

John E Peterson

Lawrence Berkeley National Laboratory
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EDUCATION

- Ph.D. Geophysics, UC Berkeley. Dissertation: ‘The Application of Algebraic Reconstruction Techniques to Geophysical Problems’
B.S. Geophysics, University of California, Berkeley.

PROFESSIONAL POSITIONS

- 2000- Principal Scientific Engineer, LBNL
1988-2000 Staff Scientist, Lawrence Berkeley National Laboratory, CA.
1986-1988 Post-Doc (Geophysicist), Lawrence Berkeley National Laboratory, CA.
1985 Geophysicist, Chevron Oilfield Research Company

RESEARCH and EXPERIENCE

- Development of geophysical inversion methodologies, with focus on wave-based methods.
- Acquisition, pre-processing, and cataloging of a variety of hydrological, geological, geophysical, and geochemical datasets common to earth science investigations.
- Development of automatic web-based data manipulation and visualization tools
- Development of algorithms for conversions of formats and coordinate systems;
- Programming languages: C, C++, Fortran, Javascript, HTML, Perl, PHP.

SELECTED PUBLICATIONS (>80 publications)

1. Ajo-Franklin, J.B., **Peterson, J.**, Doetsch, J., and T.M. Daley (2013), High-resolution characterization of a CO₂ plume using crosswell seismic tomography: Cranfield, MS. *International Journal of Greenhouse Gas Control*, 18, 497-509; DOI:10.1016/j.ijggc.2012.12.018.
2. Dafflon, B., Y. Wu, S.S. Hubbard, J.T. Birkholzer, T.M. Daley, J.D. Pugh, J.E. Peterson, and R.C. Trautz (2013), Monitoring CO₂ intrusion and associated geochemical transformations in a shallow groundwater system using complex electrical methods. *Environmental Science & Technology*, 47 (1), 314–321; DOI: 10.1021/es301260e. LBNL-5608E.
3. Dafflon, B., S.S. Hubbard, C. Ulrich, and J.E. Peterson (2013), Electrical conductivity imaging of active layer and permafrost in an Arctic ecosystem, through advanced inversion of electromagnetic induction data. *Vadose Zone Journal*, 12 (4), DOI: 10.2136/vzj2012.0161.
4. 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. Wulschleger (2013), Quantifying and relating land-surface and subsurface variability in permafrost environments using LiDAR and surface geophysical datasets. *Hydrogeology Journal*, 21 (1), 149–169; DOI: 10.1007/s10040-012-0939-y.
5. 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. Wulschleger (2014), Extrapolating active layer thickness measurements across Arctic polygonal terrain using LiDAR and NDVI data sets, *Water Resources Research*, 1944-7973, doi:10.1002/2013WR014283.
6. 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, June 2013, *Vadose Zone Journal*.

7. Truex, M.J., T.C. Johnson, C.E. Strickland, J.E. Peterson, and S.S. Hubbard (2013), Monitoring vadose zone desiccation with geophysical methods. *Vadose Zone Journal*, 12 (2), DOI: 10.2136/vzj2012.0147.
8. Gasperikova, E., S.S. Hubbard, D.B. Watson, G.S. Baker, J.E. Peterson, M.B. Kowalsky, M. Smith, and S. Brooks (2012), Long-term electrical resistivity monitoring of recharge-induced contaminant plume behavior. *Journal of Contaminant Hydrology*, DOI: 10.1016/j.jconhyd.2012.09.007.
9. Hubbard, S.S., K. Williams, M. Conrad, B. Faybishenko, **J. Peterson**, J. Chen, P. Long and T. Hazen, Geophysical monitoring of hydrological and biogeochemical transformations associated with Cr(VI) Biostimulation, *Environmental Science and Technology*, DOI 10.1021/es071702s, 2008.
10. Birkholzer, J., N. Halecky, S.W. Webb, J. Peterson, and G.S. Bodvarsson, A modeling study evaluating the thermal hydrological conditions in and near waste emplacement at Yucca Mountain. LBNL-61359. *Nuclear Technology*, 163 (1), 147–164, 2008.
11. Majer, E.L., **J. Peterson** The impact of injection on seismicity at The Geysers, California Geothermal Field, *International Journal of Rock Mechanics and Mining Sciences*, 44, pp1079-1090, 2007.
12. Chen, J., S. Hubbard, **J. Peterson**, K. Williams, M. Fienen, P.Jardine, and D. Watson Development of a joint hydrogeophysical inversion approach and application to a contaminated fractured aquifer, *Water Resour. Res.*, 42, W06425, doi:10.1029/2005WR004694, 2006
13. Hubbard, S., K. Williams, M.E. Conrad, B. Faybishenko, **J. Peterson**, J. Chen, P. Long and T. Hazen, Geophysical monitoring of biogeochemical transformations associated with Bioremediation, *J. Contaminant Hydrology*
14. Birkholzer, J. T., Webb, S. W., Halecky, N., **Peterson, J. E.** and Bodvarsson, G. S., Evaluating the moisture conditions in the fractured rock at Yucca Mountain: The impact of natural convection in heated emplacement drifts, *Vadose Zone Journal*. LBNL-59334. 5 1172-1193, 2006.
15. Daley, T. M., Myer, L. R., **Peterson, J. E.**, Majer, E. L. and Hoversten, G. M., Time-lapse crosswell seismic and VSP monitoring of injected CO₂ in a brine aquifer, *Environmental Geology.*, 54, 1657–1665, DOI:10.1007/s00254-0070943-z, 2008. LBNL-62396.
16. Majer, E. and **Peterson, J. E.**, (2006) The Impact of Injection on Seismicity at The Geysers, California Geothermal Field, *International Journal of Rock Mechanics & Mining Sciences*.LBNL-61693.
17. Majer, E., Daley, T., Queen, J., Korneev, V., Cox, D. and **Peterson Jr., J. E.**, (2006) Cost effective imaging of CO₂ injection with borehole seismic methods. LBNL-61293.
18. M. B. Kowalsky, M.B, J. Birkholzer, **J. Peterson**, S. Finsterle, S. Mukhopadhyay, and Y. Tsang, (2006) Sensitivity analysis for joint inversion of ground-penetrating radar and thermal-hydrological data from a large-scale underground heater test, *Nuclear Technology*.
19. Chen, J., S. Hubbard, **J. Peterson**, K. Williams, M. Fienen, P.Jardine, and D. Watson (2006), Development of a joint hydrogeophysical inversion approach and application to a contaminated fractured aquifer, *Water Resour. Res.*, 42, W06425, doi:10.1029/2005WR004694.
20. Daley, T., Majer, E. and **Peterson Jr., J.E.**, 2004. Crosswell seismic imaging in a contaminated basalt aquifer. *Geophysics*, 68: pp. 614-628, 2004.
21. Hubbard, S., J. Zhang, P. Monteiro, **J. Peterson** and Y. Rubin, Detection of rebar corrosion using non-destructive geophysical techniques, *ACI Materials Journal*, v100, No.6, pp501-510 2002. LBNL #48447.
22. Hubbard, S., Chen, J., **Peterson, J.**, Majer, E., Williams, K., Swift, D., B. Mailliox and Y. Rubin, Hydrogeological Characterization of the D.O.E. Bacterial Transport Site in Oyster Virginia using Geophysical Data, *Water Resources Research*, 37(10), 2431-2456, 2001. LBNL-46224.
23. **Peterson, J. E., Jr** , Pre-inversion corrections and analysis of radar tomographic data, *EEGS*, March, 2001
24. Hubbard, S., **Peterson, J.E.**, Majer, E.L., Zawislanski, P.T., Roberts, J., Williams, K.H. and Wobber, F., Estimation of permeable pathways and water content using tomographic radar data, *The Leading Edge of Exploration*, 16(11), 1623-1628, 1997