tundra, *Journal of Geophysical Research: Biogeosciences*, doi: 10.1002/2016jg003724.
 32. Dafflon, B., Leger, E., Soom, F., Ulrich, C., Peterson, J., and Hubbard, S. (2016), Quantification of Arctic soil and permafrost properties using ground penetrating radar, 2016 Extended abstract, 16th International Conference on Ground Penetrating Radar (GPR), doi: 10.1109/icgpr.2016.7572663.
 33. Wainwright, H. M., Liljedahl, A. K., Dafflon, B., Ulrich, C., Peterson, J. E., and Hubbard, S. S. (2016), Mapping snow depth within a tundra ecosystem using multiscale observations and Bayesian methods, *The Cryosphere Discussions*, p. 1–56, doi: 10.5194/tc-2016-168.
 34. Anantharaman, K., Brown, C. T., Hug, L. A., Sharon, I., Castelle, C. J., Probst, A. J., Thomas, B. C., Singh, A., Wilkins, M. J., Karaoz, U., Brodie, E. L., Williams, K. H., Hubbard, S. S. and Banfield, J. F. (2016), Thousands of microbial genomes shed light on interconnected biogeochemical processes in an aquifer system, *Nature Communications*, v. 7, p. 13219, doi: 10.1038/ncomms13219
 35. Arora, B., Dwivedi, D., Hubbard, S. S., Steefel, C. I., and Williams, K. H. (2016), Identifying geochemical hot moments and their controls on a contaminated river floodplain system using wavelet and entropy approaches, *Environmental Modelling & Software*, v. 85, p. 27–41, doi: 10.1016/j.envsoft.2016.08.005, 2016.
 36. Tokunaga, T. K., Kim, Y., Conrad, M. E., Bill, M., Hobson, C., Williams, K. H., Dong, W., Wan, J., Robbins, M. J., Long, P. E., Faybishenko, B., Christensen, J. N., and Hubbard, S. S. (2016), Deep Vadose Zone Respiration Contributions to Carbon Dioxide Fluxes from a Semiarid Floodplain, *Vadose Zone Journal*, v. 15, doi: 10.2136/vzj2016.02.0014.
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46. Newcomer, M.E., Bouskill, N., Wainwright, H., Arora, B., Maavara, T., Dwivedi, D., Woodburn, E., Williams, K.H., Carroll, R., Steefel, C., Hubbard, S.S., Relationship between Water Quality Trends and Watershed Characteristics across the United States, 11th National Water Monitoring conference in Denver Colorado from March 25-29, 2019.
47. Rigoni, H., Underwood, J., Newcomer, N., Schram, T., Harvey, R., Roth, D., Bliznik, P., Smedt, M., Seymour, D., Trotta, D., Jasperse, J., Hubbard, S.S., Impacts of Fires on Microbial Biomass and Communities in the Russian River Watershed, Sonoma County, California, AGU Virtual poster, Washington DC, Dec 2018

48. Wainwright et al., 4D Digital Watershed: Advanced Bedrock-to-Canopy Characterization For Watershed Functions, 2019 CUAHSI Hydroinformatics Conference, Brigham Young University, Provo, UT, July 29-31, 2019.
49. Tas, N., Wu, Y., Ulrich, C., Dafflon, B., Kneafsey, T., Tringe, S., Torn, M., Hubbard, S.S., Jansson, J.K., Microbial controls on soil biogeochemical cycles in polygonal arctic tundra, ISME17, Leipzig, Germany, August 12-17, 2018.
50. Falco, N., Wainwright, H., Ulrich, C., Dafflon, B., Hubbard, S.S., Williamson, M., Cothren, J., Ham, R., McEntire, J., McIntire, M., Remote Sensing to UAV-Based Digital Farmland, IGARSS 2018, Valencia, Spain, July 22-27, 2018.
51. Newcomer, M.E., Maier, U., Dwivedi, D., Hubbard, S.S., Steefel, C., Advancing Numerical Capabilities for Microbial and Biogeochemical Processes in Hyporheic Zones, CMWR2018: Computational Methods in Water Resources, Saint-Mola, France, June 3-7, 2018.
52. Wainwright, H., Dafflon, B., Falco, N., Arora, B., Woodburn, E., Williams, K.H., Hubbard, S.S., Digital Watershed: Advanced Watershed Characterization across Scales, CMWR2018: Computational Methods in Water Resources, Saint-Mola, France, June 3-7, 2018.
53. Wullschleger, S., Boden, T., Bolton, R., Graham, D., Hubbard, S., Iversen, C., Rogers, A., Romanovsky, V., Rowland, J., Thornton, P., Torn, M., Riley, W., Wilson, C., Next-Generation Ecosystems Experiment (NGEE Arctic): Progress and Plans, DOE ESS PI meeting, Potomac, MD, May 1-2, 2018.
54. Wainwright, H.M., Dafflon, B., Oktem, R., Dengel, S., Curtis, J.B., Torn, M.S., Cherry, J., Soom, F., Ulrich, C., Kneafsey, T., Wu, Y., Hubbard, S.S., Multiscale Data Integration for Scaling Land-atmosphere Carbon Exchange and Soil Properties in Ice-wedge Polygon Tundra, DOE ESS PI meeting, Potomac, MD, May 1-2, 2018.
55. Rungee, J., Tran, A.P., Faybishenko, B., Hubbard, S.S., Combining patch-scale modeled output with spatial statistics to estimate evapotranspiration across the landscape, DOE ESS PI meeting, Potomac, MD, May 1-2, 2018.
56. Tas, N., Wu, Y., Ulrich, C., Dafflon, B., Kneafsey, T., Tringe, S., Torn, M., Hubbard, S.S., Jansson, J.K., Deep Look into Deep Permafrost: Impact of Warming on Microbial Functions, DOE ESS PI meeting, Potomac, MD, May 1-2, 2018.
57. Mary, B., Peruzzo, L., Binley, A., Whalley, R., Hawkesford, M., The use of hydro-geophysical monitoring for the identification of root-water-uptake patterns: ERT and MALM experiments in a vineyard, European Geosciences Union General Assembly, Vienna, Austria, April 8-13, 2018.
58. Matheus-Carnevali, P., Lavy, A., Dong, W., Thomas, B., Williams, K.H., Tokunaga, T., Wan, J., Hubbard, S.S., Banfield, J.F., Microbial community structure of meander-associated riparian zone topsoil resembles that of a hillslope floodplain site, but differs from deeper samples, DOE JGI User Meeting, Berkeley, CA, March 13-16, 2018.
59. Boaga, J., Mary, B., Peruzzo, L., Schmutz, M., Wu, Y., Hubbard, S.S., Cassiani, G., H31B-1511: 3D electrical resistivity tomography and Mise-à-la-Masse method as tools for the characterization of vine roots, American Geophysical Society Union Fall Meeting, New Orleans, LA, December 11-15, 2017.
60. Newcomer, M.E., Dwivedi, D., Raberg, J. Fox, P.M., Nico, P.S., Wainwright, H.M., Conrad, M.E., Bill, M., Bouskill, N., Williams, K.H., Hubbard, S., Steefel, C.I., H41N-08: Hyporheic Interfaces Serve as Ecological Control Points for Mountainous Landscape Biological Productivity, American Geophysical Society Union Fall Meeting, New Orleans, LA, December 11-15, 2017.

61. Dafflon, B., Leger, E., Peterson, J., Falco, N., Wainwright, H., Wu, Y., Tran, A.P., Brodie, E., Williams, K.H., Versteeg, R., Hubbard, S.S., H43P-06: Critical Zone Co-dynamics: Quantifying Interactions between Subsurface, Land Surface, and Vegetation Properties Using UAV and Geophysical Approaches, American Geophysical Society Union Fall Meeting, New Orleans, LA, December 11-15, 2017.
62. Leger, E., Dafflon, B., Robert, Y., Ulrich, C., Peterson, J.E., Soom, F., Biraud, S., Tran, A.P., Hubbard, S.S., C21A-1110: Quantifying the Interactions Between Soil Thermal Characteristics, Soil Physical Properties, Hydro-geomorphological Conditions and Vegetation Distribution in an Arctic Watershed, American Geophysical Society Union Fall Meeting, New Orleans, LA, December 11-15, 2017.
63. Falco, N., Wainwright, H.M., Dafflon, B., Leger, E., Peterson, J., Steltzer, H., Wilmer, C., Williams, K.H., Hubbard, S.S., B22C-06: Hillslope characterization: Identifying key controls on local-scale plant communities' distribution using remote sensing and subsurface data fusion, American Geophysical Society Union Fall Meeting, New Orleans, LA, December 11-15, 2017.
64. Wu, Y., Chou, C., Peruzzo, L., Riley, W., Hao, Z., Petrov, P., Newman, G.A., Versteeg, R., Blancaflor, E., Ma, X., Dafflon, B., Brodie, E., Hubbard, S.S., B12B-04: Life in the dark: Roots and how they regulate plant-soil interactions, American Geophysical Society Union Fall Meeting, New Orleans, LA, December 11-15, 2017.
65. Arora, B., Wainwright, H.M., Vaughn, L.S., Curtis, J.B. Torn, M.S., Dafflon, B., Hubbard, S.S., B41I-2082: Identifying Factors Causing Variability in Greenhouse Gas (GHG) Fluxes in a Polygonal Tundra Landscape, American Geophysical Society Union Fall Meeting, New Orleans, LA, December 11-15, 2017.
66. Hubbard, S.S., Williams, K.H., Agarwal, D., Banfield, J.F. Beller, H.R., Bouskill, N., Brodie, E., Maxwell, R.M. Nico, P.S., Steefel, C.I., Steltzer, H., Tokunaga, T.K., Wainwright, H.M., Dwivedi, D., Newcomer, M.E., (Invited) H32D-01: Predictive Understanding of Mountainous Watershed Hydro-Biogeochemical Function and Response to Perturbations, American Geophysical Society Union Fall Meeting, New Orleans, LA, December 11-15, 2017.
67. Williams, K.H., Brown, W.S., Carroll, R.W.H., Dafflon, B., Dong, W., Hubbard, S. S., Leger, E., Li, L., Maxwell, R.M., Rowland, J.C., Steltzer, H., Tokunaga, T.K., Wainwright, H.M., H41C-1461: The East River, Colorado Community Watershed: Hydrobiogeochemical Studies Spanning Scales and Disciplines, American Geophysical Society Union Fall Meeting, New Orleans, LA, December 11-15, 2017
68. Wainwright, H.M., Trutner, S., Siirila-Woodburn, E., Newcomer, M.E., Williams, K.H., Hubbard, S.S., Enquist, J., Steltzer, H., Carroll, R.W.H., H41N-07: Quantifying Temperature Effects on Snow, Plant and Streamflow Dynamics in Headwater Catchments, American Geophysical Society Union Fall Meeting, New Orleans, LA, December 11-15, 2017.
69. Tran, A.P., Dafflon, B., Hubbard, S., H31B-1500: Coupled Land Surface-Subsurface Hydrogeophysical Inverse Modeling to Estimate Soil Organic Carbon Content in an Arctic Tundra, American Geophysical Society Union Fall Meeting, New Orleans, LA, December 11-15, 2017.
70. Tas, N., Wu, Y., Ulrich, C., Dafflon, B., Kneafsey, T., Tringe, S.G., Hubbard, S., Jansson, J.K., Deep Look into Permafrost: Multi-Omics Insights into Carbon Cycling, Microbiology Centennial Symposium, Wageningen University, October 2017.

71. Dou, S., Ajo-Franklin, J.B., Dafflon, B., Peterson, J., Ulrich, C., Dreger, D., Hubbard, S.S., Surface-wave imaging of inversely dispersive media: a permafrost example, SEG International Exposition and 87th Annual Meeting, Houston, Texas, September 2017.
72. Tas, N., Prestat, E., Wang, S., Wu, Y., Ulrich, C., Kneafsey, T., Tringe, S.G., Torn, M., Hubbard, S., Jansson, J.K., Microbial communities and functions across polygon types at the Next Generation Ecosystem Experiment (NGEE)-Arctic Barrow site, Multi-omics Conference, Richland, WA, 2017.
73. Hubbard, S.S., Wainwright, H.M., Tran, A.P., Wu, Y., Dafflon, B., Monitoring, Scaling and Predicting Interactions Across Critical Zone Compartments using Geophysical Data, AGU-SEG Hydrogeophysics Workshop, Stanford, CA, July 24-27, 2017.
74. Wu, Y., Dafflon, B., Tran, A.P., Leger, E., Peterson, J., Brodie, E., Williams, K.H., Hubbard, S.S., Investigating the Coupling of Root Zone and Hillslope Thermo-Hydro-Bio-Geo-Chemical Dynamics in a Mountainous Watershed Multi-scale Approaches, AGU-SEG Hydrogeophysics Workshop, Stanford, CA, July 24-27, 2017.
75. Dafflon B., Léger, E., Robert, Y., Peterson, J., Ulrich, C., Biraud, S., Tran, A.P., Arora, B., Wainwright, H., Romanovsky, V., Hubbard, S.S., EUCOP 5, France, June 2017.
76. Arora, B., Wainwright, H.M., Vaughn, L.S., Curtis, J.B. Torn, M.S., Dafflon, B., Hubbard, S.S., B411-2082: Identifying Factors Causing Variability in Greenhouse Gas (GHG) Fluxes in a Polygonal Tundra Landscape, American Geophysical Society Union Fall Meeting, New Orleans, LA, December 11-15, 2017.
77. Williams, K.H., Brown, W.S., Carroll, R.W.H., Dafflon, B., Dong, W., Hubbard, S. S., Leger, E., Li, L., Maxwell, R.M., Rowland, J.C., Steltzer, H., Tokunaga, T.K., Wainwright, H.M., H41C-1461: The East River, Colorado Community Watershed: Hydrobiogeochemical Studies Spanning Scales and Disciplines, American Geophysical Society Union Fall Meeting, New Orleans, LA, December 11-15, 2017.
78. Wainwright, H.M., Trutner, S., Siirila-Woodburn, E., Newcomer, M.E., Williams, K.H., Hubbard, S.S., Enquist, J., Steltzer, H., Carroll, R.W.H., H41N-07: Quantifying Temperature Effects on Snow, Plant and Streamflow Dynamics in Headwater Catchments, American Geophysical Society Union Fall Meeting, New Orleans, LA, December 11-15, 2017.
79. Tran, A.P., Dafflon, B., Hubbard, S., H31B-1500: Coupled Land Surface-Subsurface Hydrogeophysical Inverse Modeling to Estimate Soil Organic Carbon Content in an Arctic Tundra, American Geophysical Society Union Fall Meeting, New Orleans, LA, December 11-15, 2017.
80. Boag, J., Mary, B., Peruzzo, L., Schmutz, M., Wu, Y., Hubbard, S., Cassiani, G., H31B-1511: 3D Electrical Resistivity Tomography and Mise-à-la-Masse Method as Tools for the Characterization of Vine Roots, American Geophysical Society Union Fall Meeting, New Orleans, LA, December 11-15, 2017.
81. Schmutz, M., Franceschi, M., Revil, A., Peruzzo, Maury, T., Vaudelet, P., Ghorbani, A., Hubbard, S., (Invited) H31J-04: Spectral Induced Polarization approaches to characterize reactive transport parameters and processes, American Geophysical Society Union Fall Meeting, New Orleans, LA, December 11-15, 2017.
82. Tas, N., Wu, Y., Ulrich, C., Dafflon, B., Kneafsey, T., Tringe, S.G., Hubbard, S., Jansson, J.K., Deep Look into Permafrost: Multi-Omics Insights into Carbon Cycling, Microbiology Centennial Symposium, Wageningen University, October 2017.

83. Tas, N., Prestat, E., Wang, S., Wu, Y., Ulrich, C., Kneafsey, T., Tringe, S.G., Torn, M., Hubbard, S., Jansson, J.K., Microbial communities and functions across polygon types at the Next Generation Ecosystem Experiment (NGEE)-Arctic Barrow site, Multi-omics Conference, Richland, WA, 2017.
84. Dou, S., Ajo-Franklin, J.B., Dafflon, B., Peterson, J., Ulrich, C., Dreger, D., Hubbard, S.S., Surface-wave imaging of inversely dispersive media: a permafrost example, SEG International Exposition and 87th Annual Meeting, Houston, Texas, September 2017.
85. Banfield, J., et al., Standing on the threshold and looking forward: incorporating microbial metabolism into understanding of biogeochemistry (Invited), Plenary 'Goldschmidt Award', Paris, France, August 13-18, 2017.
86. Wu, Y., Dafflon, B., Tran, A., Leger, E., Peterson, J., Brodie, E., Williams, K. and Hubbard, S., Investigating the Coupling of Root Zone and Hillslope Thermo-Hydro-Bio-Geo-Chemical Dynamics in a Mountainous Watershed using Multi-scale Approaches, The 3rd AGU-SEG Hydrogeophysics Workshop: Imaging the Critical Zone, Stanford, CA, July 2017.
87. Wainwright et al, Multi-type Multiscale Observation Platforms for Quantifying and Scaling Above and Below-ground Interactions, 2nd Asian Conference on Permafrost, ACOP 2017, Sapporo, Japan, July 2-6, 2017.
88. Hubbard, S., Wainwright, H., Tran A., Leger, E., Wu, Y., Dafflon, B., Monitoring, Scaling and Predicting Interactions across Critical Zone Compartments Using Geophysical Data, The 3rd AGU-SEG Hydrogeophysics Workshop: Imaging the Critical Zone, Stanford, CA, July 2017.
89. Dafflon B., Léger, E., Robert, Y., Peterson, J., Ulrich, C., Biraud, S., Tran, A.P., Arora, B., Wainwright, H., Romanovsky, V., Hubbard, S.S., EUCOP 5, France, June 2017.
90. Hubbard, S., Nico, P., Jones, A., Varadharajan, C., Kosteki, R., Ramesh, R., California Water Resiliency in an Energy Constrained and Uncertain Climate Future, Invited, 254th American Chemical Society National Meeting, Washington DC, August 20-24, 2017.
91. Léger, E., Dafflon, B., Peterson, J., Ulrich, C., Soom, F., Biraud, S., Tran, A., Wainwright, H., Ajo-Franklin, J. and Hubbard, S., Investigating Bedrock Through Canopy Structure, Organization and Connectivity of an Arctic Watershed, ESS PI Meeting, Washington, DC, April 25-26, 2017.
92. Dafflon, B., Tran, A., Wainwright, H., Léger, E., Curtis, J., Oktem, R., Peterson, J., Ulrich, C., Soom, F., Wu, Y., Kneafsey, T., Torn, M. and Hubbard, S., Quantifying Multi-Dimensional Relationships to Estimate Arctic Soil Properties and Ecosystem Functioning at Relevant Scales, ESS PI Meeting, Washington, DC, April 25-26, 2017.
93. Matheus-Carnevali P., Williams, K., Dong, W., Hubbard, S. and Banfield, J., Genome-resolved metagenomic and geochemical analysis of East River riparian zone soils supports the 'systems within systems' approach for watershed analysis, Poster, ESS PI Meeting, Washington, DC, April 25-26, 2017.
94. Wainwright, H., Steefel, C., Williams, K., Hubbard, S., Enquist, B., Steltzer, H. and Sarah, T., H11D-06: Mapping Drought Sensitivity of Ecosystem Functioning in Mountainous Watersheds: Spatial Heterogeneity and Geological-Geomorphological Control, American Geophysical Society Union Fall Meeting, San Francisco, December 12, 2016.
95. Dafflon, B., Leger, E., Peterson, J., Ulrich, C., Soom, F., Biraud, S., Tran, A., Wainwright, H., Ajo-Franklin, J. and Hubbard, S., NS23B-08: Investigating Bedrock through Canopy Structure, Organization and Connectivity of an Arctic Watershed. American Geophysical Society Union Fall Meeting, San Francisco, December 13, 2016

96. Oktem, R., Wainwright, H., Curtis, J., Dafflon, B., Peterson, J., Ulrich, C., Hubbard, S. and Torn, M., B33C-0617: Ground-based Remote Sensing for Quantifying Subsurface and Surface Co-variability to Scale Arctic Ecosystem Functioning. American Geophysical Society Union Fall Meeting, San Francisco, December 14, 2016.
97. Leger, E., Dafflon, B., Thorpe, M., Kreitinger, A., Laura, D., Haivala, J., Peterson, J., Spangler, L. and Hubbard, S., H34A-04: Monitoring CO₂ Intrusion in shallow aquifer using complex electrical methods and a novel CO₂ sensitive Lidar-based sensor. American Geophysical Society Union Fall Meeting, San Francisco, December 14, 2016.
98. Tran, A., Dafflon, B. and Hubbard, S., B53G-0596: Coupled Land Surface-Subsurface Inverse Modeling to Investigate Arctic Hydrological and Thermal Dynamics and Soil Organic Content using Geophysical Data. American Geophysical Society Union Fall Meeting, San Francisco, December 16, 2016.
99. Soom, F., Ulrich, C., Dafflon, B., Wu, Y., Kneafsey, T., López, R., Peterson, J. and Hubbard, S., B43C-0627: Estimating the spatial distribution of soil organic matter density and geochemical properties in a polygonal shaped Arctic Tundra using core sample analysis and X-ray computed tomography, American Geophysical Society Union Fall Meeting, San Francisco, December 15, 2016.
100. Newcomer, N., Hubbard, S., Fleckenstein, J., Maier, U., Schmidt, C., Laube, G., Chen, N., Ulrich, C., Dwivedi, D., Steefel, C. and Rubin, Y., B31H-0573: Hydrological and Climate Controls on Hyporheic Contributions to River Net Ecosystem Productivity (Invited). American Geophysical Society Union Fall Meeting, San Francisco, December 14, 2016.
101. Wan, J., Tokunaga, T., Dong, W., Williams, K., Hobson, C., Kim, Y., Conrad, M., Bill, M., Long, P. and Hubbard, S., Relative Carbon Fluxes from Soil, Deep Valdose Zone and Groundwater to Atmosphere and River of a Semi-Arid Floorplain in Colorado, GSA Annual Meeting, Denver, CO, September 27, 2016.
102. Peruzzo, L., Schmutz, M., Franceschi, M., Hubbard, S., Copper solution concentration influence on the spectral induced polarization signature of different soil constituents, 4th International Workshop on Induced Polarization, Aarhus, Denmark, June 6-8, 2016.
103. Anantharaman, K., Brown, C., Hug, L., Itai, S., Castelle, C., Shelton, A., Bonet, B., Probst, A., Thomas, B., Singh, A., Wilkins, M., Williams, K., Tringe, S., Beller, H., Brodie, E., Hubbard, S. S., and Banfield, J., B11J-0567: 2500 High-quality Genomes Reveal that the Biogeochemical Cycles of C, N, S and H are Cross-linked by Metabolic Handoffs in the Terrestrial Subsurface. American Geophysical Union Fall Meeting, San Francisco, CA, December 14, 2015.
104. Molz, F., Faybishenko, B., Brodie, E., and Hubbard, S. S., H21A-1331: Complexity in Soil Systems: What Does It Mean and How Should We Proceed? American Geophysical Union Fall Meeting, San Francisco, CA, December 15, 2015.
105. Tran, A.P., Dafflon, B., Hubbard, S. S., Bisht, G., Peterson, J., Ulrich, C., Romanovsky, V., Kneafsey, T. Wu, Y., H13E-1596: Coupled Monitoring and Inverse Modeling to Investigate Surface – Subsurface Hydrological and Thermal Dynamics in the Arctic Tundra. American Geophysical Union Fall Meeting, San Francisco, CA, December 14, 2015.
106. Dafflon, B., Peterson, J., Oktem, R., Curtis, J., Ulrich, C., Torn, M., and Hubbard, S. S., B41D-0469: Estimating Soil Properties and Relationship to Landscape Properties in Arctic Tundra using Aerial Platform and Geophysical Monitoring. American Geophysical Union Fall Meeting, San Francisco, CA, December 17, 2015.

107. Wu, Y., Dafflon, B., and Hubbard, S. S., H53C-1671: Geophysical Imaging of Root Architecture and Root-soil Interaction. American Geophysical Union Fall Meeting, San Francisco, CA, December 18, 2015.
108. Ulrich, C., Dafflon, B., Wu, Y., Kneafsey, T., Lopez, R., Peterson, J., and Hubbard, S. S., C11C-0788: Lab-Scale Investigation of Multi-dimensional Relationships between Soil Intrinsic Properties to Improve Estimation of Soil Organic and Ice Content using Novel Core Imaging and Geophysical Techniques in Arctic Tundra. American Geophysical Union Fall Meeting, San Francisco, CA, December 14, 2015.
109. Wainright, H., Liljedal, A., Peterson, J., Dafflon, B., Ulrich, C., Gusmeroli, A., and Hubbard, S. S., C33C-0825: Multiscale Observational Platforms and Bayesian Data Integration to Estimate Snow Depth and Snow-water-equivalent over the Ice-wedge Polygonal Tundra. American Geophysical Union Fall Meeting, San Francisco, CA, December 16, 2015.
110. Hubbard, S. S., Dafflon, B., Tran, A.P., Chen, J., and Wainwright, H., B52C-04: Quantifying Biogeochemical Responses to Hydrological Perturbations in Terrestrial Systems using Geophysical Monitoring and Inversion Schemes. American Geophysical Union Fall Meeting, San Francisco, CA, December 18, 2015.
111. Dafflon, B., Tran, A.P., Wainright, H., Hubbard, S. S., Peterson, J., Ulrich, C., and Williams, K., H54B-02: Quantifying Subsurface Water and Heat Distribution and its Linkage with Landscape Properties in Terrestrial Environment using Hydro-Thermal-Geophysical Monitoring and Coupled Inverse Modeling. American Geophysical Union Fall Meeting, San Francisco, CA, December 18, 2015.
112. Newcomer, M., Hubbard, S. S., Fleckenstein, J., Maier, U., Schmidt, C., Thullner, M., Ulrich, C., Flipo, N., and Rubin, Y., B54B-04: Riverbed Bioclogging and the Effects on Infiltration and Carbon Flux under Climate Variability. American Geophysical Union Fall Meeting, San Francisco, CA, December 18, 2015.
113. Hubbard, S. S., Walck, M., Blankenship, D., Bonneville, A., Bromhal, G., Daley, T., Pawar, R., Polsky, Y., Mattson, E., and Mellors, R., H51M-1561: The DOE Subsurface (SubTER) Initiative: Revolutionizing Responsible use of the Subsurface for Energy Production and Storage. American Geophysical Union Fall Meeting, San Francisco, CA, December 18, 2015.
114. Hubbard, S. S., Agarwal, D., Banfield, J., Beller, H., Brodie, E., Long, P., Nico, P., Steefel, C., Tokunaga, T., Williams, K. H., and the Sustainable Systems SFA 2.0 Team, B31B-0020: Genome-to-Watershed Predictive Understanding of Terrestrial Environments, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.
115. Chen, J., Hubbard, S. S., and Williams, K. H., B31B-0022: Estimating groundwater dynamics at a Colorado floodplain site using historical hydrological data and climate information, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.
116. Christensen, J. N., Shiel, A. E., Conrad, M. E., Williams, K. H., Dong, W., Tokunaga, T. K., Wan, J., Long, P. E., and Hubbard, S. S., H43N-1174: Uranium and Strontium Isotopic Study of the Hydrology of the Alluvial Aquifer at the Rifle Former U Mine Tailings Site, Colorado, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.
117. Conrad, M., Arora, B., Williams, K. H., Bill, M., Spycher, N., Steefel, C. I., Tokunaga, T. K., and Hubbard, S. S., B31B-0016: Using Concentrations and Isotopic Compositions of CO₂ to Distinguish Microbial Production of CO₂ in Unsaturated Zone Sediments in Hydrogeochemical Models, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.

118. Dafflon, B., Hubbard, S. S., Peterson, J., Ulrich, C., Oktem, R., Curtis, J. B., Tran, A. P., Wu, Y., Cable, W. and Romanovsky, V. E., FM14-C11C-0379: Estimating Arctic Tundra Soil Water Content Variability and Relationship to Landscape Properties Using Above- and Below-Ground Imaging, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.
119. Dou, S., Dreger, D. S., Peterson, J., Ulrich, C., Dafflon, B., Hubbard, S. S. and Ajo-Franklin, J. B., FM14-C53A-0288: Wavefield Inversion of Surface Waves for Delineating Seismic Structure in Saline Permafrost: A Case History from the Barrow Peninsula, AK, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.
120. Gangodagamage, C., Rowland, J. C., Hubbard, S. S., Brumby, S. P., Liljedahl, A., Wainwright, H. M., Sloan V. L., Altmann, G., Skurikhin, A., Shelef, E., Wilson, C. J., Dafflon, B., Peterson, J., Ulrich, C., Gibbs, A., Tweedie, C. E., Painter, S. L., and Wullschleger, S. D., EP31A-3517: Predicting/Extrapolating Active Layer Thickness Using Statistical Learning from Remotely-Sensed High-resolution Data in Arctic Permafrost Landscapes: Improved parameterization of Ice-wedge polygons from LiDAR/WorldView-2 derived metrics, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.
121. Hubbard, S. S. and Arora, B., (Chairs), B33B: Characterizing Spatial and Temporal Variability of Hydrological and Biogeochemical Processes Across Scales I Posters, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.
122. Hubbard, S. S., Agarwal, D., Banfield, J. F., Beller, H. R., Brodie, E., Long, P., Nico, P. S., Steefel, C. I., Tokunaga, T. K., Williams, K. H., and the Sustainable Systems SFA 2.0 Team, B31B-0020: Genome-to-Watershed Predictive Understanding of Terrestrial Environments, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.
123. Newcomer, M. E., Hubbard, S. S., Fleckenstein, J. H., Schmidt, C., Maier, U., Thullner, M., Ulrich, C., and Rubin, Y., B31E-0055: Feedbacks Between Bioclogging and Infiltration in Losing River Systems, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.
124. Tokunaga, T. K., Wan, J., Dong, W., Kim, Y., Williams, K. H., Conrad, M. E., Christensen, J. N., Bill, M., Faybishenko, B., Hobson, C., Dayvault, R., Long, P. E. and Hubbard, S. S., B44B-07: Water and Carbon Fluxes in a Semi-Arid Region Floodplain: Multiple Approaches to Constrain Estimates of Seasonal- and Depth Dependent Fluxes at Rifle, Colorado, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.
125. Tran, A. P., Dafflon, B., Hubbard, S. S., Kowalsky, M. B., Tokunaga, T. K., Faybishenko, B., and Long, P. E., H54B-06: Monitoring Soil Hydraulic and Thermal Properties using Coupled Inversion of Time-lapse Temperature and Electrical Resistance Data, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.
126. Ulrich, C., Hubbard, S. S., Peterson, J., Blom, K., Black, W., Delaney, C. and Mendoza, J., NA21A-3870: Geophysical Assessment of the Control of a Jetty on a Barrier Beach and Estuary System, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.
127. Versteeg, R. J., Bianchi, M., and Chen, J., Hubbard, S. S., and Williams, K. H., B31B-0022: Estimating groundwater dynamics at a Colorado floodplain site using historical hydrological data and climate information, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.

128. Wainwright, H. M., Hubbard, S. S., and Arora, B., (Chairs), B44B: Characterizing Spatial and Temporal Variability of Hydrological and Biogeochemical Processes Across Scales II, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.
129. Wainwright, H. M., Dafflon, B., Smith, L.J., Hahn, M.S., Ulrich, C., Wu, Y., Peterson, J., Curtis, J. B., Torn, M. S., and Hubbard, S. S., FM14-B54F-07: Identifying multiscale zonation and assessing the relative importance of polygon geomorphology and polygon types on carbon fluxes in an Arctic Tundra Ecosystem, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.
130. Walck, M.C., Hubbard, S. S., and Hollett, D., TH15E: DOE Crosscutting Subsurface Initiative: Adaptive Control of Subsurface Fractures and Flow, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.
131. Wan, J., Dong, W., Kim, Y., Tokunaga, T. K., Bil, M., Conrad, M. E., Williams, K. H., Long, P. E., and Hubbard, S. S., B33B-0164: Subsurface Carbon Cycling Below the Root Zone, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.
132. Wu, Y., Kneafsey, T. J., Tas, N., Bill, M., Ulrich, C., and Hubbard, S. S., FM14-B41O-07: Controlled Freeze-thaw Experiments to Study Biogeochemical Process and its Effects on Greenhouse Gas Release in Arctic Soil Columns, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.,
133. Versteeg, R. J., Bianchi, M., Hubbard, S. S., H13H-1210: Predictive assimilation framework to support contaminated site understanding and remediation, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.
134. Hubbard, S. S., Geophysical quantification of ecosystem processes across scales and system compartments, ESPM UC Berkeley seminar series, Berkeley, CA, April 2014
135. Hubbard, S. S., et al., Geophysical imaging of the Arctic Tundra: From microbes to landscapes, KQED, San Francisco, CA May 2014.
136. Hubbard, S. S., et al., Identifying ecosystem controls through joint use of above and below ground datasets, DOE SBR/PI Meeting, Potomac, MA, May 2014.
137. Banfield, J., Castelle, C., Hug, L., Wrighton, K., Sharon, I., Brown, C., Kantor, R., Singh, A., Thomas, B., Luef, B., Comolli, L., Williams, K. H., Long, P., Hubbard, S. S., Prediction of the biogeochemical roles of uncultivated bacteria and archaea in the subsurface, Goldschmidt, Sacramento, CA, June 2014.
138. Christensen, J. N., Shiel, A., Conrad, M. E., Williams, K. W., Dong, W., Tokunaga, T. K., Wan, J., Long, P. E., Hubbard, S. S., Constraints on the hydrology of a riparian site from U and Sr isotopes: The Rifle, Colorado floodplain, Goldschmidt, Sacramento, CA, June 2014.
139. Banfield, J., Castelle, C., Sharon, I., Hug, L., Brown, C., Kantor, R., Thomas, B., Singh, A., Wilkins, M., Hettich, R., Tringe, S., Williams, K. H., Brodie, E., Beller, H., Hubbard, S. S., Diversity and metabolic potential of the terrestrial subsurface microbiome and its influence on biogeochemical cycling, PI meeting SBR DOE, TES SBR PI Meeting, Potomac, MD, May 6-7, 2014.
140. Chakraborty, R., Pettenato, A., Tas, N., Hubbard, S. S., Jansson, J., Metabolic and Growth Characteristics of Novel Diverse Microbes Isolated from Deep Cores Collected from Barrow, Alaska, American Society for Microbiology Meeting, Boston , Massachusetts, May 17-20, 2014.

141. Freshley, M., Freedman, V., Hubbard, S. S., Wainwright, H., Truex, M., Eddy-Dilek, C., Scheibe, T., Moulton, D. and Marble, J., Advanced Simulation Capability for Environmental Management (ASCEM): A Toolset for Evaluation of Complex Sites, Federal Remediation Technologies Roundtable, May 2014.
142. Freshley, M., Freedman, V., Hubbard, S. S., Wainwright, H., Scheibe, T., Moulton, D., Dixon, P., and Marble, J., Advanced Simulation Capability for Environmental Management (ASCEM): A Toolset for Groundwater Protection EPRI Groundwater Protection Workshop, Savannah GA, June 24-26, 2014.
143. Freshley, M., Scheibe, T., Moulton, D., Freedman, V., Hubbard, S. S., Finsterle, S., Steefel, C., Wainwright, W., Flach, G., Seitz, R., Dixon, P., Marble, J., Advanced Simulation Capability for Environmental Management Initial User Release (14134), Waste Management, 2014.
144. Pugh, J., Birkholzer, J., Dafflon, B., Esposito, R., Hubbard, S. S., Newell, D., Nico, P., Spycher, N. Tinnacher, R., Trautz, R., Varadharajan, C., Wu, Y., Zheng, L., Effects of CO₂ Leakage into Drinking Water Aquifers: Lessons Learned from a Controlled CO₂ Release Field Test, GHGt12, Austin, 2014.
145. Hubbard, S. S., Agarwal, A., Banfield, J., Beller, H., Brodie, E., Long, P., Nico, P., Steefel, C., Tokunaga, T., Williams, K., Genome-to-Watershed Predictive Understanding of Terrestrial Biogeochemical Functioning: 'Sustainable Systems 2.0', Goldschmidt, Sacramento, CA, June 2014.
146. Newcomer, M.E., Hubbard, S. S., Fleckenstein, J., Schmidt, C., Maier, U., Thullner, M., Rubin, Y., Seasonal Dynamic Permeability Effects on the Transient Connection Status of a River, International Water Association (IWA) Conference, San Francisco, 2014.
147. Tas, N. Wang, S., Wu, Y., Smith, L., Ulrich, C., Kneafsey, T., Torn, M., Hubbard, S. S., and Jansson, J., Microbial ecology across polygon features at the NGEE-Arctic Barrow site, Complex Soil Systems Conference, Berkeley, California, September 3-5, 2014.
148. Tokunaga, T., Wan, J., Dong, W., Williams, K. H., Robbins, M. J., Kim, Y., Faybishenko, B., Conrad, M., Christensen, J., Hobson, C., Gilbert, B., Dayvault, R., Long, P. E., Hubbard, S. S., Determining water and carbon fluxes into groundwater from a semiarid floodplain vadose zone, Goldschmidt, June 2014, Sacramento, CA.
149. Wan, J., Dong, W., Tokunaga, T., Williams, K., Kim, Y., Conrad, M., Gilbert, B., Long, P., Hubbard, S. S., Carbon transport and transformation from vadose zone to groundwater, Goldschmidt, Sacramento, CA, June 2014.
150. Wullschleger, S., Hinzman, L., Hubbard, S. S., Rogers, A., Thornton, P., Wilson, C., Landscape change in a warming Arctic - Implications for carbon cycle processes and climate feedbacks at multiple scales, "Vulnerability of Arctic and Boreal Ecosystems Under a Changing Climate", Anchorage, AK, May 18-22 2014.
151. Dafflon, B., Hubbard, S. S., Wainwright, H., Wu, Y., Dou, S., Ajo-Franklin, J., Peterson, J., Ulrich, C., Gusmeroli, A., Kneafsey, T., Characterization of active layer and permafrost variability using geophysical approaches, Department of Energy TES/SBR Joint PI Meeting, Potomac, MD, May 14-15, 2013.
152. Tas, N., Torn, M., Chakraborty, R., Smith, L., Wu, Y., Ulrich, C., Kneafsey, T., Graham, D., Hubbard, S. S., Wullcheleger, S., Jansson, J., Microbial ecology across polygon features at the NGEE-Arctic Barrow site, Department of Energy TES/SBR Joint PI Meeting, Potomac, MD, May 14-15, 2013.

153. Wulschleger, S., Graham, D., Liang, L., Norby, R., Thornton, P., Hubbard, S. S., Torn, M., Riley, W., Rowland, J., Wilson, C., Rogers, A., Hinzman, L., NGEE Arctic: Migrating process-rich knowledge across spatial scales to improve climate prediction, Department of Energy TES/SBR Joint PI Meeting, Potomac, MD, May 14-15, 2013
154. Wilson, C., Hinzman, L., Wulschleger, S., Bolton, R., Busey, R., Cherry, J., Liljedahl, A., Grosse, G., Gusmeroli, A., Hubbard, S. S., Kholodov, A., Peterson, J. Romanovsky, V., Rowland, J., Wainwright, H., Young, J., Quantifying the interactions of geomorphic hydrologic and thermal processes to improve predictions of climate impacts and feedbacks in the Arctic, Department of Energy TES/SBR Joint PI Meeting, Potomac, MD, May 14-15, 2013.
155. Hinzman, L. D., Wulschleger, S. D., Wilson, C. J., Rowland, J. C., Hubbard, S. S., Torn, M. S., Riley, W. J., Graham, D. E., Liang, L., Norby, R. J., Thornton, P. E., Rogers, A., Next-Generation Ecosystem Experiment (NGEE Arctic): Opportunities for International Collaboration and Partnership, ISAR - 3 Third International Symposium on the Arctic Research, Tokyo, Japan, January 14-17, 2013.
156. Hubbard S. S., Dafflon B., Wainwright H., Tokunaga T. K., Ulrich C., Jansson J., Tidenorn M. S., Williams K. H., H41L-04: Characterizing controls on terrestrial environment functioning across scales using geophysical datasets, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
157. Agarwal, D., Pullman, S., Voytek, J., Pastorello, G., Papale, D., Biraud, S., Hubbard, S. S., Torn, M., IN33B-1536: Enabling Mobile Data and Metadata Collection and Submission in Support of AmeriFlux and NGEE Data Collection and Access, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
158. Cheng, Y., Bouskill, N., Hubbard, C., Hubbard, S. S., Surasani, V., Ajo-Franklin, J., Li, L., Rafa, S., Engelbrekton, A., Coates, J., Understanding Microbial Reservoir Souring and Desouring Processes Using Reactive Transport Modeling, B43B-0477: American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
159. Chakraborty, R., Pettenato, A., Tas, N., Hubbard, S. S., Jansson, J., B33G-0561: Isolation and characterization of novel microorganisms from deep cores collected at the Next Generation Ecosystem Experiment (NGEE)-Arctic site in Barrow, Alaska, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
160. Commer, M., Kowalsky, M. Dafflon, B., Wu, Y., Hubbard, S. S., NS33A-1683: Strategies for improving the resolution of electrical and electromagnetic geophysical measurements for three-dimensional inverse modeling of CO₂ movement, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
161. Dafflon B., Hubbard S. S., Ulrich C., Peterson J. E., Wu Y., Wainwright H., Gangodagamage C., Kholodov A.L., Kneafsey T., C43A-0664: Quantifying Arctic terrestrial environment behaviors using geophysical, point-scale and remote sensing data, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
162. Dafflon B., Hubbard S. S., Ulrich, C., and Peterson J. E., Estimating arctic soil properties through advanced inversion of electromagnetic induction data (extended abstract), SEG/AGU joint workshop: Cryosphere geophysics: Understanding a changing climate with subsurface imaging, Boise, ID, January 2013.

163. Dafflon B., Hubbard, S. S., Ulrich, C., Peterson, J. E., Wainwright, H., and Wu, Y., Estimating active layer, ice-wedge and permafrost property distributions in Arctic ecosystem using electrical conductivity imaging (Invited), SEG extended abstract, Houston, TX, September 2013.
164. Dixon, P., Freshley, M., Schiebe, T., Moulton, D., Hubbard, S. S., Finsterle, S., Steefel, C., Advanced Simulation Capability for Environmental Management User Release and Current Plans, The Geological Society of America (GSA) Annual Meeting and Expo, Denver CO, October 27-30, 2013.
165. Florsheim, J. L., Ulrich, C., Hubbard, S. S., Borglin, S., Rosenberry, D. O., EP33A-0873: Geomorphic field experiment to quantify grain size and biotic influence on riverbed sedimentation dynamics in a dry-season reservoir, Russian River, CA, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
166. Gangodagamage, C., Rowland, C. J., Skurikhin, A. N., Wilson, C. J., Brumby, S. P., Painter, S. L., Gable, C. W., Bui, Q., Short, L. S., Liljedahl, A. K., Wainwright, H. M., Hubbard, S. S., Dafflon, B., Tweedie, C. E., Kumar, J., Wulschleger, S. D., B51H-0402: Spatial and Spectral Characterization, Mapping, and 3D Reconstructing of Ice-wedge Polygons Using High Resolution LIDAR Data, AGU, San Francisco, CA, December 9-13, 2013.
167. Hinzman, L., Wulschleger, S., Hubbard, S. S., Graham, D., Wilson, C., Torn, M., Norby, R., Rogers, A., and the entire NGEE-Arctic Team, C31B-0649: Observation Platforms and Data Streams of the Arctic Next Generation Ecosystem Experiment (NGEE-Arctic), American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
168. Jansson, J., Tas, N., Wu, Y., Ulrich, U., Kneafsey, T., Torn, M., Hubbard, S. S., Chakraborty, R., Graham, D., Wulschleger, S., B32C-04: Metagenomics reveals microbial community composition and function with depth in Arctic permafrost cores, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
169. Hubbard, S. S., Graham, D. E., Hinzman, L. D., Liang, L., Liljedahl, A., Norby, R. J., Rogers, A., Rowland, J. C., Thornton, P. E., Torn, M. S., Riley, W. J., Wilson, C. J., Wulschleger, S. D., C33C-07: Improved Climate Prediction through a System Level Understanding of Arctic Terrestrial Ecosystems: Next Generation Ecosystem Experiments (NGEE-Arctic), American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
170. Newcomer, M., Hubbard, S. S., Fleckenstein, J., Schmidt, C., Maier, U., Rubin, Y., H24A-07: Dynamic Permeability and Clogging Processes of Riverbank Filtration Systems, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
171. Tas, N., Wu, Y., Smith, L., Ulrich, C., Kneafsey, T., Torn, M., Hubbard, S. S., Wulschleger, S., Jansson, J., Metagenomics and microbial community profiling across an Arctic polygon transect, Polar and Alpine Microbiology, Big Sky, MT, Sept 8-12, 2013.
172. Tas, N., Hubbard, S. S., Jansson, J., Isolation and characterization of anaerobic, fermentative and respiratory microbes from permafrost soil, in Polar and Alpine Microbiology, Big Sky, MT, September 8-12, 2013.
173. Chakraborty, R., Pettenato, A., Tas, N., Hubbard, S. S., Jansson, J., Metabolic and growth characteristics of novel diverse microbes isolated from deep cores collected at the Next Generation Ecosystem Experiment (NGEE) - Arctic site in Barrow, Alaska, in American Society for Microbiology Meeting, Boston, MA, May 17-20, 2013
174. Tokunaga, T., Wan, J., Dong, W., Williams, K. H., Robbins, M. J., Kim, Y., Faybishenko, B., Conrad, M.C., Christensen, J. N., Gilbert, B., Dayvault, R. D., Long, P. E., Hubbard, S. S., B23C-

- 0568: Organic carbon inventory and vertical flux through the Vadose Zone into groundwater at the Rifle, Colorado River floodplain site, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
175. Ulrich, C., Hubbard, S. S., Peterson, J., Delaney, C., Blaum, K., and Black, W., H13A-1308: Geophysical Assessment of the Control of a Jetty on a Barrier Beach and Estuary System, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
176. Wainwright H., Hubbard S. S., Dafflon B., Ulrich C., Peterson J. E., Wu Y., Hahn M. S., Torn M. S., Gangodagamage C., Rowland J. C., Wilson C. J., Liljedahl A., Gusmeroli A., Wulschleger S. D., C53C-06, Characterizing subsurface controls on the Arctic ecosystem carbon cycling across scales using geophysical, in-situ and remote sensing datasets, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
177. Wu, Y., Kneafsey, T., Nakagawa, S., Borglin, S., Cook, P., Torn, M., Jansson, J., Hubbard, S. S., B14E-07: Freeze-thaw Laboratory Column Experiments using Arctic Permafrost Cores: Exploring Controls of Subsurface Heterogeneity on Greenhouse Gas Release, American Geophysical Union Fall Meeting, CA, December 9-13, 2013.
178. Yang, D., Li, M., Chen, J., Hubbard, S. S., H44A-04: Calibration of a distributed forecasting model with input uncertainty using a Bayesian Framework, American Geophysical Union Fall Meeting, San Francisco, CA, December 3-7, 2012.
179. Jansson, J., Tas, N., Brodie, e., Graham, D., Kneafsey, T., Torn, M., Wu, Y., Wulschleger, S., Hubbard, S. S., C31C-06: Horizontal and vertical profiling of microbial communities across landscape features at NGEE site, Barrow, Alaska, American Geophysical Union Fall Meeting, San Francisco, CA, December 3-7, 2012.
180. Wilson, C., Graham, D., Hinzman, L., Hubbard, S. S., Liang, L., Norby, R., Riley, W., Rogers, A., Rowland, J., Thornton, P., Torn, M., Wulschleger, S., C53A-0807: Scaling process studies and observations in the arctic for improved climate predictability, American Geophysical Union Fall Meeting, San Francisco, CA, December 3-7, 2012.
181. Surasani, V. K., Commer, M., Ajo-Franklin, J., Li, L., Hubbard, S. S., B23B-0444: Reactive transport modeling and geophysical monitoring of bioclogging at reservoir scale, 2012 Fall Meeting, American Geophysical Union Fall Meeting, San Francisco, CA, December 3-7, 2012.
182. Gusmeroli, A., Liljedahl, A., Peterson, J., Hubbard, S. S., C33C-0668: Effects of spatially variable snow cover on thermal regime and hydrology of an Arctic ice wedge polygon landscape identified using ground penetrating radar and LIDAR datasets, American Geophysical Union Fall Meeting, San Francisco, CA, December 3-7, 2012.
183. Ulrich, C., Hubbard, S. S., Florsheim, J., Rosenberry, D., Borglin, S., Zhang, Y., Seymour, D., and Trotta, M., H131-10: Quantifying Factors That Impact Riverbed Dynamic Permeability at a Riverbank Filtration Facility, American Geophysical Union Fall Meeting, San Francisco, CA, December 3-7, 2012.
184. Wu, Y., Hubbard, S. S., Ulrich, C., Dafflon, B., Wulschleger, S., C13C-0640: Complex resistivity method for permafrost studies: freeze thaw transitions in the arctic soils, American Geophysical Union Fall Meeting, San Francisco, CA, December 3-7, 2012.
185. Dafflon, B., Hubbard, S. S., Ulrich, C., Peterson, J., Wu, Y., Chen, J. and Wulschleger, S., C22B-04: Depth imaging of active layer and permafrost variability in the Arctic using electromagnetic induction data, American Geophysical Union Fall Meeting, San Francisco, CA, December 3-7, 2012.

186. Wainwright, H., Hubbard, S. S., Gangodagamage, C., Dafflon, B., Ulrich, C., Wu, Y., Wilson, C., Tweedie, C., and Wulschlegger, S., B53E-0715: High resolution characterization of heterogeneous arctic tundra subsurface properties using a multiscale bayesian fusion approach with geophysical datasets, American Geophysical Union Fall Meeting, San Francisco, CA, December 3-7, 2012.
187. Hubbard, C., Hubbard, S. S., Wu, Y., Surasani, V., Ajo-Franklin, J., Commer, M., Dou, S., Kwon, T., Li, L., Fouke, B., and Coates, J., B23B-0447: Toward optimized bioclogging and biocementation through combining advanced geophysical monitoring and reactive transport modeling approaches, American Geophysical Union Fall Meeting, San Francisco, CA, December 3-7, 2012.
188. Hubbard, S. S., Grote, K. R., Freese, P., Peterson, J. E. and Rubin, Y., H53F-1586: Waves and Wine: Advanced approaches for characterizing and exploiting micro-terroir, American Geophysical Union Fall Meeting, San Francisco, CA, December 3-7, 2012.
189. Hubbard, S. S., Wainwright, H., Chen, J., Bea, S., Li, L. and Spycher, N., H33N-01: Quantifying physicochemical heterogeneity and critical transitions that influence plume behavior using geophysical approaches and reactive transport modeling, American Geophysical Union Fall Meeting, San Francisco, CA, December 3-7, 2012.
190. Wulschleger, S., Graham, D., Hinzman, L., Hubbard, S. S., Liang, L., Liljedahl, A., Norby, R., Rogers, A., Rowland, J., Thornton, P., Torn, M., Riley, W., Wilson, C., U51B-05: Improved climate prediction through a system level understanding of arctic terrestrial ecosystems, American Geophysical Union Fall Meeting, San Francisco, CA, December 3-7, 2012.
191. Bea, S. A., Wainwright, H., Spycher, N., Hubbard, S. S., Davis, J., Identifying key controls on the behavior of an acidic-U (VI) Plume at the Savannah River Site using Reactive Transport Modeling, Goldschmidt, Montreal, Canada, June 24-29, 2012.
192. Brodie, E., Jansson, J., Bouskill, N., Hubbard, S. S., Torn, M., Understanding and modeling the microbial processes driving terrestrial biogeochemical cycles, TES PI meeting, Washington, DC, April 23-24, 2012.
193. Spycher, N., Bea, S. A., Wainwright, H., Mukhopadhyay, S., Christensen, J., Dong, W., Hubbard, S. S., Davis, J., Denham, M., Integrating geochemical, reactive transport, and facies-based modeling approaches at the Savannah River F-Area, Goldschmidt, Montreal, Canada, June 24-29, 2012.
194. Chen, J., Hubbard, S. S., Man Mok, C., Suribhatla, R., Kaback, D., A new software toward improved site characterization for easy integration of hydrogeological and geophysical datasets, Batelle International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, CA, May 2012.
195. Hubbard, S. S., Ajo-Franklin, J., Butler-Veytia, B., Wu, Y., Gasperikova, E., Peterson, J., Kelley, R., Geophysical imaging for investigating the distribution of induced fractures and associated amendments in a TCE-contaminated aquifer, Batelle International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, CA, May 2012.
196. Bendiganavale, A., Ntarlagiannis, D., Slater, L., Tyson, T. A., Hubbard, S. S., Prodan, C., Nano scale detection of metal precipitate around bacterial cell membrane using dielectric spectroscopy, 56th International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication, Waikoloa, HI, May 2012.

197. Hubbard, S. S., Gangodagamage, C., Dafflon, B., Wainwright, H., Ulrich, C., Gusmeroli, A., Wu, Y., Doetsch, J., Peterson, J.E., Wilson, C., Tweedie, C., Wulschleger, S.D., Quantifying and relating subsurface and land-surface variability in permafrost environments using surface geophysical and LIDAR datasets, Geophysical Research Abstracts, Vol. 14, EGU 2012, Preview 2012, EGU General Assembly 2012. Vienna, Austria.
198. Freshley, M., Hubbard, S. S., Freedman, V., Flach, G., Gorton, I., Moulton, D., Finsterle, S., Steefel, C., Dixon, P., Advanced Simulation Capability for Environmental Management (ASCEM): Development and Demonstration, Waste Management 2012, New Forest, UK, April 4-6, 2012.
199. Freshley, M., Hubbard, S. S., Freedman, V., Flach, G., Gorton, I., Moulton, D., Finsterle, S., Steefel, C., Dixon, P., Advanced Simulation Capability for Environmental Management (ASCEM): Development and Demonstration, Waste Management Extended Abstract, SBR PI Meeting, Washington, DC, April 2012.
200. Gusmeroli, A., Hinzman, L., Hubbard, S. S., Dafflon, B., Wulschleger, S., Exploring the Alaskan cryosphere with ground penetrating radar, IARC Conference, Paris, France, March 2012.
201. Wainwright, H.M., Hubbard, S. S., Dafflon, B., Ulrich, C., Wu, Y., Gangodagamage, C., Rowland, J., Wilson, C., Tweedie, C., Wulschleger, S.D., Multiscale bayesian fusion approach using geophysical and remote sensing data for characterizing arctic tundra hydrogeochemical properties, TICOP 2012, Salekhard, Russia, June 25-29, 2012.
202. Fujita, Y., Smith, R., Ginn, T., Hubbard, S. S., Taylor, J., Henriksen, J., Gebrehiwet, t., Delwiche, M., Peterson, J., Microbially induced calcite precipitation in the subsurface, ACS Meeting, San Diego, CA, March 2012.
203. Wu, Y., Dafflon, B., Hubbard, S. S., Peterson, J., Pugh, J., Daley, T., Trautz, R., Birkholzer, J., Complex electrical method as a monitoring tool for CO₂ intrusion into shallow groundwater systems and associated geochemical transformations, 11th Annual Carbon Capture, Utilization and Sequestration Conference, Pittsburg, PA, April 2012.
204. Pugh, J., Esposito, R., Trautz, R., Birkholzer, J., Spycher, N., Hubbard, S. S., Newell, D., Assessing the impact of elevated dissolved carbon dioxide on aquifer water quality through a controlled release field test: Test Design and Implementation, Annual Conference on Carbon Capture and Sequestration, Pittsburg, PA, May 13-16, 2012.
205. Schiebe, T., Hubbard, S. S., Onstott, R., DeFlaun, M., Lessons learned from bacterial transport research at the South Oyster Site, National Groundwater Summit, Garden Grove, CA, May 2012.
206. Hubbard, S. S., Hinzman, L., Graham, D., Liang, L., Norby, R., Riley, W., Rogers, A., Rowland, J., Thornton, P., Torn, M., Wilson, C., Wulschleger, S., Next Generation Ecosystem Experiment, Quantification and prediction of coupled processes in the terrestrial Arctic system, American Geophysical Union Fall Meeting, San Francisco, CA, December 5-9, 2011. (abstract)
207. Ajo-Franklin, J., Daley, T., Butler-Veytia, B., Peterson, J., Gasperikova, E., Wu, Y., Kelly, B., Hubbard, S. S., H52C-03: The acquisition and integrated inversion of a continuous active source seismic monitoring dataset: application to shallow hydrofracture evolution (Invited), American Geophysical Union Fall Meeting, San Francisco, CA, December 5-9, 2011.
208. Chen, J., Hubbard, S. S., Williams, K. H., H11E-0847: A Hierarchical Bayesian Model for Estimating Remediation-induced Biogeochemical Transformations Using Spectral Induced

- Polarization Data: Development and Application to the Contaminated DOE Rifle (CO) Site, American Geophysical Union Fall Meeting, San Francisco, CA, December 5-9, 2011.
209. Dafflon, B., Wu, Y., Hubbard, S. S., Birkholzer, J., Daley, T. M., Pugh, J. D., Peterson, J., Trautz, R. C., GC41E-02: Evaluating sensitivity of complex electrical methods for monitoring CO₂ intrusion into a shallow groundwater system and associated geochemical transformations, American Geophysical Union Fall Meeting, San Francisco, CA, December 5-9, 2011.
210. Dong, W., Tokunaga, T., Miles, D., Davis, J., Hubbard, S. S., V23C-2578: Surface complexation modeling of U(VI) adsorption onto Savannah River site sediments, American Geophysical Union Fall Meeting, San Francisco, CA, December 5-9, 2011.
211. Fujita, Y., Taylor, J., Henriksen, J., Delwiche, M., Gebrehiwet, T., Hubbard, S. S., Spycher, N., Ginn, T., Pffiffner, S., Smith, R., H24A-06: Probing microbial activity in a perched water body located in a deep vadose zone, American Geophysical Union Fall Meeting, San Francisco, CA, December 5-9, 2011.
212. Istok, J., Jansik, D., Foote, M., Zhang, Z., Wu, Y., Hubbard, S. S., Mattigod, S., Zhong, L., Wellman, D., H24A-03: Foam-based delivery of amendments to immobilize metals and radionuclides in deep vadose zone environments (Invited), American Geophysical Union Fall Meeting, San Francisco, CA, December 5-9, 2011.
213. Kelley, R., Hubbard, S. S., Ajo-Franklin, J., Butler-Veytia, B., Wu, Y., Peterson, J., Gasperikova, E., Geophysical imaging for investigating the distribution of induced fractures and associated amendments at the F.E. Warren Air Force Base, SERDP Conference, Washington, DC, December 2011.
214. Murakami-Wainwright, H., Sassen, D., Chen, J., Hubbard, S. S., H52C-06: Multiscale hydrogeophysical data assimilation for plume-scale subsurface characterization, American Geophysical Union Fall Meeting, San Francisco, CA, December 5-9, 2011.
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