

## CURRICULUM VITAE

Richard T. Conant

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### Education:

May 1997	Ph.D	Botany (Ecology)	Arizona St. Univ.
		Dissertation: <i>Carbon pools and fluxes along a semiarid gradient in Northern Arizona.</i>	
Dec 1990	B.A.	Environmental Biology	Univ. of Colorado
		Undergraduate Research: <i>Effects of nutrient amendments on plant nutrient concentrations in two Alpine Tundra communities.</i>	

### Professional Experience:

2013-	Associate Dean of Academic Programs, Warner College of Nat. Resources, CSU
2010-	Associate Professor, Department of Ecosystem Science and Sustainability, CSU
2006-	Research Sci. III, Natural Resource Ecology Lab, CSU
2003-	Advising Faculty, Grad. Degree Program in Ecology, CSU
2002-2006	Research Sci. II, Natural Resource Ecology Lab, CSU
2001-2010	Joint Assistant Prof., Dept. of Forest, Range, and Watershed Stewardship, CSU
2001-2003	Regular Faculty, Grad. Degree Program in Ecology, CSU
2000-2002	Scientist, Natural Resource Ecology Lab, CSU

### Affiliations

2013-	Adjunct Professor, Queensland University of Technology
2011-	Sr. Research Scientist, International Livestock Research Institute
2010-2012	Professor, Queensland University of Technology
2010	Visiting Scientist, UN Food and Agricultural Organization, Rome
2005-	Research Affiliate, Center for Science and Technology Policy Research, U of CO

### Leadership/service:

#### Colorado State University

Associate Director, School of Global Environmental Sustainability, 2008-2013  
Member, Internal Advisory Board, Center for Multiscale modeling of Atmospheric Processes  
Core Team Member, Institute for Livestock and the Environment, 2008-2010

Chair, Warner College Curriculum Committee, 2012-2013  
Member, University Curriculum Committee, 2012-2013  
Member, Warner College Facilities Committee, 2007-2009  
Member, Warner College International Affairs Committee, 2007-2010  
CSU Benefits Committee Member, 2000-2001  
Judge, Front Range Student Ecology Symposium 1999-present  
Founder and co-Director (with Joe von Fischer), Summer Ecology Research Program, 2005-2008

#### NREL

Executive Committee Member, 2007-present  
Budget Committee Member, 2002-2004  
Ecosystem Science and Sustainability Curriculum Committee Chair, 2007-2009  
Space Committee Member, 2002-2007  
Scholarship Committee Member, 2003-2006  
Francis Clark Soil Biology Scholarship Committee Member, 2003-2006  
Seminar Series organizer 2005-2006  
Director, Analytical Facilities 2002-2009  
Program in Research and Scholarly Excellence ad hoc committee Member, 2003  
Graduate Student Coordinator 2002-2004

#### Graduate Degree Program in Ecology

Executive Committee Member, 2005-2007  
Academic Committee Member, 2002-2010

#### Journal reviews

Acta Agriculturae Scandinavica; Agricultural Systems; Agriculture, Ecosystems, and Environment; Agronomy Journal; Arctic, Antarctic, and Alpine Research; Australian Journal of Soil Research; Biogeochemistry; Biogeosciences; Canadian Journal of Soil Science; Carbon Management; Chemosphere; Climatic Change; Ecology; Ecological Applications; Ecological Modelling; Ecological Monographs; Ecology Letters; Ecosphere; Ecosystems; Encyclopedia of Life Sciences; Environmental Geology; Environmental Management; Environmental Policy and Management; Environmental Pollution; Environmental Science and Technology; European Journal of Soil Science; Forest Ecology and Management; Frontiers in Ecology and the Environment; Geoderma; Global Biogeochemical Cycles; Global and Planetary Change; Global Change Biology; Journal of Arid Environments; Journal of Applied Ecology; Journal of Geophysical Research – Biogeosciences; Journal of Environmental Quality; Journal of Soil and Water Conservation; Land Use Planning; Nature; Nature Geoscience; Pedosphere; Plant and Soil; PLoS ONE; Rangeland Ecology and Management; Soil & Tillage Research; Soil Biology & Biochemistry; Soil Science Society of America Journal.

#### Proposal reviews

American Chemical Society; Austrian Science Fund; Grant Agency of the Academy of Sciences of the Czech Republic; Kearney Foundation; Minnesota Environment and Natural

Resources Trust Fund Panel 2007; Department of Energy-NICCR; Department of Energy-NIGEC; National Research Council, Research Associateship Panelist 2008-present; Natural Sciences and Engineering Research Council of Canada; NASA Terrestrial Ecology; NASA-Earth System Fellowship Panel 2007; NASA/USDA Carbon Cycle Science Panel 2007. NASA Terrestrial Ecology Program; NASA-New Investigator Program Panel 2005; Netherlands Organisation for Scientific Research; New Zealand Global Research Alliance Livestock Research Program; NSF-Antarctic Organisms and Ecosystems; NSF-Climate Dynamics; NSF-Ecosystems; NSF-Geosciences; NSF-LTERB; NSF-OPUS; NSF-PIRE; Portuguese Foundation for Science and Technology; Science and Technology Center in Ukraine; Science Foundation Ireland; South Dakota 2010 Research Center Program; USDA NRI Soil Biology Program; USDA Small- and Medium-sized Farm Prosperity Program Panel 2008. USDA Tropical and Subtropical Agricultural Research Panel 2009.

#### Professional/societies

Editor, Biogeosciences, 2011-present  
 Subject Editor, Global Change Biology, 2010-present  
 Editorial Advisory Board, Global Change Biology 2007-2010  
 Co-coordinator for carbon cycle science, NSF Math-Science Partnership project, 2009-2010.  
 Guest Editor, Plant and Soil special issue on Soil Organic Matter Dynamics. 2009.  
 Member, Scientific Committee, North American Biochar Conference. Boulder, CO. August 2009.  
 Convener, Workshop on Temperature sensitivity of soil organic matter. Colorado Springs, CO. July 2009.  
 Member, Organization Committee, 2nd International Meeting on Soil Organic Matter Dynamics. Colorado Springs, CO. July 2009.  
 Member, National Research Council Research Associate Program Review Panel, 2008-present.  
 Member, Shortgrass Steppe Long-term Ecological Research Site, Science Steering group, 2008-present.  
 NEON Domain 10 Science Coordination Committee. 2008-2010.  
 Co-convener, Opportunities in Colorado for agricultural carbon offsets. Sterling, CO. 2008  
 Co-convener, Terrestrial Agricultural and Forestry Carbon Opportunities in Colorado. Brighton, CO. 2008  
 Member, Carbon Management Steering Group of Colorado Renewable Energy Collaboratory.  
 Review Panel, Legislative Citizens Commission on Minnesota's Resources. 2007  
 American Society of Agronomy Carbon Sequestration Working Group, 2007-2009  
 NEON Domain 10 Executive Committee, 2007-2008  
 Member, CO Governor's Climate Action Roundtable – Agricultural and Forestry Sectors. 2007.  
 Co-convener, Soil Carbon: Response to Climate Change, Symposium at the Fall Meeting of the American Geophysical Union. 12/07  
 Review Panel, USGS Land Cover Trends Program. 2007

Co-convener, The Contribution of Terrestrial and Anthropogenic Processes to Atmospheric CO<sub>2</sub> Concentrations in the Mid Continent NACP Intensive, Des Moines, IA, September 15-17, 2004

Co-convener, Reconciling supply and demand of carbon cycle science, Fort Collins, CO, September 18-19, 2004

Co-convener, Taking the PULSE of Colorado's Front Range, Denver, CO, November 17, 2004

#### Synthesis reports

Challenges and opportunities for carbon sequestration in grassland systems. Technical report for FAO. 2009

Rebuilding resilience through climate mitigation. Technical report for FAO. 2009

Author, Policy measures for mitigation and adaptation – pasture management in dry and cold environments. Submission to FAO's Intergovernmental Group on Meat and Dairy Products – Mitigating greenhouse gas emissions from animal production: A policy agenda. FAO 2009.

Contributor, Grasslands: Enabling their potential to contribute to greenhouse gas mitigation. A submission by FAO to the UNFCCC. FAO. 2009

Contributor, Reduced emissions and adaptation in landscapes. Report on The State-of-the-Art on Agriculture and Climate Change. The World Bank. 2009.

Coordinating Lead Author, Climate Change Science Program Scientific Assessment Product 2.2: State of the Carbon Cycle Report; Chapter 10, Agriculture, grasslands, shrublands, and arid lands, 2007

Lead Author, Climate Change Science Program Scientific Assessment Product 2.2: State of the Carbon Cycle Report; Chapter 3, The North American Carbon Budget, Past and Present. 2007

Co-organizer, Agricultural Production Monitoring, Rome May 8-11, 2006

Theme Team Member and Lead Author, Integrated Global Observations for Land (IGOL), a Theme Report for the Integrated Global Observation Strategy Partners, 2005-2007

Lead Author, USDA-NRCS National Engineering Handbook, Part 629, Chapter 3: Greenhouse Gases. 2005

Contributing Author, IPCC Good Practice Guidance for Land Use, Land-use Change, and Forestry, 2004

Contributing Author, IPCC Special Report on Land Use, Land Use Change, and Forestry, 2000

#### Advisory boards/consultations

Member, US Carbon Cycle Science Steering Group, 2012-present.

Member, American Carbon Registry Livestock Methodology Technical Committee, 2012

Member, Advisory Board, Coalition on Agricultural Greenhouse Gases (C-AGG), 2010-present

Expert consultation on greenhouse gas emissions and mitigation potential in agriculture, forestry, and fisheries sectors, UN Food and Agricultural Organization, December 2009.

Member, Rangeland Protocol Issues Advisory Group, Marin Carbon Project, 2008-2010.

Member, Grassland Carbon working Group, 2008-present.

#### Public presentations

Invited presentation on CSU's School of Global Environmental Sustainability at the monthly meeting of the Northern Colorado Renewable Energy Society. Fort Collins, CO. 3/10.

Invited presentation on CSU's School of Global Environmental Sustainability to the Rocky Mountain Regional Center of the Institute of International Education. 3/10.

Invited presentation on "Terrestrial carbon sequestration: Some perspectives that inform future terrestrial carbon sink policies" at the Annual Meeting of the Big Sky Partnership. Bozeman, MT. 9/09.

Invited presentation on "Greenhouse gases in Colorado – emissions and opportunities" to the 5<sup>th</sup> Annual Arkansas Valley Farm/Ranch/Water Symposium and Trade Show. 2/09.

Invited presentation on CSU's School of Global Environmental Sustainability at the "Bigger than Business Open House" 10/08.

Commencement address at the Graduation Ceremony for the Warner College of Natural Resources. 12/07.

Invited presentation on "COMET-VR and scaling issues" at the Kansas Forum on soil carbon mitigation: measurement and monitoring. 12/07.

Invited presentation on "Soil carbon – quantification for trading" to the Colorado RC&D Coordinators meeting 11/07.

Invited presentation on "Soil carbon credit programs" at the Annual Meeting of the Independent Bankers of Colorado. Denver, CO. 5/07.

Invited presentation by Moffatt Ngugi (PhD Student) on "Characteristics of key resource areas: information for grazing management" to Kenyan Grazing Professionals. Nairobi, Kenya. 4/07.

Soil carbon sequestration briefing to US Extension Agents at the Colorado Renewable Energy Options Conference. Denver, CO. 3/07.

CO House testimony on behalf of Colorado State House Bill HB-1203 sponsors. 2/07.

Project briefing on Assessment of soil carbon sequestration and greenhouse gas mitigation in Colorado's lands for the Colorado Pollution Prevention Advisory Board. Denver, CO. 1/07.

Research update for the Crow Valley Grazing Association on MODIS data and grazingland management. 10/06.

CO Senate testimony on behalf of Colorado State Senate Bill SB-214 sponsors. 4/06.

#### **Professional affiliations:**

1993-present	Ecological Society of America Chapter Secretary, Rocky Mountain Chapter of ESA, 1999-2000. Judge, ESA Student Presentations 1999-present.
1997-present	American Geophysical Union
1997-present	American Society of Agronomy

## **Publications:**

### Refereed Journal Articles

- Wallenstein, M. D., M. L. Haddix, D. L. Lee, R. T. Conant, and E. A. Paul. 2012. A litter-slurry technique elucidates the key role of enzyme production and microbial dynamics in temperature sensitivity of organic matter decomposition. *Soil Biology & Biochemistry* **47**:18-26.
- Berdanier, A. B., and R. T. Conant. 2011. Regionally-differentiated N<sub>2</sub>O emissions estimated by Bayesian inversion of inventory data. *Global Change Biology* **18**:928-935.
- Suseela V., R.T. Conant, M.D. Wallenstein, and J.S. Dukes. 2012. Effects of soil moisture on the temperature sensitivity of heterotrophic respiration vary seasonally in an old-field climate change experiment. *Global Change Biology* **18**:336-348.
- Conant, R. T., M. G. Ryan, G. I. Ågren, H. E. Birge, E. A. Davidson, P. E. Eliasson, S. E. Evans, S. D. Frey, C. P. Giardina, F. Hopkins, R. Hyvönen, M. U. F. Kirschbaum, J. M. Lavalée, J. Leifeld, W. J. Parton, M. Steinweg, M. D. Wallenstein, J. A. M. Wetterstedt, and M. A. Bradford. 2011. Temperature and soil organic matter decomposition – synthesis of current knowledge and a way forward. *Global Change Biology* **17**:3392-3404.
- Conant, R. T., S. M. Ogle, E. A. Paul, and K. Paustian. 2011. Reliable methods are fundamental for legitimate terrestrial offset programs. *Frontiers in Ecology and the Environment* **3**:169-173.
- Conant, R. T. 2011. Sequestration through forestry and agriculture. Invited review for Wiley Interdisciplinary Reviews: Climate Change **2**:238-254.
- Plante, A. F., J. M. Fernandez, M. L. Haddix, J. M. Steinweg, R. T. Conant. 2011. Biological, chemical and thermal indices of soil organic matter stability. *Soil Biology and Biochemistry* **43**:1051-1058.
- Cotrufo M.F., R.T. Conant, and K. Paustian. 2011. Soil organic matter dynamics: land use, management and global change. *Plant and Soil* **338**:1-3.
- Haddix, M. L., A. F. Plante, R. T. Conant, E. A. Paul, J. Six, J. M. Steinweg, K. Magrini-Baer, R. A. Drijber, and S. J. Morris. 2011. Temperature sensitivity of active and resistant soil organic matter decomposition during long-term incubation. *Soil Science Society of America Journal* **75**:56-68.
- Conant R.T., M.L. Haddix, and K. Paustian. 2010. Partitioning soil carbon responses to warming: Model-derived guidance for data interpretation. *Soil Biology & Biochemistry* **42**:2034-2036.
- Plante, A.F., R.T. Conant, J. Carlson, R. Greenwood, J. Schuman, M.L. Haddix, and E. A. Paul. 2010. Decomposition temperature sensitivity of isolated soil organic matter fractions. *Soil Biology & Biochemistry* **42**:1991-1996.
- Lisboa, C., C. E. P. Cerri, C. C. Cerri, R. T. Conant, and M. L. Haddix. 2009. Soil carbon turnover measurement by physical fractionation at a forest-to-pasture chronosequence in the Brazilian Amazon. *Ecosystems* **12**:1212-1221.
- Plante, A. F., A. Kougentak, A. M. Sen, C. Slominski, J. Six, E. A. Paul, and R. T. Conant. 2009. Does physical protection of soil organic matter attenuate temperature sensitivity? *Soil Science Society of America Journal* **73**:1168-1172.

- Stewart, C. E., K. Paustian, R. T. Conant, A. F. Plante, and J. Six. 2009. Soil carbon saturation: Implications for measurable carbon pool dynamics in long-term incubations. *Soil Biology & Biochemistry* **41**:357-366.
- Steinweg, J. M., A. F. Plante, R. T. Conant, E. A. Paul, and D. L. Tanaka. 2008. Patterns of substrate utilization during long-term incubations at different temperatures. *Soil Biology & Biochemistry* **40**:2722-2728.
- Conant, R. T., J. M. Steinweg, M. L. Haddix, E. A. Paul, A. F. Plante, and J. Six. 2008. Experimental warming shows that decomposition temperature sensitivity increases with soil carbon recalcitrance. *Ecology* **89**:2384-2391.
- Ngugi, M. K., and R. T. Conant. 2008. Ecological and social characterization of key resource areas in Kenyan rangelands. *Journal of Arid Environments*. **72**:820-835.
- Conant, R.T., R.A. Drijber, M.L. Haddix, W.J. Parton, E.A. Paul, A.F. Plante, J. Six, J.M. Steinweg. 2008. Sensitivity of organic matter decomposition to warming varies with its quality. *Global Change Biology*. **14**:868-877.
- Stewart, C. E., K. Paustian, R. T. Conant, A. F. Plante, and J. Six. 2008. Soil carbon saturation: Linking concept and measurable carbon pools. *Soil Science Society of America Journal* **72**:379-392.
- Stewart, C. E., K. Paustian, R. T. Conant, A. F. Plante, and J. Six. 2007. The soil carbon saturation concept: Evaluation and corroboration by long-term incubations. *Soil Biology and Biochemistry*. **40**:1741-1750.
- Conant, R. T., M. Easter, K. Paustian, A. Swan, and S. Williams. 2007. Impacts of periodic tillage on soil C stocks: a synthesis. *Soil & Tillage Research* **95**:1-10.
- Stewart, C. E., K. Paustian, A. F. Plante, and J. Six. 2007. Soil C saturation: Concept, evidence, and evaluation. *Biogeochemistry* **86**:19-31.
- Logar, N. and R. T. Conant. 2007. Reconciling the supply of and demand for carbon cycle science in the U.S. agricultural sector. *Environmental Science & Policy* **10**:75-84.
- Plante, A. F., C. E. Stewart, R. T. Conant, K. Paustian, and J. Six. 2006. Soil management effects on organic carbon storage in fractions physically isolated from a Gray Luvisol soil. *Canadian Journal of Soil Science* **86**:141-151.
- Plante, A. F., R. T. Conant, E. A. Paul, K. Paustian, and J. Six. 2006. Acid hydrolysis of easily dispersed and microaggregate-derived and silt- and clay-sized fractions to isolate biologically resistant soil organic matter. *European Journal of Soil Science* **57**:456-467.
- Paul, E.A., S.J. Morris, R.T. Conant, and A.F. Plante, 2006: Does the acid hydrolysis-incubation method measure meaningful soil organic matter pools? A review of the literature. *Soil Science Society of America Journal* **70**: 1023-1035.
- Plante, A. F., R. T. Conant, C. E. Stewart, K. Paustian, and J. Six. 2006. Impact of soil texture on the distribution of soil organic matter in physical and chemical fractions. *Soil Science Society of America Journal* **70**:287-296.
- Conant, R. T., S. J. Del Grosso, W. J. Parton, and K. Paustian. 2005. Nitrogen pools and fluxes in grassland soils sequestering carbon. *Nutrient Cycling in Agroecosystems* **71**:239-248.
- Conant, R. T., J. Six, and K. Paustian. 2004. Land use effects on soil carbon fractions in the southeastern United States: II. Change in soil carbon fractions along a forest to pasture chronosequence. *Biology and Fertility of Soils* **40**:194-200.

- Conant, R. T., and K. Paustian. 2004. Grassland management activity data: Current sources and future needs. *Environmental Management* **33**:467-473.
- Ogle, S. M., R. T. Conant, and K. Paustian. 2004. Deriving grassland management factors for a carbon accounting method developed by the intergovernmental panel on climate change. *Environmental Management* **33**:474-484.
- Conant, R. T., J. M. Klopatek, P. Dalla-Betta, and C. C. Klopatek. 2004. Controls on soil respiration soil respiration in semiarid soils. *Soil Biology and Biochemistry* **36**:945-951.
- Six, J., S. M. Ogle, F. J. Briedt, R. T. Conant, and K. Paustian. 2004. The potential to mitigate global warming with no-tillage management is only realized when practiced in the long term. *Global Change Biology* **10**:155-160.
- Conant, R. T., J. Six, and K. Paustian. 2003. Land use effects on soil carbon fractions in the southeastern United States: I. Management intensive versus extensive grazing. *Biology and Fertility of Soils* **36**:386-392.
- Pielke, R. A. and R. T. Conant. 2003. Best practices in prediction for decision making: Lessons from the atmospheric and earth sciences. *Ecology* **84**:1351-1358.
- Conant, R. T., G. Smith, and K. Paustian. 2003. Spatial Variability of Soil Carbon in Forested and Cultivated Sites: Implications for Change Detection. *Journal of Environmental Quality* **32**:278-286
- Conant, R. T. and K. Paustian. 2002. Potential soil carbon sequestration in overgrazed grassland ecosystems. *Global Biogeochemical Cycles* **16**: art. no. 1143
- Six, J., R. T. Conant, E. A. Paul, and K. Paustian. 2002. Stabilization mechanisms of soil organic matter: Implications for C-saturation of soils. *Plant and Soil* **245**:155-176
- Conant, R. T., and K. Paustian. 2002. Spatial variability of soil organic carbon: Implications for detecting change at different scales. *Environmental Pollution* **116**:127-135.
- Conant, R. T., Paustian, K., and E. T. Elliott. 2001. Grassland management and conversion into grassland: Effects on soil carbon. *Ecological Applications* **11**:343-355.
- Conant, R. T., J. M. Klopatek, and C. C. Klopatek. 2000. Environmental factors controlling soil respiration in three semiarid ecosystems. *Soil Science Society of America Journal* **64**:383-390.
- Conant, R. T., J. M. Klopatek, and C. C. Klopatek. 1998. Carbon pools and fluxes along an environmental gradient in Northern Arizona: Potential effects of climatic change. *Biogeochemistry* **43**: 43-61
- Klopatek, J. M., R.T. Conant, J. M. King, R. A. Malin, K. L. Murphy, and C. C. Klopatek. 1996. Implications of spatial and temporal patterns of carbon flux across a semiarid ecotone. *Landscape and Urban Planning* **39**: 309-317
- Bowman, W. D. and R. T. Conant. 1994. Shoot growth dynamics and photosynthetic response to increased nitrogen availability in the alpine willow *Salix glauca*. *Oecologia* **97**: 93-99
- Bowman, W. D., T. A. Theodose, J. C. Schardt, and R. T. Conant. 1993. Constraints of nutrient availability on primary production in two alpine tundra communities. *Ecology* **74**: 2085-2097
- Refereed Book Chapters and Reports
- Plante, A. F., and R. T. Conant. 2013. Soil Organic Matter Dynamics, Climate Change Effects. DOI: 10.1007 in B. Freedman, editor. *Handbook of Global Environmental Pollution: Volume 1, Global Environmental Change*. Springer-Verlag, Berlin.

- Ojima, D. S., J. G. Canadell, R. T. Conant, C. Negra, and P. Tschakert. 2013. Carbon cycle sustainability and land use. Pages 523-538 in D. Brown, C. A. Robinson, N. H. F. French, and B. C. Reed, editors. *Land use and the Carbon Cycle: Science and Applications in Human and Environment Interactions*. Cambridge University Press, Cambridge.
- Conant, R. T. 2012. Grassland soil organic carbon stocks: status, opportunities, vulnerability. Pages 275-302 in R. Lal, K., Lorenz, R. F. Hüttl, B. U. Schneider, and J von Braun, editors. *Recarbonization of the Biosphere*. Springer, Dordrecht.
- Paustian, K., S.M. Ogle and R.T. Conant. 2012. Quantification and Decision Support Tools for US Agricultural Soil Carbon Sequestration. Pages 307-341 in D. Hillel and C. Rosenzweig editors. *Handbook of Climate Change and Agroecosystems: Impact, Adaptation and Mitigation*. World Scientific, Singapore.
- Conant, R.T., C. Neely, and C. Batello. 2010 Conclusions. Pages 267-272 in *Grassland sequestration: management, policy, and economics* C. Batello, R. T. Conant, and M. Abberton editors. UN Food and Agricultural Organization. Rome.
- Conant, R. T., K. Paustian, F. Garcia-Oliva, H. H. Janzen, V. J. Jaramillo, D. E. Johnson, and S. N. Kulshreshtha. 2007. *State of the Carbon Cycle: Agricultural lands, grasslands, shrublands, and arid lands*. Department of Energy, Washington, DC.
- Pacala, S., R. A. Birdsey, S. Bridgham, R. T. Conant, K. Davis, B. Hales, R. A. Houghton, J. C. Jenkins, M. Johnson, G. Marland, K. Paustian, J. Caspersen, R. Socolow, and R. S. J. Tol. 2007. *State of the Carbon Cycle: The North America Carbon Budget Past and Present*. Department of Energy, Washington, DC.
- Conant, R.T., D.S. Johnson, and S.M. Ogle. 2005. USDA-NRCS National Engineering Handbook, Part 629, Chapter 3: Greenhouse Gases.
- Nabuurs, G.-J., et al (including R. T. Conant). 2004. LUCF-sector good practice guidance. in J. Penman, M. Gytarsky, T. Hirishi, T. Krug, and D. Kruger, editors. *IPCC Good Practice Guidance for LULUCF*. Institute for Global Environmental Strategies, Hayama, Japan.
- Conant, R. T. 2003. Grazer-dominated ecosystems. in *Encyclopedia of Life Sciences*. Nature Publishing Group, London.
- Conant, R. T., K. Paustian, and E. T. Elliott. 2002. Pasture land use in the southeastern US: Implications for C sequestration. Pages 423-432 in *Agricultural practices and policies for carbon sequestration in soil*. R. Lal, R. F. Follet, and J. M. Kimble, editors. CRC Press, Boca Raton.
- Sampson, R. M., et al (including R. T. Conant). 2000. Additional human-induced activities - article 3.4. Pages 180-281 in *Land Use, Land-Use Change, and Forestry*. R. T. Watson, I. R. Noble, B. Bolin, N. H. Ravindranath, D. J. Verardo, and D. J. Dokken, editors. Cambridge University Press, Cambridge.

### Books

- Batello, C., R. T. Conant, and M. Abberton, editors. 2010. *Grassland sequestration: management, policy, and economics*. 338 pages. UN Food and Agricultural Organization. Rome.

#### In Press

Signor, D., R. T. Conant, and C. E. P. Cerri. 2013. N<sub>2</sub>O emissions due to nitrogen fertilizer application in two regions of sugarcane cultivation in Brazil. *Environmental Research Letters* 8:doi:10.1088/1748-9326/1088/1081/015013.

#### Non-peer Reviewed Articles and Proceedings

- Conant, R. T., R. B. Boone, M.K. Ngugi. 2004. Remote sensing and ecological modeling for assessing C sequestration in semiarid grassland soils. In *Proceedings of the West Africa Carbon Sequestration workshop*, Mali. February 26-27, 2004.
- Conant, R. T. and G. Brann, and G. D. Johnson. 2003. Seasonality of grazing impacts on light-use-efficiency and APAR in southeastern pastureland: implications for remote sensing of ANPP. *Proceedings of the 30<sup>th</sup> International Symposium on Remote Sensing of Environment*. Honolulu, HI. November 10-14, 2003.
- Conant, R. T., and K. Paustian. 2001. The effects of grazing management on soil carbon (carbon sequestration). Pages 319-328 *in* B. Drake, editor. 1st National Conference on Grazing Lands. USDA, Las Vegas, NV.
- Conant, R. T., and K. Paustian. 1998. Carbon sequestration through improved pasture management. Pages 32-40 *in* M. Orlic, editor. The Ruminant Livestock Efficiency Program Annual Conference. US Environmental Protection Agency, Athens, GA.
- Asner, G., and R. T. Conant. 1996. Global biogeochemical cycles and process-based ecosystem models. Pages 135-144 *in* D. Schimel and R. Monson, editors. *Terrestrial Ecosystems and the Atmosphere*. National Center for Atmospheric Research, Boulder, CO.

#### Submitted

- Conant, R.T., A.A. Berdanier and P.R.Grace. 2013. Patterns and trends in nitrogen use and nitrogen recovery efficiency in world agriculture. *Global Biogeochemical Cycles*, submitted 10/12.
- Li, Dejun, Schädel, Christina, Haddix, Michelle, Paul, Eldor; Conant, Richard T., Li, Jianwei Zhou, Joe, and Luo, Yiqi. 2013. Differential Responses of Soil Organic Carbon Fractions to Warming: Results from an Analysis with Data Assimilation. *Environmental Science & Technology*. Submitted 11/12.
- Mario Herrero, Richard T. Conant, Petr Havlík, Alexander N. Hristov, Pete Smith, Pierre Gerber, Margaret Gill, Klaus Butterbach-Bahl, Benjamin Henderson, and Philip K. Thornton. 2013. Greenhouse gas mitigation potentials in the livestock sector. *Nature Climate Change*. Submitted 1/13.

#### **Funded Research Projects:**

- 2012-2013 Australia National Data System. The fate of aboveground carbon inputs: a key process that is poorly understood. Department of Agriculture, Fisheries, and Forestry. \$A378,161.
- 2012-2013 A Data Transformation and Model Calibration System for Carbon and Nutrient Dynamics in Australian Ecosystems. Australian National Data Service. \$A200,000.
- 2012-2015 A framework for enhancing EO capacity for Agriculture and Forest Management in Africa as a contribution to GEOSS; \$153,000.

- 2012-2013 Deriving a nitrous oxide emission factor map for Australian croplands. Australian Department of Climate Change and Energy Efficiency; \$A67,100.
- 2011-2014 Soil, Land Use and Climate Change: A new Bacallaureate concentration; co-PI with F. Cotrufo, others; USDA; \$139,694.
- 2011-2012 The abatement potential of soil carbon sequestration in agriculture; UN Food and Agricultural Organization; \$115,931.
- 2011-2012 Improving long-term predictions of carbon and nutrient dynamics in Australia's agroecosystems: Assimilation of datasets from long-term research sites for verification of biophysical models of vegetation and soil changes. Australian Centre for Ecological Analysis and Synthesis; \$A49,949.
- 2010-2013 Large scale increases in soil carbon storages under grazing systems to offset Queensland's greenhouse gas emissions; \$A600,000
- 2010-2011 Temperature control on organic carbon sequestration and binding mechanisms by iron oxides; co-PI with Thomas Borch and Martin Obst; Canadian Light Source; support for two beamtime cycles over 12 mos; no financial support.
- 2010-2011 Organic carbon binding mechanisms: temperature controls; co-PI with Thomas Borch and Martin Obst; Lawrence-Berkeley Light Source; support for two beamtime cycles over 12 mos; no financial support.
- 2010-2012 Development of Protocols and Accounting Methods for Carbon Sequestration on US Rangelands; PI with Environmental Defense Fund as lead institution; USDA-CIG; \$638,793
- 2010 Building a solution-oriented team for a rangeland coordinated agricultural project; PI with D. Ojima, T. Chermack, J. Morgan (USDA), and W. Silver (UC Berkeley); USDA; \$50,000.
- 2009-2010 On-farm greenhouse gas emissions from energy and livestock integration into COMET-FARM; Co-PI with K. Paustian, S. Ogle; USDA-NRCS; \$283,129.
- 2009-2011 Quantifying C Sequestration Potential through Improved Pasture Management. PI with K. Paustian. Environmental Protection Agency. \$150,000.
- 2009 Reconciling predictions of kinetic theory with observations of decomposition responses to temperature: Biological, biochemical, and edaphic constraints – supplement to support Research Education for Teachers. PI with J Moore. National Science Foundation. \$15,000.
- 2009 Sampling to document changes in soil carbon stocks under CRP. PI with K. Paustian. Colorado Department of Public Health and the Environment. \$9,954.
- 2009-2012 Reconciling predictions of kinetic theory with observations of decomposition responses to temperature: Biological, biochemical, and edaphic constraints. PI with E. Paul and M. Wallenstein. National Science Foundation. \$729,000.
- 2008-2013 Research opportunities in ecosystem science and environmental sustainability. Co-PI with J. Moore, M. Wallenstein, H. Steltzer, and J. Hanzlick. UDSA-CSREES. \$234,000.
- 2008-2009 Field-gate to factory-gate biofuel emission offset calculator. CSU Clean Energy Supercluster. \$35,000.
- 2008-2009 Whole-farm greenhouse gas accounting-COMET-FARM; Co-PI with K. Paustian, S. Ogle; USDA-NRCS; \$262,995.

- 2007-2010 Ecosystem Controls on C Sequestration Following Afforestation of Agricultural Lands. Co-PI with E.A. Paul and S.J. Morris (Bradley U.). Department of Energy. \$819,975.
- 2007-2008 Enhancing the COMET-VR system: uncertainty estimation and expanded management options. Co-PI with K. Paustian and S. Ogle. USDA/NRCS. \$251,348.
- 2007-2009 Soil carbon sequestration for Colorado. Co-PI with K. Paustian and D.S. Ojima. State of Colorado (House Bill 1203). 5/07-4/09. \$170,000.
- 2007-2010 Parsing the mechanisms that drive soil decomposition responses to climate change: a test of the substrate depletion and microbial acclimation hypotheses. Co-PI with Wallenstein, M. and E.A. Paul. 6/07-5/10. Department of Energy – NICCR. \$374,970.
- 2007 Shortgrass Steppe Field Station. National Science Foundation. Co-PI with I. Burke, W. Lauenroth, J.A. Morgan, A.K. Knapp, J. Detling, J. Moore, and others. 7/06. \$279,000.
- 2006 Assessments of Soil Carbon Sequestration and Greenhouse Gas Mitigation in Colorado's Land Systems. PI with K. Paustian and D.S. Ojima. State of Colorado. 8/06-3/07. \$50,000.
- 2006 REU Supplement for Vulnerability of soil organic matter to temperature changes: Exploring constraints due to substrate decomposability. PI with E.A. Paul, J. Six (UC Davis), R. Drijber (U of Nebraska), and A.F. Plante NSF-Ecosystems. 5/06-12/06. \$11,000.
- 2005-2009 Science Policy Assessment and Research on Climate (SPARC) for Decision Making Under Uncertainty. Co-PI with R.A. Pielke, Jr (University of Colorado) and D. Sarewitz (Arizona State U.). National Science Foundation. \$2,400,000.
- 2005-2006 Integrated Global Observation System – Land Theme Report. PI. USGS. \$68,188.
- 2005 REU Supplement for Vulnerability of soil organic matter to temperature changes: Exploring constraints due to substrate decomposability. PI with E.A. Paul, J. Six (UC Davis), R. Drijber (U of Nebraska), and A.F. Plante NSF-Ecosystems. \$12,000.
- 2005 Shortgrass Steppe Field Station. Co-PI with I. Burke, W. Lauenroth, J.A. Morgan, A.K. Knapp, J. Detling, J. Moore, and others. CSU-Academic Enrichment Program. 8/05. \$1,500,000.
- 2005 Shortgrass Steppe Field Station. National Science Foundation. Co-PI with I. Burke, W. Lauenroth, J.A. Morgan, A.K. Knapp, J. Detling, J. Moore, and others. 7/05. \$232,378.
- 2004-2009 CO<sub>2</sub> Fluxes between Agricultural Lands and the Atmosphere: Towards more Complete Accounting by Integrating Remote Sensing with Simulation Modeling. Co-PI with S. Ogle, K. Paustian. NASA. \$1,189,547.
- 2004-2007 Vulnerability of soil organic matter to temperature changes: Exploring constraints due to substrate decomposability. PI with E.A. Paul, J. Six (UC Davis), R. Drijber (U of Nebraska), and A.F. Plante NSF-Ecosystems. \$540,000.
- 2004-2006 PULSE: Taking the pulse of Colorado's Front Range. PI with J. Baron. US Geological Survey. \$40,600.
- 2004-2007 Characterizing key resource areas in Kenyan rangelands. Earth System Fellowship supervisor for M. Ngugi. NASA. \$72,000.
- 2004-2007 Ecosystem Controls on C Sequestration Following Afforestation of Agricultural Lands. Co-PI with E.A. Paul and S.J. Morris (Bradley U.). Department of Energy. \$619,202.

- 2004-2006 Improved agricultural soil greenhouse gas inventories for South American countries. Co-PI with K. Paustian, S.M. Ogle, and S.J. DelGrosso (USDA). EPA. \$170,000.
- 2004-2005 Agricultural land use and management impacts on soil organic carbon: National Inventory reporting and IPCC inventory guidelines. Co-PI with K. Paustian and S.M. Ogle. EPA. \$99,907.
- 2003-2005 National Engineering Handbook, Part 629, Agriculture Air Quality: Greenhouse Gases. PI with S. Ogle, K. Paustian, D. Johnson. USDA/NRCS. \$42,881.
- 2002-2004 Understanding and Enhancing the Linkages Between Decision Making and Carbon Cycle Research. Co-PI with R.A. Pielke Jr. (U. of Colorado) and D. Sarewitz (Arizona State U.). NOAA. . \$142,850.
- 2002-2005 Consortium for Agricultural Soils Mitigation of Greenhouse Gasses. Co-PI with Keith Paustian. USDA. \$1,050,856.
- 2001-2005 An Integrated Multi-scale Investigation of Grazing Land Management: Implications for Carbon Cycling. PI. NASA. \$343,855.
- 2001 An Integrated Approach to Develop Baseline Soil Carbon Content in Semiarid Eastern Oregon. PI with J. Six, S. Ogle. Environmental Resources Trust. \$19,953.
- 2000-2004 Soil carbon saturation: determining limits on carbon sequestration capacity. Co-PI with J. Six (UC Davis), and K. Paustian. DOE. \$610,000.
- 2000-2001 Quantifying precision of soil sampling. Environmental Resources Trust. PI with K. Paustian. \$18,764.

**Abstracts/Presentations** (since 2004 only):

- Conant, R.T.. 2013. Volatility of forage production and the world's livestock production systems – drivers and consequences. Invited presentation at the International Livestock Research Institute. Nairobi. 1/13.
- Conant, R.T.. 2013 Agriculture and climate change: Emissions and solutions in context. Invited Presentation at the International Center for Agroforestry Research. Nairobi. 1/13.
- Henderson, B. and R.T. Conant. 2013. New findings on soil C sequestration potential of the World's grasslands. Invited Presentation at the International Workshop on the Global Agenda of Action. Nairobi. 1/13.
- Conant, R.T. 2012. Global potential for carbon sequestration in grasslands. Invited presentation at the 17<sup>th</sup> Conference of the Parties, Doha. 12/12.
- Lavallee, J.M. and R.T. Conant. 2012. Is mineral-bound soil organic matter sensitive to temperature? Invited presentation at EUROSIL 2012. Bari, Italy. 7/12.
- Conant, R.T. 2012. Grassland degradation – a global perspective. Invited Presentation at the International Workshop on the Global Agenda of Action. Brasilia. 5/12.
- Conant, R.T. 2012. Temperature controls on decomposition: a review and a way forward. Invited presentation at the Cold and Arid Environmental Research Institute, Chinese Academy of Sciences. Lanzhou, China 8/2012.
- Conant, R. T. Patterns and trends in nitrogen use and nitrogen recovery efficiency in world agriculture. Invited presentation at the UN FAO. Rome. 7/2012.
- Lavallee, J.M., R.T. Conant, T. Borch, M. Obst, and T. Z. Regier. Investigation of Organo-mineral Complexes Using Synchrotron-Based Near Edge X-Ray Spectroscopy. Oral

- presentation at the 22<sup>nd</sup> VM Goldschmidt Conference. Montreal. 7/2012.
- Haddix, M.L., Hannah E. Birge, Richard Conant, Sherri Morris, Ronald Follett, Francisco Calderon, Kim Magrini, Matthew Wallenstein, Christopher Blackwood, Suhana Chattopadhyay, Merle Vigil and Eldor Paul. 2011. The Role of Soil Characteristics and Microbial Community In Substrate Utilization. Poster presentation at the Annual Meeting of the American Society of Agronomy. San Antonio. 10/2011.
- Calderon, F., Michelle Haddix, Richard Conant, Sherri Morris, Ronald Follett, Kim Magrini, Matthew Wallenstein, Christopher Blackwood and Eldor Paul. 2011. Mid-Infrared Soil Spectral Changes Due to Cultivation, C Mineralization, and Short-Term Substrate Utilization. Poster presentation at the Annual Meeting of the American Society of Agronomy. San Antonio. 10/2011.
- Chattopadhyay, S., Michelle Haddix, Richard Conant, Sherri Morris, Eldor Paul and Christopher Blackwood. 2011. Agricultural Practices Affecting Soil Carbon Sequestration Cause Shifts In Microbial Community Assembly As Revealed by Tag Encoded Pyrosequencing. Poster presentation at the Annual Meeting of the American Society of Agronomy. San Antonio. 10/2011.
- Paul, E. A. Sherri Morris, Kim Magrini, Chris Blackwood, Francisco Calderon, Richard Conant, Ron Follett and Michelle Haddix. 2011. Soil Microbiology, Ecology and Biochemistry: An Exciting Present and a Great Future Based On a Solid Past. Francis Clark invited lecture. Annual Meeting of the American Society of Agronomy. San Antonio. 10/2011.
- Conant, R. T. 2011. Volatility of forage production and the world's livestock production systems: drivers and consequences. Invited presentation at the third Sino-French workshop on ecosystem carbon dynamics. Shenyang, China. 8/2011.
- Conant, R. T. 2011. Agriculture and climate change: emissions and solutions in context. Invited Presentation at the Industry-Faculty of Science and Technology Lecture Series, Queensland University of Technology. Brisbane. 6/2011.
- Conant, R.T. 2011. Grassland Soil Carbon Stocks: Status, Opportunities and Vulnerability. Invited Presentation at the Chinese Academy of Sciences, Institute for Applied Ecology; Shenyang, China. 5/2011.
- Conant, R.T. 2011. Soil carbon saturation and stabilization. Invited Presentation at the Chinese Academy of Sciences, Institute for Applied Ecology; Shenyang, China. 5/2011.
- Conant, R.T. 2011. Grassland Soil Carbon Stocks: Status, Opportunities and Vulnerability. Invited Presentation at the Chinese Academy of Sciences, Northeast Institute for Geography and Applied Ecology; Changchun, China. 5/2011.
- Conant, R.T. 2011. Grassland Soil Carbon Stocks: Status, Opportunities and Vulnerability. Invited Presentation at Recarbonizing the Biosphere. Potsdam, Germany. 3/2011.
- Lee, D., M.L. Haddix, M.D. Wallenstein, R.T. Conant, and E.A. Paul. 2011. Organic matter decomposition and its response to temperature in oak and pine litter. Poster presentation at the Front Range Student Ecological Symposium. Fort Collins, CO. 2/2011.
- Berdanier, A.A. and R.T. Conant. 2011. Regionally-differentiated estimates of cropland N<sub>2</sub>O emissions reduce uncertainty in global calculations. Oral presentation at the Front Range Student Ecological Symposium. Fort Collins, CO. 2/2011. (*Best presentation – 2<sup>nd</sup> place*)

- Birge, H. M.L. Haddix, R. T. Conant, M. Wallenstein, and E. A. Paul. Biological controls on the decomposition of soil organic matter. Poster presented at the Annual Meeting of the American Society of Agronomy. Long Beach, CA. 11/2010.
- Haddix, M. L. K. Magrini-Bair, R. T. Conant, M Wallenstein, S. J. Morris, Francisco Calderon, and E. A. Paul. 2010. Pyrolysis molecular beam mass spectrometry to characterize soil organic matter relative to its dynamics. Poster presented at the Annual Meeting of the American Society of Agronomy. Long Beach, CA. 11/2010.
- Conant, R. T. 2010. Understanding and managing climate-carbon feedbacks. Invited presentation at the Institute for Sustainable Resources. Queensland University of Technology. Brisbane, Australia. 3/10.
- Conant, R.T.. 2010. Rangeland Carbon Cycle Science: What do we know? Invited presentation at the Annual Meeting of the Society for Rangeland Management. Denver, CO. 1/10.
- Conant, R.T.. 2010. Measurements and modeling for carbon sequestration. Invited presentation at the Annual Meeting of the Society for Rangeland Management. Denver, CO. 1/10.
- Conant, R.T. Global perspectives on soil carbon sequestration: measurements, mechanisms, and feedbacks. Keynote address at Managing Climate Change Conference. Palmerston North, New Zealand. 11/09.
- Brown, C. S., M. K. Brydger, T. E. Smith, R. T. Conant, K. A. Pickering, and D. H. Wall. Training the next generation of environmental problem solvers: The School of Global Environmental Sustainability at Colorado State University. 2009. Poster presented at the Annual Meeting of the Ecological Society of America. Albuquerque, NM. August. 8/09.
- Suseela, V., R. T. Conant, M. D. Wallenstein, and J. S. Dukes. 2009. Sensitivity of old-field soil respiration to warming and altered precipitation. Oral presentation at the Annual Meeting of the Ecological Society of America. Albuquerque, NM. 8/09.
- Haddix, M. L. R. T. Conant, S. J. Morris, R. F. Follett, K. Magrini-Bair, and E. A. Paul. 2009. Cropping Effects on the Physical and Chemical Makeup of Soil Organic Matter and its Dynamics. Poster presented at the 2nd International Meeting on Soil Organic Matter Dynamics. Colorado Springs, CO. 7/09.
- Conant, R.T. Synthesis of recent studies investigating the relationship between soil OM lability and decomposition temperature sensitivity. 2009. Invited Presentation at the 2nd International Meeting on Soil Organic Matter Dynamics. Colorado Springs, CO. 7/09.
- Conant R.T. 2009. Policy measures for mitigation and adaptation: pasture management in dry and cold environments. Invited Presentation at the International Symposium on Mitigating Greenhouse Gas emissions from Animal Production: A Policy Agenda. Asuncion. 5/09.
- Conant , R. T., E. A. Paul, and M. Wallenstein. 2009. Using climatological transects to understand the relationship between soil C lability-temperature sensitivity. Invited presentation at the Annual Meeting of the European Geophysical Union. Vienna. 4/09.
- Conant, R. T. 2009. Management interventions impacts soil carbon stocks in grasslands. Invited Presentation at the FAO workshop on The Role of grassland carbon sequestration in the mitigation of Climate Change: technical and policy issues. Rome. 4/09.
- Conant, R. T. and K. Paustian. 2009. Soil carbon measurement and monitoring. Invited presentation at Agricultural greenhouse gases and carbon – Investing now for a productive and resilient future at the World Bank. Washington, DC. 1/09.

- Conant, R.T., M.L. Haddix, E.A. Paul, R.F. Follett, and K. Magrini-Baer. 2008. Biochemically-resistant carbon compounds in physically- and chemically-protected soil C pools. Invited presentation at the Fall Meeting of the American Geophysical Union. San Francisco. 12/08.
- Conant, R.T. and K. Paustian. 2008. Grassland management and soil carbon: current issues in the US. Invited presentation at Soil C Sequestration and Climate Change Mitigation in Agriculture. 2008.Nanjing. 10/08.
- Conant, R. T. 2008. Greenhouse gases in agriculture: Emissions and opportunities. Invited presentation at Regional Opportunities in Agriculture and Forestry Carbon Sequestration.. Bozeman, MT. 10/08.
- Conant R.T. 2008. Communicating about climate change: some remarks from a C management perspective. Invited presentation at the Communicating About Climate Change Workshop. Denver, CO. 6/08.
- Conant, R.T. 2008. Measuring and monitoring agricultural C sequestration and GHG emission reductions. Invited presentation at Opportunities in Colorado for agricultural carbon offsets. Sterling, CO. 5/08.
- Conant, R. T. 2008. Greenhouse gases in agriculture in Colorado: Emissions and opportunities. Invited presentation at Terrestrial Agricultural and Forestry Carbon Opportunities in Colorado. Brighton, CO. 2/08.
- Conant, R.T. 2008. Greenhouse gases in agriculture: an introduction to the processes and tools to control them. Invited presentation at the American Council for an Energy Efficient Economy meeting on Agricultural Energy Efficiency. Des Moines, IA. 2/08.
- Conant, R.T. M.L. Haddix, C.C. Lisboa, S.J. Del Grosso, and W.J. Parton. 2007. Temperature sensitivity functions that vary with soil C lability. Invited Presentation at the American Geophysical Union Fall Meeting symposium entitled "Soils: Mechanisms of Carbon Stabilization and Response to Climate Change". San Francisco. 12/07.
- Conant, R. T., K. Paustian, J. Brenner, R. Vining, S. Ogle, K. Killian, M. Easter, and S. Williams. 2007. COMET-VR: A carbon sequestration decision support tool. Invited Presentation at the Carbon Measurement and Monitoring Forum. Manhattan, KS. 12/07.
- Drijber, R.J., R.T. Conant, A.F. Plante, E.A. Paul, J.M. Steinweg, and M.L. Haddix. 2007. Temperature-driven shifts in soil microbial community composition are not soil dependent. Poster presentation at the Annual Meeting of the American Society of Agronomy. New Orleans. 11/0
- Mellor, N., S.J. Morris, R.T. Conant, and E.A. Paul. 2007. Stable isotope probing of cedar and pine stands following afforestation of a sandy, native prairie. Poster presentation at the Annual Meeting of the American Society of Agronomy. New Orleans. 11/07
- Borges, A.P., K. Johnson, C. Bernacchi, K. McConnaughay, E.A. Paul, R.T. Conant, and S.J. Morris. 2007. Nutrient dynamic differences in wetland and former wetland soils. Poster presentation at the Annual Meeting of the American Society of Agronomy. New Orleans. 11/07
- Stewart, C.E., A.F. Plante, R.T. Conant, K. Paustian, and J. Six. 2007. Do soil C pools saturate? Evidence from measurable C fractions in agroecosystems. Poster presentation at the Annual Meeting of the American Society of Agronomy. New Orleans. 11/07

- Plante, A.F., A. Kougentakis, A. Sen, C. Slominski, J. Six, and R.T. Conant. 2007. Can Physical Protection Attenuate Temperature Sensitivity of Soil Organic Matter Dynamics? Oral presentation at the Annual Meeting of the American Society of Agronomy. New Orleans. 11/07
- Six, J., H. Chung, A.F. Plante, C.E. Stewart, S. Gulde, D.M. Kool, R.T. Conant, and K. Paustian. 2007. Soil carbon saturation limits soil organic carbon responses to global change. Invited Presentation at the 3<sup>rd</sup> International Conference on Mechanisms of Organic Matter Stabilisation and Destabilisation in Soils and Sediments. Adelaide, Australia. 9/07.
- Plante, A.F., K. Magrini-Bair, R.T. Conant, and E.A. Paul. 2007. Comparisons of soil organic matter composition by pyrolysis-molecular beam mass spectrometry and chemometric analysis. Invited Presentation at the 3<sup>rd</sup> International Conference on Mechanisms of Organic Matter Stabilisation and Destabilisation in Soils and Sediments. Adelaide, Australia. 9/07.
- Conant, R.T., J.M. Steinweg, M.L. Haddix, E.A. Paul, C.C. Lisboa, J. Schulman, R. Greenwood, J. Carlson, W.J. Parton, A.F. Plante, and J. Six. 2007. Biochemical and physical controls on temperature sensitivity of decomposition: results from three experiments. Poster presentation at the 3<sup>rd</sup> International Conference on Mechanisms of Organic Matter Stabilisation and Destabilisation in Soils and Sediments. Adelaide, Australia. 9/07.
- Haddix, M.L., C.C. Lisboa, R.T. Conant, E.A. Paul, and J.M. Steinweg. 2007. Temperature sensitivity of soil organic matter fractions. Presentation at the Annual Meeting of the Ecological Society of America. San Jose, CA. 8.07. (*Best poster award – Soil Ecology*)
- Six, J., H. Chung, A.F. Plante, C.E. Stewart, S. Gulde, D. M. Kool, R.T. Conant, and K. Paustian. 2007. Soil carbon saturation limits soil organic carbon responses to global change. Presentation at the Annual Meeting of the Ecological Society of America. San Jose, CA. 8.07.
- Conant, R.T., R.A. Drijber, M.L. Haddix, C.C. Lisboa, A.F. Plante, E.A. Paul, J. Six, and J.M. Steinweg. 2007. Three lines of evidence indicating that the sensitivity of organic matter decomposition to warming varies indirectly with its quality. Presentation at the Annual Meeting of the Ecological Society of America. San Jose, CA. 8.07.
- Ngugi, M.K. and R.T. Conant. 2007 The characteristics of Large Herbivore Key Resource Areas in Kenyan Rangelands. Presentation at the Annual Meeting of the Ecological Society of America. San Jose, CA. 8.07.
- Conant, R.T. 2007. Soil carbon credit programs. Invited presentation at the Annual Meeting of the Independent Bankers of Colorado. Denver, CO. 5/07.
- Lisboa, C. R.T. Conant, and C.C. Cerri. 2007. Impact of temperature on soil carbon decomposition from the Brazilian Amazon region. Contributed poster presentation at the 11<sup>th</sup> Biennial Soil Ecology Society Meeting. Moab, UT. 4/07.
- Conant, R.T., K. Paustian, and D.S. Ojima. 2007. Assessment of soil carbon sequestration and greenhouse gas mitigation in Colorado's lands. Invited presentation at the Colorado Renewable Energy Options Conference. Denver, CO. 3/07
- Conant, R.T. 2007. Greenhouse gas mitigation and co-benefits within the agricultural sector. Invited presentation at the US-Japan Workshop on Climate Actions and Development Co-benefits. Sponsored by the Institute for Global Environmental Strategies. Washington, DC. 3/07.

- Conant, R.T., K. Paustian, and D.S. Ojima. 2007. Assessment of soil carbon sequestration and greenhouse gas mitigation in Colorado's lands. Invited presentation to the Colorado Pollution Prevention Advisory Board. Denver, CO. 1/07
- Conant, R.T., C.S. Potter, S.A. Klooster, S. Williams, K. Paustian, and S.M. Ogle. 2007. Net primary production in the Mid-Continent region: comparison of two models versus surveys at the county scale. Contributed presentation at the North American Carbon Program meeting, Colorado Spring, CO. 1/06.
- Conant, R.T., E.A. Paul, M.L. Haddix, J.M. Steinweg, A.F. Plante, R.J. Drijber, and J. Six. Impact of warming on labile and more resistant soil C stocks. 2006. Invited Presentation at the USDA-ARS Research Station in Mandan, ND. 11/06.
- Borges, A.P., C.J. Bernacchi, K. McConaughay, E.A. Paul, R.T. Conant, and S.J. Morris. Nutrient Dynamic Differences in Former Wetland Soils Following 80+ Years of Agriculture. Contributed presentation at the Annual Meeting of the American Society of Agronomy. Indianapolis, IN. 11/06.
- Baron, J., R. T. Conant, L. R. Arnold, T. R. Owens, C. Wessman, N. Golubiewski, and W. B. Langer. 2006. Applying indicators of condition to evaluate the state of the Colorado Front Range region environment. Contributed presentation at the Annual Meeting of the Ecological Society of America. Memphis, TN. 8/06.
- Ngugi, M. K. and R. T. Conant. 2006 Remote sensing and GIS approach delineates key resource areas for large herbivores in Kenyan rangelands. Contributed poster presentation at the Annual Meeting of the Ecological Society of America. Memphis, TN. 8/06.
- Steinweg, J. M., M. L. Haddix, R. T. Conant, E. A. Paul, R. Greenwood, and J. Carlson. 2006. Temperature sensitivity of soil organic matter fractions: results from two experiments. Contributed presentation at the Annual Meeting of the Ecological Society of America. Memphis, TN. 8/06.
- Borges, A. P. K. M., K. Johnson, C. Bernacchi, K. D. McConaughay, E. A. Paul, R. T. Conant, and S. J. Morris. 2006. Nutrient dynamic differences in former wetland soils following 80+ years of agriculture. Contributed poster presentation at the Annual Meeting of the Ecological Society of America. Memphis, TN. 8/06.
- Haddix, M. L., J. M. Steinweg, R. T. Conant, and E. A. Paul. 2006. Temperature sensitivity of soil organic matter fractions. Contributed poster presentation at the Annual Meeting of the Ecological Society of America. Memphis, TN. 8/06.
- Milligan, H. , K. Magrini, R. Conant, A. Plante, R. Drijber, S. Morris, E. Brewer, E. Paul. 2006. Relating the chemical structure of soil organic carbon components to management practices. . Contributed poster presentation at the Annual Meeting of the Ecological Society of America. Memphis, TN. 8/06.
- Conant, R.T. Integrated Global Observations for Land. Invited presentation at the Integrated Global Observing Systems-Partners, 13<sup>th</sup> Business Meeting. Geneva, Switzerland. 5/06.
- Conant, R.T. Integrated Global Observations for Land. Invited presentation at a special meeting on Monitoring Agricultural Production, FAO, Rome, Italy. 3/06.
- Conant, R.T., A.F. Plante, E.A. Paul, R.J. Drijber, J. Six, M.L. Haddix, J.M. Steinweg, J. Carlson, R. Greenwood. Vulnerability of soil organic matter to temperature changes:

- Exploring constraints due to substrate decomposability. Presentation at the fall meeting of the American Geophysical Union. San Francisco, CA. 12/05
- Plante, A.F., R.T. Conant, E.A. Paul, and J. Six. 2005. Interactions between protection mechanisms and impacts of acid hydrolysis of silt- and clay-sized fractions. Second International Conference on Mechanisms of soil organic matter stabilization and destabilization in soils. Monterrey, CA. 10/05.
- Conant, R. T. Thoughts on Carbon Cycle science, scientific research, and undergraduate education. Invited Presentation at Bradley University, Peoria, IL. 6/05.
- Conant, R. T. An introduction to ecological modeling.. Invited Presentation at Bradley University, Peoria, IL. 6/05.
- Morris, S.J., E.A. Brewer, A. Plante, R. Conant, G.P. Robertson and E. A. Paul. 2005. The global carbon cycle: Do organisms matter? An interactive poster. Invited presentation at the Annual Meeting of the Soil Ecology Society. Agronne, IL. 5/05
- Conant, R.T. A. Swan, M. Easter, and K. Paustian. 2005 Disturbance and recovery of soil C following infrequent activities. Invited presentation at the USDA Carbon Symposium. Baltimore, MD. 3/05.
- Conant, R.T. S. Mooney, and K. Gerow. 2005. Costs and benefits of reducing uncertainty in accounting for soil C credits. Contributed talk at the USDA Carbon Symposium. Baltimore, MD. 3/05.
- Conant, R.T., A.F. Plante, S.J. Morris, and E.A. Paul. 2004. Stable isotopes and biochemically protected soil carbon fractions. Fall Meeting of the American Geophysical Union. San Francisco, CA. 12/04.
- Conant, R.T., R.A. Pielke Jr., L. Dilling, and D. Sarewitz. 2004. Reconciling carbon cycle science supply and demand: the agricultural sector. CSU Symposium on the Environment. Fort Collins, CO. 11/04.
- Ngugi, M.K., and R.T. Conant. 2004. Characterizing key resource areas in Kenyan rangelands. CSU Symposium on the Environment. Fort Collins, CO. 11/04. (*Best poster award*)
- Paustian, K, J. Six, R.T. Conant, K. Denef, A.F. Plante, and C. Stewart. 2004. Interpreting saturation and protection mechanisms of soil organic C: A functional pool model. American Society of Agronomy Annual Meeting. Seattle, WA. 11/04.
- Stewart, C., A.F. Plante, R. T. Conant, J. Six, and K. Paustian. Determining Rates of Carbon Sequestration in Soil: Carbon stabilization after 2.5 years of incubation. American Society of Agronomy Annual Meeting. Seattle, WA. 11/04.
- Stewart, C., A.F. Plante, R.T. Conant, J. Six, and K. Paustian. Measuring the Modelable; Tracing <sup>13</sup>C Additions through Modelable C Pools. American Society of Agronomy Annual Meeting. Seattle, WA. 11/04. (*Best poster award*)
- Plante, A.F., R.T. Conant, E.A. Paul, J. Six, and K. Paustian. Does acid hydrolysis isolate a meaningful resistant fraction? American Society of Agronomy Annual Meeting. Seattle, WA. 11/04.
- Paul, E.A. S.J. Morris, R.T. Conant, and A.F. Plante. Do acid hydrolysis and incubation measure meaningful soil organic matter pools? American Society of Agronomy Annual Meeting. Seattle, WA. 11/04.

Conant, R.T. 2004. Taking the PULSE of Colorado's front grasslands. Shortgrass steppe LTER brown bag. Fort Collins, CO. 10/04.

Ngugi, M.K., and R.T. Conant. 2004. Characterizing precipitation use efficiency by remote sensing at a shortgrass steppe. Annual Meeting of the Ecological Society of America. Portland, OR. 8/04.

Paustian, K., R.T. Conant K. Killian, J. Brenner, J. Schuler, D. Lightle, J. Sheehan R. Nelson. Modeling Soil C and GHG Emissions for Bioethanol Production in Iowa. 2004. Invited Presentation at the Sun Grant Planning Meeting. Oklahoma City, OK. 6/04.

Del Grosso, S., W.J. Parton, P. Adler, A. Mosier, R.T. Conant. 2004. DAYCENT Model Comparisons Of Greenhouse Gas Fluxes For Alternative Biofuel Cropping Scenarios. Invited Presentation at the Sun Grant Planning Meeting. Oklahoma City, OK. 6/04.

Conant, R. T., R. B. Boone, M.K. Ngugi. 2004. Remote sensing and ecological modeling for assessing C sequestration in semiarid grassland soils. Invited presentation at the West Africa Carbon Sequestration workshop. Bamako, Mali. 2/04.

### **Honors and Awards:**

Queensland Smart Futures Fellow, 2010  
 Warner College Distinguished Scientific Research Award, 2008  
 Nobel Peace Prize in recognition of the IPCC 2007.  
 NREL Best advisor 2006.  
 Member Phi Kappa Phi Honor Society 1993-present  
 Graduate Tuition Scholarship 1995-1996, 1996-1997

### **Courses taught:**

#### University courses

Foundations for Greenhouse Gas Management/Accounting (ESS524), CSU, Fall 2012  
 Ecosystem Ecology (ECOL610), CSU, Fall 2008  
 Introduction to Environmental Conservation (NR120), CSU, Fall 2008  
 Research Methods Seminar, Graduate Degree Program in Ecology (EY693), CSU, Spring 2008.  
 General Ecology, Department of Biology (BY320), CSU, Fall 2007  
 Ecological Stoichiometry, Graduate Degree Program in Ecology (EY592), CSU, Fall 2007  
 Remote sensing and ecological modeling, Graduate Degree Program in Ecology (EY592), CSU, Fall 2002  
 General Botany, Department of Plant Biology (BOT108), ASU, Fall 1997  
 General Botany Laboratory (TA), Department of Plant Biology (BOT108), ASU, 1993-1996  
 Survey of the Plant Kingdom (TA), Department of Botany (BOT310), ASU, Fall 1995  
 Plant Ecology (TA), Department of Botany (BOT454), ASU, Fall 1994

#### Short courses

Decomposition, respiration, and the global carbon cycle: A teacher training workshop. February 2010.  
 Science, Policy, and Politics of Climate Change, Zeppelin University, March 2009.

Modeling using the Century and Daycent models, Nanjing Agricultural University, October 2009.

**Graduate students and committees:**

Phasita Toonsiri	Soil and Crop Sciences (CSU)	2012	Ph.D	Committee
Maosi Chen	Grad. Degree Program Ecology (CSU)	2012	Ph.D	Committee
Tracy Smith	Grad. Degree Program Ecology (CSU)	2009	MS	Committee
Jocelyn Lavalley	Grad. Degree Program Ecology (CSU)	2009	Ph.D	Advisor
Hannah Birge	Grad. Degree Program Ecology (CSU)	2009	MS	Advisor
Eric Bowen	Grad. Degree Program Ecology (CSU)	2009	MS	Advisor
Mohamed Abulobaida	Soil and Crop Sciences (CSU)	2009	PhD	Committee
Jessica Ernakovich	Grad. Degree Program Ecology (CSU)	2008	Ph.D	Committee
Carolina Lisboa	Universidade de São Paulo, Piracicaba	2008	Ph.D	Committee
J. Megan Steinweg	Grad. Degree Program Ecology (CSU)	2007	MS	Advisor
Michelle Haddix	Grad. Degree Program Ecology (CSU)	2007	MS	Advisor
Moffatt K. Ngugi	Grad. Degree Program Ecology (CSU)	2010	Ph.D	Advisor
Cathy Stewart	Grad. Degree Program Ecology (CSU)	2006	Ph.D	Committee
Erandi Lokupitya	Grad. Degree Program Ecology (CSU)	2006	Ph.D	Committee
Nat Logar	Dept. of Political Sci. (CU)	2005	MS	Committee

**Referees**

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