

Ecology and Evolutionary Biology • University of Arizona • Biosciences West 310 • Tucson, AZ 85721

Phone: (520) 626-1500 Fax: (520) 621-9190 E-mail: saleska@email.arizona.edu

Web page: <http://eebweb.arizona.edu/faculty/saleska/>

RESEARCH INTERESTS

Interactions between ecology and biogeochemistry. Current emphasis: effect of climate and disturbance dynamics on carbon cycling and biosphere-atmosphere trace gas exchange in forest ecosystems. Using advanced technological methods (e.g., the micrometeorological method of eddy covariance, isotopic techniques), combined with classical field ecology & forestry, to integrate biogeochemical processes to larger scales. The effect of human activities on these processes, and on sustainable functioning of the biosphere generally.

EDUCATION

• University of California, Berkeley

Ph.D. Energy and Resources Group, December 1998

Dissertation Committee: John Harte (Chair), F. Stuart Chapin III, Ronald Amundson

Dissertation title: "Global climate change and ecosystem carbon storage: an experimental investigation of ecologically-mediated feedbacks to climate in montane meadows"

• Massachusetts Institute of Technology, Cambridge, MA

B.S., Physics, with minor in electrical engineering, June 1986

EMPLOYMENT

- *Assistant Professor*, University of Arizona, Ecology & Evolutionary Biology Jan. 2005-present
- *Research Associate*, Harvard University, Earth & Planetary Sciences 2002-2004
- *Post-doctoral Fellow*, Harvard University, Earth & Planetary Sciences 1999-2001
(supervisor: Steven C. Wofsy)

Pre-doctoral:

- *Graduate Student Instructor*, U.C. Berkeley, Berkeley, CA 1995, 1997
- *Staff Scientist*, Institute for Energy and Environmental Research, Takoma Park, MD 1990-1992
(non-profit environmental research/policy organization)
- *Energy Policy Analyst*, Public Citizen, Washington, DC 1988-1990
(non-profit public interest energy policy organization)
- *Technical Research Assistant*, The Bruce Company, Washington, DC 1987-1988
(consultant for U.S. Environmental Protection Agency's Global Change Division)

HONORS AND AWARDS

- National Science Foundation (NSF) – *Doctoral Dissertation Improvement Grant* 1996-1998
- National Aeronautics and Space Administration (NASA) -- *Global Change Fellowship* 1994-1997

SERVICE/OUTREACH

Local / State

- Public Talk at lecture series on Global Climate Change, October 11, 2006: *Global Climate Change and the role of the Biosphere*, Academic Village, Tucson, AZ.

National / International

- Organized and co-authored Brief of *Amici Curiae* climate scientists, David Battisti, William E. Easterling, Christopher Field, Inez Fung, James E. Hansen, John Harte, Eugenia Kalnay, Daniel Kirk-Davidoff, Pamela A. Matson, James C. McWilliams, Mario J. Molina, Jonathan T. Overpeck, F. Sherwood Rowland, Joellen Russell, Scott R. *Saleska*, Edward Sarachik, John M. Wallace, and

Steven C. Wofsy, in support of petitioners, in the Supreme Court of the United States, Aug. 31, 2006. (in Massachusetts v. EPA, the first case on global Climate Change to reach the U.S. Supreme Court).

University / Departmental

- Science Steering Committee, UofA Biosphere 2 EarthScience Facility
- EEB Microbial Sciences Search Committee (2006-2007; and 2005-2006)
- GIDP in Global Change
- Institute for the Study of Planet Earth (ISPE)
- Meeting participant representing UofA, National Academy of Sciences, “Meeting to Assess the Potential Use of Infrastructure at Biosphere 2 Center for Scientific Research and Education” (Chair: Peter Raven) (March 2005)

Professional

Societies and Activities

- Director and PI, *Amazon-PIRE*, an NSF-funded 5-year (2007-2012) “Partnership for International Research and Education” (PIRE) focusing on Amazon forest-climate interactions. Partners include Harvard, University of São Paulo (Brazil), Federal University of Pará (in the Brazilian Amazon), and the Brazilian National Institute for Amazonian Research.
- Chair, Amazon Carbon Flux Synthesis Workshop II, “The Large-scale Biosphere-Atmosphere Experiment in Amazônia, Model Intercomparison Project (LBA-MIP),” to be held in Salvador, Brazil, September 24-25, 2007.
- Co-convener, Amazon Carbon Flux Synthesis Workshop I, “Scaling Amazonian Carbon Dynamics from sites to region: combining flux tower measurements, models, and remote sensing,” Brasília, Brazil, Oct. 2-3, 2006. Co-sponsored by Instituto Nacional de Pesquisas da Amazônia (INPA), the University of São Paulo (USP), and the University of Arizona (UofA).
- Chair, Synthesis working group on Scaling Carbon Fluxes in Amazônia, LBA-ECO 9th Science Team meeting, Sao Paulo, Brazil, November 2005. Co-organizers Humberto da Rocha (University of São Paulo), Antonio Nobre (National Institute for Amazonian Research, Government of Brazil)
- Member, LBA-ECO Science Team, 1999-present: the Large-Scale Biosphere-Atmosphere experiment in Amazônia (LBA), Ecological component.
- Member, American Association for the Advancement of Science
- Member, American Geophysical Union

Grant Panels and Reviewing

- Panel Reviewer for NSF Ecosystem Science Panel
(panels: April 2003, April 2004, April 2005, October 2005, April 2006)
- Panel Reviewer for NASA Carbon Cycle Science Panel (March 2001)
- Reviewer for NSF (ecosystem science/DEB/BIO, atmospheric sciences/GEO)

Journal Reviewing/Editing

- Associate Editor, *Journal of Geophysical Research, Biogeosciences*, Spring 2006 – present.
- *Agriculture and Forest Meteorology; Earth Interactions; Ecological Applications; Global Change Biology; Global Biogeochemical Cycles; Isotopes in Environmental and Health Studies, Philosophical Transactions of the Royal Society; Oecologia; Plant, Cell and Environment; Proceedings of the National Academy of Sciences; Science.*

PUBLICATIONS

Peer-reviewed Scientific Literature

Manuscripts in review

- Hutyra, L.R., J.W. Munger, E.-H. Pyle, S.R. *Saleska*, N. Restrepo-Coupe, P.B. de Camargo, S.C. Wofsy. Resolving systematic errors in estimates of net ecosystem exchange of CO₂ and ecosystem respiration in a tall-stature forest: application to a tropical forest biome, in review at *Agric. Forest Meteorology*.
- P. Ratana, A. R. Huete, Y.E. Shimabukuro, N. Restrepo-Coupe, H.R. da Rocha, S.R. *Saleska*, Variability in Amazon phenology across the transitional rainforest-cerrado ecotone, (in review). *J. Geophys. Res – Biogeosciences*.
- Hammond Pyle, E., G.W. Santoni, H.E.M. Nascimento, L.R. Hutyra, P.B. de Carmago, S. Vieira, D.J. Curran, J. van Haren, S.R. *Saleska*, V.Y. Chow, W.F. Laurance, and S.C. Wofsy. Effects of disturbance on biomass, structure and carbon balance in two Amazonian Forests. (in review). *J. Geophys. Res – Biogeosciences*.

Published papers

- Saleska*, S.R., K. Didan, A.R. Huete, and H.R. da Rocha. 2007. Amazon forests green-up during 2005 drought. *Science*, 20 September 2007 (10.1126/science.1146663).
- Hutyra, L.R., J.W. Munger, S.R. *Saleska*, E. Gottlieb, B.C. Daube, A.L. Dunn, D.F. Amaral, P.B. de Camargo, S.C. Wofsy. 2007. Seasonal controls on the exchange of carbon and water in an Amazonian rainforest, *J. Geophys. Res, Biogeosciences*, **112**: G03008. doi:10.1029/2006JG000365.
- Harte, J, S.R. *Saleska*, T. Shih. 2006. Shifts in plant dominance control short and long-term carbon-cycle responses to widespread drought, in press, *Env. Res. Lett.* **1**: 014001. (Online at stacks.iop.org/ERL/1/014001).
- Turner DP, Ritts WD, Cohen WB, Gower ST, Running SW, Zhao MS, Costa MH, Kirschbaum AA, Ham JM, *Saleska* SR, Ahl DE. 2006. Evaluation of MODIS NPP and GPP products across multiple biomes. *Remote sensing of environment* 102 (3-4): 282-292.
- Saleska*, S; J. Shorter, S. Herndon, R. Jimenez, B. McManus, D. Nelson, M. Zahniser (2006). What are the instrumentation requirements for measuring the isotopic composition of net ecosystem exchange of CO₂ using eddy covariance methods? *Isotopes Env. Health Studies*, **42** (2), 115-133.
- Huete, A.R.; K. Didan, Y.E. Shimabukuro, P Ratana, SR. *Saleska*, L.R. Hutyra, W. Yang, RR. Nemani, R. Myneni (2006), Amazon rainforests green up with sunlight in the dry season, *Geophys. Res. Lett.* **33**, L06405, doi:10.1029/2005GL025583..
- Liu, W.H., D.M. Bryant, L.R. Hutyra, S.R. *Saleska*, E.H. Pyle, D. Curran, S.C. Wofsy (2006). Woody debris contribution to the carbon budget of selectively logged and maturing mid-latitude forests, *Oecologia*, 148 (1): 108-117.
- Engel, K.H. and S.R. *Saleska* (2005). Subglobal Regulation of the Global Commons: The case of Climate Change, *Ecology Law Quarterly* **32** (2): 183-233.
- McManus, J.B., D.D. Nelson, J.H. Shorter, R. Jiménez, S. Herndon, S. *Saleska*, and M.S. Zahniser, (2005). A high precision pulsed QCL spectrometer for measurements of stable isotopes of carbon dioxide, *J. Modern Optics*, **52**, 2309-2321.
- Hutyra, L., J.W. Munger, C.A. Nobre, S.R. *Saleska*, S.A. Vieira, S.C. Wofsy (2005). Climatic variability and vegetation vulnerability in Amazônia, *Geophys. Res. Lett.* **32**(24): L24712.
- Gu, L, E.M. Falge, T. Boden, D.D. Baldocchi, T.A. Black, S.R. *Saleska*, T. Suni, S.B. Verma, T. Vesala, S.C. Wofsy, L.K. Xu (2005). Objective threshold determination for nighttime eddy flux filtering. *Agricultural and Forest Meteorology*, 128 (3-4): 179-197.
- Xiao, X., Q. Zhang, S.R. *Saleska*, L. Hutyra, P. Camargo, S. Wofsy, S. Frohling, S. Boles, M. Keller and B. Moore III (2005). Satellite-based modeling of gross primary production in a seasonally moist tropical evergreen forest. *Remote Sensing of Environment*. **94**: 105-122.

- Dunne, J.A., S.R. *Saleska*, M.L. Fischer, J. Harte. Integrating experimental and gradient methods in ecological climate change research. 2004. *Ecology*. 85: 904-916.
- Martens, C.S., T.J. Shay, H.P. Mendlovitz, D.M. Matross, S.R. *Saleska*, S.C. Wofsy, W.S. Woodward, M.C. Menton, J.M.S. Moura, P.M. Crill, O.L.L. de Moraes, R.L. Lima. Radon fluxes in tropical forest ecosystems of Brazilian Amazonia: night-time CO₂ net ecosystem exchange derived from radon and eddy covariance methods (2004). *Global Change Biology*, 10: 618-629.
- Rice, A.H., E.H. Pyle, S.R. *Saleska*, L. Hutyrá, M. Palace, M. Keller, P.B. de Camargo, K. Portilho, D.F. Marques, and S.C. Wofsy (2004). Carbon balance and vegetation dynamics in an old-growth Amazonian forest. *Ecological Applications*. 14 (Supplement): S55-S71.
- Saleska*, S.R., S.D. Miller, D.M. Matross, M.L. Goulden, S.C. Wofsy, H. da Rocha, P.B. de Camargo, P.M. Crill, B.C. Daube, C. Freitas, L. Hutyrá, M. Keller, V. Kirchhoff, M. Menton, J.W. Munger, E.H. Pyle, A.H. Rice, H. Silva (2003). Carbon in Amazon forests: unexpected seasonal fluxes and disturbance-induced losses. *Science*. 302: 1554-1557.
- Malhi Y; Phillips OL; Lloyd J; Baker T; Wright J; Almeida S; Arroyo L; Frederiksen T; Grace J; Higuchi N; Killeen T; Laurance WF; Leano C; Lewis S; Meir P; Monteagudo A; Neill D; Vargas PN; Panfil SN; Patino S; Pitman N; Quesada CA; Rudas-Ll A; Salomao R; *Saleska* S; Silva N; Silveira M; Sombroek WG; Valencia R; Martinez RV; Vieira ICG; Vinceti B (2002). An international network to monitor the structure, composition and dynamics of Amazonian forests (RAINFOR), *Journal of Vegetation Science*, 13(3): 439-450.
- Saleska*, S.R.; M.R. Shaw, M. Fischer, J. Dunne, C.J. Still, M. Holman, and J. Harte (2002). Plant community composition mediates both large transient decline and predicted long-term recovery of soil carbon under climate warming. *Global Biogeochemical Cycles*. 16(4): 1055, doi:10.1029/2001GB001573.
- Barford, C.C., S.C. Wofsy, M.L. Goulden, J.W. Munger, E.H. Pyle, S.P. Urbanski, L. Hutyrá, S.R. *Saleska*, D. Fitzjarrald. K. Moore (2001). Factors Controlling Long- and Short-Term Sequestration of Atmospheric CO₂ in a Mid-latitude Forest. *Science*. 294: 1688-1691.
- Saleska*, Scott R., John Harte, and Margaret S. Torn (1999). The effect of experimental ecosystem warming on CO₂ fluxes in a montane meadow. *Global Change Biology*. 5: 125-141.
- Saleska*, S.R. and K.H. Engel (1998). Facts are stubborn things: An empirical reality check in the theoretical debate over the race-to-the-bottom in state environmental standard-setting. *Cornell Journal of Law and Public Policy*, 8: 55-88.
- Lashof, Daniel, Benjamin DeAngelo, Scott *Saleska*, and John Harte (1997). Feedbacks to Global Climate Change. *Annual Reviews of Energy and the Environment*, 22: 75-118.

Media

Publications in the media

- Saleska*, Scott. 2006. "Wake up, time for action," an op-ed on behalf of scientists participating in climate change case before the U.S. Supreme Court, *New Scientist* 192(2581): 22.
- Engel, Kirsten and Scott *Saleska*, 2000. "Don't trade away the benefits of clean air." *Boston Globe op-ed*, May 29.

Selected Media coverage:

- Research featured in national news article: Andrew C. Revkin, "Brazil: Amazon Forests Resilient to Drought", *New York Times*, September 21, 2007.

- Research featured in local news article: Dan Sorenson, “UA team finds rainforest OK in drought,” *Arizona Daily Star*, September 21, 2007.
- profiled (along with UofA Law Professor Kirsten Engel) in Newsmakers section of *Science*, April 13, 2007 (for role in organizing Amicus Curiae climate scientists in Massachusetts v. EPA, the climate change case before the U.S. Supreme Court)
- Guest, *Arizona Illustrated*, KUAT Public Television’s daily news magazine, April 2, 2007, discussing Massachusetts v. EPA, the U.S. Supreme Court case on climate change.
- Role in organizing climate scientist brief to the U.S. Supreme Court featured in news article, “Supreme Court case to hear case on carbon dioxide,” *Arizona Daily Star*, 27 June 2006.

SCHOLARLY PRESENTATIONS

Oral Presentations and Seminars (since January 2005)

- Invited plenary speaker: LBA-ECO 11th Science Team Meeting, to be held in Salvador, Brazil, September 26-28, 2007.
- Joint Departmental seminar, Dept. of Ecology & Evolutionary Biology and Dept. of Soil Water & Environmental Science, University of Arizona, September 17, 2007.
- Invited speaker, session on “Impacts of Climate Change on terrestrial biological systems,” University of Washington Program on Climate Change, Summer Institute on “Climate Change and Biology,” Friday Harbor Laboratory, September 11-13, 2007.
- Invited: American Geophysical Union, Spring Joint Assembly, Acapulco, Mexico, May 2007. *What is the future of Amazon forests under climate change?* (co-authors: A Huete, K. Didan, P. Ratana, N Restrepo-Coupe, H.R. da Rocha)
- Invited: seminar at UofA ‘Data Blitz’ on Environmental Sustainability, 4/19/07
- American Geophysical Union, San Francisco Fall Meeting, December 2006. *Shifts in plant dominance control carbon-cycle responses to both experimental warming and widespread strong drought* (co-author John Harte).
- LBA-ECO 10th Science Team Meeting, Brasilia, Brazil, October 4-6, 2006. *Using Ground-based LIDAR for estimating Amazon forest canopy structure, biomass, and carbon fluxes*
- American Geophysical Union, San Francisco Fall Meeting, December 2005. *Climate Seasonality, Land-Use Change, and seasonality of carbon fluxes: up-scaling using MODIS data and a network of flux towers*
- Invited Departmental Seminar, University of Washington, Program on Climate Change, Nov 30, 2005. Host: James Murray: “*Carbon Dynamics and climate in the Amazon Rainforest: seeing both the forest and the trees.*”
- LBA-ECO 9th Science Team Meeting, Sao Paulo, Brazil, November 2005. “*From source to sink: tracing the effects of natural disturbance on tropical forest carbon balance*”

Poster Presentations (since January 2005)

- Restrepo-Coupe, N., *Saleska*, S.R., daRocha, H., Tannus, R. N., Christoffersen, B. Deriving GEP seasonality: issues posed by the absence of CO₂ profile measurements, LBA-ECO 11th Science Team Meeting, to be held in Salvador, Brazil, September 26-28, 2007.
- American Geophysical Union, San Francisco Fall Meeting, December 2006. On behalf of Ph.D. advisee Joost van Haren: *Tree Species identity affects Soil Trace Gas Production in Primary Forests and Plantations in Amazonia*
- Seventh International CO₂ Conference, September 25-20, 2005, *The effects of land use change and of seasonal variations in climate on GPP across the Amazon basin: an analysis combining data from MODIS satellites and from a network of flux towers*

- Seventh International CO₂ Conference, September 25-20, 2005, *Feasibility of eddy covariance measurements of the isotopic composition of CO₂ fluxes above a forest ecosystem using quantum cascade laser absorption spectrometry*