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### Education

Ph.D. Energy and Resources, University of California, Berkeley, 1994  
M.S. Energy and Resources, University of California, Berkeley, 1990  
B.S. Conservation and Resource Studies, Highest Honors, University of California, Berkeley, 1984

### Professional Positions

Program co-Head, Climate and Carbon Sciences, Lawrence Berkeley National Lab, 2001-present  
Senior Scientist, Earth Sciences Division, Lawrence Berkeley National Laboratory, 2013-present  
Associate Adjunct Professor, Energy and Resources, U.C. Berkeley, 2005-present  
Staff Scientist, Earth Sciences Division, Lawrence Berkeley National Laboratory, 2005-2013  
Scientist, Earth Science Division, Lawrence Berkeley National Laboratory, 1998-2005  
Post-Doctoral Fellow, U.C. Irvine and Stanford University 1994-1998  
Graduate Research Assistant, Energy and Resources Group, U.C. Berkeley 1986-1994  
Research Principal Investigator, Rocky Mountain Biological Laboratory, Colorado 1991-93  
Science Intern, Lawrence Livermore National Laboratory 1985-1986

### Fellowships and Honors

Honorary Doctorate, University of Zurich 2015  
Secretary of Energy Outstanding Mentor Award 2008  
Presidential Early Career Award for Scientists and Engineers, 2003  
DOE Early Career Award for Scientists and Engineers, 2003  
Earth System Science Post-Doctoral Fellowship, 1994-1997  
NASA Global Change Doctoral Fellowship, 1991-94  
Switzer Environmental Fellowship, 1990-92  
Graduate Opportunity Fellowship, U.C. Berkeley, 1986-87

### Peer-reviewed Publications (*\*indicates student or post doc*)

- Feldman, DR, WD Collins, PJ Gero, MS Torn, EJ Mlawer, TR Shippert. 2015. Observational determination of surface radiative forcing by CO<sub>2</sub> from 2000 to 2010. *Nature* doi:10.1038/nature14240
- Wainwright, HM, B Dafflon, LJ Smith, MS Hahn, JB Curtis, Y Wu, C Ulrich, JE Peterson, MS Torn. SS Hubbard. 2015. Identifying multiscale zonation and assessing the relative importance of polygon geomorphology on carbon fluxes in an Arctic Tundra Ecosystem, *JGR Biogeosci.*, 120, 788–808. doi: [10.1002/2014JG002799](https://doi.org/10.1002/2014JG002799).
- Shao, J., Zhou, X., Luo, Y., Li, B., Aurela, M., Billesbach, D., ... & Zhang, J. (2015). Biotic and climatic controls on interannual variability in carbon fluxes across terrestrial ecosystems. *Agricultural and Forest Meteorology*, 205, 11-22.
- Dong, Jinwei, Xiangming Xiao, Pradeep Wagle, Geli Zhang, Yuting Zhou, Cui Jin, Margaret S. Torn et al. 2015. Comparison of four EVI-based models for estimating gross primary production of maize and soybean croplands and tallgrass prairie under severe drought. *Remote Sensing of Environment* 162 (2015): 154-168.
- Torn, M. S., Chabbi, A., Crill, P., Hanson, P. J., Janssens, I. A., Luo, Y., ... & Zhu, B. (2015). A call for international soil experiment networks for studying, predicting, and managing global change impacts. *Soil-Discussions*.
- Wu, GC.; Torn, MS, Williams, JH 2015. Incorporating Land-Use Requirements and Environmental Constraints in Low-Carbon Electricity Planning for California. *Environmental Science & Technology* Volume: 49 Issue: 4 Pages: 2013-2021 Published: FEB 17 2015. DOI: 10.1021/es502979v

- Hu, Lei, Stephen A. Montzka, John B. Miller, Aryln E. Andrews, Scott J. Lehman, Benjamin R. Miller, Kirk Thoning et al. "US emissions of HFC 134a derived for 2008–2012 from an extensive flask air sampling network." *Journal of Geophysical Research: Atmospheres* (2015).
- Hatton, P.J., C. Castanha, M.S. Torn, J.A. Bird. Litter type control on soil C and N stabilization dynamics in a temperate forest. *Global Change Biology* doi. 10.1111/gcb.12786 online 5 DEC 2014
- Jardine, K., J Chambers, EG Alves, A Teixeira, S Garcia, J Holm, N Higuchi, A Manzi, L Abrell, JD Fuentes, LK Nielsen, MS Torn, CE Vickers. 2014. Dynamic balancing of isoprene carbon sources reflects photosynthetic and photorespiratory responses to temperature stress. *Plant Physiology* December 2014 vol. 166 no. 4 2051-2064. doi:<http://dx.doi.org/10.1104/pp.114.247494>
- Williams\*, IN; MS Torn, WJ Riley, M Wehner. Impacts of climate extremes on gross primary production under global warming. *Environmental Research Letters* 9 (9), 094011
- Toomey et al. Greenness indices from digital cameras predict the timing and seasonal dynamics of canopy-scale photosynthesis. In Press, *Ecological Applications*.
- Wagle, P., Xiangming Xiao, MS. Torn, D.R. Cook<sup>3</sup>, R. Matamala<sup>3</sup>, M.L. Fischer, C. Jin, J. Dong, and C. Biradar. 2014 Sensitivity of vegetation indices and gross primary production of tallgrass prairie to severe drought. *Remote Sensing of the Environment* 152: 1-14
- Riley, W. J., F. M. Maggi, M. Kleber, M. S. Torn, J. Y. Tang, D. Dwivedi, and N. Guerry. 2014. Long residence times of rapidly decomposable soil organic matter: application of a multi-phase, multi-component, and vertically-resolved model (TOUGHREACTv1) to soil carbon dynamics. *Geoscientific Model Development Discussions* 7: 815-870. In Press, *Geoscientific Model Development*
- Maseyk, K., J. Berry, D. Billesbach, E. Campbell, M.S. Torn, M. Zahniser, and U. Seibt. 2014. Sources and sinks of carbonyl sulfide in an agricultural field in the Southern Great Plains. *PNAS*, early online June 2014. [www.pnas.org/cgi/doi/10.1073/pnas.1319132111](http://www.pnas.org/cgi/doi/10.1073/pnas.1319132111)
- Maestrini, B., S. Abiven, N. Singh, J. Bird, M.S. Torn, and M.W.I. Schmidt. 2014. Carbon losses from pyrolysed and original wood in a forest soil under natural and increased N deposition." *Biogeosciences*, 11, 5199–5213, 2014. [www.biogeosciences.net/11/5199/2014/](http://www.biogeosciences.net/11/5199/2014/)
- Williams, I. N., W. J. Riley, M. S. Torn, S. C. Biraud, and M. L. Fischer. 2014. Biases in regional carbon budgets from covariation of surface fluxes and weather in transport model inversions. *Atmospheric Chemistry and Physics* 14, 1571-1585. doi:10.5194/acp-14-1571-2014
- Ryals\*, R., Kaiser, M., Torn, M. S., Berhe, A. A., & Silver, W. L. 2014. Impacts of organic matter amendments on carbon and nitrogen dynamics in grassland soils. *Soil Biology and Biochemistry*, 68, 52-61.
- Jones, A. D., Collins, W. D., Edmonds, J., Torn, M. S., Janetos, A., Calvin, K. V., A. Thomson, L.P. Chini, Jiafu Mao, Xiaoying Shi, Pe. Thornton, G.C. Hurtt and M. Wise. (2013). Greenhouse gas policy influences climate via direct effects of land-use change. *Journal of Climate*, 26(11), 3657-3670.
- Crane-Droesch\*, A., Abiven, S., Jeffery, S., & Torn, M. S. (2013). Heterogeneous global crop yield response to biochar: a meta-regression analysis. *Environmental Research Letters*, 8(4), 044049.
- Koven, C.D., W. J. Riley, Z. M. Subin, J. Y. Tang, M. S. Torn, W. D. Collins, G. B. Bonan, D. M. Lawrence, and S. C. Swenson. The effect of vertically-resolved soil biogeochemistry and alternate soil C and N models on C dynamics of CLM4. *Biogeosciences* 10 (2013): 7201-7256.
- Billesbach, D. P., J. A. Berry, U. Seibt, K. Maseyk, M. S. Torn, M. L. Fischer, M. Abu-Naser, and J. E. Campbell. (2014). Growing season eddy covariance measurements of carbonyl sulfide and CO<sub>2</sub> fluxes: COS and CO<sub>2</sub> relationships in Southern Great Plains winter wheat. *Agricultural and Forest Meteorology*, 184, 48-55.
- Basu, S, S Guerlet, A Butz, S Houweling, O Hasekamp, I Aben, P Krummel, P Steele, R Langenfelds, MS Torn, S Biraud, B Stephens, A Andrews, D Worthy. 2013. Global CO<sub>2</sub> fluxes estimated from GOSAT retrievals of total column CO<sub>2</sub>. *Atmospheric Chemistry and Physics*, 13(17), 8695-8717.
- Torn, M.S., Kleber, M., Zavaleta, E.S., Zhu\*, B., Field, C.B., & Trumbore, S.E. (2013). A dual isotope approach to isolate soil carbon pools of different turnover times. *Biogeosciences*, 10(12), 8067-8081.
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- Jones\*, A.D., W.D. Collins, and M.S. Torn. 2013. On the additivity of radiative forcing between land-use change and greenhouse gases. *Geophysical Research Letters*, Online July 2013. DOI: 10.1002/grl.50754
- Subin\*, Z.M., C.D. Koven, W.J. Riley, M.S. Torn, D.M. Lawrence, S.C. Swenson, 2013: Effects of Soil Moisture on the Responses of Soil Temperatures to Climate Change in Cold Regions. *J. Climate*, **26**, 3139–3158. doi: <http://dx.doi.org/10.1175/JCLI-D-12-00305.1>
- Castanha, C., M.S. Torn, M.J. Germino, B. Weibel, and L.M. Kueppers. 2013. Conifer seedling recruitment across a gradient from forest to alpine tundra: effects of species, provenance, and site. *Plant Ecology & Diversity* 6 (3-4) 307-318. DOI: 10.1080/17550874.2012.716087
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- Biraud S.C., Torn M.S., Smith J.R., Sweeney C., Riley W.J., and P. P. Tans. 2013. A multi-year record of airborne CO<sub>2</sub> observations in the U.S. Southern Great Plains. *Atmospheric Measurement Techniques* 6(3): 751-763. doi:10.5194/amtd-5-7187-2012
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- Schaefer, K., et al. 2012. A model-data comparison of gross primary productivity: Results from the North American Carbon Program site synthesis. *J. Geophys. Res.*, **117**, G03010, doi:10.1029/2012JG001960.
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- Haley, B., J-B. Gallo, A. Kehr, M. Perry, D. Siao, W. Smallen, M.S. Torn, and J.H. Williams. "The 2020 emissions reduction impact of urban water conservation in California." *Journal of Water and Climate Change* 3, no. 2 (2012): 151-162.
- Singh\*, N. S. Abiven, MS Torn, MWI Schmidt. 2012. Fire-derived organic carbon in soil turns over on a centennial scale. August. *Biogeosciences* 9, 2847-2857
- Santos\*, F., M.S. Torn, J.A. Bird. 2012. Biological degradation of pyrogenic organic matter in temperate forest soils. August. *Soil Biology and Biochemistry Journal* 51:115-124
- Sudderth\*, E.A., S.B. St Clair\*, S.A. Placella\*, S.M. Swarbreck\*, C. Castanha, D.J. Herman, M.L. Fischer, M. Kleber, E.B. Sudderth, M.S. Torn, M.K. Firestone, G.L. Andersen, and D.D. Ackerly. Annual grassland resource pools and fluxes: Sensitivity to precipitation and dry periods on two contrasting soils. *Ecosphere*, **3** (8); DOI:[10.1890/ES12-00004.1](http://dx.doi.org/10.1890/ES12-00004.1).
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- Williams\*, I., W. Riley, M. Torn, J. Berry, and S. Biraud. 2011. Using boundary layer equilibrium to reduce uncertainties in CO<sub>2</sub> flux inversions, *Atmospheric Chemistry Physics* 11: 9631–9641. doi:10.5194/acp-11-9631-2011
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- Subin\*, Z.M., W.J. Riley, J. Jin, D.S. Christianson, M.S. Torn, L.M. Kueppers. 2011. Ecosystem Feedbacks to Climate Change in California: Development, Testing, and Analysis Using a Coupled Regional Atmosphere and Land-Surface Model (WRF3-CLM3.5). *Earth Interactions*, 15:1–38. doi: <http://dx.doi.org/10.1175/2010EI331.1>
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- Salve, R, MS Torn. 2011. Precipitation and soil impacts on partitioning of subsurface moisture in *Avena barbata*. *Vadose Zone Journal* 10: 437-449
- Swarbreck\*, W. M., Sudderth\*, E. A., St.Clair\*, S. B., Salve, R., Castanha, C., Torn, M. S., Ackerly, D. D. and Andersen, G. L. (2011), Linking leaf transcript levels to whole plant analyses provides mechanistic insights to the impact of warming and altered water availability in an annual grass. *Global Change Biology*, 17: 1577–1594. doi: 10.1111/j.1365-2486.2010.02359.x
- McKone\* T.E., W.W. Nazaroff, P. Berck, M. Auffhammer, T. Lipman, M.S. Torn, E. Masanet, A. Lobscheid, N. Santero, U. Mishra\*, A. Barrett, M. Bomberg, K. Fingerman\*, C. Scown, B. Strogen, A. Horvath. 2011. Grand Challenges for Life-Cycle Assessment of Biofuels. *Environmental Sci & Techn.* , 45 (5), pp 1751–1756, DOI: 10.1021/es103579c
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- Masiello\*, C.A., O.A. Chadwick, J. Southon, M.S. Torn, and J.W. Harden. 2004. Mechanisms of carbon storage in grassland soils. *Global Biogeochemical Cycles* 18(4): GB4023 10.1029/2004GB002219
- Fried, J.S., M.S. Torn, and E. Mills. 2004. The impact of climate change on wildfire severity: a regional forecast for Northern California. *Climatic Change*, 64 (1-2): 169-191
- Billesbach, D.P., M.L. Fischer, M.S. Torn, and J.A. Berry. 2004. A portable eddy covariance system for the measurement of ecosystem-atmosphere exchange of CO<sub>2</sub>, water vapor, and energy, *The Journal of Atmospheric and Oceanic Technology*, 21: 684-695
- Lapenis, A.G., G.B. Lawrence, A.A. Andreev, A.A. Bobrov M.S. Torn, J.W. Harden. 2004. Acidification of forest soil in Russia: 1893-present. *Global Biogeochemical Cycles*, 18 (1): GB1037
- Torn, M.S., S. Davis, J.A. Bird, M.R. Shaw, M.E. Conrad. 2003. Automated analysis of <sup>13</sup>C/<sup>12</sup>C ratios in CO<sub>2</sub> and dissolved inorganic carbon for ecological and environmental applications. *Rapid Communications in Mass Spectrometry* 17(23):2675-2682
- Kahle\*, M., M. Kleber, M.S. Torn and R. Jahn. 2003. Carbon storage in coarse and fine clay fractions of illitic soils. *Soil Science Society of America Journal*, 67:1732-1739.
- Riley, W.J., C.J. Still, M.S. Torn, and J.A. Berry. 2002. A mechanistic model of H<sub>2</sub><sup>18</sup>O and C<sup>18</sup>OO fluxes between ecosystems and the atmosphere: Model description and sensitivity analyses. *Global Biogeochemical Cycles*, 16, 1095-1109.
- Torn, M.S., Lapenis, A.G., Timofeev, A. Fischer, M., Babikov, I., Harden, J. 2002. Organic carbon and carbon isotopes in modern and 100-year-old soil archives of the Russian steppe. *Global Change Biology*, 8:941-953.

- Torn, M.S. and J. Southon. 2001. A new  $^{13}\text{C}$  correction for radiocarbon samples from elevated- $\text{CO}_2$  Experiments. *Radiocarbon*, 43: 691-694.
- Rillig, M.C., S.F. Wright, K.A. Nichols, W.F. Schmidt, and M.S. Torn. 2001. Large contribution of arbuscular mycorrhizal fungi to soil carbon pools in tropical forest soils. *Plant and Soil*, 233(2): 167-177.
- Lapenis, A.G., M.S. Torn, J.W. Harden, K. Hollocher, B.V. Babikov, A.I. Timofeev, M.I. Hornberger, R. Nattis. 2000. Scientists unearth clues to soil contamination by comparing old and new soil samples, *EOS* 81(7): 55-57.
- Saleska, S.R., J. Harte, and M.S. Torn. 1999. The effect of experimental ecosystem warming on  $\text{CO}_2$  fluxes in a montane meadow. *Global Change Biology* 5:125-141.
- Torn, M.S., S.E. Trumbore, O.A. Chadwick, P.M. Vitousek, and D.M. Hendricks. 1997. Mineral control over soil carbon storage and turnover. *Nature* 389:170-173.
- Chapin III, F.S., M.S. Torn and M. Tateno. 1996. Principles of ecosystem sustainability. *American Naturalist* 148(6): 1016-1037.
- Torn, M.S. and J. Harte. 1996. Methane consumption by montane soils: implications for positive and negative feedback with climatic change. *Biogeochemistry* 32: 53-67.
- Harte, J., M.S. Torn, F. Chang, B. Feifarek, A. Kinzig, M.R. Shaw, and K. Shen. 1995. Results from a global warming experiment: Soil temperature and moisture responses in a subalpine meadow ecosystem. *Ecological Applications* 5(1): 132-150.
- Torn, M.S. and F.S. Chapin III. 1993. Environmental and biotic controls over methane flux from arctic tundra. *Chemosphere* 26 (1-4): 357-368.
- Torn, M.S. and J.S. Fried. 1992. Predicting the impact of global warming on wildfire. *Climatic Change* 21: 257-274.
- Fried, J.S. and M.S. Torn. 1990. Analyzing localized climate impacts with the Changed Climate Fire Modeling System. *Natural Resource Modeling* 4(2): 229-253.

### **Books and Book Chapters**

- Torn, M.S., C.W. Swanston, C. Castanha, S.E. Trumbore. 2009. Storage and turnover of natural organic matter in soil. In: *IUPAC Series on Biophysico-chemical Processes in Environmental Systems; Volume 2- Biophysico-chemical processes involving natural nonliving organic matter in environmental systems*. Series Editors: P. M. Huang and N. Senesi. *LBNL-810E*
- Jensen, D.B., M.S. Torn, and J. Harte. 1993. In *Our Own Hands: A Strategy for Conserving California's Biological Diversity*, University of California Press, Los Angeles. 290 pp.
- Harte, J., M.S. Torn, and D.B. Jensen. 1992. The nature and consequences of indirect linkages between climate change and biological diversity. In: *Global Warming and Biological Diversity*, R.L. Peters and T.E. Lovejoy, eds. Yale University Press, New Haven. pp. 325-343.

### **Selected Non-Refereed Publications**

- Berg, L., M.S. Torn, D. Turner, Y. Zhang. Study of Land-Atmosphere-Cloud Interactions in the Atmospheric System Research (ASR) Program. White Paper prepared for the DOE ASR program. June 26, 2015
- Bailey, V., P. Hanson, J. Jastrow, M.S. Torn, and D. Stover. Data-model needs for belowground ecology. A summary report from the Terrestrial Ecosystem Science (TES) mini-workshop. May 8, 2014. Report date December 4, 2014.
- Williams, J.H., B. Haley, F. Kahrl, J. Moore, A.D. Jones, M.S. Torn, H. McJeon. 2014. *Pathways to deep decarbonization in the United States*. The U.S. report of the Deep Decarbonization Pathways Project of the Sustainable Development Solutions Network and the Institute for Sustainable Development and International Relations.
- Torn, M., S. Biraud, and W.J. Riley. 2014. Project 1: Atmospheric Carbon: Measurements and analyses of the carbon cycle, including AmeriFlux. White paper prepared per request from BER CESD. June 30, 2014.
- Torn, M.S., I. Williams, L.M. Kueppers, and S. Biraud. 2014. Project 2: Land Surface Forcing and Land-Atmosphere Interactions. White paper prepared per request from BER CESD. June 30, 2014.

- Feldman, D., M.S. Torn, W. Collins, and S. Biraud. 2014. Project 3: Measured CO<sub>2</sub> and CH<sub>4</sub> Radiative Forcing and Climate Model Implications. White paper prepared per request from BER CESD. June 30, 2014.
- Torn, M.S., E. Brodie, P. Nico, N. Tas Baas, C. Castanha, C. Pries, and B. Zhu. 2014. LBNL TES SFA on Belowground Carbon Cycling—Long Term Vision. July 7, 2014. White paper prepared per request from BER CESD.
- Wang, J., T. Miura, A. Kato (2014), Radiometric validation of satellite vegetation indices using flux tower measurements. 2014 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), (conference proceedings) July 13-18, 2014. Quebec, Canada (<http://www.igarss2014.org/default.asp>)
- Trumbore, S., M. Torn, and L. Smith. 2011. Constructing a database of terrestrial radiocarbon measurements, *Eos Trans. AGU*, 92(43), 376, doi:10.1029/2011EO430006. Published 25 October 2011.
- Ekstrom, J.A., S.C. Moser, M.S. Torn. 2010. Barriers to Adaptation: A Diagnostic Framework. Report to the California Energy Commission for Project Greenhouse Gas Abatement and Climate Change. April 30, 2010. 80 pp.
- Fingerman, K.R., M.S. Torn, and D.M. Kammen. 2010. Water Impacts of Biofuel Extend Beyond Irrigation. e-Letter. **Science**. 3 February 2010
- Michael W. I. Schmidt, Margaret S. Torn, Daniel Rasse, Ingrid Kögel-Knabner, David Manning, José Gonzalez-Perez, Paolo Nannipieri, Thorsten Dittmar, Georg Guggenberger, Ivan Janssen, Steve Weiner, Markus Kleber, Susan Trumbore, and Johannes Lehmann. Dynamic Soil Organic Matter – From black box models to mechanistic predictions. Report to the European Science Foundation. November 2009.
- Hanson et al. Ecosystem experiments: Understanding climate change impacts on ecosystems and feedbacks to the physical climate. Report of the workshop on Exploring Science Needs for the Next Generation of Climate Change and Elevated-CO<sub>2</sub> Experiments in Terrestrial Ecosystems. April 2008
- Kerr, A. and M.S. Torn. 2008. Greenhouse Gas Inventory Methods. A report for the Climate Change Research Plan Update, California Energy Commission.
- Oldenburg, C.M. and M.S. Torn (and workshop participants). 2008. Biologically Enhanced Carbon Research Needs and Opportunities. Whitepaper prepared for the Energy Biosciences Institute.
- Kueppers, L., M.S. Torn, and J. Harte. 2007. Quantifying ecosystem feedbacks to climate change: observational needs and priorities. A report to the Office of Biological and Environmental Research, DOE.
- Fried, J.S., J.K. Gillespie, W.J. Riley, T.J. Moody, C. Simon de Blas, K. Hayhoe, M. Moritz, S. Stephens, M.S. Torn. 2006. Predicting the effect of climate change on wildfire severity and outcomes in California: Preliminary analysis. For: California Climate Change: Science Report to Governor on Impacts and Adaptation Options.
- Trumbore, S.E. and M.S. Torn. Soils and the Global Carbon Cycle. In: Soils and Global Change, EA Holland, ed. NATO Advanced Study Institute 1997, LBNL-44910, 2005.  
[http://esd.lbl.gov/ESD\\_staff/torn/nato\\_soilcarbon.pdf](http://esd.lbl.gov/ESD_staff/torn/nato_soilcarbon.pdf)
- Denning, S., R. B. Cook, L. Dilling, L. Heath, D. McGuire, B. McKee C. Sabine, R. Oren, K. Paustian, J. Randerson, J. Reilly, S. Running, R. Stallard, M.S. Torn, S. Wofsy. 2005. Interagency Science Implementation Strategy for the North American Carbon Program. Report of the U.S. Interagency Carbon Cycle Science Program. Washington, DC: US Global Change Research Program.
- Farrell, A.E., A.C. Kerr, A.R. Brandt, M.S. Torn, and G. Franco. 2004. Research Roadmap for Greenhouse Gas Inventory Methods. Prepared for the California Energy Commission PIER (Public Interest Energy Research) program.
- Hanneman, M. and M.S. Torn. 2003. Review Chapter. In: Global Climate Change and California: Potential Implications for Ecosystems, Health, and Economy. California Energy Commission.
- Torn, M.S., C. Masiello, I. Basile-Doelsch, N. Bijoor, and R. Sutton. 2002. Mineral control of carbon storage in Andisols: Case studies and applications to other soils. In: Kleber, M., P. Bartoli, and O. Arnauds. Mineralogy related features and processes common to European Andosols. COST ACTION 622: "Soil Resources of European Volcanic Systems" Manderscheid, Germany, April 24-28, 2002. (conference proceedings). LBNL-53797 Ext. Abs.



- Hedin, L. O. Chadwick, J. Schimel, M. Torn, and workshop participants. 2002. Linking Ecological Biology and Geoscience. Report to the National Science Foundation April 4, 2002. Workshop held at the Annual meeting of the Ecological Society of America, August 4-5 2001, Madison, Wisconsin
- Barnes, F.J., S.M. Benson, and M.S. Torn, co-chairs. 2002. DOE Water Cycle Research Strategy. December 2001. U.S. Department of Energy, Office of Science, Office of Biological and Environmental Research. DOE-SC-0043.
- Berner, R. and workshop participants. 2001. The Changing Carbon Cycle: A Terrestrial Focus. Report of the Workshop on the Terrestrial Carbon Cycle. Sponsored by The National Science Foundation, Division of Earth Sciences, June 3, 2000. Workshop Participants: Michael Bender, Robert Berner, Katherine H. Freeman, Chris Field, James Galloway, John Hedges, Lars O. Hedin, Fred Mackenzie, Claudia Mora, Joshua Schimel, William Schlesinger, Robert Stallard, Eric Sundquist, Margaret Torn, Steven C. Wofsy.
- Billesbach, D.P., M.L. Fischer, J.A. Berry and M.S. Torn (2001) A highly portable, rapidly deployable system for eddy covariance measurements of CO<sub>2</sub> fluxes. LBNL Report. LBNL-48953.
- Torn, M.S., E. Mills, and J.S. Fried. 1999. Will climate change spark more wildfire damage? Contingencies: American Academy of Actuaries. July/August p. 34-43. LBNL Report No. 42592.
- Torn, M.S. 1994. Environmental Controls over Methane Flux from Ecosystems and the Potential for Feedbacks with Climatic Change. Ph.D. Dissertation, University of California, Berkeley.
- Torn, M.S. 1993. Global Warming and Upwelling Ecosystems. In: California Sea Grant: Biennial Report of Completed Projects, 1988-1990. California Sea Grant College, U.C. San Diego.
- Jensen, D.B., M.S. Torn, and J. Harte. 1991. In Our Own Hands: A strategy for conserving biological diversity in California. California Policy Seminar, Berkeley, CA. 220 pp.
- Torn, M.S. 1990. The Threats to Biological Diversity in California. Masters Thesis, Energy and Resources Group, U.C. Berkeley. 65 pp.
- Torn, M.S., J.E. DeGrange, and J.H. Shinn. 1988. The Effects of Acidic Deposition on Alberta Agriculture: A review. Acid Deposition Research Program. Calgary, Alberta. 160 pp.

### **Selected Synergistic and Professional Activities, 1999-2013**

- Service to Berkeley Lab and UC Berkeley: Chair of the Earth Sciences Division diversity committee, 2003-2006; member of ESD Division Council (2001–present) and UCB ERG Executive Committee (2003–2005 as affiliate; 2006–present as core member).
- Lead*, AmeriFlux network, AmeriFlux Management Project, 2012-present
- Founding member, International Soil Experiment Network, 2013-present
- International Advisory Board, University Research Priority Program on 'Global Change and Biodiversity', University of Zurich, Switzerland, 2013-present.
- Co-organizer*, Land-atmosphere interactions breakout session, ASR/ARM Science Team meeting 2014
- User Working Group member*, Carbon Dioxide Information Analysis Center (CDIAC), 2013
- Advisory Board, Reviewer*, Carbon Dioxide Information Analysis Center (CDIAC), 2005
- Science Steering Group, National Soil Carbon Network, 2008-present
- IPCC chapter lead for US government review (Chapter 26: North America), 2013
- Organizing committee with Alain Plante (Chair), Josh Schimel, and Anthony Aufdenkampe, SOM6, The Sixth International Workshop on Soil Organic Matter Stabilization and Destabilization, October 2014, International Advisory Board, University Research Priority Program on 'Global Change and Biodiversity', University of Zurich, Switzerland, 2013-present.
- Organizing Committee, Bouyoucos Conference on “A Path to Improved Understanding of Complex Soil Systems.” Berkeley, Spring 2014.
- Co-convenor with Ingrid Kögel-Knabner of Goldschmidt 2013 session 18b, Climate Change and SOM storage and decomposition. Florence, Italy, August 2013.
- Organizing committee, 5th North American Carbon Program Principal Investigators Meeting, January 2015.
- Co-Chair, AmeriFlux Principal Investigators meeting, 2014

Science Steering Group, North American Carbon Program (NACP) of the U.S. Global Change Research Group, 2005-2010

Co-organizer, DOE Workshop: Strategies to Promote Integrated Experiment-Model Approaches to Terrestrial Ecosystem Study, Washington DC, March 19-21, 2012.

Lead Organizer, Terrestrial Radiocarbon Database international workshop, Berkeley, CA, July 20-21, 2011.

Rapporteur: Moving wire analysis workshop, Lawrence Livermore National Lab, 9-10 Feb 2012

Invited participant, NASA Carbon Monitoring System workshop. 13-14 July 2010 Boulder CO

Rapporteur and invited participant, The Lake Constance think tank on global change and feedback from organic carbon dynamics: Defining research visions on how to quantify the molecular-level mechanisms driving soil organic matter turnover, Ittingen, Switzerland, October 2009

Invited participant, DOE-NSF Workshop on Coordinated Approaches to Address Long-Term Issues in Global Change Experiments, August 2009

Rapporteur, meeting on Arctic Tundra Deep Warming: a Possible DOE Next-Generation Climate Change Ecosystem Experiment, July 2009

Invited participant, JGI Soil metagenomics initiative meeting, July 2009

Invited participant, DOE next generation ecosystem experiment, February 2009

Planning meeting, the Carbon Summit, National Academies, January 28-29, 2009.

Invited participant, ARM Climate Research Facility Workshop Report, October 2008

Member, ARM Science Team, surface flux working group

Convened workshop for Energy Biosciences Institute (EBI) on research needs for biologically enhanced carbon sequestration in terrestrial and geologic reservoirs. Co-convenor: Curt Oldenburg. Berkeley, October 29, 2007. Co-author of whitepaper to EBI.

Workshop participant, Exploring science needs for the next generation of climatic change and elevated CO<sub>2</sub> experiments in terrestrial ecosystems, Crystal City, VA, April 14-18, 2008.

*Rapporteur*, Gradients and Transects session, NACP PI meeting, January 25, 2007.

*Co-Chair, Continental Synthesis Task Force*, Science Steering Group, (NACP), 2005

Testified for California Air Resources Board to US EPA hearing on AB32 waiver, May 30, 2007

*Organizing committee and session chair*, China-US Climate Change Conference, Berkeley, CA, May 2006.

*Contributing writer and reviewer*, California Climate Change: Science Report to Governor on Impacts and Adaptation Options. Convened by California Energy Commission, EPA, and ARB.

*Co-convenor and Co-chair*, AGU sessions (oral and poster): Carbon, Water, and Energy Exchange in Grassland and Cropland Ecosystems, Fall Meeting 2004. Modeling and observation of ecosystem, carbon cycle and energy system feedbacks in the Earth's climate, Fall Meeting 2006. Soils: Mechanisms of Carbon Stabilization and Response to Climate Change II, Fall Meeting 2007. Long-term networks for ecosystem GHGs fluxes: applications and development, Fall 2013. Representing soil carbon dynamics in global land models to improve future IPCC assessments, Fall 2014. Understanding the processes that affect soil organic matter decomposition by linking process-rich experiments and models, Fall 2014. Ideas in Terrestrial Biochemistry: Tell the Story, Ditch the PowerPoint, Fall 2014.

*National Technical Advisory Committee*, DOE National Institute for Global Environmental Change, 2003-2005

*Science advisor*, Union of Concerned Scientists assessment of climate change and wildfire impacts in California, 2005

*Invited participant and rapporteur*, NSF NEON Biogeochemistry Workshop, Boulder, July 2004

*Invited participant*, Interagency workshop on Ecosystem Chapter of the US Climate Change Science Plan, Spring, 2004.

*Session leader*, NSF-sponsored workshop on soil respiration: Carbon Respiration from Terrestrial Ecosystems (CaRTE). 2004

*Writing Team, Rapporteur*, North American Carbon Program workshop & implementation plan, 2003

*Co-Author*, Review Chapter of California Energy Commission Climate Change Assessment, 2003

*Lead Author*, Road map for non-CO<sub>2</sub> greenhouse gas inventories in California, California Energy Commission. 2003-2004

*Co-chair and author*, DOE Water Cycle Dynamics and Prediction Program plan, 2001

*Co-organizer NSF workshop* for research in joint geosciences and biosciences. Madison, WI, 2001.

*Co-author*, white paper on Biogeosciences in NSF. White Paper title “Linking Ecological Biology and Geoscience. Report to the National Science Foundation, April 4, 2002.”

*Co-author* NSF workshop on the Terrestrial Carbon Cycle, June 2000. White Paper title: “The changing carbon cycle: A terrestrial focus,”

*Co-author* DOE Terrestrial Ecosystems Research Facilities white paper, 2000.

*Invited Panelist* California Energy Commission Workshop on Climate Change Science, June 1999.

*Co-author* Agricultural and grassland ecosystems, appendix to “Working paper on carbon sequestration science and technology,” Office of Science and Office of Fossil Energy, DOE 1999

*Guest Instructor* workshop on “Monitoring, Evaluation, Reporting, Verification and Certification of CO<sub>2</sub> Emissions,” LBNL Energy and Environmental Technologies Division, 2000.

*Interviewer*, Switzer Environmental Fellowship

*Interviewer*, Compton Foundation Fellowship

*Reviewer* *Atmospheric Environment, Biogeochemistry, Chemosphere, Climatic Change, Ecological Applications, Geoderma, Global Biogeochemical Cycles, Global Change Biology, Journal of Geophysical Research, Limnology and Oceanography, Nature, Oecologia, Soil Science Society of America Journal*

*Proposal Reviewer* DOE, NSF, WESTGEC, EPA, EMSL

*Proposal Panel Member* DOE-TCP, DOE-NICCR

*Mentor*, ERULF, SULI, GREF, Pre-teacher training, and Mickey Leland programs.

### **Courses Taught**

Masters Seminar (ER292C, D, E) co-convenor, Fall 2012, Spring 2013, Spring 2014.

Quantitative Aspects of Global Environmental Problems (Energy and Resources 102) University of California, Berkeley, Spring 2006, Spring 2009 (co-taught), Spring 2011.

Climate Change Adaptation: policies, politics, and metrics (Energy and Resources 298), University of California, Berkeley, Spring 2010

Food Systems (Energy and Resources 298), University of California, Berkeley, Fall 2008, Spring 2009

Climate Change Impacts and Adaptation (Energy and Resources 290), University of California, Berkeley, Fall 2007, Fall 2008

Environmental Aspects of Biofuels (Energy and Resources 290N) University of California, Berkeley, Spring 2007.

The Root-Ecosystem Interface. Co-taught with Todd Dawson. Department of Integrative Biology, University of California, Berkeley. Spring 2002. Course number: IB 250.

Biogeochemistry: Carbon and Nitrogen Cycles (Environmental Science 320), Colorado College, Spring 1996. (*Visiting Professor*)

### **Other Teaching Experience**

*Seminar Leader on Climate Change*, Environmental Leadership Forum, UC Berkeley, July 13, 2011.

*Guest Lecturer*, UC Merced, Fall 2009

*Guest Lecturer at UCB*, ER201, Fall 2006, 2007, 2008, 2009, 2010, 2011, 2012; 2013. PH268 Spring 2008, 2009, 2010

*Guest Lecturer*, Monterey Institute of International Studies, February 2008, October 2008, November 2009, October 2011

*Lecturer* Environmental and Cultural Aspects of Energy, Workshop for Native American College *Instructor*, Native American Renewable Energy Education Project, Summer 1996.

*Teaching Assistant* Quantitative Aspects of Global Environmental Problems (Energy and Resources 102) University of California, Berkeley, Spring 1987.

*Guest Lecturer* UC Berkeley, UC Irvine, LBNL, 1991-1994, 1995, 1999-2000

*Guest Lecturer* Stanford University, 1999

*Guest Instructor*, workshop on “Monitoring, evaluation, reporting, verification and certification of CO<sub>2</sub> emissions” organized by Ed Vine, LBNL Energy and Environmental Technologies Division, 2000.

### **Invited Presentations, 1999-2013**

Process understanding on soil dynamics along the vertical profile, presented at the NSF RCN workshop on

Representing soil carbon dynamics in global land models to improve future IPCC assessments, Breckenridge, CO. June 12, 2014.

Connecting soil organic matter residence time with SOM molecular structure. EMSL session of the TES/SBR PI Meeting, Potomac, MD, May 6, 2014.

Mysteries of the deep: soil response to climate change. Kaplan Workshop on Biogeochemistry, Sdot Yam, Israel. May 27 2014.

Soil warming and the vulnerability of old soil organic carbon. DOE SBR/TES PI Meeting, Bolger Center, Bethesda, MD, May 14, 2013

What happens to Earth's climate when the permafrost thaws? Science in the Theater. Berkeley, CA. April 22, 2013.

Carbon – Ecosystems – Climate, and Technology path to deep greenhouse gas reductions by 2050. University of Zurich, Zurich, Switzerland. April 15, 2013.

Pathways to 2050: Modeling a Low-Carbon Future. United Nations Sustainable Development Solutions Network. New York City, NY. April 9, 2013. (co-presented with Jim Williams)

The Terrestrial Carbon Cycle: Implications for Climate Feedbacks and Mitigation. Life Sciences Seminar, Life Sciences Division, Berkeley Lab. January 8, 2013.

Two Aspects of Soils in Global Change: Challenges for models. SOM-5 Unifying concepts of organic matter (de-)stabilization in terrestrial and aquatic systems. Ascona, Switzerland. October 9, 2012

Terrestrial Ecosystem Science SFA. Environmental Microbiology Program, Berkeley Lab. September 5, 2012.

Linking new process understanding with Ecosystem carbon models. Terrestrial Ecosystem Science PI meeting, Washington, DC, April 24, 2012.

A radiocarbon database for improving understanding of global soil carbon dynamics (with L. Smith, S.E. Trumbore, J. Harden, T. Baisden, L. Nave, and D. Agarwal). AGU Fall Meeting, San Francisco, CA, December 7, 2012.

Secrets of the Soil, Science at the Theater series, Berkeley Repertory Theater, Berkeley California, November 7, 2011

Trees in Mountain Alpine Zones? And other potential warming impacts & mitigations. Barrow Arctic Research Center. August 20, 2011.

Video Interview about Ngee in Barrow, Alaska, August 19, 2011. <http://youtu.be/KIvUXoqC9g4>

Sit down with Sabin, July 6, 2011: <http://www.youtube.com/BerkeleyLab#p/a/u/0/QTvYAsG2RVE>

Teacher at international Environmental Leadership Forum, July 13, 2011

Terrestrial Carbon Dioxide Removal: Ecological Limits and Impacts. Modeling and Policy of CO<sub>2</sub> Removal from the Atmosphere, International Center for Climate Governance, Venice, Italy, May 30-31, 2011. (Margaret Torn, Lydia Smith, and Andy Jones)

Empirical perspective: Soil Carbon Cycle. INTERFACE Workshop, Captiva Island, FL, March 2, 2011

Integrating mechanisms into soil carbon models for global simulations. Invited presentation at AGU Fall Meeting, San Francisco, CA, December 15, 2011.

Soil carbon dynamics in a changing world: Shifting paradigms? Soil Science Zvieri, University of Zurich, Sept 29, 2011.

Soil carbon dynamics in a changing world: Shifting paradigms? SOM 2010, Hyères, France, September 22, 2011.

Carbon Cycling in Terrestrial Ecosystems Research Challenges and Opportunities. Department of Energy Subsurface Biogeochemical Research workshop, Washington, DC, March 28-31, 2010

Isotopic Disequilibria in <sup>13</sup>CO<sub>2</sub> fluxes in the U.S. Southern Great Plains. Invited presentation at AGU Fall Meeting, San Francisco, CA, December 18 2009.

Global change and feedback from organic carbon dynamics: Defining research visions on how to quantify the molecular-level mechanisms driving soil organic matter turnover. Soil Science Zvieri, University of Zurich, October 7, 2009.

Climate Change Science and GHG Emissions Reduction Modeling. European Commission's Learning and Development Unit, Brussels, Belgium. September 29, 2009. (Presented by Jim Williams)

Workshop Presentations for Department of Energy and presentations for the Berkeley Lab Directorate, various dates in 2009.

Soil Carbon Vulnerability and Black Carbon Stability. Invited presentation at AGU Fall Meeting, San Francisco, CA, December 16 2008.

The Direct Effects of land use and land cover change for Biofuels. Workshop on Measuring and Modeling the Lifecycle GHG Impacts of Transportation Fuels. EDF-ERG-EBI. Berkeley, CA, July 1-2, 2008.

Effects of erosion on CO<sub>2</sub> and N<sub>2</sub>O fluxes accompanying land use change. Greenhouse Gas Emissions from Biofuels Workshop, Berkeley, CA, June 9-10, 2008. Sponsored by EBI.

Mission and Discovery: Big Science and Little Science at a National Laboratory. Invited talk for the German-American Conference on Organization, Research Management, and Science Policy, How Do We Know What We Know about Climate Change? University of California, Berkeley, April 24-26, 2008.

CLASIC Carbon Air. The CLASIC workshop. March 26-27, Norman, Oklahoma.

Ecosystem feedbacks in the climate system and the role of soils. Environmental Engineering Seminar, University of California, Berkeley, February 29, 2008.

Linking the Response of Annual Grasslands to Warming and Altered Rainfall Across Scales of Gene Expression, Species, and Ecosystem, invited presentation at AGU Fall Meeting, San Francisco, CA, December 14 2007.

Annual Grassland Response to Altered Precipitation and Temperature: genes, species, and ecosystem, invited talk in "Ecosystem responses to experimental warming and other global climate change factors," Ecological Society of America annual meeting, San Jose, CA, August 8, 2007.

Isotope research opportunities, FACE Workshop, Oak Ridge, TN, June 6, 2007.

Ecosystem-Climate Interactions, Poster and flash slide presentation, German American Frontiers of Science, Kavli Frontiers of Science, National Academy of Sciences, Irvine, CA, June 1, 2007.

Speaker at Earth Day rally on Sproul Plaza, UC Berkeley, April 20, 2007.

Belowground Carbon Cycling and Root Modeling, Enriched Background Isotope Study workshop, New Orleans, LA, April 12, 2007.

Climate Change: In your lifetime. Presented to the American Junior Academy of Sciences, Lawrence Berkeley National Laboratory, February 15, 2007.

The Risk of Climate Change: What it Means for California. First Friday Forum, Lafayette, California February 2, 2007

Asymmetries in Climate Change Feedbacks: Why the Future may be Hotter Than you Think. AGU Fall Meeting, San Francisco, CA, December 12, 2006.

Climate Change: Facing the Impacts Now. Santa Rosa Jr College, Arts and Lectures Series. Santa Rosa, CA, October 11, 2006.

Climate Change Feedbacks and the Future Role of Soils. USGS Western Colloquium. Menlo Park, CA, August 14, 2006

Local Impacts of Global Warming, Presented to representatives from Alameda county and all its cities for the ICLEI Alameda Kickoff, Berkeley, CA, June 15, 2006

Next Generation Soil Carbon Models: Lessons from Isotopic Studies. Keynote address for the German Soil Priority Program 1090, Mechanisms of Soil Organic Matter Stabilization. Thurnau, Germany, March 21, 2006.

Are roots the source of all soil organic matter? Results from isotopic experiments in two temperate forests, AGU Fall meeting, San Francisco, 2005

From Mechanisms to Models. Final talk for the Second International Conference on Mechanisms of Soil Organic Matter Stabilization. Asilomar, CA, October 13, 2006.

TCP Soil Carbon Research, for the DOE/BER (BERAC) Carbon Cycle Research Review, Washington DC, Oct 4-6 2006, with contributions from J. Jastrow, R. Matamala, E. Paul, S. Morris, C. Garten, and P. Hanson.

Regional Analysis: ARM, for the DOE/BER (BERAC) Carbon Cycle Research Review, Washington DC, Oct 4-6 2006.

Women in Science. Panel discussion for Girls, Inc Alameda, Women of the 21<sup>st</sup> Century Club. Alameda, CA, July 19, 2005.

An Annual Grassland Exploration of Scaling from Genomes to Ecosystem Function. Program for Ecosystem Research Workshop, Flagstaff, AZ, April 12, 2005

Climate-Ecosystem Feedbacks: Observational Needs and Opportunities: A scoping project for the US Climate Change Science Program. Program for Ecosystem Research Workshop, Flagstaff, AZ, April 12, 2005

EBIS Microbial Carbon Cycling rates and substrates. Enriched Background Isotope Study Workshop, Livermore, CA, January 20, 2005.

Modeling wildfire and changing climates. Fire Ecology Seminar. University of California, Berkeley. September 2004.

Soil Carbon Dynamics in Two Novel Cases: The Historic Russian Archives and the Tennessee Burp. Informal Seminar. University of Zurich, Switzerland. May 2004.

Climate Change: Bringing it Back Home. Berkeley Lab Friends of Science Lecture Series. Berkeley City Main Library, April 26, 2004.

Biotic and biogeochemical feedbacks to climate change. AGU fall meeting, San Francisco, CA, December 2002. Presented by John Harte.

Mineral control of carbon storage in Andisols: Case studies and applications to other soils. European Union workshop. COST ACTION 622: "Soil Resources of European Volcanic Systems" Manderscheid, Germany, April 24-28, 2002. \*Keynote address.

Applications of Radiocarbon to Terrestrial Carbon Research. Martin Luther University, April 30, 2002, Halle, Germany.

Quantifying the Importance of Belowground Plant Allocation for Sequestration of Carbon in Soil. DOE Science Team Meeting, Argonne National Laboratory, IL. October 29-31, 2001

Historic Russian Soil Collection Soil Carbon in the Russian Steppe. Workshop on Mechanisms of Soil Carbon Storage, UC Santa Barbara, December 3-4, 2001.

Using  $^{13}\text{C}$  and  $^{14}\text{C}$  in Elevated  $\text{CO}_2$  Experiments to Understand Soil Carbon Cycling in Grasslands. Workshop on Mechanisms of Soil Carbon Storage, UC Santa Barbara, December 3-4, 2001.

Using  $^{13}\text{C}$  and  $^{14}\text{C}$  in Elevated  $\text{CO}_2$  Experiments to Understand Soil Carbon Cycling and Microbial Activity in Grassland. Isotopes in Ecology and the Earth Sciences at UC Berkeley; Berkeley Center for Stable Isotope Biogeochemistry, Berkeley, CA, August 2000.

Ecological Complexity and Climate Change; California Energy Commission Workshop on Climate Change Science, Sacramento, CA, June 1999.

Mineral Control of Soil Organic Matter Storage and Turnover. Center For Accelerator Mass Spectrometry Seminar Series, Lawrence Berkeley National Laboratory, 1999.

#### **Current Grants, Principal investigator**

1. The AmeriFlux Network Management Project, DOE BER 2012-2015
2. Terrestrial Ecosystem Science Scientific Focus Area, DOE BER 2010-2013
3. Atmospheric System Research Scientific Focus Area, DOE BER 2010-2013

#### **Current Grants, Co-investigator:**

1. Atmospheric Radiation Measurement Program: Carbon Cycle infrastructure. PI Sébastien Biraud
2. ARM Airborne Carbon Measurement Experiments (ACME). PI Sébastien Biraud
3. Next Generation Ecosystem Experiment (NGEE) – Arctic. Lead PI is Stan Wullschlegel at ORNL.

#### **Postdoctoral Research Advisors:**

Susan Trumbore, Peter Vitousek, Chris Field

#### **Thesis Advisors:**

John Harte, F. Stuart Chapin, III, Pamela Matson, John Holdren

#### **Postdoctoral Research Associates:**

Jeff Bird, Julia Gaudinski, Simon Davis, Caroline Masiello, Chris Swanston, Lara Kueppers, Karis McFarlane, Federico Maggi, Jen Aminzade, Ian Williams, Umakant Mishra, Naama Raz Yaseef, Biao Zhu, Caitlin Hicks Pries

#### **Serve(d) as reader, mentor, and/or collaborator for graduate students:**

Amber Kerr, Andrew Crane-Droesch, Asmeret Asefaw Behre, Danielle Svelha Christianson, Daniela Cusack, Kevin Fingerman, Katarina Georgiou, Karen Hammes (University of Zurich), Stacy Jackson, Andrew Jones,

Maren Kahle (Martin Luther University, FRG), Amber Kerr, Laurie Koteen, Bernardo Maestrini (University of Zurich), Rich Plevin, Nimisha Singh (University of Zurich), Emma Shepherdson, Erika Marin-Spiotta (DOE GREF Mentor), Rebecca Sutton, Craig Rasmussen (UC Davis), Lydia Smith, Zack Subin, Bettina Weibel (University Zurich), Erika Zavaleta (Stanford), John Zobitz (DOE GREF Mentor).

**Mentored Undergraduate, High School, and Teacher Interns (with name of Mentorship Program), in chronological order:**

Diane Kenski (ERULF), Pallavi Shukla (Mickey Leland), Erin Hanlon (Science Undergraduate Laboratory Internship, SULI), Braulia Sapien (Pre-Service Teacher Training, PST), Laura Wells (PST), Laura Huppert (Piedmont High School; Winner, Regional Science Fair and Intel International Science Fair in March 2005 with our project); Francesca Mia Hopkins (Environmental Science Senior Thesis, UCB; then Earth Sciences Division post baccalaureate fellow), Amy Morris (PST); Ryan Smith (PST); Alec Boyd; Chris Denn; Rachel Porras (SULI); Lynn Murphy (DOE Academy for Creating Teacher Scientists); Palermo Cuartero (Community College Initiative, CCI), Alfredo Hernandez (Community College Initiative); Kai Orans (Piedmont High), Julia Siegrist (Zurich), Caitlin O'Neill (SULI).

**Professional Affiliations**

American Geophysical Union  
Ecological Society of America