

EDWARD B. RASTETTER

Senior Scientist
The Ecosystems Center
Marine Biological Laboratory

EPA, *GEM*

Principal Investigator; 09/07/2000 06/30/2002; Total Award: \$80,000

EPA, *Update GEM Model*

Principal Investigator; 03/15/2000 09/30/2001; Total Award: \$79,745

NSF, *Developing Process-Level Understanding of Controls on Belowground Carbon and Nutrient Dynamics in Tundra Ecosystems*

Principal Investigator; 02/01/2000 01/31/2005; Total Award: \$1,653,896

Pending Grants

None

Training Record

Student Committees

Freddrick Wikström, Opponent for PhD defense, Swedish Agricultural University, Uppsala, Sweden

David Bryant, PhD committee, University of New Hampshire

Seeta Sistla, PhD committee, University of California at Santa Barbara

Chelsea Nagy, PhD committee, Brown University

Laura Garrison, PhD committee, Brown University

Tenure Review Committee

Riitta Hyvönen-Olsson, Faculty of Forestry, Swedish Agricultural University, Uppsala, Sweden

Post-Doctoral Fellows

Michael Ryan, 1988-1990

Robert McKane 1990-1994

David Fernandes 1994-1996

Mathew Williams 1994-1997

Darrell Herbert 1996-1999

Severine Le Dizès 2000-2001

Gabrielle Holmes 2008-2009

Adrian Rocha 2010-2012

Yueyang Jiang 2012-

Publications

Rastetter, EB, KL Griffin, BL Kwiatkowski, and GW Kling. 2023. Ecosystem feedbacks constrain the effect of day-to-day weather variability on land-atmosphere carbon exchange. *Global Change Biology*

<http://doi.org/10.1111/gcb.16926>

- Jiang, Y, **EB Rastetter**, GR Shaver, AV Rocha, Q Zhuang, and BL Kwiatkowski. 2017. Modeling long-term changes in tundra carbon balance following wildfire, climate change, and potential nutrient addition *Ecological Applications* 27:105-117 DOI: 101002/eap1413
- Nagy, RC, **EB Rastetter**, C Neill, and S Porder. 2017. Nutrient limitation in tropical secondary forests following different management practices *Ecological Applications* 27:734-755
- Hobbie, JE, GR Shaver, **EB Rastetter**, JE Cherry, SJ Goetz, KC Guay, WA Gould, and GW Kling. 2017. Ecosystem responses to climate change at a Low Arctic and a High Arctic long-term research site *Ambio* 46 (Suppl 1):S160-S173 DOI: 101007/s13280-016-0870-x
- Rastetter, EB**. 2017. Modeling for understanding v modeling for numbers *Ecosystems* 20:215-221

Bowden, W.B, J.R. Larouche, A.R. Pearce, B.T. Crosby, K. Krieger, M.B. Flinn, J. Kampman, M.N. Gooseff, S.E. Godsey, J.B. Jones, B.W. Abbott, M.T. Jorgenson, G.W. Kling, M. Mack, E.A.G. Schuur, A.F. Baron, and **E.B. Rastetter**. 2012. An Integrated Assessment of the Influences of Upland Thermal-Erosional Features on Landscape Structure and Function in the Foothills of the Brooks Range, Alaska. In: M. Kenneth (ed.),

- McKane, R., **E. Rastetter**, G. Shaver, K. Nadelhoffer, A. Giblin, J. Laundre and F. Chapin. 1997b. Reconstruction and analysis of historical changes in carbon storage in arctic tundra. *Ecology* 78:1188-1198.
- Nadelhoffer, K.J., G.R. Shaver, A.E. Giblin, and **E.B. Rastetter**. 1997. Potential impacts of climate change on nutrient cycling, decomposition and productivity in arctic ecosystems. In: W.C. Oechel, T. Callaghan, T. Gilmanov, J.I. Holten, B. Maxwell, U. Molau, and B. Sveinbjörnsson (eds.), *Global Change and Arctic Terrestrial Ecosystems*. Springer-Verlag, New York, pp. 349-364
- Rastetter, E.B.**, G.I. Ågren, and G.R. Shaver. 1997a. Responses of N-limited ecosystems to increased CO₂: A balanced-nutrition, coupled-element-cycles model. *Ecological Applications* 7:444-460.
- Rastetter, E.B.**, R.B. McKane, G.R. Shaver, K.J. Nadelhoffer, and A.E. Giblin. 1997b. Analysis of CO₂, temperature, and moisture effects on carbon storage in Alaskan arctic tundra using a general ecosystem model. In: W.C. Oechel, T. Callaghan, T. Gilmanov, J.I. Holten, B. Maxwell, U. Molau, and B. Sveinbjörnsson (eds.), *Global Change and Arctic Terrestrial Ecosystems*. Springer-Verlag, New York, pp.437-451.
- Shaver, G.R., **E.B. Rastetter**, A.E. Giblin, and K.J. Nadelhoffer. 1997. Carbon-nutrient interactions as constraints on recovery of arctic ecosystems from disturbance. In: R.M.M. Crawford (ed.), *Disturbance and Recovery in Arctic Lands: An Ecological Perspective*. Kluwer Academic Publishers, Dordrecht, pp. 553-562
- Williams, M., **E.B. Rastetter**, D.N. Fernandes, M.L. Goulden, G.R. Shaver, and L.C. Johnson. 1997. Predicting gross primary productivity in terrestrial ecosystems. *Ecological Applications* 7:882-894.
- Johnson, L.C., G.R. Shaver, A. Giblin, K. Nadelhoffer, **E. Rastetter**, J. Laundre, and G. Murray. 1996. Effects of enhanced drainage and elevated temperature on carbon balance of tussock tundra microcosms. *Oecologia* 108:737-748.
- Rastetter, E.B.** 1996. Validating models of ecosystem response to global change. *BioScience* 46(3):190-198.
- Ryan, M.G., E.R. Hunt, Jr., R.E. McMurtrie, G.I. Ågren, J.D. Aber, A.D. Friend, **E.B. Rastetter**, W. Pulliam, J. Raison, and S. Lindner. 1996(a). Comparing models of ecosystem function for temperate conifer forests. I. Model description and validation. In: A. Breymeyer, D.O. Hall, J.M. Melillo, and G.I. Ågren (eds.), *Global Change: Effects on Coniferous Forests and Grasslands*. SCOPE 56. John Wiley & Sons, New York, pp 313-362.
- Ryan, M.G., R.E. McMurtrie, G.I. Ågren, E.R. Hunt, Jr., J.D. Aber, A.D. Friend, **E.B. Rastetter**, and W.M. Pulliam. 1996(b). Comparing models of ecosystem function for temperate conifer forests. II. Simulations of the effect of climatic change. In: A. Breymeyer, D.O. Hall, J.M. Melillo, and G.I. Ågren (eds.), *Global Change: Effects on Coniferous Forests and Grasslands*. SCOPE 56. John Wiley & Sons, New York, pp 363-387.
- Shaver, G.R., A.E. Giblin, K.J. Nadelhoffer, and **E.B. Rastetter**. 1996. Plant functional types and ecosystem change in arctic tundras. In: T. Smith, H. Shugart, and I. Woodward (eds.), *Plant Functional Types*. Cambridge University Press, Cambridge, UK.
- Townsend, A.R., and **E.B. Rastetter**. 1996. Nutrient constraints over carbon storage in forested ecosystems. In: M. Apps and D. Price (eds.), *Forest Ecosystems, Forest Management and the Global Carbon Cycle*. NATO ASI Series, Vol I 40. Springer-Verlag, Berlin, pp. 35-45.
- Townsend, A.R., M.T. Sykes, M.J. Apps, I. Fung, S. Kellomäki, P.J. Martikainen, **E.B. Rastetter**, B.J. Stocks, W.J.A. Volney, and C. Zoltai. 1996. WG1 Summary: Natural and anthropogenically-induced variations in terrestrial carbon balance. In: M. Apps and D. Price (eds.), *Forest Ecosystems, Forest Management and the Global Carbon Cycle*. NATO ASI Series, Vol I 40. Springer-Verlag, Berlin, pp. 97-107.
- Williams, M., **E.B. Rastetter**, D.N. Fernandes, M.L. Goulden, S.C. Wofsy, G.R. Shaver, J.M. Melillo, J.W. Munger, S.-M. Fan, and K.J. Nadelhoffer. 1996. Modelling the soil-plant-atmosphere continuum in a *Quercus-Acer* stand at Harvard Forest: the regulation of stomatal conductance by light, nitrogen and soil/plant hydraulic properties. *Plant, Cell and Environment* 19:911-927.
- Rastetter, E.B.**, and G.R. Shaver. 1995. Functional redundancy and process aggregation: Linking ecosystems to species. In: C.G. Jones and J.H. Lawton (eds.), *Linking Species and Ecosystems*. Chapman and Hall, New York, pp. 215-223.
- Hobbie, J.E., L.A. Deegan, B.J. Peterson, **E.B. Rastetter**, G.R. Shaver, G.W. Kl
Chapin, M. C. Miller, G.W. Kipphut, W.B. Bowden, A.E. Hershey, and M.E. McDonald. 1995. Long-term measurements at the Arctic LTER site. In: T.M. Powell and J.H. Steele (eds.), *Biological Time Series*. Chapman and Hall, New York, pp. 391-409
- McKane, R.B., **E.B. Rastetter**, J.M. Melillo, G.R. Shaver, C.S. Hopkins, D.N. Fernandes, D.L. Skole, and W.H. Chomentowski. 1995. Effects of global change on carbon storage in tropical forests of South America. *Global Biogeochemical Cycles* 9(3):329-350.
- Kicklighter, D.W., J.M. Melillo, W.T. Peterjohn, **E.B. Rastetter**, A.D. McGuire, P.A. Steudler, and J.D. Aber. 1994. Aspects of spatial and temporal aggregation in estimating regional carbon dioxide fluxes from temperate forest soils. *Journal of Geophysical Research* 99:1303-1315.
- Rastetter, E.B.**, and G.R. Shaver. 1992. A model of multiple element limitation for acclimating vegetation. *Ecology* 73:1157-1174.
- Rastetter, E.B.**, A.W. King, B.J. Cosby, G.M. Hornberger, R.V. O'Neill, and J.E. Hobbie. 1992a. Aggregating fine-scale ecological knowledge to model coarser-scale attributes of ecosystems. *Ecological Applications* 2:55-70.

Book Reviews

Rastetter, E.B. 1993. Scaling physiological processes: leaf to globe. J.R. Ehleringer and C.B. Field (eds.), *Ecology*: 74:2470-2471.

Rastetter, E.B. 1999. Forest ecosystems: Analysis at multiple scales. R.H. Waring and S.W. Running. *Tree Physiology* 19:138.

Rastetter, E.B. 1999. Scaling up from cell to landscape. P.R. van Gardigen, G.M. Foody and P.J. Curran (eds.), *Ecology* 80:354-355.