

CURRICULUM VITAE

BENJAMIN S. FELZER

The Ecosystems Center, Marine Biological Laboratory
7 MBL Street, Woods Hole, MA 02543
(508) 289-7748
bfelzer@mbl.edu

www: <http://www.mbl.edu/eco42/Personnel/bfelzer/benindex.html>

EDUCATION

Ph.D., Geological Sciences (Paleoclimatology), Brown University, 1995
Dissertation: "Sensitivity of late Quaternary Climates to Changes in Northern Hemisphere Ice Sheets: Experiments with a General Circulation Model", Faculty advisor: Thompson Webb III

M.S., Geology, University of Colorado – Boulder, 1991
Thesis: "Quantitative reflectance spectroscopy of buddingtonite from the Cuprite mining district, Nevada", Faculty advisor: Alexander F.H. Goetz

B.A., Honors, Physics (Major) and Astronomy (Minor), Swarthmore College, 1987

Additional courses completed:

American Meteorological Society Summer Policy Colloquium, June 3-12, 2001, Washington DC.

Hydrogeology (Fall 1997) and Groundwater Modeling (Spring 1998) - Geological Sciences Department, University of Colorado – Boulder.

Atmospheric Dynamics, Tropical Meteorology - Department of Meteorology, University of Wisconsin – Madison, Fall, 1993.

Fourth Annual Workshop on the Community Climate Model, National Center for Atmospheric Research, Summer 1993.

PROFESSIONAL EXPERIENCE

Research Associate, The Ecosystems Center, Marine Biological Laboratory, 8/2001 – present.

Program Specialist, Office of Global Programs, National Oceanic and Atmospheric Administration, Global Energy and Water Cycle Experiment - Americas Prediction Project (GAPP-GEWEX), 7/2000 - 7/2001.

Project Scientist - Climate Scenarios Coordinator,
National Assessment Working Group and the National Assessment Coordination Office,
National Center for Atmospheric Research, 9/1998 - 7/2000.

Postdoctoral Fellow, Paleoclimates of Arctic Lakes and Estuaries (PALE),
National Center for Atmospheric Research, 10/1995 - 9/1998.

Graduate Research Assistant, Department of Geological Sciences, Brown University, 1991 - 1995.
Faculty Supervisor: Thompson Webb III

Graduate Research Assistant, Geological Sciences Department, University of Colorado – Boulder, 1989 - 1990.
Faculty Supervisor: Alexander F.H. Goetz

TEACHING

Teaching Interests: ecosystem modeling, climate modeling, paleoclimatology, meteorology, remote sensing,

sedimentation and stratigraphy, general geology

Graduate Teaching Assistant, Department of Geological Sciences, Brown University, 1991 - 1994.

Courses: Meteorology, Sedimentology and Stratigraphy, Introductory Geology

Faculty Supervisors: Thompson Webb III, Robley K. Matthews, Bruno R. Giletti

Guest Lecturer for Brown University / Marine Biological Laboratory Graduate Seminar, "Human Impacts on the Functioning of Ecosystems", Topic: Ozone Depletion Impacts on Terrestrial Ecosystems, Spring Semester 2006, 2007; Topic: Climate Variability and Change, Spring Semester 2007.

Guest Lecturer for undergraduate course, "Oceanography",

Topic: Global Warming and Climate Change, Sea Education Association, Wood Hole, MA, Spring Semester 2005.

Mentor and Research Supervisor, Swarthmore College Externship Program, Winter 2004, 2005, 2006, 2007.

Mentor and Research Supervisor, Significant Opportunities in Atmospheric Research and Science (SOARS) Program to foster careers in science, National Center for Atmospheric Research, Summer 1996, 1997, 1999.

Undergraduate Research Supervisor, Women in Science and Education Program, Brown University, 1993-1994.

Science Fair Judge, Falmouth Academy, Falmouth, MA, 2002, 2004, 2005, 2006, 2007.

Science Fair Projects Tutor, Lawrence School, Falmouth, MA, 2001 - 2007.

Instructor, Science Outreach Program for inner-city elementary school students, Providence, RI, Spring 1995.

UNIVERSITY SEMINARS AND COLLOQUIA - INVITED SPEAKER

Brown University Department of Geological Sciences, Providence, RI, 1992, 1993, 1994, 1995

University of Wisconsin Center for Climatic Research, Madison, WI, 1992

Yale University Geophysical Fluid Dynamics group, New Haven, CT, 1994

NCAR Interdisciplinary Climate Systems Section, 1995

Princeton University / NOAA Geophysical Fluid Dynamics Laboratory, Princeton University, Princeton, NJ, 1995

Institute for Arctic and Alpine Research, University of Colorado, Boulder, CO, 1996, 1997

NCAR Climate and Global Dynamics Division Research Report, 1998

U.S. National Assessment regional, sector and national meetings, 1998-2000

U.S. National Assessment Synthesis Team, 1998-2000

UKMO Hadley Centre for Climate Prediction and Research, Bracknell, UK, 1999

Canadian Centre for Climate Modelling and Analysis (CCCma), Victoria, Canada, 1999

NCAR Environmental and Societal Impacts Group (ESIG) seminar, 1999

National Environmental Careers Conference, Hartford, CT, 1999

US Global Change Research Program (USGCRP) seminar, Washington DC, 1999

Department of Energy (DOE) seminar, Washington, DC, 1999

NCAR Climate and Global Dynamics (CGD) seminar, Boulder, CO, 1999

MIT Joint Program on the Science and Policy of Global Change, Cambridge, MA, 2002, 2003

The Ecosystems Center, Marine Biological Laboratory, 2003

Boston University Department of Geography seminar series, 2004

Hadley Centre for Climate Prediction and Research, 2006

RELATED PROFESSIONAL EXPERIENCE

Web Developer, Paleoclimates of Arctic Lakes and Estuaries (PALE) Program, National Center for Atmospheric Research, 1995 – 1998.

Web Developer, U.S. National Assessment Program (<http://www.usgcrp.gov/usgcrp/nacc/background/scenarios>),

National Center for Atmospheric Research, 1998 – 2000.

Associate Technical Specialist, Computer Sciences Corporation, NASA Goddard Space Flight Center, 1987 - 1988.

Introduction to C++, Learning Tree International, Summer 2001.

Introduction to C Programming, University of Colorado – Boulder, Continuing Ed., Fall 1996.

SERVICE TO PROFESSIONAL ORGANIZATIONS AND HIGHER EDUCATION

Society Memberships:

American Geophysical Union, American Meteorological Society, Ecological Society of America,
Sigma Xi Award for Outstanding Research

Conference Coordination:

Session Chair, "Environmental Research Careers", National Environmental Careers Conference, 1999.

Symposium Co-Chair, "Earth System Processes at the Last Glacial Maximum", Geological Society of America Annual Meeting, 1996.

Planning for Circumarctic Paleoenvironments (CAPE) International Annual Meetings, 1996, 1997

Alumni Service:

Alumnus Interviewer for Office of College Admissions, Brown University, 1997 – present.

Alumnus Interviewer for College Admissions Office, Swarthmore College, 1997 - present.

Technical Committees:

Technical Review Committee on Global Change and Wildlife, The Wildlife Society, 2002-2004.

Steering Committee on Indicators for Ecological Effects of Air Quality to the EPA, The Heinz Center, 2006 – present.

REVIEWED PUBLICATIONS

Felzer, B., P. Hauff and A. F. H. Goetz (1994). "Quantitative reflectance spectroscopy of buddingtonite from the Cuprite mining district, Nevada." Journal of Geophysical Research 99(B2): 2887-2895.

Felzer, B., R. J. Oglesby, H. Shao, T. Webb III, D. Hyman, W. L. Prell and J. E. Kutzbach (1995). "A systematic study of GCM sensitivity to latitudinal changes in solar radiation." Journal of Climate 8: 877-887.

Felzer, B., R.J. Oglesby, T. Webb III, and D. Hyman (1996). "Sensitivity of a general circulation model to changes in northern hemisphere ice sheets", Journal of Geophysical Research 101(D14): 19077-19092.

Felzer, B., T. Webb III, and R.J. Oglesby (1998). "The impact of ice sheets, CO₂, and orbital insolation on late Quaternary climates: Sensitivity experiments with a general circulation model", Quaternary Science Reviews, 17: 507-534.

Pollard, D., Bergengren, J. C., Stillwell-Soller, L. M., Felzer, B., and S. L. Thompson (1998). "Climate simulations for 10000 and 6000 years BP using the GENESIS global climate model", Paleoclimates: Data and Modelling, 2(2-3): 183-218.

Felzer, B., T. Webb III, and R. J. Oglesby (1999). "Climate model sensitivity to changes in boundary conditions during the Last Glacial Maximum", Paleoclimates: Data and Modeling, 3(4): 257-278 .

Felzer, B. and P. S. Heard (1999). "Precipitation differences amongst GCMs used for the U.S. National Assessment", Journal of the American Water Resources Association, 35(6): 1327-1339.

- National Assessment Synthesis Team. (2000). "Climate change impacts on the United States: the potential consequences of climate variability and change", prepared as part of the USGCRP for the NSTC and the U.S. Congress, Overview and Climate Foundation chapter.
- Felzer, B., Thompson, S. L., Pollard, D., and J. C. Bergengren. (2000). "GCM-simulated hydrology in the Arctic during the past 21,000 years", Journal of Paleolimnology, 24: 15-28.
- MacDonald, G. M., Felzer, B., Finney, B. P., and S. L. Forman. (2000). "Holocene lake sediment records of Arctic hydrology", Journal of Paleolimnology, 24: 1-14.
- Felzer, B. (2001). "Climate impacts of an ice sheet in East Siberia during the Last Glacial Maximum", Quaternary Science Reviews, 20: 437-447.
- Felzer, B. and S. L. Thompson. (2001). "Evaluation of a regional climate model for paleoclimate applications in the Arctic", Journal of Geophysical Research, 106(D21): 27407-27424.
- MacCracken, M. C., Barron, E. J., Easterling, D. R., Felzer, B. S., and Karl, T. R. (2003). "Climate change scenarios for the U.S. National Assessment", Bulletin of the American Meteorological Society, DOI: 10.1175/BAMS-84-12-1711.
- Endreny, T., Felzer, B., Shuttleworth, J. W., and Bonell, M. (2003). "Policy to coordinate watershed hydrological, social, and ecological needs: the HELP initiative", Water Resources Monograph 16, 10.1029/016WM22.
- Felzer, B., Kicklighter, D., Melillo, J., Wang, C., Zhuang, Q., and R. Prinn. (2004). "Effects of ozone on net primary production and carbon sequestration in the conterminous United States using a biogeochemistry model", Tellus, 56B: 230-248.
- Felzer, B. S., Reilly, J., Melillo, J., Kicklighter, D. W., Sarofim, M., Wang, C., Prinn, R. G., and Q. Zhuang. (2005). "Future effects of ozone on carbon sequestration and climate change policy using a global biochemistry model", Climatic Change, 73 (3): 345-373.
- Zhuang Q, Melillo JM, Kicklighter DW, Prinn RG, McGuire AD, Steudler PA, Felzer BS, Hu S. (2004) "Methane Fluxes Between Terrestrial Ecosystems And the Atmosphere at Northern High Latitudes During the Past Century: A Retrospective Analysis with a Process-based Biogeochemistry Model". Global Biogeochemical Cycles, 18, GB3010, doi:10.1029/2004GB002239.
- Miller, G. H., Mangan, J., Pollard, D., Thompson, S. L., Felzer, B. S., and Magee, J. W. (2005). "Sensitivity of the Australian monsoon to insolation and vegetation: implications for human impact on continental moisture balance". Geology 33(1): 65-68.
- Zhuang, Q., Melillo, J. M., Sarofim, M. C., Kicklighter, D. W., McGuire, A. D., Felzer, B. S., Sokolov, A., Prinn, R. G., Steudler, P. A., and Hu S. (2006) CO₂ and CH₄ exchanges between land ecosystems and the atmosphere in northern high latitudes over the 21st century. Geophysical Research Letters 33, L17403, doi: 10.1029/2006GL026972.
- Zhuang, Q., Melillo, J. M., McGuire, A. D., Kicklighter, D. W., Prinn, R. G., Steudler, P. A., Felzer B. S., and Hu S. (2007) Net emissions of CH₄ and CO₂ in Alaska: implications for the region's greenhouse gas budget. Ecological Applications 17(1), 203-212.
- Reilly, J., Felzer, B., Kicklighter, D., Melillo, J., and Tian, H. (2007). The prospects for biological carbon sinks in greenhouse gas emissions trading systems., in Greenhouse Gas Sinks, Ed. Reay, D., Hewitt, N, Smith, K., and Grace, J. CABI Publishing, Cambridge, MA. 290 pp.
- Prinn, R., Reilly, J., Sarofim, M., Wang, C., and Felzer, B. Effects of air pollution control on climate. Integrated Assessment of Human-induced Climate Change. M. Schlesinger (ed). Cambridge University Press. Cambridge, UK.

in press.

Reilly, J., Paltsev, S., Felzer, B., Wang, X., Kicklighter, D., Melillo, J., Prinn, R., Sarofim, M., Sokolov, A., and Wang, C. Global economic effects of changes in crops, pasture, and forests due to changing climate, carbon dioxide, and ozone. *Energy Policy*. in press.

Ren, W., Tian, H., Liu, M., Zhang, C., Chen, G., Pan, S., Felzer, B., Xu, X. Tropospheric ozone pollution and its influence on net primary productivity and carbon storage in terrestrial ecosystems of China. *JGR-Atmospheres*. under revision.

Felzer, B. S., Cronin, T., Reilly, J. M., Melillo, J. M. and Wang, X. Impacts of ozone on trees and crops. *Comptes rendus Geoscience*, under revision.

PRESENTATIONS AND ABSTRACTS (10 examples)

Felzer, B., T. Webb III, and R. Oglesby (1995). "Impact of northern hemisphere ice sheets on the Asian monsoon". American Geophysical Union Fall Meeting, San Francisco, December 11-15.

Felzer, B., Thompson, S. L., Pollard, D., and J. C. Bergengren (1996). "Vegetational assemblages during the Last Glacial Maximum", GSA Annual Meeting, Denver, CO, October 28-31.

Felzer, B. and S. L. Thompson (1997). "PALE Modern Simulation of the North Atlantic Region Using the ARCSyM Mesoscale Model". American Geophysical Union Spring Meeting, Baltimore, May 27-30.

Felzer, B. (1999). "Climate model projections of the 21st century for the U.S. National Assessment". 11th Symposium on Global Change Studies, American Meteorological Society, Long Beach, CA, January 9-14, 2000.

Felzer, B. (1999). "Hydrological implications of GCM results for the U.S. national assessment". American Water Resources Association workshop, Atlanta, May 10-12 1999 (extended abstract).

Felzer, B., Kicklighter, D. W., Zhuang, Q., and Melillo, J. (2002). "Ozone effects on global net primary production and carbon sequestration using a biogeochemistry model", December AGU meeting, San Francisco, CA.

Felzer, B., Reilly, J., Melillo, J., Kicklighter, D. W., Wang, C., Prinn, R., Sarofim, M., and Q. Zhuang (2003). "Implications of ozone on carbon sequestration and climate policy in the U.S. using the MIT integrated global systems model", December AGU meeting, San Francisco, CA.

Felzer, B., Williams, M., Zhuang, Q., Melillo, J., Kicklighter, D. W., Prinn, R. (2004). "The Effect of Ozone on Ecosystem Processes Using Improved Hydrological Cycling within a Biogeochemical Model", December AGU meeting, San Francisco, CA.

Felzer, B., Williams, M., Melillo, J. M., Kicklighter, D. W., Zhuang, Q., Rastetter, E. B., and Prinn, R. G. (2006). "The role of evapotranspiration on the relative influence of ozone on regional carbon dynamics", April EGU meeting, Vienna, Austria.

Felzer, B., Cronin, T., Williams, M., Melillo, J. M., Kicklighter, D. W., Zhuang, Q., Rastetter, E. B., and Prinn, R. G. (2006). "The role of evapotranspiration on carbon dynamics and ozone uptake on temperate forests in the U.S.", Summer ESA meeting, Memphis, TN.

FUNDED PROJECTS

Global effects of human and terrestrial ecosystems, Reilly, J. M. and Melillo, J. M (co-PIs), Prinn, R. G., Eckaus, R. S., Tian, H., Felzer, B. S., and Kicklighter, D. W. (co-Is), NSF-Biocomplexity, 09/14/04-02/28/09.

Dynamic modeling of emissions from land-use activities, Reilly, J. and Melillo, J. (co-PIs), Felzer, B., Kicklighter, D., and Paltsev, S. (co-Is), EPA- Dynamics global economic modeling of greenhouse gas emissions and mitigation from land-use activities, 06/14/05-06/13/10.

Nonlinear and threshold responses to environmental stresses in land-river networks at regional to continental scales, Melillo, J., Peterson, B., and Vorosmarty, C. (co-PIs), Felzer, B., Kicklighter, D., McClelland, J., and Wollheim, W. (co-Is), EPA/DOE – Nonlinear Responses to Global Change in Linked Aquatic and Terrestrial Ecosystems and Effects of Multiple Factors on Terrestrial Ecosystems, 06/01/06-05/31/09.