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EDUCATION

Ph.D. in Geology (Harvard University, March 1990)

Thesis: The relation of propylitic alteration and O¹⁸-depletion patterns to Ag/Au vein deposits in the Tayoltita mining district of Durango, Mexico.

A.M. in Geology (Dartmouth College, June 1982)

Thesis: Variations within the layering of the Skaergaard intrusion, East Greenland.

B.A. in Geology (Pomona College, May 1979)

Thesis: The petrology of a portion of the San Dimas Experimental Forest, San Gabriel Mountains, southern California.

PROFESSIONAL EXPERIENCE

Head, Geochemistry Department, Earth Sciences Division ((Lawrence Berkeley National Laboratory; 5/06-present).

Staff Geological Scientist (Lawrence Berkeley National Laboratory; 4/01-present): Transport of radionuclides through the vadose zone, influence of heating on the geochemistry of unsaturated rocks, monitoring subsurface microbial activity with stable isotopes, isotopic monitoring of the water cycle.

Geological Scientist (Lawrence Berkeley National Laboratory; 5/95-3/01): Monitoring subsurface microbial activity with stable isotopes, fate and transport of groundwater contaminants, vadose zone hydrology, metal uptake by lichens, paleoclimatic patterns in California and stable isotope systematics of clay minerals.

Geologist Postdoctoral Fellow (Lawrence Berkeley National Laboratory; 5/92- 5/95): Stable isotope evidence for subsurface microbial activity, groundwater hydrology and water-rock interaction in geothermal systems.

Research Associate (Dartmouth College; 10/90-5/92): Research on fluid-rock interaction in a moderate-to high-temperature geologic environments.

Consulting geologist (Meridian Gold Company; 4/88-12/88, 3/90-5/90): Evaluation of gold property in the Mother Lode of California.

Exploration Geologist (Anaconda Minerals Company; 6/80-10/80, 3/81-7/81, 6/82-8/83): Evaluation of the economic potential of mining properties in Alaska, Nevada and Mexico.

Summer Geologist (Noranda Exploration, Inc.; 5/79-8/79): Reconnaissance mapping of volcanic rocks in Arizona to evaluate mineral potential.

Professional Service

Editorial Board for Environmental Monitoring and Assessment (1998 - present).

Reviewer for Environmental Science & Technology, Geochimica et Cosmochimica Acta, Water Resources Research, Organic Geochemistry, Vadose Zone Journal, Journal of Contaminant Hydrology, Geofluids, Geomedia II and Contributions to Mineralogy and Petrology.

Reviewer of grant proposals for National Science Foundation, Department of Energy Basic Energy Sciences, Environmental Remediation Science Program and Small Business Innovative Research Programs.

Associate Editor of Journal of Geophysical Research (1995-1998).

Member of California Environmental Protection Agency Ad-Hoc Workgroup for Criteria and Standards in the Verification of Bioremediation Processes.

Professional Affiliations: American Chemical Society, Geological Society of America, Mineralogical Society of America, American Geophysical Union, Society of Economic Geologists, Clay Minerals Society.

Research Supervision

Katie Harding (University of California, Berkeley): PhD thesis research (2007-present).

Kaye Kamp (St. Aloysius School, Spokane, WA): Middle School teacher summer intern (2008).

Jenny Druhan (University of California, Berkeley): PhD thesis research (2007-present).

Cristina Ryan (University of California, Berkeley): Undergraduate research assistant (2006-2007).

Michelle Lo (Saratoga High School): DOE High School Summer Intern (2006).

Patrick Lee (University of California, Berkeley): PhD thesis research (2002-present).

Charlotte Carlson (Middlebury College): Undergrad Summer Intern (2003).

Michael Singleton: Postdoctoral Fellow (2002-2005).

Yit Arn Teh (University of California, Berkeley): PhD thesis research (2000-2004).

Simon Davis: Postdoctoral Fellow (1998-2000).

Donald Song (University of California, Berkeley): PhD thesis research (1997-2000).

Stephanie Cheng (Massachusetts Institute of Technology): Undergrad Summer Intern (1998).

Eric Pili: Postdoctoral Fellow (1997-1998).

Marco Aurelio Nadal De Masi (Stanford University): PhD thesis research 1996-1998).

Ilana Liebert (Dartmouth College): Undergraduate Summer Intern (1996).

John Bratton University of California, Berkeley): PhD thesis research (1995-1997).

Mariel Colon-Eliza (University of Turabo, Puerto Rico) Undergraduate Summer Intern (1995).

Hester Parker (Cornell University): PhD thesis research (1995-1996).

Traci Washington (Jackson State University): Undergraduate Summer Intern (1994, 1995).

Suzanne Anderson (University of California, Berkeley): PhD thesis research (1993-1995)

PUBLICATION LIST

Journal Articles

1. Liu, F., R.C. Bales, M.H. Conklin, and M.E. Conrad, 2008, Stream flow generation from snowmelt in semi-arid, seasonally snow-covered, forested catchments, Valles Caldera, New Mexico: *Water Resources Res.*, doi:10.1029/2007WR006728.
2. Faybishenko, B., T.C. Hazen, P.E. Long, E.L. Brodie, M.E. Conrad, S.S. Hubbard, J.N. Christensen, D. Joyner, S.E. Borglin, R. Chakraborty, K.H. Williams, J.E. Petersen, J. Chen, S.T. Brown, T.K. Tokunaga, J. Wan, M. Firestone, D.R. Newcomer, C.T. Resch, K.J. Cantrell, A. Willett, and S. Koenigsberg, 2008, In Situ Long-Term Reductive Bioimmobilization of Cr(VI) in Groundwater Using Hydrogen Release Compound: *Environ. Sci. Technol.* 42, 8478-8485.
3. Druhan, J.L., M.E. Conrad, K.H. Williams, L. N'Guessan, P.E. Long, and S.S. Hubbard, 2008, Sulfur Isotopes as Indicators of Amended Bacterial Sulfate Reduction Processes Influencing Field Scale Uranium Bioremediation: *Environ. Sci. Technol.* 42, 7842-7849.

4. Hubbard, S.S., K. Williams, M.E. Conrad, B. Faybishenko, J. Peterson, J.S. Chen, P. Long, and T. Hazen, 2008, Field-scale geophysical monitoring of biogeochemical transformations associated with Cr(VI) bioremediation: *Environ. Sci. Technol.* 42, 3757-3765.
5. Conrad, M.E., D.J. DePaolo, K. Maher, G.W. Gee, and A.L. Ward, 2007, Field evidence for strong chemical separation of contaminants in the Hanford vadose zone: *Vadose Zone J.* 6, 1031-1041.
6. Christensen, J.N., Conrad, M.E., D.J. DePaolo, and P. E. Dresel, 2007, Isotopic Studies of Contaminant Transport at the Hanford Site, WA: *Vadose Zone J.* 6, 1018-1030.
7. Lee, P.K.H., M.E. Conrad, and L. Alvarez-Cohen, 2007, Stable carbon isotope fractionation of chloroethenes by dehalorespiring isolates: *Environ. Sci. Technol.* 41, 4277-4285.
8. Menchaca, L.B., B. M. Smith, J. Connolly, M. Conrad, and B. Emmett, 2006, A method to determine plant water source using transpired water: *Hydrol. Earth Syst. Sci. Discuss.* 4, 863-880.
9. Machavaram, M.V., D.O. Whittemore, M.E. Conrad, and N.L. Miller, 2006, Precipitation induced stream flow: An event based chemical and isotopic study of a small stream in the Great Plains region of the USA: *J. Hydrology* 330, 470-480.
10. Singleton, M.J., K. Maher, D.J. DePaolo, M.E. Conrad, and P.E. Dresel, 2006, Dissolution rates and vadose zone drainage from strontium isotope measurements of groundwater in the Pasco Basin, WA unconfined aquifer: *J. Hydrology* 321, 39-58.
11. Templeton, A.S., K.-H. Chu, L. Alvarez-Cohen and M.E. Conrad, 2006, Variable carbon isotope fractionation expressed by aerobic CH₄-oxidizing bacteria: *Geochim. et Cosmochim. Acta* 70, 1739-1752.
12. Teh, Y.A., W.L. Silver, M.E. Conrad, S.E. Borglin, and C.M. Carlson, 2006, Carbon isotope fractionation by methane-oxidizing bacteria in tropical rain forest soils: *J. Geophys. Res.* 111, G02001, doi:10.1029/2005JG000053.
13. Solomon, C.T., P.K. Weber, J.J. Cech, Jr., B.L. Ingram, M.E. Conrad, M.V. Machavaram, A.R. Pogodina, and R.L. Franklin, 2006, Experimental determination of the sources of otolith carbon and associated isotopic fractionation: *Can. J. Fish. Aquat. Sci.* 63, 79-89.
14. Sonnenthal E., A. Ito, N. Spycher, M. Yui, J. Apps, Y. Sugita, M. Conrad, and S. Kawakami, 2005, Approaches to modeling coupled thermal, hydrological, and chemical processes in the Drift Scale Heater Test at Yucca Mountain: *International J. Rock Mech. and Mining Sci.* 42, 698-719.
15. Teh, Y.A., W.L. Silver, and M.E. Conrad, 2005, Oxygen Effects on CH₄ Production and Oxidation in Humid Tropical Forest Soils: *Global Change Biology* 11, 1283-1297.
16. Singleton, M.J., K.N. Woods, M.E. Conrad, D.J. DePaolo, and P. E. Dresel, 2005, Tracking sources of unsaturated zone and groundwater nitrate contamination using nitrogen and oxygen stable isotopes at the Hanford Site, WA: *Environ. Sci. Technol.* 39, 3563-3570.
17. Miller, N.L., A.W. King, M.A. Miller, E.P. Springer, M.L. Wesely, K.E. Bashford, M.E. Conrad, K. Costigan, P.N. Foster, H.K. Gibbs, J. Jin, J. Klazura, B.M. Lesht, M.V. Machavaram, F. Pan, J. Song, D. Troyan, and R.A. Washington-Allen, 2005, The DOE water cycle pilot study: *Bull. Am. Meteorol. Soc.* 86, 359-374.
18. Singleton, M.J., E.L. Sonnenthal, M.E. Conrad, D.J. DePaolo, and G.W. Gee, 2004, Multiphase reactive transport modeling of seasonal infiltration events and stable isotope fractionation in unsaturated zone pore water and vapor at the Hanford Site: *Vadose Zone J.* 3, 775-785.
19. Christensen, J.N., P.E. Dresel, M.E. Conrad, K. Maher, and D.J. DePaolo, 2004, Identifying the sources of subsurface contamination at the Hanford site in Washington using high-precision uranium isotopic measurements: *Environ. Sci. Technol.* 38, 3330-3337.
20. Chu, K.-H., S. Mahendra, D.L. Song, M. E. Conrad, and L. Alvarez-Cohen, 2004, Stable carbon isotope fractionation during aerobic biodegradation of chlorinated ethenes: *Environ. Sci. Technol.* 38, 3126-3130.

21. Bill, M., M.E. Conrad, and A.H. Goldstein, 2004, Stable carbon isotopic composition of atmospheric methyl bromide: *Geophys. Res. Lett.* 31, L04109, DOI:10.129/203GL018639.
22. DePaolo, D.J., M.E. Conrad, K. Maher, and G.W. Gee, 2004, Evaporation Effects on Oxygen and Hydrogen Isotopes in Deep Vadose Zone Pore Fluids at Hanford, Washington: *Vadose Zone J.* 3, 220-232.
23. Conrad, M.E., and D.J. DePaolo, 2004, Carbon isotopic evidence for biodegradation of organic contaminants in the shallow vadose zone of the Radioactive Waste Management Complex: *Vadose Zone J.* 3, 143-152.
24. Torn, M.S., S. Davis, J.A. Bird, M.R. Shaw, and M.E. Conrad, 2003, Automated analysis of $^{13}\text{C}/^{12}\text{C}$ ratios in CO_2 and dissolved inorganic carbon for ecological and environmental applications: *Rapid Comm. in Mass Spectrometry* 17, 2675-2682.
25. Maher, K., D.J. DePaolo, M.E. Conrad, and R.J. Serne, 2003, Vadose zone infiltration rate at Hanford, Washington, inferred from Sr isotope measurements: *Water Resources Res.* 39, 1204 DOI: 10.1029/202WR001742.
26. Bhupathiraju, V.K., P. Krauter, H.-Y.N. Holman, M.E. Conrad, P.F. Daley, A.S. Templeton, J.R. Hunt, M. Hernandez, and L. Alvarez-Cohen, 2002, Assessment of in-situ bioremediation at a refinery waste-contaminated site and an aviation gasoline contaminated site: *Biodegradation* 13, 79-90.
27. Song, D.L., M.E. Conrad, K.S. Sorenson, and L. Alvarez-Cohen, 2002, Stable carbon isotope fractionation during enhanced in-situ bioremediation of trichloroethene: *Environ. Sci. Technol.* 36, 2262-2268.
28. Byrne, R., B.L. Ingram, S. Starratt, F. Malamud-Roam, J.N. Collins, and M.E. Conrad, 2001, Carbon-isotope, diatom, and pollen evidence for Late Holocene salinity change in a brackish marsh in the San Francisco Estuary: *Quat. Res.* 55, 66-76.
29. Geller, J.T., H.-Y. Holman, G. Su, T-S. Liou, M.E. Conrad, K. Pruess, and J.C. Hunter-Cevera, 2000, Flow dynamics and potential for biodegradation of organic contaminants in fractured rock vadose zone: *J. Contaminant Hydrology* 33, 63-90.
30. Conrad, M.E., A.S. Templeton, P.F. Daley, and L. Alvarez-Cohen, 1999, Seasonally-induced fluctuations in microbial production and consumption of methane during bioremediation of aged subsurface refinery contamination: *Environ. Sci. Technol.* 33, 4061-4068.
31. Conrad, M.E., A.S. Templeton, P.F. Daley, and L. Alvarez-Cohen, 1999, Isotopic evidence for biological controls on migration of petroleum hydrocarbons: *Org. Geochem.* 30, 843-859.
32. Compton, J.S., M.E. Conrad, and T.W. Vennemann, 1999, Stable isotope evolution of volcanic ash layers during diagenesis of the Miocene Monterey Formation, California: *Clays and Clay Min.* 47, 84-95.
33. Ingram, B.L., P. De Deckker, A.R. Chivas, M.E. Conrad, and A.R. Byrne, 1998, Stable isotopes, Sr/Ca, and Mg/Ca in biogenic carbonates from Petaluma Marsh, northern California, USA: *Geochim. et Cosmochim. Acta* 62, 3229-3237.
34. Ryan, P.C., M.E. Conrad, K. Brown, C.P. Chamberlain, and R.E. Reynolds, 1998, Oxygen isotope compositions of mixed-layer serpentinite and illite/smectite in the Tuscaloosa formation (U.S. Gulf Coast): Implications for pore fluids and mineralogic reactions: *Clays and Clay Min.* 46, 357-368.
35. Anderson, S.P., W.E. Dietrich, D.R. Montgomery, R. Torres, M.E. Conrad, and K. Loague, 1997, Subsurface flow paths in a steep unchanneled catchment: *Water Resources Res.* 33, 2637-2653.
36. Conrad, M.E., D.M. Thomas, S. Flexser, and T.W. Vennemann, 1997, Fluid flow and water-rock interaction in the East Rift Zone of Kilauea Volcano, Hawaii: *J. Geophys. Res.* 102, 15021-15037.
37. Conrad, M.E., P.F. Daley, M.F. Fischer, B.B. Buchanan, T. Leighton, and M. Kashgarian, 1997, Combined ^{14}C and $\delta^{13}\text{C}$ monitoring of *in situ* biodegradation of petroleum hydrocarbons: *Environ. Sci. Technol.* 31, 1463-1469.

38. Ingram, B.L., J.C. Ingle, and M.E. Conrad, 1996, Stable isotope record of late Holocene salinity and river discharge in San Francisco Bay, California: *Earth and Plan. Sci. Lett.* 141, 237-247.
39. Ingram, B.L., J.C. Ingle, and M.E. Conrad, 1996, A 2000 yr record of Sacramento-San Joaquin river inflow to San Francisco Bay estuary, California: *Geology* 24, 331-334.
40. Thomas, D.M., F.L. Paillet, and M.E. Conrad, 1996, Hydrogeology of the HSDP borehole KP-1, Part II: Ground-Water geochemistry and regional flow patterns: *J. Geophys. Res.* 101, 11683-11694.
41. Ingram, B.L., M.E. Conrad, and J.C. Ingle, 1996, Stable isotope and salinity systematics in estuarine waters: San Francisco Bay: *Geochim. et Cosmochim. Acta* 60, 455-467.
42. Conrad, M.E., J.R. O'Neil, and U. Petersen, 1995, The relation between widespread ^{18}O -depletion patterns and precious metal mineralization in the Tayoltita mine of Durango, Mexico: *Econ. Geol.* 90, 322-342.
43. Macfarlane, A.W., R. Prol-Ledesma, and M.E. Conrad, 1994, Isotope and fluid inclusion studies of the geological and hydrothermal evolution of the Hualgayoc district, northern Peru: *International Geology Review* 36, 645-677.
44. Chamberlain, C.P., and M.E. Conrad, 1993, Oxygen-isotope zoning in garnet: A record of volatile transport: *Geochim. et Cosmochim. Acta* 57, 2613-2630.
45. Conrad, M.E., and C.P. Chamberlain, 1992, Laser-based, in situ measurements of fine-scale variations in the $\delta^{18}\text{O}$ values of hydrothermal quartz: *Geology* 20, 812-816.
46. Conrad, M.E., U. Petersen, and J.R. O'Neil, 1992, Evolution of an Au-Ag producing hydrothermal system: The Tayoltita mine, Durango, Mexico: *Econ. Geol.* 87, 1451-1474.
47. Chamberlain, C.P., and M.E. Conrad, 1991, Oxygen isotope zoning in garnet: *Science* 254, 403-406.
48. Chamberlain, C.P., and M.E. Conrad, 1991, The relative permeabilities of quartzites and schists at mid-crustal levels: *Geophys. Res. Lett.* 18, 959-962.
49. Conrad, M.E., and H.R. Naslund, 1989, Modally-graded rhythmic layering in the Skaergaard intrusion: *J. Petrology.* 30, 251-269.

Book Chapters

1. Sonnenthal, E.L., N.F. Spycher, M. Conrad, and J. Apps, 2004. *A conceptual and numerical model for thermal-hydrological –chemical processes in the Yucca Mountain Drift Scale Test.* In: Stephansson, O., J.A. Hudson, and L. Jing, ed., *Coupled Thermo-Hydro-Mechanical-Chemical Processes in Geo-Systems, Fundamentals, Modelling, Experiments and Applications.* Elsevier Geo-Engineering Book Series, volume 2, p. 347-352.
2. Conrad, M.E., and B. Faybishenko, 2000, Isotopic tracers of flow and transport through the vadose zone: In eds., Looney, B., and R. Falta, *Vadose Zone Technology and Science Solutions*, Batelle Press, Columbus, OH, 298-303.