

BOBBY H. BRASWELL

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PROFESSIONAL EXPERIENCE

Research Associate Professor, Institute for the Study of Earth Oceans and Space, Durham, New Hampshire, (2016-present)

Senior Research Scientist, Applied Geosolutions LLC, Durham, New Hampshire (2011-present)

Research Affiliate Professor, Institute for the Study of Earth Oceans and Space, Durham, New Hampshire, (2012-2016)

Senior Staff Scientist, Deputy Lead System Engineer, GOES-R, Atmospheric and Environmental Research, Inc., Lexington, Massachusetts (2009-2011)

Research Assistant Professor, Institute for the Study of Earth Oceans and Space, Durham, New Hampshire (2001-2009)

Scientist (BAT-IIa), Max Planck Institute for Biogeochemistry, Jena, Germany (1999-2001)

Research Scientist II, Institute for the Study of Earth Oceans and Space, Durham, New Hampshire (1997-1999)

Research Associate, Climate System Modeling Program, NCAR, Boulder, Colorado (1993-1996)

EDUCATION

Ph.D. in Earth Sciences, University of New Hampshire, Durham, 1996

M.Sci. in Physics, University of New Hampshire, Durham, 1990

B.Sci. in Physics, University of Alabama, Tuscaloosa, 1987

PUBLICATIONS (58)

Peer Reviewed Articles

Harris, N., S. Hagen, S. Saatchi, T. Pearson, C. Woodall, G. Domke, B. Braswell, B. Walters, S. Brown, W. Salas, A. Fore, Y. Yu. Attribution of net carbon change by disturbance type across forest lands of the conterminous United States. *Carbon Balance and Management* 11:24, 2016.

Howey, M.C.L., M. Palace, C.H. McMichael, and B.H. Braswell. Moderate-resolution remote sensing and geospatial analyses of microclimates, mounds, and maize in the Northern Great Lakes. *Advances in Archaeological Practice*. August 2014, pp. 195-207, 10.7183/2326-3768.2.3.195.

Zobitz, J.M., D.J.P. Moore, T. Quaipe, B.H. Braswell, A. Bergeson, J.A. Anthony, and R.K. Monson. Joint data assimilation of satellite reflectance and net ecosystem exchange data constrains ecosystem carbon fluxes at a high-elevation subalpine forest. *Agricultural and Forest Meteorology* 195-196:73-88, 2014.

McMichael, C., M.W. Palace, M.B. Bush, B.H. Braswell, S. Hagen, E.G. Neves, M.R. Silman, E.K. Tamanaha, C. Czarnecki. Predicting pre-Columbian anthropogenic soils in Amazonia. *Proceedings of the Royal Society B*. 281:1777, 2014.

Hufkens, K., M. Friedl, O. Sonnentag, B.H. Braswell, T. Milliman, A.D. Richardson. Linking near-surface and satellite remote sensing measurements of deciduous broadleaf forest phenology. *Remote Sensing of Environment*, 117:307-321, 2012.

Sonnentag, O., K. Hufkens, C. Teshera-Sterne, A.M. Young, M. Friedl, B.H. Braswell, T. Milliman, J. O'Keefe, A.D. Richardson. Digital repeat photography for phenological research in forest ecosystems. *Agricultural and Forest Meteorology*, 152, 2012.

Baldwin, J.L., B.H. Braswell, D.B. Hogan, E.J. Kennelly, X. Papadakis, M. Sze. GOES-R Algorithms: A Common Science and Engineering Design and Development Approach for Delivering Next Generation Environmental Data Products. *Proceedings of SPIE - The International Society for Optical Engineering*, DOI: 10.1117/12.860855, 2010.

Espírito-Santo, F.D.B., M. Keller, B. Braswell, B.W. Nelson, S. Frohling, and G. Vicente, Storm intensity and old growth forest disturbances in the Amazon region, *Geophysical Research Letters*, 37:L11403, 2010.

Richardson, A.D., B.H. Braswell, D. Hollinger, J. Jenkins, S.V. Ollinger. Near-surface remote sensing of spatial and

- temporal variation in canopy phenology. *Agricultural and Forest Meteorology*, 19:1417-1428, 2009.
- Román, M.O., C.B. Schaaf, C.E. Woodcock, A.H. Strahler, X. Yang, B.H. Braswell, P.S. Curtis, K.J. Davis, D. Dragoni, M.L. Goulden, L. Gu, D.Y. Hollinger, T.E. Kolb, T.P. Meyers, J.W. Munger, J.L. Privette, A.D. Richardson, T.B. Wilson, S.C. Wofsy. The MODIS (Collection V005) BRDF/albedo product: Assessment of spatial representativeness over forested landscapes. *Remote Sensing of Environment*, 113:2476-2498, 2009.
- Arnone, J.A., P.S.J. Verburg, D.W. Johnson, J.D. Larsen, R.L. Jasoni, A.J. Lucchesi, C.M. Batts, C. von Nagy, W.G. Coulombe, D.E. Schorran, P.E. Buck, B.H. Braswell, J.S. Coleman, R.A. Sherry, L.L. Wallace, Y. Luo, D.S. Schimel. Future CO₂ uptake suppressed by synchronous and lagged ecosystem responses to an extreme year. *Nature*, 455:383-386, 2008.
- Anderson, J.E., L. Plourde, M.E. Martin, B.H. Braswell, M.-L. Smith, R. Dubayah, M. Hofton, and J.B. Blair. Integrating waveform LIDAR with hyperspectral imagery for inventory of a northern temperate forest. *Remote Sensing of Environment*, 112:1856-1870, 2008.
- Burakowski, E.A., C.P. Wake, B.H. Braswell, D.P. Brown. Trends in Wintertime Climate in the Northeast United States, 1965-2005. *Journal of Geophysical Research*, 113, D20114, doi:10.1029/2008JD009870, 2008.
- Palace, M., M. Keller, G.P. Asner, S.C. Hagen, and B.H. Braswell. An analysis of Amazonian forest structure using an automated tree crown detection algorithm and IKONOS imagery. *Biotropica*, 40:141-150, 2008.
- Richardson, A.D., M.D. Mahecha, E. Falge, J. Kattge, A.M. Moffat, D. Papale, M. Reichstein, V.J. Stauch, B.H. Braswell, G. Churkina, B. Kruijt, D.Y. Hollinger. Statistical properties of random CO₂ flux measurement uncertainty inferred from model residuals. *Agricultural and Forest Meteorology*, 148:38-50, 2008.
- Moffat, A.M., D. Papale, M. Reichstein, A.G. Barr, B.H. Braswell, G. Churkina, A.R. Desai, E. Falge, J.H. Gove, M. Heimann, D.Y. Hollinger, D. Hui, A.J. Jarvis, J. Kattge, A. Noormets, A.D. Richardson, V.J. Stauch. Comprehensive comparison of gap filling techniques for net carbon fluxes. *Agricultural and Forest Meteorology*, 147:209-232, 2007.
- Jenkins, J.P., A.D. Richardson, B.H. Braswell, S.V. Ollinger, D.Y. Hollinger, and M.-L. Smith. Refining light-use efficiency calculations for a deciduous forest canopy using simultaneous tower-based carbon flux and radiometric measurements. *Agricultural and Forest Meteorology*, 143:64-79, 2007.
- Richardson, A.D., D.Y. Hollinger, J.D. Aber, S.V. Ollinger, and B.H. Braswell. Environmental variation is directly responsible for short- but not long-term variation in forest-atmosphere carbon exchange. *Global Change Biology*, 13:788-803, doi: 10.1111/j.1365-2486.2007.01330.x, 2007.
- Richardson, A.D., J.P. Jenkins, B.H. Braswell, D.Y. Hollinger, S.V. Ollinger, and M.-L. Smith. Use of digital webcam images to track spring green-up in a deciduous broadleaf forest. *Oecologia*, doi10.1007/s00442-006-0657-z, 2007.
- Hagen, S.C., B.H. Braswell, S. Froking, A. Richardson, D. Hollinger and E. Linder. Statistical uncertainty of eddy flux based estimates of gross ecosystem carbon exchange at Howland Forest, Maine. *Journal of Geophysical Research*, 111, doi10.1029/2005JD006154, 2006.
- Richardson, A.D., B.H. Braswell, D.Y. Hollinger, P. Burman, E.A. Davidson, R.S. Evans, L.B. Flanagan, J.W. Munger, K. Savage, S.P. Urbanski, and S.C. Wofsy. Comparing simple respiration models for eddy flux and dynamic chamber data. *Agricultural and Forest Meteorology*, 141:219-234, 2006.
- Tiwari, Y.K., M. Gloor, R.J. Engelen, F. Chevallier, C. Roedenbeck, S. Koerner, P. Peylin, B.H. Braswell, and M. Heimann. Comparing CO₂ retrieved from AIRS on the Aqua satellite with model predictions: implications for constraining surface fluxes and lower-to-upper troposphere transport. *Journal of Geophysical Research (Atmospheres)*, 11, D17106, doi: 10.1029/2005JD006681, 2006.
- Zhang, Q., X. Xiao, B.H. Braswell, E. Linder, S. Ollinger, M. -L. Smith, J.P. Jenkins, F. Baret, A.D. Richardson, B. Moore III. Characterization of seasonal variation of forest canopy in a temperate deciduous broadleaf forest, using daily MODIS data. *Remote Sensing of Environment*, 105:189-203, 2006.
- Braswell, B.H., B. Sacks, E. Linder, and D.S. Schimel. Estimating ecosystem process parameters by assimilation of eddy flux observations of NEE. *Global Change Biology*, 11:335-355, 2005.
- Churkina, G., D.S. Schimel, B.H. Braswell, and X. Xiao. Spatial analysis of growing season length controls on net ecosystem carbon exchange. *Global Change Biology*, 11:1777-1787. 2005.
- Diner, D.J., B.H. Braswell, R. Davies, N. Gobron, J. Hu, Y. Jin, R.A. Kahn, Y. Knyazikhin, N. Loeb, J.-P. Muller, A.W. Nolin, B. Pinty, C.B. Schaaf, G. Seiz, and J. Stroeve. The value of multiangle measurements for retrieving structurally and radiatively consistent properties of clouds, aerosols, and surfaces. *Remote Sensing of Environment*, 97:495-518.

2005.

- Holland, E.A., B.H. Braswell, J. Sulzman, and J.-F. Lamarque. Nitrogen deposition onto the United States and Western Europe: A synthesis of observations and models. *Ecological Applications*, 15:38-57, 2005.
- Sacks, W.J., D.S. Schimel, R.K. Monson, and B.H. Braswell. Model-data synthesis of diurnal and seasonal CO₂ fluxes at Niwot Ridge, Colorado. *Global Change Biology*, 12:240-259, 2005.
- Zhang, Q., X. Xiao, B.H. Braswell, E. Linder, J. Aber, and B. Moore III. Estimating seasonal dynamics of biophysical and biochemical parameters in a deciduous forest using MODIS data and a radiative transfer model. *Remote Sensing of Environment*, 99:357-371, 2005.
- Frolking, S., C. Li, B.H. Braswell, and J. Fuglestedt. Short and long term greenhouse gas and radiative forcing impacts of changing water management in Asian rice paddies. *Global Change Biology*, 10:1180-1196, 2004.
- Keller, M.A. Alencar, G.P. Asner, B.H. Braswell, M. Bustamante, E. Davidson, T. Feldpausch, E. Fernandes, M. Goulden, P. Kabat, B. Kruijt, F. Luizão, S. Miller, D. Markewitz, A. Nobre, C. Nobre, N. Priante, H. Rocha, P. Silva Dias, C. von Randow, G. Vourlitis. Ecological research in the Large Scale Biosphere Atmosphere Experiment in Amazonia (LBA): A discussion of early results. *Ecological Applications*, 14:S3-S16, 2004.
- Xiao, X., Q. Zhang, B.H. Braswell, S. Urbanski, S. Boles, S. Wofsy, B. Moore III, and D. Ojima. Modeling gross primary production of temperate deciduous broadleaf forest using satellite images and climate data. *Remote Sensing of Environment*, 91:256-270, 2004.
- Braswell, B.H., S.C. Hagen, S.E. Frolking and W.A. Salas. A multivariable approach for mapping sub-pixel land cover distributions using MISR and MODIS: An application in the Brazilian Amazon. *Remote Sensing of Environment*, 87:243-256, 2003.
- Hurt, G., X. Xiao, M. Keller, M. Fearon, M. Palace, G. Vourlitis, L. Guild, T. Sa, B.H. Braswell, S. Hagen, M. Cardoso, A. Schloss, B. Moore III, C. Nobre. IKONOS imagery for the Large Scale Biosphere-Atmosphere Experiment in Amazonia. *Remote Sensing of Environment*, 88:111-127, 2003.
- Jenkins, J.P., B.H. Braswell, S.E. Frolking, and J.D. Aber. Detecting and predicting spatial and interannual patterns of temperate forest springtime phenology in the eastern U.S. *Geophysical Research Letters*, 29:54-56, 2003.
- Xiao, X., B.H. Braswell, Q. Zhang, S. Boles, S.E. Frolking, and B. Moore, III. Sensitivity of vegetation indices to atmospheric aerosols: Continental-scale observations in northern Asia. *Remote Sensing of Environment*, 84:385-392, 2003.
- Hagen, S.C., B.H. Braswell, S. Frolking, W.A. Salas, and X. Xiao. Determination of sub-pixel fractions of non-forested area in the Amazon using multi-resolution satellite data. *Journal of Geophysical Research (Atmospheres)*, 107:8049, 2002.
- Schimel, D.S., J.I. House, K.A. Hibbard, P. Bousquet, P. Ciais, P. Peylin, B.H. Braswell, M.J. Apps, D. Baker, A. Bondeau, J. Canadell, G. Churkina, W. Cramer, A.S. Denning, C.B. Field, P. Friedlingstein, C. Goodale, M. Heimann, R.A. Houghton, J.M. Melillo, B. Moore, D. Murdiyarso, I. Noble, S.W. Pacala, I.C. Prentice, M.R. Raupach, P.J. Rayner, R.J. Scholes, W.L. Steffen, and C. Wirth. Recent patterns and mechanisms of carbon exchange by terrestrial ecosystems. *Nature*, 414:169-172, 2001.
- Vukicevic, T., B.H. Braswell, and D.S. Schimel. A diagnostic study of temperature controls on global terrestrial carbon exchange. *Tellus (B)*, 53:150-170, 2001.
- Asner, G.P., A.R. Townsend, and B.H. Braswell. Satellite observations of El Nino effects on Amazon phenology and productivity. *Geophysical Research Letters*, 27:981-984, 2000.
- Holland, E.A., F.J. Dentener, B.H. Braswell, and J. Sulzman. Contemporary and pre-industrial global reactive nitrogen budgets. *Biogeochemistry*, 46:7-43, 1999.
- Asner, G.P., B.H. Braswell, D.S. Schimel, and C.A. Wessman. Ecological research needs from multi-angle remote sensing data. *Remote Sensing of Environment*, 63:155-165, 1998.
- Braswell, B.H., D.S. Schimel, E. Linder, and B. Moore. The response of global terrestrial ecosystems to interannual temperature variability. *Science*, 238:870-872, 1997.
- Holland E.A., B.H. Braswell, J.F. Lamarque, A. Townsend, J. Sulzman, J.F. Muller, F. Dentener, G. Brasseur, H. Levy, J.E. Penner, and G.J. Roelofs. Variations in the predicted spatial distribution of atmospheric nitrogen deposition and their impact on carbon uptake by terrestrial ecosystems. *Journal of Geophysical Research (Atmospheres)*, 102:15849-15866, 1997.

- Schimel, D.S., B.H. Braswell, R. McKeown, D.S. Ojima, W.J. Parton, and W. Pulliam. Climate and nitrogen controls on the geography and time scales of terrestrial biogeochemical cycling. *Global Biogeochemical Cycles*, 10:677-692, 1997.
- Schimel D.S., B.H. Braswell, and W.J. Parton. Equilibration of the terrestrial water, nitrogen, and carbon cycles. *Proceedings of the National Academy of Sciences of the United States of America* 94:8280-8283, 1997.
- Schimel D.S., W. Emanuel, B. Rizzo, T. Smith, F.I. Woodward, H. Fisher, T.G.F. Kittel, R. McKeown, T. Painter, N. Rosenbloom, D.S. Ojima, W.J. Parton, D.W. Kicklighter, A.D. McGuire, J.M. Melillo, Y. Pan, A. Haxeltine, C. Prentice, S. Sitch, K. Hibbard, R. Nemani, L. Pierce, S. Running, J. Borchers, J. Chaney, R. Neilson, and B.H. Braswell. Continental scale variability in ecosystem processes: Models, data, and the role of disturbance. *Ecological Monographs* 67:251-271, 1997.
- Braswell, B.H., D.S. Schimel, J.L. Privette, B. Moore III, W.J. Emery, E.W. Sulzman, and A.T. Hudak. Extracting ecological and biophysical information from AVHRR optical measurements: an integrated algorithm based on inverse modeling. *Journal of Geophysical Research (Atmospheres)*, 101:23335-23348, 1996.
- Townsend, A.R., B.H. Braswell, E.A. Holland, and J.E. Penner. Spatial and temporal patterns of potential terrestrial carbon storage resulting from deposition of fossil fuel derived nitrogen. *Ecological Applications*, 6:806-814, 1996.
- Famiglietti, J.S., B.H. Braswell, and F. Giorgi. Process-controls and similarity in the US continental-scale hydrological cycle from EOF Analysis of regional climate model simulations. *Hydrological Processes*, 9:437-444, 1995.
- Moore, B. and B.H. Braswell. The lifetime of excess atmospheric carbon dioxide. *Global Biogeochemical Cycles*, 8:23-38, 1994.
- Moore, B. and B.H. Braswell. Planetary metabolism: Understanding the carbon-cycle. *Ambio*, 23:4-12, 1994.
- Schimel, D.S., B.H. Braswell, E.A. Holland, R. McKeown, D.S. Ojima, T.H. Painter, W.J. Parton, and A.R. Townsend. Climatic, edaphic, and biotic controls over storage and turnover of carbon in soils. *Global Biogeochemical Cycles*, 8:279-293, 1994.

Book Chapters

- Ollinger, S.V., R.N. Treuhaft, B.H. Braswell, J.E. Anderson, M.E. Martin, and M.-L. Smith. The role of remote sensing in the study of terrestrial net primary production. In: *Methods for Estimating Net Primary Productivity. The Long-Term Ecological Research Network Series.* (T. Fahey, Ed.), Oxford University Press, 2007.
- Schimel, D.S., and B.H. Braswell. The role of mid-latitude mountains in the carbon cycle: Global perspective and a Western U.S. case study. In: *Global Change and Mountain Regions: An Overview of Current Knowledge* (U.M. Huber, H.K.M. Bugmann, M.A. Reasoner; Eds.), Springer-Verlag, 2005.
- Schimel D.S., G. Churkina, B.H. Braswell, and J. Trembath. Remembrance of weather past: Ecosystem response to climate variability. In: *A History of Atmospheric CO₂ and its Effects on Plants, Animals and Ecosystems*, (J. Ehleringer; Ed.), Springer-Verlag, pp. 350-368, 2005.

Other Articles

- Thornton, P.E., R.B. Cook, B.H. Braswell, B.E. Law, W.M. Post, H.H. Shugart, B.T. Rhyne, and L.A. Hook. Archiving models of biogeochemical dynamics. *Transactions, EOS*, 86:431, 2005.
- Famiglietti, J.S., B.H. Braswell, and F. Giorgi. Implications for continental-scale hydroclimatological similarity from regional climate model simulations. *GEWEX News*, 4:2, 1994.

ORAL PRESENTATIONS

Invited Lectures

- “Combining Ecosystem Models with Data”, Cary Institute for Ecosystem Studies, Millbrook, NY, April, 2008.
- “Observations and Modeling of the Terrestrial Carbon Cycle”, Bowdoin University, Department of Physics, October 2005.
- “Ecological and Environmental Controls on Terrestrial Carbon Exchange”, University of Washington, Joint Institute for the Study of Atmosphere and Ocean, October 2004.
- “Multiangular and Multispectral Remote Sensing of Ecosystem Type and Function”, Boston University, Department of Geography, March 2003.
- “Multiscale Synthesis of MISR, High Spatial Resolution Data, and Canopy Reflectance Modeling for Ecosystem Research”, Third International Workshop on Multiangular Measurements and Models (Chair: David Diner), Steamboat Springs,

Colorado, June 2002.

"Interannual Variability of Climate-Carbon Cycle Interactions", University of Texas, Department of Geology, November 1998.

"Indirect Biogeochemical Controls on the Growth Rate of Atmospheric CO₂", University of Rhode Island, Institute of Oceanography, Narragansett, Rhode Island, May 1998.

"Modeling the Linkage between the Global Bio-atmospheric Cycles of Carbon and Nitrogen"; BIOGEOMON, Session on Interfacing Biogeochemistry with GIS (Chair: William Reiners), Villanova University, June 1997.

Other Oral Presentations:

"India Crop Insurance: Strategic Sampling with Remote Sensing", B.H. Braswell and S. Hagen, Indian Ministry of Agriculture, Delhi, India March 2014.

"Updated Analysis of Lossless Compression Techniques for the GOES-R Rebroadcast (GRB) Sub-System", P. Finocchio, B.H. Braswell, Y. He, D.B. Hogan, D. Hunt, 7th GOES-R Users Conference, Birmingham, AL, October, 2011.

"Life in the GOES-R Development Environment", E. Kennelly, R. Lynch, B. Braswell, R. Kaiser. GOES-R AWG Annual Review Meeting, Fort Collins, CO, June 7, 2010.

"GOES-R Algorithm Architecture: Ensuring Product Quality and System Performance", B.H. Braswell, P. Finocchio, R. Lynch, W. Gallery, E. Kennelly. 6th GOES Users' Conference, Madison, WI, December 2009.

"Open Geoscience: Using Free and Open Source Software for Research and Education", B.H. Braswell, AAG Annual meeting, 2008 (Session Chair).

"Community Development and Application of Standards-Based Geospatial Tools and Services for Earth System Science Data", B.H. Braswell, A. Schloss, M. Fahnestock, Global Organization of Earth System Science Portals (GO-ESSP) Meeting, Paris, France, 2007.

"Gap Filling Using a Bayesian Regularized Neural Network", Max Planck Institute for Biogeochemistry, 2005.

"Hyperion Data for Ecosystem and Land Cover Change Studies in the Brazilian Amazon", B.H. Braswell, Seventh Annual LBA Business Meeting, Fortaleza, Brazil, 2003.

"Net Ecosystem Exchange in a Tall Tower Footprint: Reconciling Observations, Modeling, and Remote Sensing", B.H. Braswell, G. Churkina, D. Schimel, K. Davis, AGU Spring Meeting, 2001.

"Ecosystem Carbon Flux Observations from Tower Networks: Who is Eddy?" B.H. Braswell, University of New Hampshire, Complex Systems Research Center, 2001.

"A Bayesian Unmixing Algorithm for Retrieving Landcover Distributions Using Global Reflectance Data", B.H. Braswell, E. Linder, S. Hagen, X. Xiao, S. Frolking, B. Moore, AGU Fall Meeting, 2000.

"Synthesis of Terrestrial Carbon Models with Remote Sensing and Flux Tower Data", B.H. Braswell, E.M. Gloor, Max Planck Institute for Biogeochemistry, 2000.

"Interannual Variability and Trends in Terrestrial Biosphere-Atmosphere Exchange as Inferred from Satellite Data: A Signal-to-Noise Problem", B.H. Braswell, D.S. Schimel, AGU Fall Meeting, 1998.

"A Technique for Combining Geometrical and Spectral BRDF Information for Retrieval of Plant Canopy Characteristics using AVHRR Optical Data", B.H. Braswell, J.L. Privette, D.S. Schimel International Geoscience and Remote Sensing Symposium (IGARSS), 1996.

"Decadal-Scale Temperature Anomalies and Transient Modeling of Global Terrestrial Carbon Cycling", B.H. Braswell, D.S. Schimel, P. Tans, IUGG XXI General Assembly, 1995.

"Extracting Ecological and Biophysical Information From AVHRR Optical Measurements Using Models of Canopy Radiative Transfer", B.H. Braswell, B. Moore, D.S. Schimel, J.L. Privette, AGU Spring Meeting, 1995.

"Nitrogen Deposition and Terrestrial Carbon Storage: How Big Is the Sink and How Long Will It Last?", A.R. Townsend, B.H. Braswell, E.A. Holland, J.E. Penner, AGU Fall Meeting, 1994.

RESEARCH GRANTS

Awarded

PI, NASA/SBIR Phase II, A Geospatial Decision Support System Toolkit (GeoKit) (\$748,965), 2015.

PI, NASA/SBIR Phase I, A Geospatial Decision Support System Toolkit (GeoKit) (\$124,949), 2014.

Co-I, NASA/CMS, Operational Multi-Sensor Design for National Scale Forest Carbon Monitoring to Support REDD+ MRV systems (\$1788,546), PI: S. Hagen, with Winrock International and NASA JPL, 2013.

Co-I, NASA/CMS, Prototyping MRV Systems Based on Systematic and Spatial Estimates of Carbon Stock and Stock Changes of Forestlands (\$1178,000), PI: S. Hagen, with Winrock International and NASA JPL, 2013.

Co-I, NASA/TE, Analysis and Detection of Amazonian Black Earth Sites using Hyperspectral Satellite Imagery (\$452,552), PI: M. Palace, 2010.

PI, DOE/NICCR, Coupling Carbon, Water and Nutrient Cycles with Data Assimilation and Multiple Constraints (\$249,397), 2008.

PI, NHIRC, Developing Cutting-Edge Web-Mapping Technology for Land Use Modeling and Planning (\$16,799), 2008.

Co-I, NASA/TE, Scaling Forest Biometric Properties Derived from High Resolution Imagery to the Amazon Basin using Moderate Resolution Remote Sensing (\$442,439), PI: M. Palace, 2007.

Co-I, CICEET, Integrating Geospatial and Web-based Technologies to Improve Land Use Planning (\$236,141), PI: F. Rubin, 2007.

Co-PI, NASA-EPSCoR, Enhancing Research and Education Capacity for Integration of Earth Observations, Infectious Diseases Ecology and Public Health in New Hampshire (\$749,221), PI: D. Bartlett, 2007.

Co-PI, NASA/Carbon, A Historical Reconstruction of Vegetation Change and a Carbon Budget for the Brazilian Cerrado Using Multiple Satellite Sensors and Historical Aerial Photography (\$864,518), PI: M. Keller, 2007.

Co-I, NOAA/ORR, The UNH Earth Systems Observatory: Assessing Coastal Ecosystem Impacts through a White Water to Blue Water Continuum (\$936,431), PI: Vorosmarty, 2006.

Co-I, NSF/IESSP, Exploring Ecosystems and the Atmosphere in the K-12 Classroom: A Plan to Integrate NASA Carbon Cycle Science with GLOBE (\$968,166), PI: S. Ollinger, 2006.

Co-I, NSF/Ecology of Infectious Diseases, Ecology-based Risk Assessment and Early Warning for HPAI in Asia (\$1,093,564), PI: X. Xiao, 2006.

Co-I, NASA/IDS, Advancing Our Understanding of the Earth System through Coupled Carbon-Climate Modeling and Observations (\$1,218,151), PI: Moore, 2006.

Co-I, NASA/Carbon, Scaling and Evaluation of Ecosystem Carbon Uptake through Integration of Multiscale Remote Sensing with AMERIFLUX and NACP Field Observations (\$985,096), PI: S. Ollinger, 2004.

Co-I, NASA/IDS, Understanding the Changing Carbon, Nitrogen and Water Cycles in the Earth System (\$2,349,143), PI: B. Moore, 2003.

PI, DOE/NIGEC, Synthesis of Multiscale Satellite Observations with AMERIFLUX Data for Understanding and Predicting Forest Ecosystem Dynamics (\$69,690), 2003.

Co-I, NASA/Data Products, Monitoring Inland Water Bodies using Terra and Aqua Satellite Sensors (\$350,997), PI: B. Fekete, 2003.

Co-I, NASA/TE, Sources of Variability in Forest Productivity Over the Northeastern United States: Sequential Scaling from Field Measurements to Global Sensors (\$426,634), PI: S. Ollinger, 2002.

PI, NASA/TE, Fast Fluxes and Slow Pools: Integrating Eddy Covariance and Ecosystem Process Observations within a Data Assimilation Framework (\$461,590), 2002.

Co-I, NASA/LBA, Effects of Land Use and Environmental Variability on the Carbon Balance of the Amazon Basin (\$1,122,240), PI: G. Hurtt, 2002.

Co-PI, NASA/TE, Biogeochemical Links Between the Global Carbon and Nitrogen Cycles (\$145,425), PI: E. Holland, 1997.

TEACHING EXPERIENCE

UNH Courses (graduate/senior level)

EOS/ESCI 895: Introduction to Earth System Science (Fall 2001, Fall 2002)

EOS 995: Quantitative Methods in Earth System Science (Fall 2003)

EOS/ESCI 895: Remote Sensing of the Terrestrial Biosphere (Spring 2003)

EOS/ESCI 895: Advanced Remote Sensing Methods in Earth System Research (Fall 2004)

EOS/ESCI 896: Advanced Remote Sensing II (Spring 2005)

EOS/ESCI 864: Paleoclimate Data Analysis (Spring 2006)

EOS/ESCI 864: Data Analysis Methods in Earth System Science (Spring 2009)

Workshop Instruction

Instructor for the NSF-PRIMES Workshop on Data-Model Fusion, Colorado State University, June, 2003

Instructor for the MEDIAS-France 1st International School on “Africa and Global Change”, Nairobi, Kenya, Feb., 1995

Teaching Assistantships

Introduction to Physics for Scientists and Engineers I & II Lab, 1987-1989

General Physics for Life Science Majors I & II Lab, 1989-1990

Undergraduate Mentoring

Advisor to UNH/NASA Research & Discover Program undergraduate fellows: William J. Sacks (2002-2003), and Andrew Maher (2007-2008)

Advisor to UNH Undergraduate Research Program student Katarzyna Szymanska

Other Teaching

Training course on Programming and Analysis Methods for Forest Degradation Studies, Guyana Forestry Commission, Georgetown, Guyana, February, 2012.

Faculty presenter for the 7th Annual Geospatial Conference and College Fair (“GIS-Day”), UNH, November, 2005

Guest lecturer for UNH graduate and undergraduate courses: EOS/ESCI 895 Earth System Science, EOS/ESCI 895 Advanced Remote Sensing

AWARDS AND FELLOWSHIPS

Oak Ridge Associated Universities (U.S. Department of Energy) Global Change Graduate Fellow, 1991-1993

NASA Graduate Training Grant, University of New Hampshire, 1990-1991

DISSERTATION COMMITTEE

Berrien Moore III, David S. Schimel, Robert C. Harriss, John D. Aber, David L. Skole, Janet W. Campbell

GRADUATE STUDENT COMMITTEES (* denotes chair or co-chair)

Justin Fisk (Ph.D. 2015), Maria Hunter (Ph.D. 2015), Jeanne Anderson (Ph.D. 2006), Qinyuan Zhang (Ph.D. 2006), Julian P. Jenkins* (M.Sci., 2001), Stephen C. Hagen* (Ph.D. 2007), Yingfeng Fu* (M.Sci. 2007), Elizabeth Burakowski (M.S. 2007), Susan Spierre (M.Sci. 2008), Fernando Espirito-Santo (Ph.D. 2011), Shannon Davis (Ph.D. 2011)

ACADEMIC SERVICE

Oak Ridge National Lab Distributed Active Archive Center (DAAC) User Working Group member, 2003-2009

Associate Editor for Geophysical Research Letters, 2000-2004

Reviewed manuscripts for Nature, Global Biogeochemical Cycles, Global Change Biology, Remote Sensing of Environment, Ecology, Ecological Applications, Tellus, Journal of Geophysical Research (Atmospheres), IEEE Transactions on Geoscience and Remote Sensing, Remote Sensing

Reviewed proposals for NASA Interdisciplinary Science Program (EOS), NOAA Carbon Cycle Program, National Institute for Global Environmental Change, NASA Integrated Carbon Cycle Program, DOE AmeriFlux Research Program, NASA ACCESS Program, NASA Earth System Science Fellowships, National Science Foundation

COMMUNITY INTERACTION

Participant in the 2005 “Eddy Flux Data Gap Filling Intercomparison”, led by Antje Moffat of Max Planck Institute for Biogeochemistry

Participant in the 2005-2006 “Optimization Intercomparison (OptIC)”, led by Cathy Trudinger of The Global Carbon Project, CSIRO, Australia

Member of the US National Ecological Observation Network (NEON) Fundamental Instrument Unit (FIU) Tiger Team, 2006-2007

Contributing carbon cycle modeler for the 1994 IPCC Report {Schimel, D.S., I. Enting, M. Heimann, T.M. Wigley, D. Raynaud, D. Alves, and U. Siegenthaler. CO₂ and the carbon cycle. In: IPCC Report. Climate Change 1994. Radiative Forcing of Climate Change (Ed.: J.T.Houghton, L.G.M. Filho, J. Bruce, H. Lee, B. A. Callander, E. Haites, N. Harris, and K. Maskell). Cambridge University Press, Cambridge, UK, 1994}

UNIVERSITY/INSTITUTE COMMITTEES

University of New Hampshire, Natural Resources and Earth System Science graduate faculty member, 2002-2009

Interdisciplinary Science and Engineering Symposium planning committee member, 2006-2007; student presentation judge, 2008

Computing resources committee member, Complex Systems Research Center, UNH. 2002-2003

Advisory committee member for the UNH Department of Continuing Education and Summer Programs, 2005

PROFESSIONAL TRAINING

Earned Value Management Systems (EVMS), Atmospheric and Environmental Research, December, 2010