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Experience

(1995-) (2002-) 2010-: (Assistant) (Associate) Research Professor, Institute for the Study of Earth, Oceans, and Space, and Dept. of Earth Sciences, University of New Hampshire.
(2003-) 2006-2009: (Associate) Director, Complex Systems Research Center, UNH.
1993-1995: Post-Doctoral Fellow, NOAA Program in Climate and Global Change.
1989-1993: Graduate Fellow, Dept. of Earth Sciences, UNH.
1988-1989, 1986-1987: Instructor in Physics, UNH.
1987-1988: Instructor in Physics, St. Anselm College, Manchester NH.
1984-1986: Research Scientist, Nuclear Physics Group, UNH.

Education

• Ph.D., Earth Sciences (Biogeochemistry), University of New Hampshire, 1989-1993.
• M.S., Physics, U. of New Hampshire, 1980-1983.
• B.S. Physics (Summa Cum Laude), U. of New Hampshire, 1977-1980.

Honors and Fellowships

• NOAA Program in Climate and Global Change Post-Doctoral Fellowship, 1993-1995.
• NASA Graduate Student Researcher Program Fellowship, 1990-1993.
• UNH/NASA Training Grant Graduate Fellowship, 1989-90.
• Phi Beta Kappa, U. of New Hampshire, 1979.
• Tech Alumni Achievement Award, Dept. of Physics, U. New Hampshire, 1979.

Professional Society Memberships

• American Geophysical Union
• American Association for the Advancement of Science

Refereed Publications (in review)

Zhang F, C Li, Z Wang, S Glidden, X Li, **S Frolking,** C Li**. 2015.** Changes in the soil organic carbon balance in farmland in China, *Agriculture, Ecosystems and Environment*.

Refereed Publications (accepted/in press)

Refereed Publications

Deng J, Li C, **Frolking S. 2015.** Modeling impacts of changes in temperature and water table on C gas fluxes in an Alaskan peatland, *JGR-Biogeosciences,* 120, doi:10.1002/2014JG002880.

Zhang F, C Li, Z Wang, S Glidden, DS Grogan, X Li, Y Cheng, **S Frolking. 2015.** Modeling impacts of management on farmland soil carbon dynamics along a climate gradient in Northwest China during 1981-2000. *Ecological Modelling, 312,* doi: 10.1016/j.ecolmodel.2015.05.006.

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Toomey M, M Friedl, **S Frolking**, K Hufkens, S Klosterman, O Sonnentag, DD Baldocchi, CJ Bernacchi, SC Biraud, G Bohrer, E Brzostek, SP Burns, C Coursolle, DY Hollinger, HA Margolis, H McCaughey, RK Monson, JW Munger, S Pallardy, RP Phillips, MS Torn, S Wharton, M Zeri, AD Richardson. **2015**. Greenness indices from digital cameras predict the timing and seasonal dynamics of canopy-scale photosynthesis, *Ecological Applications*, 25, 99-115.

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Kurnianto S, M Warren, J Talbot, JB Kauffman, D Murdiyarso, **S Frolking**. **2015.** Carbon accumulation of tropical peatlands over millennia: a modeling approach, *Global Change Biology,* 21, 431-444.

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Kim Y, NT Roulet, CH Peng, CS Li, **S Frolking**, IB Strachan, A Tremblay. **2014**. Multi-year carbon dioxide flux simulations of mature Canadian black spruce forests and ombrotrophic bogs using Forest-DNDC, *Boreal Environmental Research,* 19, 417-440.

Gray J, M Friedl, **S Frolking**, N Ramankutty, A Nelson, M Gumma. **2014**. Mapping Asian cropping intensity with MODIS. *IEEE J. Spec. Top. Appl. Rem. Sens.,* 7, 3373-3379.

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Bubier JL, Crill PM, Mosedale A, **Frolking S**, Linder E. 2002. Peatland Responses to varying interannual moisture conditions as measured by automatic CO2 Chambers, Fall AGU Meeting.

Rawlins MA, Lammers RB, **Frolking S**, Fekete BM, Vörösmarty CJ. 2002. Simulating Pan-Arctic runoff with a macro-scale terrestrial water balance model, Fall AGU Meeting.

Xiao, X., Braswell, B., Zhang, Q., Boles, S., **Frolking, S**., and Moore, B., 2002. Satellite-based observations of interannual variation of vegetation water content and productivity in Northern Asia during 1998-2001, AGU 2002 Spring Meeting, Washington, D.C., May 31, 2002.

Roulet N.T., T. Moore, B. Ouyang, J. Turunen, A. Reimer, C. Fraser, C. Roehm, P. Lafleur, S. Admiral, D. van Dyke, P. Richard, S. Muller, D. Verseghy, **S. Frolking,** P. Crill, J. Bubier. 2001 The Peatland Carbon Study: an analysis of the relationship between carbon exchanges and climate in northern peatland ecosystems. *CONGASS Science Meeting*, Lund, Sweden, Oct. 2001.

Li, C., Salas, W., **Frolking, S**., Boles, S., Xiao, X., Sass, R., and B. Moore, 2001, Quantifying the atmospheric impacts of paddy rice agriculture in China, Crop Modeling and Prediction at regional scales, National Institute for Agro-Ecological Sciences, Tsukuba, February 19-21, 2001 JAPAN.

Salas, W., Li, C., **Frolking, S**., Boles, S., Xiao, X., Sass, R., and B. Moore, 2001, Atmospheric impact of paddy rice agriculture in Asia: Linking Remote Sensing with Crop Growth Models, ALOS Conference, Tokyo, JAPAN.

Li C, Zhuang Y, **Frolking S,** Galloway J, Harriss R, Moore B, Schimel D, Wang X, Xiao X (2001) Soil organic matter loss threatens sustainability of Chinese agriculture: a modeling study of coupled C and N biogeochemical cycles. *IGBP Open Science Conference, Amsterdam.*

Braswell B, Hagen S, Lucas R, **Frolking S**, Xiao X. 2001. Estimating tropical forest canopy properties using multiangle and multispectral observations. *IGBP Open Science Conference, Amsterdam.*

Frolking S., J. Qiu, S. Boles, X. Xiao, J. Liu, C. Li, X. Qin, H. Tang. 2001. Combining Remote Sensing and Ground Census Data to Develop New Maps of the Distribution of Cropland in China. *IGBP Open Science Conference, Amsterdam*.

Schloss A, Aber J, Braswell B, **Frolking S**, Hurtt G, Vorosmarty C, Moore B. 2001. A WEB-based system for terrestrial environmental research. *IGBP Open Science Conference, Amsterdam.*

Lucas R, Xiao X, Hagen S, **Frolking S**. (2001) MODIS demonstrates potential for discriminating tropical regeneration stage and pathway, *EOS Trans. Suppl*. 82, Spring meeting.

Frolking S., J. Qiu, S. Boles, X. Xiao, J. Liu, C. Li, X. Qin. 2001. Combining Remote Sensing and Ground Census Data to Develop New Maps of the Distribution of Rice Agriculture in China. *EOS Trans. Suppl*. Vol. 82, Spring meeting.

Xiao X., S Boles, J. Liu, **S Frolking,** W Salas, C Li, B Moore. 2001. Sub-Pixel Mapping of Croplands in China: Using Multi-Temporal VEGETATION Sensor Data and Spectral Mixture Analysis. *EOS Trans. Suppl*. 82, Spring meeting.

Frolking S, NT Roulet, TR Moore, PJH Richard, JL Bubier, P Lafleur, PM Crill. 2001. Modeling short term and long term carbon accumulation in northern peatlands, International 7th International Symposium on the Biogeochemistry of Wetlands, Durham, NC.

Frolking S, PM Crill, NT Roulet, TR Moore, PJH Richard, JL Bubier, P Lafleur. 2001. Modeling short term and long term carbon accumulation in northern peatlands, International Workshop on Carbon Dynamics of Forested Peatlands: Knowledge Gaps, Uncertainty and Modelling Approaches, Edmonton, AB, Canada.

Braswell BH, Linder E, Hagen SC, Xiao X, **Frolking SE**, Moore B. 2000. A Bayesian unmixing algorithm for retrieving landcover distributions using global reflectance data. *EOS Trans. Suppl.* 81:F241.

Weitz A, Keller M, Crill P, **Frolking S.** 2000. Soil water dynamics in humid tropical soils of low bulk density: correlation with N_2O gas fluxes. *EOS Trans. Suppl.* 81:F245.

Hagen SC, Braswell BH, Salas WA, Xiao X, **Frolking SE**. 2000. Large scale remote observations of disturbance in the Amazon Basin. *EOS Trans. Suppl.* 81:F218.

Frolking S, NT Roulet, TR Moore, P Lafleur, PJH Richard, JL Bubier, B Ouyang, J-P Blanchet, PM Crill. 2000. Modeling the carbon balance of northern peatlands. Millennium Wetlands Conference, Quebec, Aug. 2000.

Hurtt G, Rosentrator L, **Frolking S**. 2000. Linking remote-sensing estimates of land cover and census statistics on land use to produce maps of land use of the conterminous United States. *EOS Trans. Suppl.* 81:S95.

Xiao X, Moore B, He L, Salas W, Boles S, **Frolking S**, Li C, Zhao R. 2000. Large-scale/coarse resolution characterization of paddy rice agriculture in China using VEGETATION sensor data in SPOT. *EOS Trans. Suppl.* 81:S93.

Xiao X, **S. Frolking**, Y. Zhuang, W. Salas, C. Li. 1999. Agricultural land-use in China: A comparison of area estimates from ground-based census and satellite-borne remote sensing. *EOS Trans. Suppl.* 80:F360. Fall 1999 AGU.

Weitz A, Crill P, **Frolking S**, Keller M, Linder E, Li C. 1999. Simulation of soil moisture effects on N2O flux dynamics from fertilizer agricultural soils in the humid tropics of Costa Rica. *EOS Trans. Suppl.* 80:F42. Fall 1999 AGU.

Frolking S, Roulet NT, Moore TR, Richard, PJH, Lavoie M, Crill P. 1999. Modeling northern peatland decomposition and peat accumulation. *EOS Trans. Suppl.* 80:F48. Fall 1999 AGU.

Kimball J, McDonald, KC, Keyser A, **Frolking S**, Running S, Way JB, & Zimmermann R. 1999.Development of radar remote sensing based freeze/thaw detection algorithm for the northern high latitudes. *EOS Trans. Suppl.* 80:F97. Fall 1999 AGU.

McDonald, KC, Kimball J, Keyser A, Running S, **Frolking S**, Zimmermann R, & Way JB. 1999. Application of Spaceborne Synthetic Aperture Radar to Monitoring Seasonal Ecological and Hydrologic Processes in Boreal Forest. *EOS Trans. Suppl.* 80:F96. Fall 1999 AGU.

Bubier JL, **Frolking S**, Crill PM, Linder E (1999) Net ecosystem productivity and its uncertainty in a diverse boreal peatland, 1999 ESA Annual Meeting, Abstract Volume, p. 61.

Jenkins JP, Braswell R, Aber J, **Frolking S**, Kittel T (1999) Developing a continental scale phenology model linking remote sensing data and climate drivers. *EOS Trans. Suppl.* 80:S129. Spring AGU.

Roulet N, Moore T, Blanchet J-P, Lafleur P, Richard P, **Frolking S**, Crill P (1999-poster) Peatland carbon study (PCARS): Measurement and modelling of the contemporary carbon sequestration in peatlands. *EOS Transactions Supplement*, 80:S116. Spring AGU.

Keyser A, Kimball J, McDonald K, Running W, **Frolking S**, Way JB (1999-poster) Regional assessment of spring thaw timing in Alaska using the NASA Scatterometer (NSCAT). *EOS Transactions Supplement*, 80:S101. Spring AGU.

McDonald KC, Kimball JS, Zimmermann R, Way JB, **Frolking S,** Running SW (1999) Application of space-borne scatterometer for mapping freeze-thaw state in northern landscapes as a measure of ecological and hydrological processes. IGARSS Annual meeting. Hamburg, Germany.

Frolking S, McDonald KC, Kimball JS, Way JB, Zimmermann R, Running SW (1998-poster) Using the space-borne NASA Scatterometer (NSCAT) to determine the frozen and thawed seasons of a boreal landscape. Fall 1998 AGU.

Frolking SE, A.R. Mosier, D.S. Ojima, C. Li, W.J. Parton, C.S. Potter, E. Priesack, R. Stenger, C. Haberbosch, P. Dörsch, H. Flessa, K.A. Smith (1998) Comparison of N_2O emissions from soils at three temperate agricultural sites: simulations of year-round measurements by four models. Fall 1998 AGU.

Kimball JS, **SE Frolking**, KC McDonald, JB Way, R Zimmermann, SW Running (1998-poster) Assessment of radar-based measurement of freeze-thaw timing; implications for monitoring boreal forest response to climate change. Fall 1998 AGU.

Li Changsheng, Yahui Zhuang, **Steve Frolking**, Zhaohua Dai, Xiaoke Wang, Patrick Crill, Wenzhi Song, Berrien Moore III, and William Salas (1998-poster) Scaling Up Nitrous Oxide Emissions from Agricultural Lands in China and the U.S. Fall 1998 AGU.

McDonald KC, Kimball JS, Zimmermann R, Way JB, Running SW, **Frolking S** (1998) Mapping Seasonal Freeze/Thaw Processes in Alaska with NSCAT. Fall 1998 AGU.

Way JB, **Frolking S**, Running SW, Kimball JS, McDonald KC, Zimmermann R (1998) Freeze/Thaw as a Measure of Global Change Responses of the Boreal Land Surface Using Spaceborne Radars. Fall 1998 AGU.

Way JB, McDonald K, Running SW, Kimball J, **Frolking S**, Zimmermann R (1998) Radar-based measure of interannual vegetation phenology for monitoring global change responses of vegetation. IGARSS, 1998.

Bubier J, Crill P, **Frolking S**, Moore T (1998) Environmental controls on the carbon balance of boreal peatlands, Manitoba, Canada. *EOS Transactions Supplement*, 79:S37; Spring AGU, Boston.

Frolking S, Kyle McDonald, Reiner Zimmermann, JoBea Way, John Kimball, Steve Running (1998) Can Space-Based Radar Observations Determine the Growing Season Length of Boreal Ecosystems? *EOS Transactions Supplement*, 79:S149; Spring AGU, Boston.

Frolking S, Hirsch A. (1997-poster) 'Comparing modeled and observed carbon fluxes in a boreal forest upland soil', AGU Fall Meeting, San Francisco, Dec. 1997.

Frolking S. Modeling Soil Respiration at the Site Scale: Issues, Methods, and Evaluation of Results. SSSA Annual Meeting, Anaheim CA. Oct. 1997.

Frolking S, Bubier JL, Moore TR, Ball T, Bellisario LM, Bhardwaj A, Carroll P, Crill PM, Lafleur PM, McCaughey JH, Roulet NT, Suyker AE, Verma SB, Waddington JM, Whiting GJ (1997, poster) NEE-PAR Relationships for Northern Peatlands, *Ecological Soc. Am*., Albuquerque NM.

Roulet, NT, A Bhardwaj, N Comer, M Letts, TR Moore, C Roehm, D Hilbert, **S Frolking** (1997) Modelling biospheric - climatic feedbacks in peatland ecosystems, presented at "Impact of Climate Change to Inland Wetlands: A Canadian Perspective" workshop, Oak Hammock March Centre, Oak Hammond MB, April 1997.

Frolking S (1996, poster) Spruce/Moss Boreal Forest Net Ecosystem Productivity Sensitivity to Seasonal Anomalies in Weather, *AGU Fall Meeting*.

Holden JB, Vorosmarty C, **Frolking S** (1996) A large scale water balance model for permafrost terrain: its calibration and validation against site data, *AGU Spring Meeting*, Baltimore, MD.

Frolking S, J Aber (1995) Modeling daily carbon exchanges in a spruce/moss boreal forest, *Bulletin of the Ecol. Soc. Am.,* 76(2):87, Ann. Meet. Suppl.

Frolking S (1995) Temporal variability in the carbon balance in a spruce/moss boreal forest, *EOS Trans. AGU,* 76(17):S117, Spring Meet. Suppl.

Frolking S (1993 - poster) Methane From Northern Peatlands: Sensitivity to Climate Variability and Climate Change, at NATO Advanced Research Workshop, Soil Responses to Climate Change: Implications for Natural and Managed Ecosystems, Silsoe, England, Sept. 1993.

Frolking S, P Crill (1993) Climate variability and methane flux from a poor fen in southeastern New Hampshire: measurement and modeling, *EOS*, 74:144.

Frolking S (1983) Combined Shell Model/Random Phase Approximation Calculations for ^{204,206}Pb, *Bull. Am. Phys. Soc.*

Invited Talks

"Water: Macro-scale process-based modeling of water", Climate Change Impacts and Integrated Assessment (CCI/IA) Workshop XX, Energy Modeling Forum, Snowmass CO, July 2014.

"Introduction to global climate change; brief overview of anticipated impacts in NH/New England": The Nature Conservancy, NH State Board of Trustees and Staff, Concord NH, 24 Jan. 2014.

"Peatland process modeling for understanding - simulating Holocene peatland carbon temporal dynamics": Synthesis and Training Workshop on Holocene Circum-Arctic Peatland Carbon Dynamics, Lehigh University, 13 Oct. 2013.

"Crops, climate, canals, and the cryosphere in Asia – changing water resources around the earth's third pole", Climate Change Symposium, Japan Society for the Promotion of Science, Washington DC, Feb. 22, 2013.

"Peatlands in the 21st century climate system":
- Lehigh University, Dept. of Earth and Environment, Feb. 1, 2013.
- University of Toronto, Dept. of Geography and Planning, Apr. 4, 2013.
- UNH Environmental Science Seminar Series, Durham NH, Sept. 14, 2012.

"Crops, climate, canals, and the cryosphere in Asia – changing water resources around the earth's third pole", Penn State University, Dept. of Environmental and Resource Economics, Jan. 21, 2013.

"Biogeochemistry in the Arctic-Boreal Climate System", *Arctic-Boreal Zone Modeling Workshop – plenary talk*, NASA Goddard Space Flight Center, 22-24 May 2012

"Peatlands in the 21st century climate system – state of knowledge and a modelling perspective":
- NOAA Geophysical Fluid Dynamics Laboratory, Princeton NJ, Apr. 26, 2012.

• Ecosystems Center, Marine Biological Laboratory, Woods Hole MA, Jan. 31, 2012.
• Lamont Doherty Earth Observatory, Columbia University, Oct. 28, 2011.

"The responses of peatlands to drying and temperature increases over the 21st century: initial model results", Institute of Arctic Biology, University of Alaska-Fairbanks, July 12, 2011.

"Crops, climate, canals, and the cryosphere in Asia – changing water resources around the earth's third pole":

• *Workshop on Advancing Land-use Modeling and Analysis for Carbon Cycling Studies*, Institute for Agricultural Resources and Regional Planning, Chinese Academy of Agricultural Sciences, Beijing, China, June 2011.
• Dept. of Agronomy, Northwest Agriculture and Forestry University, Yangling, Shaanxi Province, China, June 2011.

"Climate Change, Population, and Global Water Availability", *Green Living Seminar,* Massachusetts College of Liberal Arts, North Adams MA, Feb. 24, 2011.

"Peatlands in the Earth's 21st Century Coupled Climate-Carbon System", *Climate Sensitivity Extremes – Assessing the Risk*, NASA-GISS, New York, April 26-27, 2010.

"Land use, disturbance, and coupled carbon-climate system", Land Science Plenary Talk, NASA MODIS/ VIIRS Science Team Meeting, Washington DC, Jan 28, 2010.

"Assessing environmental impacts of agro-ecosystem management with a biogeochemical model", *Farming for Carbon in New England—Food and Fuel Policy and Application*, 12 June 2009, Durham NH.

"Climate forcing impact of northern peatlands through the Holocene: a framework for analysis and a new simulation model":

• Department of Geology and Geophysics, Boston College, Nov. 2008.
• Department of Geography, UCLA, May 2008.
• Department of Forestry, University of Helsinki, Sept. 2007.

"Northern peatland carbon accumulation through the Holocene and its impact on climate - a framework for analysis", Dept. of Earth & Environmental Sciences, Lehigh University, Oct. 2006.

"What we mean when we say CH_4 is 23 times as strong a greenhouse gas as CO_2, and what that really means for Mer Bleue's current impact on climate radiative forcing" eastern Canada Peatland Science Team Meeting, McGill University, Dec. 2005.

"Three centuries of gridded, global land-use transition rates and wood harvest statistics for Earth System Model applications", Dept. of Geography, Boston University, Oct. 2004.

"Modelling peatland C accumulation and CH_4 emissions – long-term sinks or sources of GHG forcing?", Lund University, Sweden, Oct. 2003.

"Greenhouse Gas Emission Consequences of Large-Scale Changes in Water Management of China's Rice Paddies During 1980-2000",

• National Institute of Agro-Environmental Sciences, Tsukuba, Japan, Mar 2003.
• National Institute of Rural Engineering, Tsukuba, Japan, Mar 2003.

"The Carbon Balance of Northern Peatlands: Modeling and Measurements at Two Sites in North America", University of Joensuu, Finland and Helsinki University, Jan. 2003.

"Models and Data for Regional Methane Budgets", NACP Methane Workshop, Durham NH, Sept. 2002.

"Modeling the carbon balance of northern peatlands" Millenium Wetlands Conference, Quebec, Aug. 2000; and UNH EOS Seminar, Sept. 2000.

"Comparing a national inventory of N_2O emissions from arable lands in China developed with a process-based agro-ecosystem model to the IPCC methodology"; Stuttgart, Germany, and Garmisch Partenkirchen, Germany, Oct 1999.

"Developing a GIS database for Agro-ecosystem Studies in China, and a First Comparison of Ground-Based and Remote Sensing-Based Agricultural Landcover Estimates":

• Chinese Academy of Meteorological Sciences, Beijing, May 1999.
• Chinese Academy of Agricultural Sciences, Beijing, May 1999.
• Chinese Ecological Research Network (CERN), CAS, Beijing, May 1999.
• Nanjing Agricultural University, Jiangsu Province, June 1999.
• Changsha Institute of Agricultural Modernization, Hunan Province, June 1999.

• Guangxi Academy of Agricultural Sciences, Nanning, Guangxi Province, June 1999.
• Xi Shuang Ban Na Research Station, CERN, CAS, Yunnan Province, June 1999.

"Carbon Cycling in Boreal Forests in Central Canada", Laval University, Quebec, May 1999.

"Comparison of N_2O Emissions from Soils at Three Temperate Agricultural Sites: Simulations of Year-Round Measurements by Four Models" Symposium on Trace Gas Fluxes, Fall 1998 AGU.

"Modeling Soil Respiration at the Site Scale: Issues, Methods, and Evaluation of Results." Symposium on Soil Respiration, Soil Science Soc. of Am. Annual Meeting. Anaheim CA, 10/97.

"Comparison of N_2O emissions from soils at three temperate agricultural sites: year-round measurements and simulations by four models", International Workshop on Dissipation of N from the Human N-Cycle, and Its Role in Present and Future N_2O Emissions to the Atmosphere, 5/97, Oslo, Norway.

"How Well Can We Assess Nitrous Oxide Emissions from Agro-Ecosystems", Inst. of Atmospheric Sciences, S. Dakota School of Mines and Technology, 3/97.

"Slow Carbon/Water/Energy Cycling - Annual to Interannual Variations in Climate and the Carbon Cycle Variations in Carbon/Water/Energy Flux Dynamics at the BOREAS Tower Sites", BOREAS Science meeting, Annapolis MD, 3/97.

"Future Canadian Research in the Global Carbon Cycle: A Perspective From BOREAS", Atmospheric Environment Service, Downsview, Ontario, 12/96.

"How Well Can We Assess Nitrous Oxide Emissions from Agro-Ecosystems", Chapman Colloquium Series, Dept. of Earth Sciences, U. New Hampshire, 12/96.

"Modeling Trace Gas Fluxes", Research Center for Eco-Environmental Sciences, Chinese Academy of Science, Beijing, 4/96.

"Modeling Nitrous Oxide Flux from US Agriculture", OECD/IPCC Workshop on N2O and CO2 fluxes from Agricultural Soils, Geneva, Dec. 1995.

"Temporal Variability in Terrestrial Trace Gas Exchange", Centre for Climate and Global Change Research, McGill Univ., Montreal, 3/95.

"Temporal Variability of the Carbon Balance in a Spruce/Moss Boreal Forest", Ecosystems Center, Marine Biological Laboratory, Woods Hole, MA, 3/95.

"Temporal Variability of Terrestrial Trace Gas Fluxes", Woods Hole Res. Center, MA, 1/95.

"Weather/Climate Controls on Temporal Variability of Methane Flux from Northern Peatlands", U. Alaska at Fairbanks, 9/94.

"Modelling N_2O Flux from Denitrification: the DNDC Model and the Role of the Soil Environment", NREL, Colorado State Univ., 12/93.

Professional Service

Working Group: *ORNL DAAC User Group*: member, 2012 – 2014.

Editorial Board: • *EOS Transactions American Geophysical Union, 2013-present;* • *Boreal Environmental Research,* 2011 – present.

Associate Editor: *Journal of Geophysical Research – Biogeosciences,* 2005 – 2009.

Guest Editor: *Environmental Research Letters*, Special Issue on Wetlands and Greenhouse Gas Emissions, 2014.

Ad Hoc Reviewer: *Agriculture and Forest Meterology; Biogeochemistry*; *Biogeosciences; Boreal Environmental Research*; *Canadian Journal of Forest Research*; *Chemosphere; Climatic Change; Current Opinion in Environmental Sustainability; Earth Interactions; Ecohydrology; Ecological Applications; Ecology; Ecology Letters; Ecological Modelling; Ecosystems; Environmental Earth Sciences; Environmental Management; Environmental Modelling and Software; Environmental Research Letters; Environmental Science and Policy; Environmental Science and Technology; Eos, Transactions, American Geophysical Union; European Journal of Soil Science; Frontiers in Ecology and the Environment; Geomicrobiology; Geophysical Research Letters; Geoscientific Model Development; Global Biogeochemical Cycles; Global Change Biology; Global Ecology and Biogeography; Global and Planetary Change; Hydrological Processes; IEEE Transactions on Geoscience and Remote Sensing; Journal of Environmental Quality; Journal of Geophysical Research – Atmospheres; Journal of Geophysical Research – Biogeosciences; Mires and Peat; Nature; Nature Climate Change; Nutrient Cycling in Agroecosystems; Plant and Soil; Proceedings of the National*

Academy of Sciences USA; Quaternary Science Reviews; Radiocarbon; Remote Sensing of Environment; Soil Science Society of America Journal; Tellus Series B; Tree Physiology; Water Resources Research; Water, Soil and Air Pollution; *Wetlands*; Intergovernmental Panel on Climate Change (IPCC); *US Agencies*: NASA; NOAA; NSF; DOE; *Canada Agencies*: NSERC, Foundation for Climate and Atmospheric Sciences, & Agri-Food Research Council; *UK Agencies*: NERC; *Dutch Agencies*: NOW-Earth & Life Sciences Council-Dutch Russian Research Cooperation Program; *German Agencies*: Helmholtz Gemeinschaft, Helmholtz-University Young Investigator Program; *Belgium Agencies*: Postdoctoral Fellowship proposal, Research Foundation - Flanders (FWO); various book chapters.

Review Panels: DOE NGEE-Arctic Phase 2 (2015); DOE Early Career Panel (2014); NASA TE Step 1 (2012); NASA CMS (2012); NSF WSC (2012); NSF EPSCoR (2011); NASA Carbon Cycle Science (2007); NASA ESS Graduate Fellowships (2002, 2005); DOE Program in Ecosystem Research (2001).

Tenure/Promotion Review: • McGill, Dept. of Nat. Res. Sci., Oct. 2006; • Univ. Montana; Div. Biol. Sci., Nov 2003; • NASA JPL, June 2000.

Program/Project Review: • member of review panel for Helmholtz Association Program in Atmosphere and Climate; 5-year program 3-day review in 2008; • member of Steering Group for Ireland Dept. of Agriculture and Food project 'Nitrous oxide from Irish agricultural grasslands: current emissions and future trends'; 1-2 day reviews in 2007 and 2009.

Official Opponent/External Examiner: • Ph.D. Reviewer: Greifswald University, Germany, Candidate: René Dommain: *Late Quaternary evolution and carbon cycling of tropical peatlands in equatorial Southeast Asia*; Nov 2014; • Ph.D. Preliminary Examiner: University of Eastern Finland, Kuopio, Finland, Candidate: Maija Marushchak: *Carbon dioxide, methane and nitrous oxide balance of subarctic tundra from plot to regional scales*; Mar 2013; • Ph.D. Preliminary Examiner: University of Eastern Finland, Joensuu, Finland, Candidate: Jaana Haapala: *Mire plants and carbon dioxide dynamics under increased ozone concentration and UV-B radiation*; Oct 2011; • Ph.D. External Examiner: University College Cork, Cork, Ireland, Candidate: Rashid Rafique: *Measurements and modelling of nitrous oxide emissions from Irish grassland*'; May 2011; • Ph.D. External Reviewer: Åbo Akademi University, Turco, Finland, Candidate: Johanna Kirkinen: *Greenhouse impact assessment of some biogenic fuels – methodological aspects and examples*; Feb 2010; • M.S. external reviewer, Dept. of Geography, McGill University, Candidate: Heather Stewart: *Partitioning belowground respiration in a northern peatland*, Jan. 2006; • Ph.D. Official Opponent, Department of Engineering Physics and Mathematics, Technical University of Helsinki, Candidate: Anu Kettunen: *Modeling of microscale variations in methane fluxes*, Jan. 2003.

Co-Editor: 'International Workshop on Dissipation of N from the Human N-Cycle, and Its Role in Present and Future N_2O Emissions to the Atmosphere'. *Nutrient Cycling in Agroecosys*. Vol. 52(2-3).

Committees: • member of IPCC/OECD Expert Group on N_2O and CO_2 from Agricultural Soils (1994-1996).

Scientific/Professional Society Meeting Session Chair or Co-Chair: • NSF-PeatNET workshop: *The Role and Importance of Peatlands in the Global Carbon Cycle: Past, Present, and Future - Linking Peatland Carbon to Carbon Models: The Next Steps*, Fall 2009; • NSF-PeatNET workshop: *Peatlands in the Earth's Climate-Carbon System*, Spring 2009; • *Fall 2008 AGU*: Surface Energy, Water, and Carbon Fluxes in Northern Wetlands and Impacts of Global Change on Carbon and Nutrient Cycling in Wetlands I - III; • NSF-PeatNET workshop: *Why is there peat?*, Spring 2008; • *Fall 2007 AGU*: Advancing Predictability in a Changing Environment Through Hydrologic Synthesis II & III; • *Spring 2003 AGU*: Atmosphere-biosphere exchanges: a comprehensive approach to sinks and sources I – IV; • *Spring 2001 AGU*: CO_2 Fluxes from the Ground Up I & II; • *Spring 2000 AGU*: Biogeochemistry of C and N in Soils I & II.

Judge of student proposals and papers: AGU Fall Meeting 2011, 2012; National Junior Science and Humanities Symposium Northern New England (1997); NASA/National Science Teachers Association Space Science Student Involvement Program - New York & New England (1995, 1996, 1998).

University Service

Faculty Chair – Natural Resources and Earth System Science PhD Program, 2015-present.

Student & Post-Doc Advising (principal advisor)*: *ESci – UNH Dept. of Earth Sciences, NRESS - UNH Natural Resources and Earth System Science PhD Program; NR - UNH Natural Resources PhD Program; DNRE - UNH Dept. of Natural Resources and Environment*.

Current students: Danielle Grogan* (*PhD, NRESS*), Justin Fisk (*PhD, NRESS*), Steve Flanagan (*PhD, Univ. Maryland, Geography*).

Graduates: Jon Holden (*MS, ESci, 1999*), Antje Weitz (*PhD, NR, 2000*), Julian Jenkins (*MS, ESci, 2000*), Kevin Tu (*PhD, NR, 2000*), Linsey DeBell (*MS, ESci, 2003*), Evilene Lopes (*PhD, NRESS, 2005*), Cary Girod (*MS, DNRE, 2005*), Hudson Silva (*MS, DNRE, 2005*), Steve Hagen* (*PhD, NRESS, 2006*), Mike Palace (*PhD, NRESS, 2006*), Mike Rawlins (*PhD, NRESS, 2006*), Steve Phillips* (*MS, ESci, 2007*), Katelyn Dolan (*MS, DNRE, 2009*), Claire Treat* (*MS, ESci, 2010*), Jordan Goodrich (*MS, ESci, 2010*), Fernando del Bon Espirito-Santo (*PhD, NRESS, 2011*), Philip Nuss (*PhD, NRESS, 2012*), Kaitlyn Steele (*MS, ESci, 2012*), Meghan Salmon (*PhD, Boston Univ., Geography, 2012*), Sofyan Kurnianto* (*MS, ESci, 2013*), Claire Treat (*PhD, NRESS, 2014*), Xiaoman Huang (*PhD, Boston Univ., Earth and Environment, 2014*), Jordan Winkler (*PhD, Boston Univ., Earth and Environment, 2014*).

Transferred or withdrawn: Julian Jenkins (PhD, NRESS), Jonathon Pundsack* (*PhD, NRESS*), Katelyn Dolan (PhD, NRESS), Jon Higgins (PhD, NRESS).

Post-Docs: Jagadeesh Yeluripati* (2004-2005), Mike Balshi* (2007-2008), Dominik Wisser* (2008-2009), Julie Talbot* (2009-2011).

Other student supervision activities: Senior Honors Thesis Faculty Advisor to Kara Maki, Applied Math, Spring 2003. Faculty sponsor for 1994 summer undergraduate research fellowship; Charlene Garland (Natural Resources) "Nitrous Oxide from Agro-Ecosystems: A Model Intercomparison of DNDC and the Rothamsted Arable Lands Nitrogen Model", Northeast Regional Center of the National Institute for Global Environmental Change. *UNH Graduate Student Independent Study credit supervision*: Sofyan Kurnianto, Cary Girod, Iulia Barbu, Whitney Blanchard.

Teaching: *(I have taught or co-taught graduate courses, graduate seminars, and graduate independent Study courses in Earth Sciences; I have taught undergraduate courses in Physics*)

- EOS 844, NR 744/844: Biogeochemistry (Spring 2006, 2008, 2010, 2012: with S. Ollinger; Spring 2014 with C. McCalley).
- EOS 895, NR 707/807: Environmental Modeling (Fall 2006, 2008: with G. Hurtt; Spring 2012: with W. Wollheim).
- EOS 867: Earth System Science (Fall 2010) (with C. Wake).
- EOS 996: *graduate independent study courses* (Spring 2005, 2007, 2009; Fall 2011).
- EOS 813: Biogeochemical Dynamics (Spring 2002, 2004).
- EOS 895: Seminar in Quantitative Methods in Earth System Science I and II (Fall 2003; Spring 2004).
- EOS 895: Concepts Dynamical Earth System Sci. (Spring 2003) (with H. Mao, M. Prentice).
- EOS 895: Earth Syst. Sci.: Understanding Our Global Environ. (Fall 2002) (with B. Braswell).
- EOS 995: Modeling & Analysis of Biogeochemical Cycles (Fall 1997; Spring 2001).
- Phys 515: Classical Mechanics (UNH: Spring 1989).
- Phys 407/121: General Physics I (UNH: Fall 1986, 1988, Sum. 1985; St. Anselm College, Fall 1987).
- Phys 408/122: General Physics II (UNH: Spring 1987, Sum. 1986; St. Anselm College, Spring 1988).
- Phys 245: Electrical Circuits (St. Anselm College, Spring 1988).
- Phys 346: Thermodynamics (St. Anselm College, Fall 1987).
- Phys 412: Technical Physics (UNH: Spring 1985, 1986).

Committee Work:

- Earth Systems Research Center Iola Hubbard Climate Change Endowment Grant Panel (2011-2015)
- Institute for the Study of Earth, Oceans, and Space – Executive Committee (2003-2009).
- Search Committees
  - – UNH – Provost and Vice President for Academic Affairs (Spring 2015, Fall 2015).
  - – Institute for the Study of Earth, Oceans, and Space
    - * EOS Business Services Center Manager (Summer 2013).
    - * EOS Director (2008-2009).
  - – UNH – Provost and Vice President for Academic Affairs (Spring 2013).
  - – College of Life Sciences and Agriculture – Sustainable Ecosystems Faculty Cluster Hire for

four faculty positions (2009-2010):
* Soil Biogeochemistry; * Aquatic Biogeochemistry;
* Landscape Ecology; * Applied Forest Ecology and Management.
– Earth Sciences Dept. – Hydrology Faculty hire (AY 2008; AY 2007).
• Institute for the Study of Earth, Oceans, and Space – P&T Committee (2011-12, 2012-13).
• Earth System School Proposal Committee (2011).
• UNH Strategic Planning Research Subcommittee (2009).
• Institute for the Study of Earth, Oceans, and Space – Curriculum Committee (2003-2009).
• UNH Sustainable Food Systems Task Force (2011-2015).
• Earth Sciences Steering Committee (2007-present).
• NRESS – Student Support Fund Committee (2007-2011).
• Member of Technology, Society, and Values Program Steering Committee (1983-87, 1993-95) and chair of Curriculum subcommittee (1984-86).

Co-Coordinator: • Friends of Modeling Seminar Series - weekly Complex Systems Research Center seminar series, Jan. - May 1996. • Friends of Fresh Water Seminar Series, Feb. - May 1999. • Friends of Environmental Datasets Seminar Series, Oct. – Dec. 2001.

Public Service

• Two lectures and Q&A on climate and water resources, *World Concerns Discussion Group*, Havenwood/Heritage Heights Senior Center, Concord NH; 11/2014; 6/2011
• Two presentations on climate change and water resources to ninety 6th graders at Pierce School, Brookline MA, 5 Feb 2013; collaboration with Boston Univ. GLACIER program.
• Member, Board of Trustees, The Nature Conservancy – New Hampshire Chapter, 2012-present.
• Member, New Hampshire Carbon Challenge Advisory Panel, 11/2008-6/2012.
• Member, New Hampshire Carbon Challenge Steering Committee, 12/2006-10/2008.
• Lecture on climate change science, Interfaith Power and Light National Climate Change 'Preach-In' weekend, Lee NH, 2/2012.
• Panel member in discussions on global climate change:
  • for all 7th graders at Oyster River Middle School, Durham, NH, 10/2008, 10/2007, 10/2006.
  • for all students at Oyster River High School, Durham, NH, 4/2007.
  • for public at Durham Community Church, 10/2006.
• Presentation on global climate change to Durham Unitarian-Universalist Fellowship, 5/2001.
• Lecture on Nuclear Issues to two 8th grade classes at Oyster River Middle School, Durham, NH, 4/1999.
• Classroom presentation on the 'Science of the Sky and Beyond', Moharimet Elementary School, Madbury, NH, 11/1999 and 3/2000.
• Chair, Education Committee of Moharimet Elementary School PTO, Madbuy NH, 1995-1998.
• Participant in Oyster River Players production of *West Side Story* (as Officer Krupke) and follow-up discussions on youth, culture, and violence at Dover, NH and Newmarket, NH Middle Schools, 5/2001.

Other

• Art exhibitions:
  • *Art Beyond Sight*, New Hampshire Art Association and New Hampshire Association for the Blind, Robert Lincoln Levy Gallery, Portsmouth NH, April 2009. Juried show – *wooden bench* and *wooden stool*.
  • *In the Company of Artists,* Faculty and Staff Art Show, University Museum, Durham NH
    • Fall 2008. Juried show – *wooden bench*.
    • Fall 2013. Juried show – *wooden stool.*

Funding History

Current

Project Title	*Role & PI*	*Collaborations*	*Funder*	*project dates*	*Award (UNH)*
Incorporating a New Urban Dataset from SeaWinds into a Multi-Sensor Analysis of Global Daytime and Nighttime Urban Heat Islands	PI (1.75 months/yr)	UW-Madison, BU	NASA – Terra/Aqua	5/20/13; 7/1/14-6/30/17	$433k
Pathways to carbon liberation: a systems approach to understanding carbon transformations and losses from thawing permafrost	PI: Saleska; UNH-PI: Li; Frolking Co-I, 1 month/yr	U Ariz., FSU, U Stockholm, U Queensland	DOE-BER	11/1/2013 – 10/31/2016	$545k
Drought-induced vegetation change and fire in Amazonian forests: past, present, and future	PI: Palace; Frolking (Co-I, 0.5+0.5)	UCSD, NASA GSFC,	NASA - IDS	4/1/1; 9/1/2013 – 8/31/2016	???
Integrated Assessment Model development, comparison, and diagnostics project	PI: Frolking (1 mon/yr)	Penn. State	DOE	8/1/2013 – 7/31/2016	$139k
Identifying ways to reduce agricultural GHG emissions: A multinational modeling approach to optimize C and N cycles between livestock and cropping systems	PI: Li, Frolking Co-I; 0.5 month/y	AGS, AgCanada, Aberdeen, Fraunhofer, Landcare Research NZ, U Melbourne	FACCE-JPI (USDA for us)	9/1/13; 1/1/14-12/31/16	€77k
Type 2. Understanding Coupling between Biogeochemical Cycling and Climate Change in Northern Ecosystems: Historical Analysis and Future Projections with the GFDL Earth System Models	PI: Pacala Princeton, UNH lead: Frolking	Princeton, NOAA GFDL	USDA	1/1/2011 – 12/31/2013 *submitted June 2010*	$109k
Developing a model of the carbon balance of tropical peatlands under pressures from land use and climate change	PI, with B. Kaufmann, USFS	USFS	USFS	9/1/2010 – 8/31/2015	$270k
Collaborative Research: WSC-Category 3: Crops, climate, canals, and the cryosphere in Asia – changing water resources around the Earth's third pole	PI: Frolking, Co-I: Lammers, Li, Wisser	Boston Univ., Penn St. Univ., Univ. Alaska – Fairbanks	NSF	2/1/2011 – 1/31/2014	$827k
Collaborative Research: Continental Scale monitoring and forecasting of phenological responses to climate change	PI: Richardson (Harvard); UNH PI: Frolking; other: Friedl, WUSTL	Harvard, Boston University, Washington Univ. at St. Louis	NSF – Marcosystems Biology	7/1/2011 – 6/30/2016	~$256k
RUI: Ecosystem responses to atmospheric N deposition in an ombrotrophic bog: vegetation and microclimate feedbacks lead to stronger C sink or source?	PI: J Bubier, Mt Holyoke College; UNH Co-I: Frolking	Mt Holyoke College	NSF Ecosystems	7/1/2010 – 6/30/2015	$161k

Expired

Project Title	*Role & PI*	*Collaborations*	*Funding Agency*	*Project Dates*	*Award (UNH)*
Luquillo CZO: The role of hot spots and hot moments in tropical: landscape evolution and functioning of the critical zone	PI (Yr 1 only, while McDowell was at NSF)	U Penn, UC Berkeley, etc.	NSF	1 Dec 2013 - 30 Nov 2018	$5M

Quantifying the impacts of major forest disturbances from wind and fire on the Earth System's coupled carbon-climate cycle and on the capacity of forests to meet future demands for wood fuel and fiber	PI: G. Hurtt; UNH Co-Is: Frolking, Palace	Tulane, U. Maryland, JGCRI, NASA-GSFC	*NASA/U. Maryland*	9/1/2010 - 8/31/2013	$150k
Collaborative Research: Long-term carbon storage shifts in high-latitude peatlands with paleoclimate change: Linking peatland modeling with paleoecology and paleohydrology	PI: Peteet, Columbia; UNH Co-I: Frolking	Columbia University/Lamont Doherty Earth Institute	NSF Office of Polar Program	10/1/2010 – 9/30/2013	$97.3k
Genes, isotopes, and ecosystem biogeochemistry: dissecting methane flux at the leading edge of global change	PI: Saleska U AZ; UNH Co-Is: Li, Frolking	U. Arizona, U. Florida,	*Dept. of Energy*	2010-2013	$217k
Modeling Impacts of Climate Change on Carbon Dynamics in Northern High Latitude Wetlands	PI: C. Li; Co-Is: Frolking, Xiao, Trettin, Salas	USFS, AGS, UOK	*NASA*	2009-2012	~$550k
Quantifying the Importance of Episodic Release of CH_4 in Annual Wetland Methane Emissions	PI: R. Varner; Co-Is: Li, Frolking	none	*DOE-NICCR*	2010-2011	$124k 1.0 & 0.0
Collaborative Research: Identifying hydroclimatic regimes of carbon stability in northern peatlands –Holocene data analysis and process-based modeling	UNH PI: Frolking; Co-PIs: MacDonald - UCLA; Yu – Lehigh	UCLA, Lehigh	*NSF*	2006-2010	~$721k
Quantifying the Importance of Episodic Release of CH_4 in Annual Wetland Methane Emissions	PI: R. Varner; Co-Is: Li, Frolking	none	*DOE-NICCR*	2010-2011	$124k
Imaging Impacts of seasonal water stress on vegetation at basin to regional scales: combining optical and microwave remote sensing with hydrological measurements to understand change	PI: Frolking; Co-PI: Fahnestock		*NASA*	2007-2011	$409k
The history of agricultural irrigation expansion: developing useful datasets of global irrigated area and irrigation water use from remote sensing and hydrologic modeling	Project PI: Douglas UMass-Boston; UNH Co-PI: Frolking; BU Co-PI: Friedl	UMass-Boston; Boston University	NASA	9/28/2007-9/27/2010	~$115k
Advancing our Understanding of the Earth System through Coupled Carbon-Climate Modeling and Observations	(Years 2-3 PI: Frolking; Year 1 PI: B Moore; Co-Is: Li, Xiao, Hurtt, Braswell, Ollinger)	Princeton	NASA	2007-2010	~$1.2M
Collaborative Research: An Integrated assessment of the Pan-Arctic freshwater system: analysis of retrospective and contemporary conditions	(PI: C Vorosmarty; Co-Is: M Fahnestock E Linder, R Lammers, S Frolking, M Steele, M Serreze)	U. Washington, U. Colorado	NSF – OPP (#0230243).	2003-2007 + 1 year no-cost extension	$1.4M
Modeling land use change in the earth system	(PI: G Hurtt, Co-I: S Frolking, C Li)	Princeton, NOAA-GFDL.	Princeton	2004-07	~$100k/y
Purchase Impact Estimator	(PI: S. Frolking; Subcontract PI: G. Norris)	Sylvatica	Texas Comm. on Environ. Quality.	2007-2008.	$48k
Understanding the changing carbon, nitrogen, and water cycles in the Earth system	(PI: B Moore; Co-Is: S Pacala, J Melillo)	Princeton, MBL, U. Colorado, Rutgers.	NASA	2003-2006	~$1.5M
Online Tool for Analyzing Products: Environmental Impacts	(PI: S. Frolking; Subcontract PI: G. Norris)	Sylvatica	Texas Comm. on Environ. Quality.	2005-2006	$57k

Assessing the influence of Asian rice paddies on the growth rate of atmospheric methane 1980-2020	(PI: C. Li; Co-Is: S. Frolking, X. Xiao)	none	NASA	2002-2005	$432k
Modeling the Role of High Latitude Terrestrial Ecosystems in the Arctic System: A Retrospective Analysis of Alaska as a Regional System	(PIs: C. Vörösmarty, S. Frolking, and R. Lammers; Co-I: A.D. McGuire)	U. Alaska.	NSF/OPP	2001-2004	$267k
A Satellite Microwave Remote Sensing Measure of High Latitude Growing Seasons for Improved Assessment of Northern Hemisphere Terrestrial Carbon Uptake.	(PI: S. Running, Co-Is: J. Kimball, K. McDonald, E. Njoku, S. Frolking)	NASA JPL, U. Montana.	NASA	2001-2004.	$118k
Biocomplexity–Incubation Activity On Biocomplexity In Peatlands	(PI: S Bridgham, Co-Is: J Pastor, N. Roulet, S. Frolking, J. Chen, J. Weltzin)	Notre Dame, McGill, U. MN-Duluth, Mich. Tech., U. Tenn.	NSF	2001-2002.	$0
Quantifying the Atmospheric Impacts of Paddy Rice Agriculture in China.	(PI: C. Li, Co-Is: R. Sass, S. Frolking, B. Moore, X. Xiao, W. Salas)	Rice University.	NASA/NSF/DOE/USDA/EPA TECO Program	1997-2001.	$845k
Modeling the Biogeochemical System of the Terrestrial Amazon: Issues for Sustainability	(PI: B. Moore)	MBL, Princeton.	NASA.	1997-2000.	$566k
Modeling the Ecosystem Carbon Balance of Northeastern Forests With a Focus on the Soil.	(PI: S. Frolking)	*none*	NIGEC.	1997-1999.	$57k
Scaling Peatland CO_2 and CH_4 Fluxes From Chambers to the BOREAS Northern and Southern Study Areas.	(PI: S. Frolking, Co-I: P. Crill)	*none*	NASA.	1998-2001.	$218k
Modeling Climate-Biosphere Interactions in the Boreal Forest.	(PI: R. Harriss then J. Aber then S. Frolking, UNH)	*none*	NASA.	1994-1997.	$258k
Trace Gas Cross-Site Comparison - A TRAGNET Project.	(PI: Ojima, Co-Is: S. Frolking, A. Mosier, W. Parton.)	Colorado State U., USDA-ARS.	NSF	1995-1996.	$32k
Trace Gas Emissions and Soil Carbon Sequestration in Agricultural Lands in the U.S. and China.	(PI: C. Li, Co-Is: B. Moore, R. Sass, S. Frolking, X. Xiao)	Rice University.	NASA/NSF/DOE/USDA/EPA TECO Prog. 1994-1997.	1994-1997.	$400k
Monitoring Global Change Responses of Vegetation	(PI: S. Running; Co-Is: JB Way, K McDonald, J Kimball, S Frolking)	U. Montana, NASA JPL.	NASA 1997-1999.	1997-1999.	$83k
Modeling boreal forest carbon cycling	Fellow	none	NOAA – post doc program in Global Change	1993-1995	2-year post-doctoral fellowship
Modeling peatland methane emissions	Fellow	none	NASA Earth System Science graduate fellowship	1990-1993	3-year graduate fellowship
Modeling peatland methane emissions	Fellow	none	UNH Space Grant graduate fellowship	1989-1990	1-year graduate fellowship