

Colleen M. Iversen · Curriculum Vitae

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Research interests

I am an ecosystem ecologist who uses a variety of field and laboratory techniques to understand and predict how ecosystems are shaped by climatic change. Specifically, I work at the root-soil interface to investigate how atmospheric and climatic change alters belowground carbon and nutrient cycling.

Education

Ph.D., University of Tennessee (2003 – 2008)

Ecology and Evolutionary Biology

Co-advisors: Richard J. Norby and Aimée T. Classen

Dissertation: Forest responses to rising atmospheric CO₂: Causes and consequences of increased fine-root production in a CO₂-enriched sweetgum plantation

M.S., University of Notre Dame (2001 – 2004)

Biological Sciences

Advisor: Scott D. Bridgham

Thesis: Scaling community nitrogen use- and uptake efficiencies in response to increased nutrient availability in peatlands

B.S. (*cum laude*), Hope College (1997 – 2001)

Biological and Environmental Sciences

Appointments

Staff scientist (2010 – present)

Environmental Sciences Division

Oak Ridge National Laboratory

Post-doctoral research associate (2008 – 2010)

Environmental Sciences Division

Oak Ridge National Laboratory

Marvin L. Wesely Graduate Research Environmental Fellow (2007 – 2008)

Global Change Education Program

Department of Energy

Publications

In press

Iversen CM, Murphy MT, Allen MF, Childs J, Eissenstat DM, Lilleskov EA, Sarjala TM, Sloan VL, Sullivan PF. Advancing the use of minirhizotrons in wetlands. *Plant and Soil*, DOI 10.1007/s11104-011-0953-1.

*Whitehouse FN, **Iversen CM**. Standing crop and depth distribution of fine roots under ambient and elevated CO₂. *Journal of Undergraduate Research*, Vol. XI.

2011

Iversen CM, Hooker TD, Classen AT, Norby RJ (2011). Net mineralization of N at deeper soil depths as a potential mechanism for sustained forest production under elevated [CO₂]. *Global Change Biology* 17: 1130-1139.

Garten CT, Iversen CM, Norby RJ (2011). Litterfall ¹⁵N abundance indicates declining soil nitrogen availability in a free air CO₂-enrichment experiment. *Ecology* 92: 133-139.

2010

Iversen CM (2010). Digging deeper: Fine root responses to rising atmospheric [CO₂] in forested ecosystems. *New Phytologist* 186: 346-357.

Norby RJ, Warren JM, Iversen CM, Garten CT, Medlyn BE, McMurtrie RE (2010). CO₂ enhancement of forest productivity constrained by limited nitrogen availability. *Proceedings of the National Academy of Sciences, USA* 107: 19368-19373.

Iversen CM, Bridgham SD, Kellogg LE (2010). Scaling plant nitrogen-use and uptake efficiencies in response to nutrient addition in peatlands. *Ecology* 91: 693-707.

Iversen CM, O'Brien SL (2010). Organized Oral Session 3. Missing links in the root-soil organic matter continuum. *Bulletin of the Ecological Society of America* 91: 54-64.

2009

O'Brien SL, Iversen CM (2009). Missing links in the root-soil organic matter continuum. *New Phytologist* 184: 513-516.

Franklin O, McMurtrie RE, Iversen CM, Crous KY, Finzi A, Tissue DT, Ellsworth DS, Oren R, Norby RJ (2009). Forest fine-root production and nitrogen use under elevated CO₂: contrasting responses in evergreen and deciduous trees explained by a common principle. *Global Change Biology* 15: 132-144.

2008

Iversen CM, Ledford J, Norby RJ (2008). CO₂ enrichment increases carbon and nitrogen input from fine roots in a deciduous forest. *New Phytologist* 179: 837-847.

Iversen CM, Norby RJ (2008). Nitrogen limitation in a sweetgum plantation: Implications for carbon allocation and storage. *Canadian Journal of Forest Research* 38: 1021-1032.

2005 – 2007

Finzi AC, Norby RJ, Calfapietra C, Gallet-Budynek A, Gielen B, Holmes WE, Hoosbeek MR, Iversen CM, Jackson RB, Kubiske MB, Ledford J, Liberloo M, Oren R, Polle A, Pritchard S, Zak DR, Schlesinger WH, Ceulemans R (2007). Increases in nitrogen uptake rather than nitrogen-use efficiency support higher rates of temperate forest productivity under elevated CO₂. *Proceedings of the National Academy of Sciences, USA* 104: 14014-14019.

Norby RJ, Iversen CM (2006). Nitrogen uptake, distribution, turnover, and efficiency of use in a CO₂-enriched sweetgum forest. *Ecology* 87: 5-14.

Keller JK, Bauers AK, Bridgham SD, Kellogg LE, **Iversen CM (2006)**. Nutrient control of microbial carbon cycling along an ombrotrophic-minerotrophic peatland gradient. *Journal of Geophysical Research* 111: G03006.

Keller JK, Bridgham SD, Chapin CT, **Iversen CM (2005)**. Limited effects of six years of fertilization on carbon mineralization dynamics in a Minnesota fen. *Soil Biology and Biochemistry* 37: 1197-1204.

*Indicates an undergraduate intern.

Grants and fellowships

- 2007 – 2009 Doctoral Dissertation Improvement Grant. Will CO₂ mediated increases in fine-root litter progressively decrease forest N availability by increasing N immobilization in soil organic matter? *National Science Foundation* (\$11,730).
- 2005 – 2008 Graduate Research Environmental Fellowship. Global Change Education Program, *United States Department of Energy* (\$19,600 annually).
- 2005 Ehleringer Stable Isotope Ecology Course at the University of Utah. Tuition grant from Department of Ecology and Evolutionary Biology, *University of Tennessee* (\$1300).
- 2004 Summer Research Grant. Department of Ecology and Evolutionary Biology, *University of Tennessee* (\$1300).

Honors and awards

- 2010 Finalist in *New Phytologist* Tansley Medal competition for mini-review: Iversen CM (2010), *New Phytologist* 186: 346-357. Highlighted in Woodward & Hetherington 'The *New Phytologist* Tansley medal', *New Phytologist* 186: 263-264.
- 2009 Distinguished Achievement Award for Post-Graduate Research. Environmental Sciences Division, Oak Ridge National Laboratory.
- 2007 – 2008 Marvin L. Wesely Graduate Research Environmental Fellow. Global Change Education Program, United States Department of Energy.
- 2006 Best student poster presentation in the Soil Ecology Section of the Ecological Society of America annual meeting, Memphis, TN, USA.
- 2006 Travel award from Terrestrial Ecosystem Responses to Atmospheric and Climatic Change network to attend forested FACE synthesis in Antwerp, Belgium.
- 2005 Second best student poster presentation. Soil Ecology Society biennial meeting, Argonne National Laboratory, Argonne, IL, USA.
- 2004 Travel award to attend Terrestrial Ecosystem Responses to Atmospheric and Climatic Change annual meeting, Fort Meyers, FL, USA.

2003 – 2004 Travel awards from the Society of Wetland Scientists to attend Society of Wetland Scientists annual meeting, New Orleans, LA, USA (2003) and Association of Southeastern Biologists annual meeting, Memphis, TN, USA (2004).

Undergraduate mentoring

- Summer, 2011 Jonathan Brooks, Hope College
The relaxation effect: Changes in fine-root distribution and soil C pools two years after the conclusion of a forested CO₂-enrichment experiment
- Summer, 2010 Heather Henderson, Volunteer State Community College
Soil moisture drives soil CO₂ efflux in a loblolly pine stand

*Heather was chosen to compete in the 2010 Department of Energy Science and Energy Research Challenge (SERCh) competition, hosted at Argonne National Laboratory, Argonne, IL, USA.
- Fall, 2009 Faith Whitehouse, Hope College
Fine-root diameter distribution and standing crop from 0 to 90 cm depth under elevated [CO₂]

*Faith was chosen to compete in the 2010 Department of Energy Science and Energy Research Challenge (SERCh) competition, hosted at Argonne National Laboratory, Argonne, IL, USA. She was also invited to attend the 2011 American Association for the Advancement of Science (AAAS) meeting in Washington, DC to present her paper, which was accepted in the Department of Energy's *Journal of Undergraduate Research* (Whitehouse and Iversen, 2011).
- Summer, 2009 Lauren Stachowiak, University of Wisconsin, Whitewater
Rooting distribution and morphology under elevated [CO₂]
- Fall, 2007 Jennifer Burks, Earlham College
Mycorrhizal production and decomposition under elevated carbon dioxide concentrations
- Summer, 2006 Caitlin Guthrie, Pomona College
Elevated carbon dioxide does not affect net nitrogen mineralization
- Fall, 2005 Joey Roberts, Middle Tennessee State University
Disentangling fine-root production under elevated carbon dioxide concentrations using a stable carbon isotope
- Summer, 2005 Zara Berg, Montana Tech
Nitrogen fertilization effects on a forest understory

Selected presentations (2006-2010)

Iversen CM, Norby RJ. 2011. The interplay between soil N availability, C partitioning, and ecosystem C storage in a CO₂-enriched sweetgum plantation. *Invited talk*. The 27th *New Phytologist* Symposium: Stoichiometric flexibility in terrestrial ecosystems under global change. Biosphere 2, Oracle, AZ, USA

Iversen CM, Keller JK, Garten GT, Norby RJ. 2011. The consequences of deeper rooting distributions under elevated [CO₂]. *Organized oral session*. Ecological Society of America annual meeting, Austin, TX, USA

Iversen CM. 2010. At the root of the response: Carbon and nitrogen cycling in a CO₂-enriched deciduous forest. *Invited talk*. Biology Department, Hope College, Holland, MI, USA.

Iversen CM, Bridgham SD, Kellogg LE. 2009. Scaling plant nitrogen-use and uptake efficiencies in response to nutrient addition in peatlands. Second International PeatNet Symposium: Peatlands in the global carbon cycle, Prague, Czech Republic. *Poster presentation*.

Iversen CM, Jastrow JD, and Norby RJ. 2009. Carbon and nitrogen inputs from decomposing roots into different soil organic matter fractions. *Organized oral session*. Ecological Society of America annual meeting, Albuquerque, NM, USA.

Iversen CM. 2009. The causes and consequences of increased fine-root production in a CO₂-enriched sweetgum plantation. *Invited talk*. Department of Biological Sciences Seminar, University of Illinois at Chicago, Chicago, IL, USA.

Iversen CM. 2008. The causes and consequences of increased fine-root production in a CO₂-enriched sweetgum plantation. *Keynote address*. High CO₂Workshop, University of Western Sydney, New South Wales, Australia.

Professional activities

Organizer: “Advancing minirhizotron use to examine ephemeral root dynamics in peatland and high carbon ecosystems”. Small workshop hosted at Oak Ridge National Laboratory, and funded by the Department of Energy, Office of Science and New Phytologist Trust.

Co-organizer: “Missing links in the root-soil organic matter continuum”. Organized oral session at the annual Ecological Society of America meeting, August, 2009 in Albuquerque, NM, USA.

Ad-hoc reviewer for: *Acta Oecologica*; *Biological Invasions*; *Canadian Journal of Forest Research*; *Ecology*; *Ecosphere*; *Global Biogeochemical Cycles*; *Global Change Biology*; *Journal of Ecology*; *Nature*; *New Phytologist*; *Oecologia*; *Plant and Soil*; *Soil Biology and Biochemistry*, *Soil Science Society of America Journal*; *Tree Physiology*; National Science Foundation; National Institute for Climate Change Research; Department of Energy, Office of Science.

Public tours: Oak Ridge National Laboratory Free-Air CO₂-Enrichment experiment.

Public outreach: Local NPR interview; web cast for Oak Ridge Associated Universities; part of a feature story in the *ORNL Review*; presentation of “Ecosystems” and “Greenhouse effect” concepts to 3rd grade classrooms and Environmental Club in Sevierville, TN, USA; built decomposition columns with 6th, 7th, 8th-graders at Cherokee Middle School, Kingston, TN, USA, ORNL recruitment video, National Geographic JASON program.

Society memberships: Ecological Society of America, Soil Ecology Society

Updated on 21 October 2011.