

## **Susan S. Hubbard**

Associate Laboratory Director & Sr. Scientist  
Earth and Environmental Sciences  
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### **Professional Positions:**

- Associate Laboratory Director, Earth and Environmental Sciences Area: Staff of 480, including premier Energy Geoscience and Climate & Ecosystems Science Divisions with significant research portfolios in climate science, terrestrial ecosystem science, environmental and biological system science, fundamental geoscience, and subsurface energy geosciences. 2015-Present
  - UC Berkeley, Environmental Science, Policy and Management, Adj Professor 2015-Present
  - Director, Earth Sciences Division, Berkeley Lab, 2013-2015
  - Deputy Director for Programs, Earth Sciences Division, Berkeley Lab, 2010-2013.
  - Senior Geological Scientist, Berkeley Lab: Lead or co-lead of several large, multi-disciplinary, multi-institutional team projects, including PI of the DOE watershed function scientific focus area (SFA), 2010-Present
  - Associate Director, Berkeley Water Center, UC Berkeley, 2007-2011
  - Program Lead, Environmental Remediation and Water Resources Program, 2004-2010.
  - Group Lead, Environmental Geophysics, Berkeley Lab, 2003-present.
  - Staff Geological Scientist, Berkeley Lab. Substantially contributed the development of fields now known as hydrogeophysics and biogeophysics. Applied developed methods to improve understanding of complex subsurface functioning relevant to environmental remediation, water resources, agriculture and ecosystems, 2002-2010
  - Geological Scientist, Berkeley Lab, 1998-2002.
  - Geophysicist, ARCO Oil and Gas Co., 1990-1993.
  - Geologist, U.S. Geological Survey, Menlo Park, CA, 1985-1987.
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### **Education:**

- Ph.D., Civil and Env. Engineering, UC Berkeley, 1998
  - M.S., Geophysics, Virginia Tech
  - B.S., Geology, University of California, Santa Barbara.
  - Professional Cert, UC Davis Viticulture. 2009
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### **Advisory, Council and Editorial Positions (partial list):**

- 2015-present, Director's Council, UC Water
- 2015-present, Council member, CCST (California Council on Science and Technology)
- 2015-present, Advisory Board, IDEAS (Interoperable design of extreme scale application software)

- 2014-present, Advisory Board, Radionuclide Waste Disposal, EPSCoR Program, South Carolina
- 2014-present, Sr Advisor, DOE Advanced Simulation Capability for Environmental Management
- 2013, Helmholtz Association Review Committee
- 2012, Dept of Energy Resources Engineering Review Committee, Stanford
- 2011, Advisory Board, SmartGeo NSF IGERT, Colorado School of Mines
- 2010-2015, BERAC -DOE Biological and Environmental Research Advisory Committee
- 2010-2014, Associate Editor, JGR-Biosciences
- 2010, DOE Environmental Management Technical Advisory Committee
- 2007-2013, Co-Editor, Vadose Zone Journal
- 2007-2010, Associate Editor, Journal of Hydrology
- 2006, Forschungszentrum Julich German National Laboratory Advisory Board
- 2001-2005, Associate Editor, Water Resources Research

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#### **Awards and Recognitions (partial list):**

- 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, Fellow, Geological Society of America
- 2010, Birdsall-Dreiss Distinguished Lecturer, Hydrological Sciences GSA
- 2009, Frank Frischknecht Leadership Award, SEG Near Surface Geophysical Society
- 2009, Top Associate Editor Award, Journal of Hydrology
- 2008, 'Most Influential Article', SEG Leading Edge recognition
- 2002-2006 Founder and First Chair, AGU Hydrogeophysics Technical Committee

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#### **Service to Scientific Community & DOE (partial list):**

- 2015: Panel Lead, BRN-EM, Basic Research Needs for Environmental Management. Report of the Office of Science Workshop on Environmental Management, July 8-11, 2015.
- 2015, National Laboratory Engagement Day, Technical lead for DOE Subsurface Science, Washington DC
- 2015: UC-DOE Water-Energy Nexus Western US Workshop committee member: Designing water utilities of the future and the role of energy utilities
- 2014-present: UC Global Food Initiative (J. Napolitano initiative), LBNL lead
- 2014-present: Co-lead, National Subsurface DOE 'crosscut'. Involves DOE, 13 National Labs, Universities, industry and stakeholders to develop a program plan to enable adaptive control of subsurface fractures, reactions and flow, as needed to transform the use of subsurface resources for both energy production and energy 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, 2014
- 2012, Session Chair, Geophysical Characterization of Permafrost Systems, Fall AGU, San Francisco
- 2012, Lead Author, Technology Innovation ‘Virtual Laboratory’ Report, Response to Dr. Bill Brinkman request to DOE-BERAC (DOE/SC-0156)
- 2010, Co-author, DOE-SC “Grand Challenges for Biological and Environmental Research: A Long Term Vision” (DOE/SC-1035, 2010)
- 2010, Co-author and workshop co-lead, DOE-BER “Complex System Science for Subsurface Fate and Transport” (DOE/SC0123, 2010)
- 2010, Contributor, DOE-EM Long-Range Deep Vadose Zone Program Plan (DOE/RL-2010-89, 2011).
- 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-EM 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, presenter- DOE BES Basic Research Needs for Geosciences: Facilitating 21<sup>st</sup> Century Energy Needs
- 2002-2006, Chair, AGU Hydrogeophysics Technical Committee
- 2002, Founder, AGU Hydrogeophysics Technical Committee
- 2002-2006, US representative, Internat. 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, Hydrogeophysics Advanced Study Inst., Czech Republic
- 2000, Chair, Breakthroughs in Field Scale Bacterial Transport, Fall AGU, S.F.

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### **Invited, Keynote and Plenary Speaking Engagements (partial list)**

- Geophysical characterization of Systems in Transition, CUAHSI big data workshop, Shepardstown WV, July 2016
- Effects of Climate Change on Watershed Dynamics: Insights Gained Using Geophysical Methods, 2016 Geotech/Geoengineering Distinguished Lecture, UC Berkeley, May 6, 2016
- Geophysical Characterization of Arctic System Behavior, Plenary Speaker, Kopri Polar Science Symposium, Seoul Korea, May 2016
- Waterloo Distinguished ‘Watertalks’ lecture series Feb 2016

- Next-Generation Geophysical Characterization of Watersheds, Keynote, Water Resource Sustainability Issues on Tropical Islands Conference, Hawaii, Dec 1-3, 2015
- Quantifying Biogeochemical Responses to Hydrological Perturbations in Terrestrial Systems using Geophysical Monitoring and Inversion Schemes. Invited presentation, American Geophysical Union Fall Meeting, San Francisco, B52C-04 CA, December 18, 2015.
- Hubbard, S.S. et al., The DOE Subsurface (SubTER) Initiative: Revolutionizing Responsible use of the Subsurface for Energy Production and Storage. Invited, American Geophysical Union Fall Meeting, San Francisco, CA, December 18, 2015.
- Toward X-ray vision: remote characterization of microbially-mediated ecosystem behavior. Life sciences Division Seminar Series, Oct 2015
- European Geophysical Union Invited Speaker, Above and below ground characterization of Arctic functional zones, April 2015
- Hubbard et al., Geophysical approaches to explore effects of climate change on terrestrial system behavior, Big Data: using observations to understand hydrological processes for predicting a changing world, CUAHSI bi-annual conference, July 25-28, Shepherdstown, West Virginia
- University of Wyoming's Department of Geology and Geophysics Distinguished Lecturer Series, Terrestrial environment functional zones: identification and quantification using geophysical methods, Nov 24, 2014
- Complex soils systems 2014 conference, Invited Opening Presentation, Berkeley, Sept 3, 2014
- Jason group, 'State of Stress in the Engineered Subsurface' June 20, 2014
- US Energy Association, Research needs in Subsurface energy science, July 23, 2014, Arlington VA
- Adaptive Control of Fractures and Reactions, Shell subsurface complexity workshop, Amsterdam, Sept 2014
- Geophysical quantification of ecosystem processes across scales and system compartments, ESPM UC Berkeley seminar series, April 2014
- DO Subsurface Biogeochemistry and Terrestrial Ecosystems PI Meeting, Invited Speaker, Maryland, May 2014, Identifying ecosystem controls through joint use of above and below ground datasets
- AGU invited speaker, Characterizing Controls on Terrestrial Environment Functioning Across Scales using Geophysical Datasets, San Francisco, Dec. 2013
- Energy Biosciences Seminar Series, Berkeley, CA April 15, 2013, Advanced modeling and monitoring of microbially-mediated petroleum reservoir processes,
- Keynote Presentation, Washington Hydrology Symposium, Tacoma, WA March 2013
- Stanford Environmental fluid mechanics and hydrology colloquium, Feb 2013
- AGU 2012 Invited speaker, Advanced approaches for characterizing and exploiting micro-terroir, Invited presentation, H53F-1586 AGU, San Francisco, CA, 3-7 Dec. 2012.
- AGU 2012 invited speaker, Quantifying physicochemical heterogeneity and critical transitions that influence plume behavior using geophysical approaches and reactive

transport modeling, Abstract H33N-01, presented at 2012 Fall Meeting, AGU, San Francisco, CA, 3-7 Dec. 2012.

- Invited speaker, New Perspectives in Integrated Monitoring, Assessment and Management in the Water Sector, Water Research Horizon Conference, Berlin. 'Strategies to observe hydro-biogeochemical states and processes across scales and compartments', July 8-10, 2012
- European Geophysical Union invited speaker 2012, Quantifying and Relating Subsurface and Land-Surface Variability in Permafrost Environments using Surface Geophysical and LIDAR Datasets, Vienna, April 2012
- Battelle Chlorinated Conference Keynote platform presentation, Characterization of the Distribution of Hydraulic Fractures and introduced Amendments using Geophysical Approaches, May 23-27, 2012, Monterey CA
- DOE-BERAC invited presentation, Geophysical Signatures of Subsurface Microbially Mediated Processes: Toward Quantifying In-Situ Ecosystem Functioning, 2011
- New Frontiers in Engineering Science for Sustainability, Texas A&M NSF Water Scholar Seminar, Invited, Nov 2011
- Univ Nevada Las Vegas seminar speaker, Feb 2, 2011
- Duke University distinguished seminar, Feb 23, 2011
- Advanced DOE Simulation Capability Workshop, ASCEM overview invited Presentation, Wash DC, Jan 2011
- Rensselaer University Invited seminar, May 4, 2011
- NSF Water scholar seminar series keynote, Texas A&M, College Station, November 2011
- Univ of Wisconsin, Madison invited seminar, Sept 2010
- Argonne National Laboratory distinguished speaker, Sept 2010
- Northern Illinois University, Dekalb, seminar, Sept 2010
- Michigan state, East Lansing, Oct 2010
- Grand Valley University, Michigan, Oct 2010
- Groundwater Research Association distinguished speaker, Sacramento, August 2010
- Inland Geological Society invited speaker, Riverside, CA, July 2010
- Keynote, Computational Methods in Water Resources Keynote Barcelona June 2010
- UC Davis Hydrological Seminar Series, June 2010
- National Groundwater Summit Keynote, Denver, CO April 2010
- UC Berkeley Civil and Environmental Eng. Seminar Series, April 2010
- DOE ERSP Annual PI meeting Invited speaker, March, Wash DC 2010
- Distinguished Environmental lecture, Florida International University, Feb 2010
- University of Florida Spring Seminar Series, Feb. 2010
- Delaware Environmental Institute Distinguished Lecture, March 5, 2010
- UMass Environmental lecture Series, March 9, 2010
- K. Douglas Nelson Lecture Series, Syracuse University, March 11, 2010
- Semi-Annual Dawdy Invited Lecture, Department of Geos., San Francisco SU Sept 2009.
- Oregon State University Geoscience Seminar Series, Jan 21, 2010
- Portland Environmental Geology Seminar Series Jan 2010

- New Mexico Tech Hydrology Seminar, Dec 10, 2009
  - LANL's Frontiers in Geosciences' Distinguished Colloquium, Dec 2009
  - AGU Invited speaker, Fall 2009 San Francisco, Dec 15, 2009
  - AGU invited speaker, Spring 2009, Toronto Canada
  - Stanford Environmental and Fluid Mechanics Seminar Series, Invited Seminar, 11/08
  - Association for Env. Health and Sciences Invited platform speaker, San Diego, 303/09
  - U.S.G.S. Water Research Division Seminar Series, 09/2008
  - Gordon Conference Invited Speaker, Flow in Porous Media, Oxford England, 07/08
  - NRC Workshop on Uncertainty, sensitivity and parameter estimation for multimedia environmental modeling, 7/07
  - AGU invited speaker, Fall Meeting 2007, San Francisco
  - UC Davis Engineering Seminar Series, 5/07
  - AGU invited speaker, Fall Meeting 2006, San Francisco
  - Geological Society of America invited speaker, Philadelphia, 11/06
  - Groundwater Resources of California, Long Beach, 10/06
  - Oregon State University 'World-Class Women in Water' seminar series, 05/06
  - UCB Seismological Laboratory Spring 06 Seminar Series, 3/06
  - Platform speaker, Computational Methods in Water Resources (CMWRC), Copenhagen, 06/06
  - Invited Keynote, IWAGPR Conference, Delft, Netherlands, 5/05
  - UC Merced Environmental Seminar Series 9/04
  - PGE Distinguished Shell Speaker, UT Austin, 11/04
  - Waste Management Conference Keynote, 2004
  - AGU 'Union Frontier' Lecture, Spring Meeting 2005, Montreal
  - Keynote DOE Characterization and Monitoring Workshop, Salt Lake City, 2004
  - Univ of Buffalo, UB Geology Pegrem Speaker Series 3/04
  - University of Kansas at Lawrence, Seminar Speaker, 4/04
  - USGS Water Resources Seminar, Menlo Park, CA 5/04
  - Heiland Distinguished Lecturer, Colorado School of Mines, Golden, Co, 2/03
  - Vadose zone characterization Series, University of Arizona at Tucson, 3/03
  - NRC-180 Precision Agriculture Conference, UC Davis; 2/03
  - AGU invited speaker, Spring Meeting 2002, Washington DC.
  - Geological Society of America invited speaker, Annual Meeting 2001, Boston
  - UC Berkeley Environmental Engineering Series, 11/01
  - AGU invited speaker Fall Meeting 2001, San Francisco
  - IAHS Kovacs Colloquium Speaker: Groundwater Resources at Risk, Paris, 06/02
  - AGU invited speaker, Spring Meeting 2001
  - Boise State Geology Seminar Series, Aquifer characterization, 11/00
  - UC Davis Hydrology Seminar Series, 12/00
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**Publications** (Partial; full list and citation metrics provided at <http://esd1.lbl.gov/about/staff/susanhubbard/publications.html>)

**Journal Papers:**

1. Tokunaga, T.K, Y. Kim, K. H. Williams, W. Dong, J. Wan, M. Conrad, M. Bill, M. J. Robbins, C. Hobson, B. Faybishenko, J. N. Christensen, R. D. Dayvault, B. Potter, P. E. Long, S. S. Hubbard, Vadose Zone Borehole Instrumentation for Monitoring Water, Solute, and Gas Fluxes: Installations in a cobbly floodplain and initial results, doi:10.2136/vzj2016.02.0014. *Zone Journal*, 2016
2. Long, P.E., Williams, K.H., Hubbard, S.S., and Banfield, J.F., Microbial Metagenomics Reveals Climate-Relevant Subsurface Biogeochemical Processes: Trends in Microbiology, doi: 10.1016/j.tim.2016.04.006, 2016
3. Faybishenko, B., S. S. Hubbard, E. Brodie, P. Nico, F. Molz, A. Hunt, and Y. Pachepsky, Preface to the Special Issue of on Soil as Complex Systems, *Vadose Zone Journal*, 15(2), doi:10.2136/vzj2016.01.0005, 2016.
4. Newcomer, M. E., S. S. Hubbard, J. H. Fleckenstein, U. Maier, C. Schmidt, M. Thullner, C. Ulrich, N. Flipo, and Y. Rubin, Simulating bioclogging effects on dynamic riverbed permeability and infiltration, *Water Resources Research*, doi:10.1002/2015wr018351, 2016.
5. Tran, A. P., B. Dafflon, and S. S. Hubbard, iMatTOUGH: An open-source Matlab-based graphical user interface for pre- and post-processing of TOUGH2 and iTOUGH2 models, *Computers & Geosciences*, 89, 132–143, doi:10.1016/j.cageo.2016.02.006, 2016
6. Wainwright, H. M., A. F. Orozco, M. Bucker, B. Dafflon, J. Chen, S. S. Hubbard, and K. H. Williams, Hierarchical Bayesian method for mapping biogeochemical hot spots using induced polarization imaging, *Water Resources Research*, 52(1), 533–551, doi:10.1002/2015wr017763, 2016
7. Dafflon, B., S. S. Hubbard, C. Ulrich, J. E. Peterson, Y. Wu, H. M. Wainwright, and T. J. Kneafsey, Geophysical estimation of shallow permafrost distribution and properties in an ice-wedge polygon-dominated Arctic tundra region, *Geophysics*, 81(1), WA247–WA263, doi:10.1190/geo2015-0175.1, 2016.
8. Chen, J. S., S. S. Hubbard, K. H. Williams, and D. L. Ficklin, Estimating groundwater dynamics at a Colorado River floodplain site using historical hydrological data and climate information, *Water Resources Research*, 52(3), 1881–1898, doi:10.1002/2015wr017777, 2016.
9. Commer, M., J. Doetsch, B. Dafflon, Y. Wu, T. M. Daley, and S. S. Hubbard, Time-lapse 3-D electrical resistance tomography inversion for crosswell monitoring of dissolved and supercritical CO<sub>2</sub> flow at two field sites: Escatawpa and Cranfield, Mississippi, USA, *International Journal of Greenhouse Gas Control*, 49, 297–311, doi:10.1016/j.ijggc.2016.03.020, 2016.
10. Tran, Anh Phuong, Dafflon, Baptiste, Kowalsky, Michael B., Long, Philip, Tokunaga, Tetsu K., Williams, Kenneth H., and Hubbard, S. Susan. Quantifying Shallow Subsurface Water and Heat Dynamics using Coupled Hydrological-Thermal-Geophysical Inversion, *Hydrology and Earth System Sciences Discussion*. doi:10.5194/hess-2016-175, 2016

11. Ulrich, C., S. S. Hubbard, J. Florsheim, D. Rosenberry, S. Borglin, M. Trotta, and D. Seymour, Riverbed Clogging Associated with a California Riverbank Filtration System: An Assessment of Mechanisms and Monitoring Approaches, *Journal of Hydrology*, 529, 1740–1753, doi:10.1016/j.jhydrol.2015.08.012, 2015.
12. Öktem, R., B. Dafflon, J. E. Peterson, and S. S. Hubbard, Monitoring Arctic landscape variation by pole and kite mounted cameras, *Image Processing: Machine Vision Applications VIII, Proc. of SPIE-IS&T Electronic Imaging*, SPIE, 9405,0940505, doi:10.1117/12.2083403, 2015
13. Newman, B.D., Throckmorton, H.M., Graham, D.E., Gu, G., Hubbard, S.S., Liang, L., Wu, Y., Heikoop, J.M., Herndon, E.M., Phelps, T.J., Wilson, C.J., and Wullshleger, S.D., Microtopographic and depth controls on active layer chemistry in arctic polygonal groupnd. DOI: 10.1002/2014GLo62804, 2015
14. Binley, A., Hubbard, S.S., Huisman, J., Revil, A., Robinson, D., Singha, K., and Slater, L., The emergence of hydrogeophysics for improved understanding of subsurface processes over multiple scales. DOI: 10.1002/20015WR017016, 2015
15. Berryman, J. G., T. H. Kwon, S. Dou, J. B. Ajo-Franklin, and S. S. Hubbard. Analysis of laboratory data on ultrasonic monitoring of permeability reduction due to biopolymer formation in unconsolidated granular media, *Geophysical Prospecting*, 64(2), 445–455, doi:10.1111/1365-2478.12295, 2015.
16. Wainwright, H., J. Chen, D. Sassen, S.S. Hubbard, Bayesian Hierarchical Approach and Geophysical Datasets for Estimation of Reactive Facies over Plume Scales, *Water Resources Research*, DOI: 10.1002/2013WR013842, 2014.
17. Wu, Y., Surasani, V.K., Li, L., Hubbard, S.S., Geophysical monitoring and reactive transport simulations of bioclogging processes induced by *Leuconostoc mesenteroides*, *Geophysics*, Vol. 79, No. 1. doi: 10.1190/GEOP2013-0121.1, 2014
18. Gangodagamage, C., J. C. Rowland, S. S. Hubbard, S. P. Brumby, A. K. Liljedahl, H. Wainwright, C. J. Wilson, G. L. Altmann, B. Dafflon, J. Peterson, C. Ulrich, C. E. Tweedie, and S. D. Wullschleger, Extrapolating active layer thickness measurements across Arctic polygonal terrain using LiDAR and NDVI data sets, *Water Resources Research*, 1944-7973, doi:10.1002/2013WR014283, 2014
19. Dafflon, B., Hubbard, S.S., Ulrich, C., Peterson, J., Electrical conductivity imaging of active layer and permafrost in an Arctic ecosystem, through advanced inversion of electromagnetic induction data, doi:10.2136/vzj2012.0161, *Vadose Zone Journal*, 2013
20. Surasani, V.K., Li, L., Ajo-Franklin, J., Hubbard, C.G., Hubbard, S.S., Wu, Y., Bioclogging and Permeability Alteration by *L. mesenteroides* in a Sandstone Reservoir: A Reactive Transport Modeling Study, *Energy and Fuels*, doi: 10.1021/ef401446f, 2013
21. Revil et al., Geochemical and geophysical responses during the infiltration of fresh water into the contaminated saprolite of the Oak Ridge Integrated Field Research Challenge site, Tennessee, *Water Resources Research*, 49(8): 4952-4970, AUG 2013, DOI: 10.1002/wrcr.20380
22. Vilcáez, J., Li, L., Hubbard, S.S., A new model for the biodegradation kinetics of oil droplets: Application to the Deepwater Horizon oil spill in the Gulf of Mexico, *Geochemical Transactions*, 2013 Oct 20;14(1):4, doi: 10.1186/1467-4866-14-4

23. Chen, J., S. Hubbard and K. Williams, Data-driven approach to identify field-scale biogeochemical transitions using geochemical and geophysical data and hidden Markov models: development and application at a uranium-contaminated aquifer, *Water Resources Research*, 2013
24. Dafflon, B., Hubbard, S.S., Ulrich, C., Peterson, J., Electrical conductivity imaging of active layer and permafrost in an Arctic ecosystem, through advanced inversion of electromagnetic induction data, doi:10.2136/vzj2012.0161, *Vadose Zone Journal*, 2013
25. Bea, S., Wainwright, H., Spycher, N., Faybishenko, B., Hubbard, S.S., Denham, M., Identifying key controls on the behavior of an acidic-U(VI) plume in the Savannah River Site using reactive transport modeling, doi:10.1016/j.conhyd.2013.04.005, 2013
26. Truex, M.J., Johnson, T.C., Strickland, C.E, Peterson, J.E. and Hubbard, S.S., Monitoring Vadose Zone Desiccation with Geophysical Methods, *Vadose Zone Journal*, 2013
27. Vilcáez, J., Li. L., Hubbard, S.S. 2012. Reactive Transport Modeling of Induced Selective plugging by *L. Mesenteroides* in Carbonate Formations, *Geomicrobiology Journal*, DOI:10.1080/01490451.2013.774074
28. Revil, A., Skold, M., Hubbard, S.S., Wu, Y., Watson, D., Karaoulis, M., Petrophysical properties of saprolites from the Oak Ridge Integrated Field Research Challenge site, Tennessee, *Geophysics* 78(1), p d21-d40, DOI 10.1190/GEO2012-0176.1.
29. Trautz, R.C., Pugh, J.D., Varadharajan, C., Zheng, L., Bianchi, M., Nico, Peter, Spycher, N., Newell, D.L., Esposito, R., Wu, Y., Dafflon, B., Hubbard, S.S., Birkholzer, Jens., Effect of dissolved CO<sub>2</sub> on a shallow groundwater system: A controlled release field experiment, dx.doi.org/10.1021/es301280t | *Environ. Sci. Technol.* 2013, 47, 298–305, 2013.
30. Wu, Y, S.S. Hubbard, C. Ulrich, S. Wullschleger Remote Quantification of Freeze Thaw Transition Using Complex Resistivity Method, doi:10.2136/vzj2012.0062, *Vadose zone Journal*, 2012.
31. Hubbard, S.S., C. Gangodagamage, B. Dafflon, H. Wainwright, J. E. Peterson, A. Gusmeroli, C. Ulrich, Y. Wu, C. Wilson, J. Rowland, C. Tweedie and S.D. Wullschleger, Quantifying and relating land-surface and subsurface variability in permafrost environments using LiDAR and surface geophysical datasets, *Hydrogeology*, 2013
32. Gasperikova, E., Hubbard, S.S., Watson, D., Baker, G., Peterson, J., Kowalsky, M., Smith, M., Brooks, S., Long-term electrical resistivity monitoring of recharge-induced contaminant plume behavior, *Journal of Contaminant Hydrology*, V 142-143, p. 33-49, 2012
33. Dafflon, B., Wu, Y., Hubbard, S.S., Birkholzer, J., Thomas, D., Pugh, J., Peterson, J., Trautz, B., Monitoring CO<sub>2</sub> transition and associated geochemical transformations in a shallow groundwater system using complex electrical methods, *Environmental Science and Technology*, DOI 0.1021/es301260e, 2012
34. Meyer, J., E. W. Bethel, S. S. Hubbard, J. L. Horsman, H. Krishnan, A. Romosana, P. Weber, E. Keating, T. C. Johnson, I. Gorton, L. Monroe, P. Moore, G. Flach, D. Schep, Visual Data Analysis and Exploration as an Integral Part of Environmental Management, *IEEE Transactions on Visualization and Computer Graphics*, October 2012

35. Mingliang, L., Yang, D., Chen, J., Hubbard, S.S., Calibration of a distributed flood forecasting model with input uncertainty using a Bayesian framework, *Water Resources Research*, Vol. 48, W08510, doi: 10.1029/2010WR010062, 2012.
36. Jadoon, K., L. Weihermüller, B. Scharnagl, M. B. Kowalsky, M. Bechtold, S.S. Hubbard, H. Vereecken, and S. Lambot, Full-waveform hydrogeophysical inversion of time-lapse ground-penetrating radar data to estimate the unsaturated soil hydraulic properties, doi:10.2136/vzj2011.0177, *Vadose Zone Journal*, 2011.
37. Wan, J., Tokunaga, T., Dong, W., Denham, M., Hubbard, S.S., Persistent source influences on the trailing edge of a groundwater plume, and natural attenuation timeframes: The F-Area Savannah River Site, *Environmental Science and Technology*, web released, dx.doi.org/10.1021/es204265q, 2012.
38. Li, M., D. Yang, J. Chen, and S. S. Hubbard, Calibration of a Distributed Flood Forecasting Model with Input Uncertainty Using a Bayesian Framework, VOL. 48, W08510, 20 PP., doi:10.1029/2010WR010062, *Water Resources Research*, 2012
39. Wu, Y., S.S. Hubbard, D. Wellman, Geophysical Monitoring of Foam Based Remediation Methods for Metals and Radionuclides in the Deep Vadose Zone, *Vadose Zone Journal*, DOI 10.2136/vzj2011.0160, 2011
40. Kowalsky, M., S. Finsterle, M. Commer, K. H. Williams, C. Murray, D. Newcomer, A. Englert, C. I. Steefel, S. S. Hubbard, On parameterization of the inverse problem for estimating aquifer properties using tracer data, *Water Resources Research*, doi:10.1029/2011WR011203, 2012.
41. Sassen, D., S. S. Hubbard, S. Bea, N. Spycher, J. Chen and M. Denham, Reactive facies: An approach for parameterizing field-scale reactive transport models using geophysical methods, *Water Resources Research*, 2012
42. Wu, Y. J.B. Ajo-Franklin, N. Spycher, S. S. Hubbard, G. Zhang, K. H. Williams, J. Taylor, Y. Fujita, R. Smith, Geophysical Monitoring and Reactive Transport Modeling of Ureolytically Driven Calcium Carbonate Precipitation, *Geochem Trans.* 2011; 12: 7, 2011
43. Chen, J., S. S. Hubbard, K. Williams, A. Flores Orozco, and A. Kemna, Estimating Spatio-temporal Distribution of Geochemical Parameters Associated with Biostimulation Using Spectral Induced Polarization Data and Hierarchical Bayesian Models, *Water Resources Research*, v. 48, W05555, 25p, 2012
44. Kowalsky, M., S. Finsterle, M. Commer, K. H. Williams, C. Murray, D. Newcomer, A. Englert, C. I. Steefel, S. S. Hubbard, On parameterization of the inverse problem for estimating aquifer properties using tracer data, *Water Resources Research*, doi:10.1029/2011WR011203, 2012.
45. Li, L., N. Gawande, M. B. Kowalsky, C.I. Steefel, S. S. Hubbard, Physiochemical heterogeneity controls on Uranium Bioreduction Rates at the Field scale, *DOE: 10.1021/es201111y*, *Environ. Sci. Technol.*, 2011, 45 (23), pp 9959–9966, 10.1021/es201111y, 2011
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3. Tran, A.P., Dafflon, B., Hubbard, S.S., Bisht, G., Peterson, J., Ulrich, C., Romanovsky, V., Kneafsey, T. Wu, Y., (2015) 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.
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5. Wu, Y., Dafflon, B., and Hubbard, S.S., (2015) Geophysical Imaging of Root Architecture and Root-soil Interaction. American Geophysical Union Fall Meeting, San Francisco, CA, December 18, 2015.
6. Ulrich, C., Dafflon, B., Wu, Y., Kneafsey, T., Lopez, R., Peterson, J., and Hubbard, S.S., (2015) 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.
7. Wainright, H., Liljedal, A., Peterson, J., Dafflon, B., Ulrich, C., Gusmeroli, A., and Hubbard, S.S., (2015) 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.
8. Hubbard, S.S., Dafflon, B., Tran, A.P., Chen, J., and Wainwright, H., (2015) 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.
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- Revolutionizing Responsible use of the Subsurface for Energy Production and Storage. American Geophysical Union Fall Meeting, San Francisco, CA, December 18, 2015.
12. Hubbard, S.S et al, Arctic ecosystem functional zones: identification and quantification using an above and below ground monitoring strategy, Invited speaker, EGU, Vienna, April 2015
  13. Arora, B., Dwivedi, D., Hubbard, S.S., Steefel, C.I., and Williams, K.H., (2015), Towards improved characterization of geochemical hot moments: A combined wavelet-entropy approach, SIAM Conference on Mathematical and Computational Issues in the Geosciences, Stanford, June 29 – July 2, 201
  14. 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
  15. Christensen, J.N., Brown, S.T., Basu, A., Schilling, K., Conrad, M.E., Bill, M., Williams, K.H. Johnson, T.M., Shiel, A.E., Yang, L., Dong, W., Tokunaga, T.K., Wan, J., Yabusaki, S.B., Maher, K., Weaver, K., Long, P.E., Hubbard, S.S., Chemical and isotopic dynamics of Spring water table rise at Rifle, CO.
  16. 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
  17. 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 CO<sub>2</sub> to Distinguish Microbial Production of CO<sub>2</sub> in Unsaturated Zone Sediments in Hydrogeochemical Models, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.
  18. Dafflon, B., Hubbard ,S.S., Peterson, J. Ulrich, C., Oktem, R., Curtis, J.B., Tran, A.P., Wu, Y., Cable, W., and Romanovsky, C11C-0379: V.E., 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.
  19. Dafflon, B., Tran, A.P., Wainwright , H.M., Flores-Orozco , A., Bücken, M., Williams , K.H., Kowalsky , M., Peterson, J., Tokunaga, T.K., Chen, J., Faybishenko, B., Long, P.E., and Hubbard, S.S., Geophysical-based Approaches for Quantifying the Spatiotemporal Distribution of Physicochemical and Hydraulic Properties that Influence the Biogeochemical Functioning of the Rifle CO Floodplain Rifle, Colorado, DOE-BER PI meeting, May 2015.
  20. Dou, S., Dreger, D.S., Peterson, J., Ulrich, C., Dafflon, B., Hubbard ,S.S., and Jonathan Blair Ajo Franklin, 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.
  21. 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.

22. Hinzman, L., Atchley, A.L., Bolton, W.R., Busey, R., Dafflon, B., Gusmeroli, A., Hubbard, S.S., Ikawa, H., Liljedahl, A., Peterson, J., Ulich, C., Wainwright, H., and Wilson, C., Multi-scale, multi-approach measurements of distributed snowpack on the North Slope of Alaska, Glaciological Issues Conference, Japan, 2014
23. 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.
24. Hubbard et al., Genomes to Watershed SFA, Goldschmidt, Sacto CA, June 2014
25. Hubbard, S.S., Wainwright, H.M., Dafflon, B., Jansson, J., Kneafsey, T., Tas, N., Wu, Y., Torn, M., Geophysical identification and characterization of permafrost soil functional zones: a method for scaling process interactions, Soil Complexity workshop, Berkeley, Sept 2014.
26. Long, P.E., Hubbard, S.S., Banfield, J., Beller, H.R., Brodie, E., Nico, P.S., Steefel, C., Tokunaga, T.K., Williams, K.H., Agarwal, D., Predictive understanding of subsurface biogeochemical functioning: using genomes to inform watershed-scale models, Geological Society of America, Vancouver BC, 2014
27. Newcomer, M.E., Hubbard, S.S., Fleckenstein, J.H., Schmidt, C., Maier, U., Thullner, M., Ulrich, C., and Rubin, Y., B31E-0055: Meander scale feedbacks between bioclogging and infiltration in losing river systems, American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.
28. Otkem, R., Dafflon, B., Peterson, J.E., Hubbard, S.S., Monitoring arctic landscape variation by pole and kite-mounted cameras, Electronic Imaging, 2014.
29. Steefel, C.I., Brodie, E.L., Molins, S., Yabusaki, S., King, E., Arora, B., Spycher, N., Karaoz, U., Maxwell, R.M., Biesman, J., Bouskill, N., Trebotich, D., Navarre-Sitchler, A., Hubbard, S.S., The GEWaSC Framework: Multiscale Modeling of Coupled Biogeochemical, Microbiological, and Hydrological Processes, Goldschmidt, 2014
30. Tas, N., Smith, L., Wu, Y., Ulrich, C., Tringe, S.G., Torn, M.S., and Hubbard, S.S., Hydrology defines microbial communities and functions across polygon types at the Next Generation Ecosystem Experiment (NGEE)-Arctic Barrow site, Ecological Society of America, 2015
31. Tas, N., Wang, S., Smith, L., Wu, Y., Ulrich, C., Tringe, S., Torn, M., Hubbard, S.S. and Jansson, J., Microbial communities and functions across polygon features at the Next Generation Ecosystem Experiment (NGEE)-Arctic Barrow site, FEMS, Netherlands, 2015
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33. 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.
34. 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.D., Long, P.E., Hubbard, S.S., Water and carbon fluxes in a semi-arid region floodplain: Multiple approaches to constrain estimates of seasonal- and depth dependent fluxes at Rifle, Colorado, Fall AGU

35. Torn, M., Pries, C., Smith, L., Brodie, E., Hubbard, S.S., Nico, P., Riley, R., Tang, J., Tas, N., Wainwright, H., Zhu, B., Climate warming and Soil Carbon Cycling: Emergent responses across time and space, invited, ESA, Baltimore, Maryland, August 9-14, 2015
36. 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.
- Ulrich, C., Hubbard ,S.S., Peterson, J., Blom, K., Black,W., Delaney, C., and Mendoza, J., NS21A-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.
37. Versteeg, R.J., Bianchi, M., and 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.
38. Wainwright, H.M., S. Molins, J.A. Davis, B. Arora, B. Faybishenko, H. Krishnan, Hubbard, S.S., G. Flach, M. Denham and C. Eddy-Dilek, J.D. Moulton, K. Lipnikov, C. Gable, T. Miller and M. Freshley, Using ASCEM Modeling and Visualization to Inform Stakeholders of Contaminant Plume Evolution and Remediation Efficacy at F-Basin Savannah River, SC, Waste Management, Phoenix, 2014
39. 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., 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.
40. Wainwright, H.M., Flores-Orozco, A., Dafflon, B., Williams, K.H., and Hubbard, S.S., Reactive Transport Modeling Parameterization using Geophysical Datasets, SSSA Soil Complexity Workshop, Berkeley, CA Sept 2014
41. Wainwright, H.M., Molins Rafa, S., Davis, J., Arora, B., Faybishenko, B., Hubbard, S.S. Flach, G., Denham, M., Eddy-Dilek, C., Moulton, D., Lipnikov, K., Gable, C., Miller, T.A., and Freshley, M., Optimizing Monitoring and Remediation Strategies at the Savannah River Site F Area Using the Advanced Simulation Capability for Environmental Management (ASCEN), SSSA Soil Complexity Workshop, Berkeley, Sept 2014
42. Wan,J., Dong, W., Kim, Y., Tokunaga, T.K., Bil4,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.
43. Wu, Y., Kneafsey, T.J., Tas, N., Bill, M., Ulrich, C., and Hubbard ,S.S., 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.
44. Hubbard S.S., Dafflon B., Wainwright H., Tokunaga T.K., Ulrich C., Jansson J., Tidenorn M.S., Williams K.H., Characterizing controls on terrestrial environment functioning across scales using geophysical datasets, Invited presentation, Abstract H41L-04, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
45. 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.S., Prediction of the

- biogeochemical roles of uncultivated bacteria and archaea in the subsurface, Goldschmidt, June 2014, Sacramento, CA.
46. 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.
  47. 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.
  48. 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, June 2014, Sacramento, CA.
  49. 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.
  50. 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, June 24-26, 2014, Savannah GA.
  51. 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.
  52. 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 CO<sub>2</sub> Leakage into Drinking Water Aquifers: Lessons Learned from a Controlled CO<sub>2</sub> Release Field Test, GHGt12 Austin, 2014.
  53. Hubbard, S.S., Agarwal, A., Banfield, J., Beller, H., Brodie, E., long, P., nico, P., steefel, S., tokunaga, T., williams, K., Genome-to-Watershed Predictive Understanding of Terrestrial Biogeochemical Functioning: 'Sustainable Systems 2.0', Goldschmidt, June 2014, Sacramento, CA.
  54. 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.
  55. 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, September 3-5, 2014. Berkeley, California.
  56. 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.

57. 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, June 2014, Sacramento, CA.
58. 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.
59. Agarwal, D., Pullman, S., Voytek, J., Pastorello, G., Papale, D., Biraud, S., Hubbard, S.S., Torn, M., Enabling Mobile Data and Metadata Collection and Submission in Support of AmeriFlux and Ngee Data Collection and Access, Abstract IN33B-1536, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
60. 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, Abstract B43B-0477, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
61. Chakraborty, R., Pettenato, A., Tas, N., Hubbard, S.S., Jansson, J., Isolation and characterization of novel microorganisms from deep cores collected at the Next Generation Ecosystem Experiment (NGEE)-Arctic site in Barrow, Alaska, Abstract B33G-0561, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
62. Commer, M., Kowalsky, M. Dafflon, B., Wu, Y., Hubbard, S.S., Strategies for improving the resolution of electrical and electromagnetic geophysical measurements for three-dimensional inverse modeling of CO2 movement, Abstract NS33A-1683, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
63. Dafflon B., Hubbard S.S., Ulrich C., Peterson J.E., Wu Y., Wainwright H., Gangodagamage C., Kholodov A.L., Kneafsey T., Quantifying Arctic terrestrial environment behaviors using geophysical, point-scale and remote sensing data, Abstract C43A-0664, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
64. 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.
65. 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, May 14-15, 2013, Potomac, MD.
66. 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.
67. 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, October 27-30, 2013, Denver CO.
68. Florsheim, J.L., Ulrich, C., Hubbard, S.S., Borglin, S., Rosenberry, D.O., Geomorphic field experiment to quantify grain size and biotic influence on riverbed sedimentation dynamics in a

- dry-season reservoir, Russian River, CA, Abstract EP33A-0873, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
69. 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., Spatial and Spectral Characterization, Mapping, and 3D Reconstructing of Ice-wedge Polygons Using High Resolution LiDAR Data, Abstract B51H-0402, AGU, San Francisco, CA, December 9-13, 2013.
  70. Hinzman, L., Wulschleger, S., Hubbard, S.S., Graham, D., Wilson, C., Torn, M., Norby, R., Rogers, A., and the entire NGEE-Arctic Team, Observation Platforms and Data Streams of the Arctic Next Generation Ecosystem Experiment (NGEE-Arctic), Abstract C31B-0649, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
  71. Jansson, J., Tas, N., Wu, Y., Ulrich, U., Kneafsey, T., Torn, M., Hubbard, S.S., Chakraborty, R., Graham, D., Wulschleger, S., Metagenomics reveals microbial community composition and function with depth in Arctic permafrost cores, Abstract B32C-04, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
  72. 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., Improved Climate Prediction through a System Level Understanding of Arctic Terrestrial Ecosystems: Next Generation Ecosystem Experiments (NGEE-Arctic), Abstract C33C-07, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
  73. Newcomer, M., Hubbard, S.S., Fleckenstein, J., Schmidt, C., Maier, U., Rubin, Y., Dynamic Permeability and Clogging Processes of Riverbank Filtration Systems, Abstract H24A-07, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
  74. 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 Montana, Sept 8-12 2013.
  75. Tas, N., Hubbard, S.S., Jansson, J., Isolation and characterization of anaerobic, fermentative and respiratory microbes from permafrost soil. Romy Chakraborty, Angelica Pettenato. Polar and Alpine Microbiology, Big Sky Montana, Sept 8-12, 2013,
  76. 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., Organic carbon inventory and vertical flux through the vadose zone into groundwater at the Rifle, Colorado River floodplain site, Abstract B23C-0568, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
  77. Ulrich, C., Hubbard, S.S., Peterson, J., Delaney, C., Blaum, K., and Black, W., Geophysical Assessment of the Control of a Jetty on a Barrier Beach and Estuary System, Abstract H13A-1308, American Geophysical Union Fall Meeting, San Francisco, CA, December 9-13, 2013.
  78. Hubbard, S.S., DOE Environmental Monitoring relevant to Fukushima Disaster (Invited talk), Japan/US Fukushima Daiichi Meeting, July 17-18, Tokyo, Japan.
  79. 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., Characterizing subsurface controls on the Arctic ecosystem carbon cycling across scales using geophysical, in-situ and remote sensing datasets, Abstract C53C-06, AGU Fall Meeting, San Francisco, CA, December 2013.

80. Wu, Y., Kneafsey, T., Nakagawa, S., Borglin, S., Cook, P., Torn, M., Jansson, J., Hubbard, S.S., Freeze-thaw Laboratory Column Experiments using Arctic Permafrost Cores: Exploring Controls of Subsurface Heterogeneity on Greenhouse Gas Release, Abstract B14E-07, AGU Fall Meeting, San Francisco, CA, December 2013.
81. Bouskill, N., Li, L., Cheng, Y., Hubbard, S.S., Towards an understanding of oil reservoir souring through microbial trait-based modeling Developing trait-based modeling approaches to determine microbial community dynamics and inform reactive transport models, London Reservoir Microbiology Conference, 2013.
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