STAN D. WULLSCHLEGER
Biological and Environmental Systems Science Directorate, Oak Ridge National Laboratory
P.O. Box 2008, Oak Ridge, TN 37831-6301
Tel (865) 574-7839
E-mail wullschlegsd@ornl.gov

ResearcherID (http://www.researcherid.com/rid/B-8297-2012)
ORCID (http://orcid.org/0000-0002-9869-0446)

EDUCATION

Ph.D.	Crop Physiology, University of Arkansas – 1990
M.S.	Tree Physiology, Colorado State University – 1982
B.S.	Forest Management, Colorado State University – 1979

STATEMENT OF RESEARCH AND LEADERSHIP INTERESTS

More than thirty years of experience in science, science leadership, and organizational management of large projects, programs, and organizations including serving as Associate Laboratory Director of Oak Ridge National Laboratory's Biological and Environmental Systems Science Directorate and Director of ORNL's Climate Change Science Institute. In these roles provided S&T leadership, strategic planning, sponsor interaction, and staff development for organizations with more than 750 scientists, technicians, students, and guests. A proven commitment to diversity and inclusion and mentoring the next generation of scientists and engineers. Research interests include systems and synthetic biology; computational prediction; biodesign; measuring and modeling a changing Arctic; characterizing plant response to global environmental change; modeling plant, regional, and global carbon and water cycles; and incorporating emerging capabilities of molecular biology into studies of plant physiology and ecology. Insights gained through these investigations are used to develop a predictive multiscale understanding of land surface processes and their response to disturbance, environmental, and climatic change.

PROFESSIONAL EXPERIENCE

Associate Laboratory Director, Biological and Environmental Systems Science Directorate (2020–present); Oak Ridge National laboratory, Oak Ridge, Tennessee. Provide S&T leadership, vison, and strategic direction for more than 275 researchers dedicated to mission-driven advancements in systems and synthetic biology, computational science, data management, terrestrial and aquatic environment, and renewable energy sciences including bioenergy and hydropower.

Interim Associate Laboratory Director, Energy and Environmental Sciences Directorate (2020); Oak Ridge National laboratory, Oak Ridge, Tennessee. Provide S&T leadership and strategic oversight to a multi-disciplinary organization of more than 675 researchers focused on mission-driven advancements in biology, environment, and applied energy sciences.

Director, Climate Change Science Institute (2017–present); Oak Ridge National Laboratory, Oak Ridge, Tennessee. Develop and execute strategic vision for an institute of 140 scientists who share a common, integrated vision for ecosystem science, multi-scale models, data and information systems, and resilience of natural and built environments.

Director, Environmental Sciences Division (2017–2020); Oak Ridge National Laboratory, Oak Ridge, Tennessee. Provide scientific leadership, strategic planning, and staff development for a large, multi-disciplinary organization that encompasses more than 165 scientists, technicians, students, and guests across the Earth, environmental, and climate sciences.

ORNL Corporate Fellow (2013–present); Environmental Sciences Division, Oak Ridge National

Laboratory, Oak Ridge, Tennessee.

Project Director, Next-Generation Ecosystem Experiments (2010–present); Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee. Serve as Director and Principal Investigator (PI) for an interdisciplinary team of 140 scientists from four national laboratories and three universities all working to develop advanced Earth Systems Models that can predict how permafrost thaw and degradation in a warming Arctic will impact regional and global climate systems.

Lead Scientist, Carbon Sequestration in Terrestrial Ecosystems (2008–2012); Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee. Coordinate a three-national laboratory effort to understand the chemical, physical, and biological mechanisms that regulate the soil carbon cycle.

Interim Division Director (2008–2009); Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee. Provide scientific leadership and operational oversight for a large, multi-disciplinary organization that encompassed more than 165 scientists, technicians, students, and guests.

Group Leader, Plant Systems Biology (2005–2010); Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee. Provide scientific leadership and mentoring to a highly talented and multi-disciplinary group of researchers involved in applying genetics and molecular biology to questions of interest to plant biology, bioenergy crop development, carbon sequestration, and ecosystem genomics.

Distinguished R&D Scientist (2005–2013); Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Senior R&D Staff Scientist (2002–2005); Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Staff Research Member (1995–2002); Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Staff Research Associate (1992–1995); Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Alexander Hollaender Distinguished Postdoctoral Fellow (1990–1992); Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Research Assistant (1985–1990); Department of Agronomy, University of Arkansas, Fayetteville, Arkansas.

Plant Physiologist (1981–1985); US Department of Agriculture-Agricultural Research Service, Fort Collins, Colorado.

Graduate Research Assistant (1979–1981); Department of Forest and Wood Sciences, Colorado State University, Fort Collins, Colorado.

PROFESSIONAL AWARDS AND HONORS

- Commitment to Human Diversity in Ecology Award, Ecological Society of America (2022)
- UT-Battelle Awards Night Recipient, Division Level Research Leadership Award (2019)
- Outstanding Alumnus, Crop, Soil, and Environmental Sciences (2016), University of Arkansas
- UT-Battelle Corporate Fellow (2013)
- UT-Battelle Awards Night Recipient, Science Communicator (2013)
- UT-Battelle Awards Night Director's Award for Outstanding Team Accomplishment (2007)
- UT-Battelle Awards Night Winner, Scientific Research Team (2007)

- Scientific Achievement Award (1998), Environmental Sciences Division, Oak Ridge, TN
- Alexander Hollaender Distinguished Postdoctoral Fellowship (1990), ORAU, Oak Ridge, TN
- Outstanding Graduate Student Award (1990), American Society of Agronomy
- Gerald O. Mott Scholarship (1989), Crop Science Society of America
- BASF Outstanding Presentation Award (1989), Beltwide Cotton Production Research Conferences
- Aubrey E. Harvey Award (1988), Sigma Xi Research Society, University of Arkansas
- Outstanding Agronomy Ph.D. Student (1987), Department of Agronomy, University of Arkansas
- Hill Memorial Fellowship (1981), Department of Forest Science, Colorado State University
- Colorado Graduate Scholarship (1980), Graduate School, Colorado State University.

MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Geophysical Union
Ecological Society of America

SERVICE TO OAK RIDGE NATIONAL LABORATORY

- Center of Bioenergy Innovation, Board of Directors (Chair)
- National Alliance for Water Innovation, Multi-laboratory ALD Advisory Board
- Innovation Crossroads Advisory Board
- Faculty Appointment, Bredesen Center for Interdisciplinary Research and Graduate Education, University of Tennessee, Knoxville (2015–present)
- ORNL Wigner Fellow Committee (2015–2017)
- Initiative Review Committee Chair, LDRD Discovery and Innovation (2014–2017)
- ORNL Mentor–Protégé Program (2013–present)
- Young Evolving Scientist Seminar Series (YESSS), Mentor (2012–2015)
- Scientific Advisory Board, Engineering CAM Metabolism for Marginal Lands (2013–2018)
- Alvin M. Weinberg Postdoctoral Fellowship Committee (2008–2010)
- LDRD Selection and Review Panel – Understanding Climate Change Impacts (2009)
- LDRD Selection and Review Panel – Systems Biology and the Environment (2007–2009)
- Seed Fund Committee (2005–2007)
- UT-Battelle Awards Night Selection Committee (2008–2009) – Distinguished Scientist, Early Career Award for Scientific Accomplishment, and Scientific Research
- UT-Battelle Awards Night Selection Committee (2008–009) – Administrative Support (Team or Exempt Individual), Administrative Support, Nonexempt, and Esprit de Corps

SERVICE TO THE SCIENTIFIC COMMUNITY

- E3SM Laboratory Managers Group, Department of Energy (DOE), Office of Science, Biological and Environmental Research Program (BER)
- ESS Cyberinfrastructure Executive Committee, DOE, Office of Science, BER
- Science Advisory Committee, Barrow Environmental Observatory, Barrow, Alaska (2013–present)
- Science Definition Team, NASA Arctic-Boreal Vulnerability Experiment (ABoVE) (2013–2014)
- Editor, *Tree Physiology* (2000–2007)
- Editorial Review Board, *Tree Physiology* (1992–present)
- Ecological Society of America Student Awards Committee (Buell and Braun Awards, 2007–2012)
- American Geophysical Union (Student Poster and Presentation Awards, 2010–present)
- Research Council, Southern Man and the Biosphere (1999–2005)
- Reviewer for scientific journals, including Science, Nature, Biogeosciences, New Phytologist, Global Change Biology, Plant Cell and Environment, Plant Physiology, Plant Cell, GCB Bioenergy,

Ecology, Ecology Letters, American Journal of Botany, Journal of Experimental Botany, Tree Physiology, Forest Ecology and Management, Physiologia Plantarum, Journal of Environmental Quality, Agricultural and Forest Meteorology, Journal of Geophysical Research, and Functional Ecology

ADDITIONAL TRAINING

LeaderCast (2014)
Developing Leadership Potential (2006)

PUBLICATIONS

BOOKS EDITED

1. Hanson, P.J. and S.D. Wullschleger (eds.) North American Temperate Deciduous Forest Responses to Changing Precipitation Regimes. 2003. Springer, New York, NY. Pp. 472.

BOOK CHAPTERS (21 published)

1. Oosterhuis, D.M. and S.D. Wullschleger. 1989. Psychrometric water potential analysis in leaf discs. pp. 113-133. *In* Modern Methods of Plant Analysis, New Series, Volume 9, Gases in Plant and Microbial Cells. H.F. Linskens and J.F. Jackson (eds.). Springer-Verlag, Berlin.
2. Wullschleger, S.D., W.M. Post and A.W. King. 1995. On the potential for a CO_2 fertilization effect in forest trees - An assessment of 58 controlled-exposure studies and estimates of the biotic growth factor. Pp.85-107. *In* Biotic Feedbacks in the Global Climate System: Will Warming Feed the Warming? G.M. Woodwell and F.T. Mackenzie (eds.). Oxford Press.
3. Norby, R.J., E.G. O'Neill and S.D. Wullschleger. 1995. Belowground responses to atmospheric carbon dioxide in forests. Pp. 397-418. *In* Carbon Forms and Functions in Forest Soils. W.F. McFee and J.M. Kelly (eds.). American Society of Agronomy, Madison, WI.
4. Norby, R.J., S.D. Wullschleger and C.A. Gunderson. 1996. Tree Responses to Elevated CO_2 and Implications for Forests. Pp. 1-21. *In* Carbon Dioxide and Terrestrial Ecosystems. G.W. Koch and H.A. Mooney (eds.). Academic Press.
5. McLaughlin, S.B., J.D. Joslin, A. Stone, R. Wimmer and S.D. Wullschleger. 1996. Effects of acid deposition on calcium nutrition and health of Southern Appalachian Spruce-Fir forests. *In* Proc. IUFRO Symp. Air Pollution and Multiple Stresses. R. Cox, K. Percy, K. Jensen and C. Simpson (eds.). p. 207-215. Fredericton, New Brunswick, Canada. September 7-9, 1994.
6. Post, W.M., A.W. King and S.D. Wullschleger. 1996. Soil organic matter models and global estimates of soil organic carbon. D.S. Powlson, P. Smith, and J.U. Smith (eds.), NATO Advanced Science Institute, Series I, vol. 38:201-222.
7. Wullschleger, S.D., R.J. Norby and C.A. Gunderson. 1997. Forest trees and their response to atmospheric CO_2 Enrichment - A Compilation of Results. Pg. 79-100. *In* Advances in Carbon Dioxide Effects Research. L.H. Allen, Jr. (ed.). American Society of Agronomy Special Publication
8. McLaughlin, J.D. Joslin, W. Robarge, A. Stone, R. Wimmer and S.D. Wullschleger. 1997. The impact of acidic deposition and global change on high elevation Southern Appalachian Spruce-Fir forests. Pg. 255-277. *In* The Productivity and Sustainability of Southern Forest Ecosystems in a Changing Environment. R.A. Mickler and S. Fox (eds.). Forest Service, Southern Global Change Program.

9. Martin, M., S. Wullschleger, and C. Garten. 2002. Laser-induced breakdown spectroscopy for environmental monitoring of soil carbon and nitrogen. *In* T. VoDinh and S. Buttgenbach (eds.) Advanced Environmental Sensing Technology. Pg. 188-195. Proceedings of the Society of Photo-optical Instrument Engineers.
10. Wullschleger, S.D. and P.J. Hanson. 2003. Sensitivity of saplings and mature-tree water use to altered precipitation regimes. pg. 87-99. *In* North American Temperate Deciduous Forest Responses to Changing Precipitation Regimes. P.J. Hanson and S.D. Wullschleger (eds.). Springer, New York.
11. Wullschleger S.D., P.J. Hanson and D.E. Todd. 2003. Forest water use and the influence of precipitation change. pg. 363-377. *In* North American Temperate Deciduous Forest Responses to Changing Precipitation Regimes. P.J. Hanson and S.D. Wullschleger (eds.). Springer, New York, NY.
12. Wullschleger S.D., C.A. Gunderson, L.M. Tharp, D.C. West and W.M. Post. 2003. Simulated patterns of forest succession and productivity as a consequence of altered precipitation. pg. 433-446. *In* North American Temperate Deciduous Forest Responses to Changing Precipitation Regimes. P.J. Hanson and S.D. Wullschleger (eds.). Springer, New York.
13. Hanson, P.J., N.T. Edwards, T.J. Tschaplinski, S.D. Wullschleger and J.D. Joslin. 2003. Estimating the net primary and net ecosystem production of a southeastern upland *Quercus* forest from an 8-year biometric record. pg. 378-395. *In* North American Temperate Deciduous Forest Responses to Changing Precipitation Regimes. P.J. Hanson and S.D. Wullschleger (eds.). Springer, New York.
14. Norby R.J., L.A. Joyce and S.D. Wullschleger. 2004. Modern and future forests in a changing atmosphere. Pg. 394-414. *In* History of Atmospheric CO_2 and the Impacts on Plants, Animals, and Ecosystems. J. Ehleringer, T. Cerling and D. Dearing (eds.). Springer, New York.
15. Tuskan, G.A., S.D. Wullschleger, J.H. Cushman, R.L. Graham, and S.R. Thomas. 2004. Mitigation of greenhouse warming, biomass-based energy supply systems and accelerated domestication of energy crops. *In* N.J. Rosenberg, F.B. Metting, and R.C. Izuarralde (eds.) Application of Biotechnology to Mitigation of Greenhouse Warming, St. Michaels, MD, April 13-15, 2003.
16. Norby R.J., S.D. Wullschleger, P.J. Hanson, C.A. Gunderson, T.J. Tschaplinski, J.D. Jastrow. 2006. CO_2 enrichment of a deciduous forest: The Oak Ridge FACE Experiment. pp. 231-251 *In* Managed Ecosystems and CO_2: Case Studies, Processes, and Perspectives (Nösberger J., Long S.P., Norby R.J., Stitt M., Hendrey G.R., Blum H, editors). Ecological Studies, Vol. 187. Springer, Berlin.
17. Martin, M.Z., S.D. Wullschleger, C.T. Garten, and P.V. Palumbo. 2007. Measurement of carbon for carbon sequestration and site monitoring. *In* J.P. Singh and S.N. Thakur (eds.) Laser Induced Breakdown Spectroscopy, Elsevier Science, The Netherlands.
18. Wullschleger S.D. and D.J. Weston. 2010. Microarrays and Molecular Phenotypes. *In* J.A. DeWoody (ed.) Molecular Insights into Natural Resource Conservation and Management, Cambridge University Press.
19. Li T., D. Weston, A. Karve, J. L. Labbe, L. E. Gunter, O. Sukumar, A. Bourland, J.-G. Chen, S. D. Wullschleger, T J. Tschaplinski and G. A. Tuskan. 2011. Innovation biological solutions to challenges in sustainable biofuels production. Pg. 376-414. *In* M. Aurelio dos Santos Bernardes (ed.) Biofuels Production – Recent Developments and Prospects, InTech. 576pp.
20. Cseke, L.J., S.D. Wullschleger, A. Sreedasyan, G. Trivedi, P.E. Larsen, and F.R. Collart. 2013. Carbon Sequestration. Pp. 415-455. *In* C. Kole (ed.), Genomics and Breeding for Climate-Resilient Crops, Vol. 2, Springer-Verlag, Berlin Heidelberg. http://dx.doi.org/10.1007/978-3-642-37048-9_12
21. Zegada-Lizarazu, W., S.D. Wullschleger, S.S. Nair, and A. Monti. 2013. Crop physiology. Pp. 55-86. *In* A. Monti (ed.), Switchgrass: A Valuable Biomass Crop for Energy, Springer-Verlag, London.

http://dx.doi.org/10.1007/978-1-4471-2903-5_3

REFEREED PUBLICATIONS (220 published; 29 cited 100 times or more; h-index 62)

1. Kidd, F.A., S.D. Wullschleger, K. Dawley and C.P.P. Reid. 1982. Use of Gentamicin in axenic culturing of ectomycorrhizal plants. Applied Environmental Microbiology 44:506-508.
2. Schaffer, B., F.G. Hawksworth, S.D. Wullschleger and C.P.P. Reid. 1983. Cytokinin-like activity related to host reactions to Dwarf mistletoe (*Arceuthobium* spp.). Forest Science 29:66-70.
3. Fiscus, E.L., S.D. Wullschleger and H.R. Duke. 1984. Integrated stomatal opening as an indicator of water stress in *Zea*. Crop Science 24:245-249.
4. Wullschleger, S.D. and D.M. Oosterhuis. 1986. A rapid leaf- disc sampler for psychrometric water potential measurements. Plant Physiology 81:684-685.
5. Tyree, M.T., E.L. Fiscus, S.D. Wullschleger and M.A. Dixon. 1986. Detection of xylem cavitation in corn under field conditions. Plant Physiology 82:597-599. **Cited 101 times.**
6. Wullschleger, S.D. and D.M. Oosterhuis. 1987. Electron microscope study of cuticular abrasion on cotton leaves in relation to water potential measurements. Journal of Experimental Botany 38:660-667.
7. Oosterhuis, D.M. and S.D. Wullschleger. 1987. Water flow through cotton roots in relation to xylem anatomy. Journal of Experimental Botany 38:1866-1874.
8. Oosterhuis, D.M. and S.D. Wullschleger. 1987. Osmotic adjustment in cotton (*Gossypium hirsutum* L.) leaves and roots in response to water stress. Plant Physiology 84:1154-1157
9. Oosterhuis, D.M., M.L. Parker, S.D. Wullschleger and K.S. Kim. 1988. The citrus leaf cuticle in relation to measurement of leaf water potential using thermocouple psychrometers. Plant, Cell and Environment 11:129-135.
10. Wullschleger, S.D., M.A. Dixon and D.M. Oosterhuis. 1988. Field measurement of leaf water potential with a temperature-corrected *in situ* thermocouple psychrometer. Plant, Cell and Environment 11:129-135.
11. Wullschleger, S.D. and D.M. Oosterhuis. 1989. The occurrence of an internal cuticle in cotton (*Gossypium hirsutum* L.) leaf stomates. Environmental and Experimental Botany 29:229-235.
12. Wullschleger, S.D. and D.M. Oosterhuis. 1989. Water use efficiency as a function of leaf age and position within the cotton canopy. Plant and Soil 120:79-85.
13. Oosterhuis, D.M., H.D. Scott, R.E. Hampton and S.D. Wullschleger. 1990. Physiological response of two soybean [*Glycine max* (L.) Merr] cultivars to short-term soil flooding. Environmental and Experimental Botany 30:85-92.
14. Wullschleger, S.D. and D.M. Oosterhuis. 1990. Photosynthesis of individual field-grown cotton leaves during ontogeny. Photosynthesis Research 23:163-170.
15. Oosterhuis, D.M., S.D. Wullschleger, R.E. Hampton and R.A. Ball. 1990. Physiological response of rice (*Oryza sativa* L.) to fenoxaprop-induced injury. Weed Science 38:459-462.
16. West, C.P., D.M. Oosterhuis and S.D. Wullschleger. 1990. Osmotic adjustment in tissues of tall fescue in response to water deficit. Environmental and Experimental Botany 30:149-156.
17. Wullschleger, S.D. and D.M. Oosterhuis. 1990. Photosynthetic carbon production and use by developing cotton leaves and bolls. Crop Science 30:1259-1264.
18. Wullschleger, S.D. and D.M. Oosterhuis. 1990. Photosynthetic and respiratory activity of fruiting

forms within the cotton canopy. Plant Physiology 94:463-469.

19. Oosterhuis, D.M. and S.D. Wullschleger. 1990. Drought tolerance and irrigation scheduling of vegetable crops. Acta Horticulturae 278:351-358.
20. Wullschleger, S.D. and D.M. Oosterhuis. 1990. Canopy development and photosynthesis of cotton as influenced by nitrogen nutrition. Journal of Plant Nutrition 13:1141-1151.
21. Hampton, R.E., S.D. Wullschleger and D.M. Oosterhuis. 1990. Impact of *Verticillium* wilt infection on net photosynthesis, respiration, and photorespiration of field-grown cotton. Physiological and Molecular Plant Pathology 37:271-280.
22. Wullschleger, S.D. and C.P.P. Reid. 1990. Implication of ectomycorrhizal fungi in the cytokinin relations of loblolly pine. New Phytologist 116:681-688.
23. Wullschleger, S.D., J.E. Cahoon, J.A. Ferguson and D.M. Oosterhuis. 1991. SURFTEMP: Simulation of soil surface temperature using the energy balance equation. Journal of Agronomic Education 20:11-15.
24. Oosterhuis, D.M., R.E. Hampton and S.D. Wullschleger. 1991. Water deficit effects on the cotton leaf cuticle and the efficiency of defoliants. Journal of Production Agriculture 4:260-265.
25. Wullschleger, S.D. and D.M. Oosterhuis. 1991. Osmotic adjustment and the growth response of seven vegetable crops following water-deficit stress. HortScience 26:1210-1212.
26. Kirkpatrick, T.L., D.M. Oosterhuis and S.D. Wullschleger. 1991. Interaction of root-knot nematodes and water stress in two cotton cultivars. Journal of Nematology 23:462-467.
27. Wullschleger, S.D., D.M. Oosterhuis, R.E. Hurron and P.J. Hanson. 1991. Evidence for light-dependent recycling of respired CO_2 by the cotton fruit. Plant Physiology 97:574-579.
28. Wullschleger, S.D. and D.M. Oosterhuis. 1991. Photosynthesis, transpiration, and water-use efficiency of cotton leaves and fruit. Photosynthetica 25:505-515.
29. Wullschleger, S.D., R.J. Norby and D.L. Hendrix. 1992. Carbon exchange rates, chlorophyll concentration, and carbohydrate status of two forest tree species to carbon dioxide enrichment. Tree Physiology 10:21-31. **Cited 118 times.**
30. Wullschleger, S.D., P.J. Hanson and R.F. Sage. 1992. PHOTOBIO: Modeling the stomatal and biochemical control of plant gas-exchange. Journal of Natural Resources and Life Sciences Education 21:141-145.
31. Wullschleger, S.D. and D.M. Oosterhuis. 1992. Canopy leaf area development and age-class dynamics in cotton. Crop Science 32:451-456.
32. Norby, R.J., C.A. Gunderson, S.D. Wullschleger, E.G. O'Neill and M.K. McCracken. 1992. Productivity and compensatory growth responses of yellow-poplar trees to elevated CO_2. Nature 357:322-324. **Cited 281 times.**
33. Wullschleger, S.D., R.J. Norby and C.A. Gunderson. 1992. Growth and maintenance respiration in leaves of *Liriodendron tulipifera* L. saplings exposed to long-term carbon dioxide enrichment in the field. New Phytologist 121:515-523.
34. Wullschleger, S.D., P.J. Hanson and C.A. Gunderson. 1992. Assessing the influence of exogenous ethylene on electron transport and fluorescence quenching in leaves of *Glycine max*. Environmental and Experimental Botany 32:449-455.
35. Wullschleger, S.D. and R.J. Norby. 1992. Respiratory cost of leaf growth and maintenance in white oak saplings exposed to atmospheric CO_2 enrichment. Canadian Journal of Forest Research 22:1717-1721.

36. Edwards, G.S., S.D. Wullschleger and J.M. Kelly. 1993. Growth and physiology of northern red oak: Preliminary comparisons of mature and seedling responses to ozone. Environmental Pollution 83:215-221.

37. Hanson, P.J., S.D. Wullschleger, S.A. Bohlman and D.E. Todd. 1993. Seasonal and topographic patterns of forest floor CO_2 efflux from an upland oak forest. Tree Physiology 13:1-15. **Cited 282 times.**

38. Wullschleger, S.D. 1993. Biochemical limitations to carbon assimilation in C_3 plants - A retrospective analysis of the A/C_i curves from 109 species. Journal of Experimental Botany 44:907-920. **Cited 725 times.**

39. Gunderson, C.A. and S.D. Wullschleger. 1993. Photosynthetic acclimation of trees to a doubling of atmospheric CO_2: A broader perspective. Photosynthesis Research 39:369-388. **Cited 286 times.**

40. Gunderson, C.A., R.J. Norby and S.D. Wullschleger. 1993. Foliar gas exchange of two deciduous hardwoods during three years of growth in elevated CO_2: No loss of photosynthetic enhancement. Plant, Cell and Environment 16:797-807. **Cited 140 times.**

41. Tschaplinski, T.J., R.J. Norby and S.D. Wullschleger. 1993. Responses of loblolly pine seedlings to elevated CO_2 and fluctuating water supply. Tree Physiology 13:283-296.

42. Luxmoore, R.J., S.D. Wullschleger and P.J. Hanson. 1993. Forest responses to CO_2 enrichment and climate warming. Water, Soil, and Air Pollution 70: 309-323.

43. Wullschleger, S.D., L.H. Ziska and J.A. Bunce. 1994. Respiratory responses of higher plants to atmospheric CO_2 enrichment. Physiologia Plantarum 90:221-229. **Cited 106 times.**

44. Bondada, B.R., Oosterhuis, D.M., Wullschleger, S.D., Kim, K.S. and Harris, W.M. 1994. Anatomical considerations related to photosynthesis in cotton (*Gossypium hirsutum* L.) leaves, bracts, and the capsule wall. Journal of Experimental Botany 45:111-118.

45. Wullschleger, S.D., Lynch, J.P. and Berntson, G.M. 1994. Modeling the belowground response of plants and soil biota to edaphic and climatic change - What can we expect to gain? Plant and Soil 165:149-160.

46. Wullschleger, S.D., R.J. Norby and P.J. Hanson. 1995. Growth and maintenance respiration in stems of *Quercus alba* after four years of CO_2 enrichment. Physiologia Plantarum 93:47-54.

47. Hanson, P.J., L.J. Samuelson, S.D. Wullschleger, T.A. Tabberer and G.S. Edwards. 1994. Seasonal patterns of light-saturated photosynthesis and leaf conductance for mature and seedling *Quercus rubra* L. foliage: differential sensitivity to ozone. Tree Physiology 14:1351-1366.

48. Norby, R.J., S.D. Wullschleger, C.A. Gunderson and C.T. Nietch. 1995. Increased growth efficiency of *Quercus alba* trees to a CO_2-enriched atmosphere. New Phytologist 131:91-97.

49. King, A.W., W.R. Emanuel, S.D. Wullschleger and W.M. Post. 1995. In search of the missing carbon sink: a model of terrestrial biospheric response to land-use change and atmospheric CO_2. Tellus 47B:501-519.

50. Kelly, J.M., L.J. Samuelson, G. Edwards, P.J. Hanson, D. Kelting, A. Mays and S.D. Wullschleger. 1995. Are seedlings reasonable surrogates for trees? An analysis of ozone impacts on *Quercus rubra*. Water, Soil, and Air Pollution 85:1317-1324.

51. Wullschleger, S.D., P.J. Hanson and G.S. Edwards. 1996. Growth and maintenance respiration in leaves of northern red oak seedlings and mature trees after three years of ozone exposure. Plant, Cell and Environment 19:577-584.

52. Wullschleger, S.D., M.A. Sanderson, S.B. McLaughlin, D.P. Biradar and A.L. Rayburn. 1996.

Photosynthetic rates and ploidy levels among populations of switchgrass. Crop Science 36:306-312.

53. Gunter, L.E., G.A. Tuskan and S.D. Wullschleger. 1996. Diversity among populations of switchgrass based on RAPD markers. Crop Science 36:1017-1022.
54. Wullschleger, S.D., P.J. Hanson and D.E. Todd. 1996. Measuring stem water content in four deciduous hardwoods with a time domain reflectometer. Tree Physiology 16:809-815.
55. Sanderson, M.A., R.L. Reed, S.B. McLaughlin, S.D. Wullschleger, B.V. Conger, D.J. Parrish, D.D. Wolf, C. Taliaferro, A.A. Hopkins, W.R. Ocumpaugh, M.A. Hussey, J.C. Read and C.R. Tischler. 1996. Switchgrass as a sustainable bioenergy crop. Bioresource Technology 56:83-93. **Cited 265 times.**
56. Post, W.M., A.W. King and S.D. Wullschleger. 1997. Historical variations in terrestrial biospheric carbon storage. Global Biogeochemical Cycles 11:99-109.
57. King, A.W., W.M. Post and S.D. Wullschleger. 1997. The potential response of terrestrial carbon storage to changes in climate and atmospheric CO_2. Climatic Change 35:199-227.
58. Norby, R.J., N.T. Edwards, J.S. Riggs, C.H. Abner, S.D. Wullschleger, C.A. Gunderson, E.G. O'Neill. 1997. Temperature-controlled open-top chambers for global change research. Global Change Biology 3:259-267.
59. Wullschleger, S.D., R.J. Norby, J.C. Love and C.D. Runck. 1997. Energetic cost of tissue construction in yellow-poplar and white oak saplings exposed to long-term CO_2 enrichment. Annals of Botany 80:289-297.
60. Wullschleger, S.D., P.J. Hanson and T.J. Tschaplinski. 1998. Whole-plant water flux in understory red maple exposed to altered precipitation regimes. Tree Physiology 18:71-79.
61. Wullschleger, S.D., F.C. Meinzer and R.A. Vertessy. 1998. A review of whole-plant water use studies in trees. Tree Physiology 18:499-512. **Cited 369 times.**
62. Norby, R.J., S.D. Wullschleger, C.A. Gunderson, D.W. Johnson and R. Ceulemans. 1999. Tree responses to rising CO_2 in field experiments: Implications for the future forest. Plant, Cell and Environment 22:683-714. **Cited 570 times.**
63. Garten, C.T. and S.D. Wullschleger. 1999. Soil carbon inventories under a bioenergy crop (Switchgrass): Measurement limitations. Journal of Environmental Quality 28:1359-1365. **Cited 121 times.**
64. Edwards, N.T. and S.D. Wullschleger. 1999. Carbon dioxide efflux rates from stems of mature *Quercus alba* L. and *Acer rubrum* L. trees do not appear to be affects by sap flow. Journal of Sustainable Forestry 10:125-11.
65. Drake, B.G., J. Azcon-Bieto, J. Berry, J. Bunce, R. Dahlman, P. Dijkstra, J. Farrar, R. Gifford, M. Gonzalez-Meler, G. Koch, H. Lambers, J. Siedow and S. Wullschleger. 1999. Does elevated atmospheric CO_2 concentration inhibit mitochondrial respiration in green plants? Plant, Cell and Environment 22:649-657. **Cited 118 times.**
66. Gunderson, C.A., R.J. Norby and S.D. Wullschleger. 2000. Acclimation of photosynthesis and respiration to simulated climatic warming in northern and southern populations of *Acer saccharum* Marsh: Laboratory and field evidence. Tree Physiology 20:87-96. **Cited 143 times.**
67. Becker, P., F.C. Meinzer and S.D. Wullschleger. 2000. Hydraulic limitation of tree height: a critique. Functional Ecology 14:4-11. **Cited 107 times.**
68. Garten, C.T., Jr. and S.D. Wullschleger. 2000. Soil carbon dynamics beneath switchgrass as indicated by stable isotope analysis. Journal of Environment Quality 29:645-653.

69. Wullschleger, S.D. and A.W. King. 2000. Radial variation in sap velocity as a function of stem diameter and sapwood thickness in yellow-poplar trees. Tree Physiology 20:511-518. **Cited 111 times.**
70. Wullschleger, S.D., K.B. Wilson and P.J. Hanson. 2000. Environmental control of whole-plant transpiration, canopy conductance and estimates of the decoupling coefficient for large red maple trees. Agricultural and Forest Meteorology 104:157-168.
71. Wullschleger, S.D., P.J. Hanson and D.E. Todd. 2001. Transpiration from a multi-species deciduous forest as estimated by xylem sap flow techniques. Forest Ecology and Management 143:205-213. **Cited 144 times.**
72. Wilson, K.B., P.J. Hanson, P.J. Mulholland, D.D. Baldocchi and S.D. Wullschleger. 2000. A comparison of methods for determining forest evapotranspiration rates and its components across scales: Sap-flow, soil moisture budget, eddy covariance and catchment water balance. Agricultural and Forest Meteorology 106:153-168. **Cited 427 times.**
73. Wullschleger, SD and R.J. Norby. 2001. Sap velocity and canopy transpiration for a 12-year-old sweetgum plantation exposed to free-air CO_2 enrichment. New Phytologist 150: 489-498.
74. Wullschleger, S.D., R.B. Jackson, W.S. Currie, A.D. Friend, Y. Luo, F. Mouillot, Y. Pan and G. Shao. 2001. Are below-ground processes needed in gap models to predict the response of forest succession as a consequence of global climatic change? Climatic Change 51:449-473.
75. Bugmann, H.K.M., A.M. Solomon, S.D. Wullschleger, D.T. Price, D.F. Clark and K. Ogle. 2001. Comparing the performance of forest gap models in North America. Climatic Change 51:349-388.
76. Wullschleger, S.D., T.J. Tschaplinski and R.J. Norby. 2001. Plant water relations and elevated CO_2 – Interactions with drought. Plant, Cell Environment 25:319-331. **Cited 257 times.**
77. Gunderson, C.A., J.D. Sholtis, S.D. Wullschleger, D.T. Tissue, P.J. Hanson and R.J. Norby. 2001. Environmental and stomatal control of photosynthetic enhancement in the canopy of a sweetgum (*Liquidambar styraciflua* L.) plantation during three years of CO_2 enrichment. Plant, Cell Environment 25:379-394. **Cited 112 times.**
78. Wullschleger, S.D., C.A. Gunderson, P.J. Hanson, K.B. Wilson and R.J. Norby. 2002. Sensitivity of stomatal and canopy conductance to elevated CO_2 concentration – Interacting variables and perspectives of scale. New Phytologist 153:485-496. **Cited 118 times.**
79. Tissue, D.T., J.D. Lewis, S.D. Wullschleger, J.S. Amthor and O.R. Anderson. 2002. Leaf respiration at different canopy positions in sweetgum (*Liquidambar styraciflua*) grown at ambient and elevated concentrations of carbon dioxide in the field. Tree Physiology 22:1157-1166.
80. Norby R.J., P.J. Hanson, E.G. O'Neill, T.J. Tschaplinski, J.F. Weltzin, R.T. Hanson, W. Cheng, S.D. Wullschleger, C.A. Gunderson, N.T Edwards and D.W. Johnson. 2002. Net primary productivity of a CO_2-enriched deciduous forest and the implications for carbon storage. Ecological Applications 12:1261-1266. **Cited 163 times.**
81. Wullschleger, S.D., G.A. Tuskan and S.P. DiFazio. 2002. Genomics and the tree physiologist. Tree Physiology 22:1273-1276.
82. Wullschleger, S.D., S. Jansson and G. Taylor. 2002. Forest biology and genomics – *Populus* emerges as the perennial favorite. Plant Cell 14:2651-2655. **Cited 115 times.**
83. Martin, M.Z., S.D. Wullschleger, C.T. Garten, Jr. and A.V. Palumbo. 2003. Laser-induced breakdown spectroscopy for the environmental determination of total carbon and nitrogen in soils. Applied Optics 42:2072-2077.
84. Wullschleger, S.D. and S.P. DiFazio. 2003. Emerging use of gene expression microarrays in plant

physiology. Comparative and Functional Genomics 4:216-224.

85. McLaughlin, S.B., S.D. Wullschleger and M. Nosal. 2003. Diurnal and seasonal changes in stem increment and water use by yellow poplar trees in response to environmental stress. Tree Physiology 23:1125-1136.

86. Reid, C.D., H. Maherali, H.B. Johnson, S.D. Smith, S.D. Wullschleger and R.B. Jackson. 2003. On the relationship between stomatal characters and atmospheric CO_2. Geophysical Research Letters 30 (vol. 19): 1983-1986.

87. Gunter, L.E., A.S. Black, S. Ratnayeke, G.A. Tuskan and S.D. Wullschleger. 2003. Assessment of genetic similarity among 'Alamo' switchgrass seed lots using RAPD markers. Seed Science and Technology 31:681-689.

88. Palumbo, A.V., J.F. McCarthy, J.E. Amonette, L.S. Fischer, S.D. Wullschleger and W.L. Daniels. 2004. Prospects for enhancing carbon sequestration and reclamation of degraded lands with fossil-fuel combustion products. Advances in Environmental Research 8:425-438.

89. Hanson P.J., J.S. Amthor, S.D. Wullschleger, K.B. Wilson, R.F. Grant, A. Hartley, D. Hui, E.R. Hunt, Jr., D.W. Johnson, J.S. Kimball, A.W. King, Y. Luo, S.G. McNulty, G. Sun, P.E. Thorton, S.S. Wang, M. Williams, and R.M. Cushman. 2004. Oak forest carbon and water simulations: Model intercomparisons and evaluations against independent data. Ecological Monographs 74:443-489. **Cited 175 times.**

90. Martin, M.Z., S.D. Wullschleger, C.T. Garten, A.V. Palumbo, and J.G. Smith. 2004. Elemental analysis of environmental and biological samples using laser-induced breakdown spectroscopy and pulsed Raman spectroscopy. Journal of Dispersion Science and Technology 25: 689-696.

91. Wullschleger, S.D., S.B. McLaughlin, and M.P. Ayers. 2004. High-resolution analysis of stem increment and sap flow for loblolly pine trees attacked by southern pine beetle. Canadian Journal of Forest Research 34: 2387-2393.

92. Palumbo, A.V., L.S. Fisher, M.Z. Martin, Z.K. Yang, J.R. Tarver, S.D. Wullschleger and W.L. Daniels. 2004. Application of emerging tools and techniques for measuring carbon and microbial communities in reclaimed mine soils. Environmental Management 33: S518-S527.

93. Wullschleger, S.D., T.M. Yin, S.P. DiFazio, T.J. Tschaplinski, L.E. Gunter, M. Davis, and G.A. Tuskan. 2005. Phenotypic variation in growth and biomass distribution for two advanced-generation pedigrees of hybrid poplar (*Populus* spp.). Canadian Journal of Forest Research 35:1779-1789.

94. Hanson, P.J., S.D. Wullschleger, R.J. Norby, T.J. Tschaplinski, and C.A. Gunderson. 2005. Importance of changing CO_2, temperature, precipitation and ozone on carbon and water cycles of an upland oak forest: Incorporating experimental results into model simulations. Global Change Biology 11:1402-1423.

95. Madhavi, M.Z., N. Labbe, T.G. Rials, and S.D. Wullschleger. 2005. Analysis of preservative-treated wood by multivariate analysis of laser-induced breakdown spectroscopy spectra. Spectrochimica Acta Part B – Atomic Spectroscopy 60: 1179-1185. **Cited 110 times.**

96. Wullschleger, S.D. and P.J. Hanson. 2006. Sensitivity of forest water use to altered precipitation: evidence from a long-term manipulative field study. Global Change Biology 12: 97-109.

97. King, A.W., C.A. Gunderson, D.J. Weston, and S.D. Wullschleger. 2006. Plant respiration in a warmer world. Science 312: 536-537.

98. Gu, L., T. Meyers, S.G. Pallardy, P.J. Hanson, B. Yang, M. Heuer, K.P. Hosman, J.S. Riggs, D. Sluss, and S.D. Wullschleger. 2006. Direct and indirect effects of atmospheric conditions and soil moisture on surface energy partitioning revealed by a prolonged drought at a temperate forest site.

Journal of Geophysical Research-Atmospheres 111: Art. No. D16102. **Cited 127 times.**

99. McLaughlin, S.B., M. Nosal, S.D. Wullschleger, and G. Sun. 2007. Interactive effects of ozone and climate on tree growth and water use in a southern Appalachian forest in the USA. New Phytologist 174: 109-124.

100. McLaughlin, S.B., S.D. Wullschleger, G. Sun, and M. Nosal. 2007. Interactive effects of ozone and climate on water use, soil moisture content and streamflow in a southern Appalachian forest in the USA. New Phytologist 174: 125-136.

101. Gu, L., T. Meyers, S.G. Pallardy, P.J. Hanson, B. Yang, M. Heuer, K.P. Hosman, Q. Liu, J.S. Riggs, D. Sluss, and S.D. Wullschleger. 2007. Influences of biomass heat and biochemical energy storages on the land surface fluxes and radiative temperature. Journal of Geophysical Research-Atmospheres 112: Art No. D02107.

102. Martin, M.Z., S.D. Wullschleger, A.A. Vass, R.C. Martin and H. Grissino-Mayer. 2007. High resolution laser-induced breakdown spectroscopy used in homeland security and forensic applications. Bulletin of Laser and Spectroscopy Society of India. 14: 23-35.

103. Yang, B., P.J. Hanson, J.S. Riggs, S.G. Pallardy, M. Heuer, K.P. Hosman, T.P. Meyers, S.D. Wullschleger, and L. Gu. 2007. Biases of CO_2 storage in eddy covariance measurements in a forest pertinent to vertical configurations of a profile system and CO_2 density averaging. Journal of Geophysical Research Atmospheres 112: D20123.

104. Wullschleger SD, Leakey DB, and St. Clair S. 2007. Functional genomics and ecology: A tale of two scales. New Phytologist 176: 735-739.

105. Martin, M.Z., N. Labbe, N. Andre, R. Harris, M. Ebinger, S.D. Wullschleger and A.A. Vass. 2007. High resolution applications of laser-induced breakdown spectroscopy for environmental and forensic applications. Spectrochimica Acta Part B – Atomic Spectroscopy 62: 1426-1432.

106. Sanchez F.G., M. Coleman, C.T. Garten, R.J. Luxmoore, J.A. Stanturf, C. Trettin, and S.D. Wullschleger. 2007. Soil carbon, after 3 years, under short rotation woody crops grown under varying nutrient and water availability. Biomass and Bioenergy 31: 793-801.

107. Ranatunga, K., Keenan R.J., S.D. Wullschleger, W.M. Post, and M.L. Tharp. 2008. Effects of harvest management practices on forest biomass and soil carbon in eucalypt forests in New South Wales: Simulations with the forest succession model LINKAGES. Forest Ecology and Management 255: 2407-2415.

108. Weston D.J., L.E. Gunter, A. Rogers, and S.D. Wullschleger. 2008. Connecting genes, coexpression modules, and molecular signatures to environmental stress phenotypes in plants. BMC Systems Biology 2: 16.

109. Leakey A.D.B., Ainsworth E.A., S.M. Bernard, R.J.C. Markelz, D.R. Ort, S.A. Placella, A. Rogers, M.D. Smith, E.A. Sudderth, D.J. Weston, S.D. Wullschleger, and S.H. Yuan. 2009. Gene expression profiling: opening the black box of plant ecosystem responses to global change. Global Change Biology 15: 1201-1213.

110. Yin, T.M., X.Y. Zhang, L.E. Gunter, S.X. Li, S.D. Wullschleger, M.R. Huang and G.A. Tuskan. 2009. Microsatellite primer resource for *Populus* developed from the mapped sequence scaffolds of the Nisqually-1 genome. New Phytologist 181: 498-503.

111. Yang X., U.C. Kalluri, S.P. DiFazio, S.D. Wullschleger, T.J. Tschaplinski, Z.M. Cheng, G.A. Tuskan. 2009. Poplar genomics: State of the science. Critical Reviews in Plant Sciences 28: 285-308.

112. Wullschleger S.D. D.J. Weston, and J.M. Davis. 2009. *Populus* responses to edaphic and climatic

cues: emerging evidence from systems biology research. Critical Reviews in Plant Sciences 28: 368-374.

113. Post W.M., J.E. Amonette, R. Birdsey, C.T. Garten Jr., R.L. Graham, R.C. Izaurralde, P.M. Jardine, J. Jastrow, R. Lal, G. Marland, B.A. McCarl, A.M. Thomson, T.O. West, S.D. Wullschleger, and F.B. Metting. 2009. Terrestrial carbon sequestration – Science for enhancement and implementation. *In* B.J. McPherson and E.T. Sundquist, editors. Carbon Sequestration and its Role in the Global Carbon Cycle. AGU Monograph Series No. 183. pp. 73-88.

114. Amthor, J.S., Hanson, P.J., Norby, R.J. and Wullschleger, S.D. 2010. A comment on "Appropriate experimental ecosystem warming methods by ecosystem, objective, and practicality" by Aronson and McNulty. Agricultural and Forest Meteorology 150: 497-498.

115. Martin M.Z., N. Labbe, N. Andre, S.D. Wullschleger, R.D. Harris, and M.H. Ebinger. 2010. Novel multivariate analysis for soil carbon measurements using laser-induced breakdown spectroscopy. Soil Science Society of America Journal 74: 87-93.

116. Wu S., J. Yang, Y. Haung, H. Li, T. Liu, Y. Li, T.M. Yin, S.D. Wullschleger, G.A. Tuskan, and R. Wu. 2010. An improved approach for mapping quantitative trait loci in a pseudo-testcross: revisiting a poplar mapping study. Bioinformatics and Biology Insights 4:1-8.

117. Garten, C.T., J.L. Smith, J.E. Amonette, V.L. Bailey, D.J. Brice, H.F. Castro, R.L. Graham, C.A. Gunderson, R.C. Izaurralde, P.M. Jardine, J.D. Jastrow, M.K. Kerley, R. Matamala, M.A. Mayes, F.B. Metting, R.M. Miller, K. Moran, W.M. Post, R.D. Sands, C.W. Schadt, J.R. Phillips, A.M. Thomson, D.D. Tyler Jr., T. Vugteveen, T.O. West, and S.D. Wullschleger. 2010. Intra-annual changes in biomass, carbon, and nitrogen dynamics at 4-year old field trials in West Tennessee, USA. Agriculture, Ecosystems, and Environment 136: 177-184.

118. Wullschleger S.D. and M. Strahl. 2010. Climate Change: A Controlled Experiment. Scientific America 302:78-83.

119. Gu L., S.G. Pallardy, K. Tu, B.E. Law, and S.D. Wullschleger. 2010. Reliable estimation of biochemical parameters from C_3 leaf photosynthesis-intercellular carbon dioxide response curves. Plant, Cell and Environment 33: 1852-1874.

120. Jansson C., S.D. Wullschleger, U.C. Kalluri, and G.A. Tuskan. 2010. Phytosequestration: Carbon biosequestration by plants and the prospects of genetic engineering. BioScience 60: 685-696.

121. Yang B., S.G. Pallardy, T.P. Meyers, L. Gu, P.J. Hanson, S.D. Wullschleger, M. Heuer, K.P. Hosman, J.S. Riggs, and D.W. Sluss. 2010. Environmental controls on water use efficiency during sever drought in an Ozark forest in Missouri, USA. Global Change Biology 16: 2252-2271.

122. Jager, Y., B. Latha Malar, C.C. Brandt, E.B. Davis, C.A. Gunderson, and S.D. Wullschleger. 2010. Empirical geographic modeling of switchgrass yields in the United States. GCB Bioenergy 2: 248-257.

123. Yin, T.M., X. Zhang, L. Gunter, R. Priya, R. Sykes, M. Davis, S.D. Wullschleger, and G.A. Tuskan. 2010. Differential detection of genetic loci underlying stem and root lignin content in *Populus*. PLoS ONE 5: e14021.

124. Wullschleger, S.D., E.B. Davis, M.E. Borsuk, C.A. Gunderson, and L.R. Lynd. 2010. Biomass production for the herbaceous bioenergy crop switchgrass: Database description and determinants of yield. Agronomy Journal 102: 1158-1168. **Cited 154 times.**

125. Garten C.T., S.D. Wullschleger and A.T. Classen. 2011. Review and model-based analysis of factors influencing soil carbon sequestration under hybrid poplar. Biomass and Bioenergy 35: 214-226.

126. Hanson, P.J., K.W. Childs, S.D. Wullschleger, J.S. Riggs, W.K. Thomas, D.E. Todd, and J.M.

Warren. 2011. A method for experimental heating of intact soil profiles for application to climate change experiments. Global Change Biology 17: 1083-1096.

127. Garten, C.T., D.J. Brice, H.F. Castro, R.L. Graham, M.A. Mayes, J.R. Phillips, W.M. Post, C.W. Schadt, S.D. Wullschleger, D.D. Tyler, P.M. Jardine, J.D. Jastrow, R. Matamala, R.M. Miller, K.K. Moran, T. Vugteveen, R.C. Izaurralde, A.M. Thomson, T.O. West, J.E. Amonette, V.L. Bailey, F.B. Metting, and J.L. Smith. 2011. Response of "Alamo" switchgrass tissue chemistry and biomass to nitrogen fertilization in west Tennessee, USA. Agriculture, Ecosystems and Environment 140: 289-297.

128. Yang, X., C.-Y. Ye, Z.-M. Cheng, T.J. Tschaplinski, S.D. Wullschleger, W. Yin, X. Xia, and G.A. Tuskan. 2011. Genomic aspects of research involving ployploid plants. Plant Cell, Tissue and Organ Culture 104: 387-397.

129. Warren, J.M., E. Pötzelsberger, S.D. Wullschleger, P.E. Thornton, H. Hasenauer and R.J. Norby. 2011. Ecohydrologic impact of reduced stomatal conductance in forests exposed to elevated CO_2. Ecohydrology 4: 196-210.

130. Xu, C., C. Liang, S.D. Wullschleger, C.J. Wilson and N. McDowell. 2011. Importance of feedback loop between soil inorganic nitrogen and microbial community in the heterotrophic soil respiration response to global warming. Nature Reviews Microbiology 9: 222-223.

131. Weston, D.J., A.A. Karve, L.E. Gunter, S.S. Jawdy, X. Yang, S.M. Allen, and S.D. Wullschleger. 2011. Comparative physiology and transcriptional networks underlying the heat shock response in *Populus trichocarpa*, *Arabidopsis thaliana* and *Glycine max.* Plant Cell and Environment 34: 1488-1506.

132. Warren J.M., R.J. Norby, and S.D. Wullschleger. 2011. Elevated CO_2 enhances leaf senescence during extreme drought in a temperate forest. Tree Physiology 31: 177-130.

133. Wullschleger S.D., K.W. Childs, A.W. King and P.J. Hanson. 2011. A model of heat transfer in sapwood and implications for sap flow measurements using thermal dissipation probes. Tree Physiology 31: 669-679.

134. Wullschleger, S.D., L.D. Hinzman and C.J. Wilson. 2011. Climate change experiments in high-latitude ecosystems. EOS 90: 145.

135. Graham D.E., M.D. Wallenstein, T.A. Vishnivetskaya, M.P. Waldrop, T.J. Phelps, S.M. Pfiffner, T.C. Onstott, L.G. Whyte, D. Gilichinsky, D.A. Elias, R. Mackelprang, N.C. VerBerkmoes, R.L. Hettich, D. Wagner, S.D. Wullschleger and J.K. Jansson. 2012. Microbes in thawing permafrost: The unknown variable in the climate change equation. The ISME Journal 6: 709-712.

136. Weston D.J., P.J. Hanson, R.J. Norby, G.A. Tuskan and S.D. Wullschleger. 2012. From systems biology to photosynthesis and primary production: a conceptual model for integrating multi-scale networks. Plant Signaling and Behavior 7: 260-262.

137. Xu C., R. Fisher, S.D. Wullschleger, C.J. Wilson, M. Cai and N.G. McDowell. 2012. Toward a mechanistic modeling of nitrogen limitation on vegetation dynamics. PLoSONE e37914.

138. Bonin, C., R. Lal, M. Schmitz, and S.D. Wullschleger. 2012. Soil physical and hydrological properties under three biofuels crops in Ohio. Acta Agriculturae Scandinavica 62: 595-603.

139. Nair, S.S., S. Kang, X. Zhang, F. Miguez, C. Izaurralde, W.M. Post, M. Dietze, L.R. Lynd, and S.D. Wullschleger. 2012. Bioenergy crop models: description, data requirements, and future challenges. GCB Bioenergy 4: 620-633.

140. Lee, H., S.D. Wullschleger and Y. Luo. 2012. Enhancing terrestrial ecosystem sciences by integrating empirical modeling approaches. EOS Transactions 93: 237.

141. McCarthy, H.R., Y. Luo and S.D. Wullschleger. 2012. Integrating empirical-modeling approaches to improve understanding of terrestrial ecology processes. New Phytologist 195: 523-525.

142. Wullschleger, S.D. and D.J. Weston. 2012. Modeling the molecular and climatic controls on flowering. New Phytologist 194: 599-601.

143. Karve, A.A., S.S. Jawdy, L.E. Gunter, S.M. Allen, X. Yang, G.A. Tuskan, S.D. Wullschleger, and D.J. Weston. 2012. Initial characterization of shade avoidance response suggests functional diversity between *Populus* phytochrome B genes. New Phytologist 196: 726-737.

144. de Graaff, M.A., J. Six, J. Jastrow, J. Phillips, C.W. Schadt and S.D. Wullschleger. 2013. Variation in root architecture among switchgrass cultivars impacts root decomposition rates. Soil Biology and Biochemistry 58: 198-206.

145. Wullschleger, S.D., D.J. Weston, S.P. DiFazio, and G.A. Tuskan. 2013. Revisiting the sequencing of the first tree genome: *Populus trichocarpa*. Tree Physiology 33: 357-364.

146. Wu Y., S.S. Hubbard, C. Ulrich, and S.D. Wullschleger. 2013. Remote monitoring of freeze-thaw transitions in Arctic soils using the complex resistivity method. Vadose Zone Journal 12: 1.

147. Hubbard S.S., C. Gangodagamage, B. Dafflon, H. Wainwright, J. Peterson, A. Gusmeroli, C. Ulrich, Y. Wu, C. Wilson, J. Rowland, C. Tweedie and S.D Wullschleger. 2013. Quantifying and relating subsurface and land-surface variability in permafrost environments using surface geophysical and LiDAR datasets. Hydrogeology Journal 21: 149-169.

148. Zeng, N., A.W. King, B. Zaitchik, S.D. Wullschleger, J. Gregg, S. Wang, and D. Kirk-Davidoff. 2013. Carbon sequestration via wood harvest and storage: An assessment of its harvest potential. Climatic Change 118: 245-257.

149. Martin, M.Z., M.A. Mayes, K. Heal, D.J. Brice, and S.D. Wullschleger. 2013. Investigation of laser-induced breakdown spectroscopy and multivariate analysis for differentiating inorganic and organic C in a variety of soils. Spectrochimica Acta-B: Atomic Spectroscopy 87: 100-107.

150. Weston, D.J., S.D. Wullschleger, and G.A. Tuskan. 2013. Extending the Arabidopsis flowering paradigm to a mass flowering phenomenon in the tropics. Molecular Ecology 22: 4603-4605.

151. Kang, S., S.S. Nair, K.L. Kline, J.A. Nichols, D. Wang, W.M. Post, S.D. Wullschleger, N. Singh, and Y. Wei. 2014. Global simulation of bioenergy crop productivity: analytical framework and case study for switchgrass. GCB Bioenergy 6:14-25. http://dx.doi.org/10.1111/gcbb.12047

152. Hengfu, Y., C.J. Chen, J. Yang, D.J. Weston, J-G. Chen, W. Muchero, N. Ye, G.A. Tuskan, T.J. Tschaplinski, S.D. Wullschleger, Z-M. Cheng and X. Yang. 2014. Functional genomics of drought tolerance in bioenergy crops. Critical Reviews in Plant Sciences 33: 205-224. http://dx.doi.org/10.1080/07352689.2014.870417

153. Hayes D.J., D.W. Kicklighter, A.D. McGuire, M. Chen, Q. Zhuang, F. Yuan, J.M. Melillo, and S.D. Wullschleger. 2014. The impacts of recent permafrost thaw on land-atmosphere greenhouse gas exchange. Environmental Research Letters 9: Article 045005. http://dx.doi.org/10.1088/1748-9326/9/4/045005

154. Martin, M.Z., L.E. Gunter, S.S. Jawdy, S.D. Wullschleger, C.S. Wheeler, and A.K. Jha. 2014. Genetic improvement, sustainable production and scalable small microenterprise of *Jatropha* as a biodiesel feedstock. Journal of Bioremediation and Biodegradation S4: 002. http://dx.doi.org/10.4172/2155-6199.S4-002

155. de Graaff, M.A., J.D. Jastrow, S. Gilette, A. Jones, and S.D. Wullschleger. 2014. Differential priming of soil carbon driven by soil depth and root impacts on carbon availability. Soil Biology and Biochemistry 69: 147-156. http://dx.doi.org/10.1016/j.soilbio.2013.10.047

156. Walker, A.P., A.P. Beckerman, J. Kattge, L.A. Cernusak, T.F. Dominques, J.C. Scales, G.Wohfahrt, S.D. Wullschleger, and F.I. Woodward. 2014. The relationship of leaf photosynthesis traits – Vcmax and Jmax – to leaf nitrogen, leaf phosphorus and specific leaf area: A meta-analysis and modeling study. Ecology and Evolution 4: 3219-3235. http://dx.doi.org/10.1002/ece3.1173. **Cited 105 times.**

157. Wullschleger, S.D., H.E. Epstein, E.O. Box, E.S. Euskirchen, S. Goswami, C.M. Iversen, J. Kattge, R.J. Norby, P.M. van Bodegom and X. Xu. 2014. Plant functional types in Earth System Models: Past experiences and future directions for application of dynamic vegetation models in high-latitude ecosystems. Annals of Botany 114: 1-16. http://dx.doi.org/10.1093/aob/mcu077. **Cited 100 times.**

158. Yin, H. C.J. Chen, J. Yang, D.J. Weston, J-G. Chen, W. Muchero, N. Ye, T. J. Tschaplinski, S.D. Wullschleger, (Max) Z-M. Cheng, G.A. Tuskan and X. Yang. 2014. Functional genomics of drought tolerance in bioenergy crops. Critical Reviews in Plant Sciences 33: 205-224. http://dx.doi.org/10.1080/07352689.2014.870417

159. Gangodagamage, C., J.C. Rowland, S.S. Hubbard, S.P. Brumby, A.K. Liljedahl, H. Wainwright, C.J. Wilson, G.L. Altmann, B. Dafflon, J. Peterson, C. Ulrich, C.E. Tweedie and S.D. Wullschleger. 2014. Extrapolating active layer thickness measurements across Arctic polygonal terrain using LiDAR and NDVI data sets. Water Resources Research 50: 6339-6357. http://dx.doi.org/10.1002/2013WR014283

160. Borland, A.M., S.D. Wullschleger, J. Hartwell, D.J. Weston, K.A. Schlauch, T.J. Tschaplinski, G.A. Tuskan, X. Yang, and J.C. Cushman. 2015. Climate-resilient agroforestry: Physiological responses to climate change and engineering of crassulacean acid metabolism (CAM) as a mitigation strategy. Plant, Cell and Environment 38: 1833-1849. http://dx.doi.org/10.1111/pce.12479

161. Cohen, L.R., N. Raz-Yaseef, J.B. Curtis, J.M. Young, T.A. Rahn, C.J. Wilson, S.D. Wullschleger and B.D. Newman. 2015. Measuring diurnal cycles of evapotranspiration in the Arctic with an automated chamber system. Ecohydrology 8: 652-659. http://dx.doi.org/10.1002/eco.1532

162. Heikoop, J.M., H.M. Throckmorton, B.D. Newman, G.B. Perkins, C.M. Iversen, T. Roy Chowdhury, V. Romanovsky, D.E. Graham, R.J. Norby, C.J. Wilson, and S.D. Wullschleger. 2015. Isotopic identification of soil and permafrost nitrate sources in an Arctic tundra ecosystem. JGR Biogeosciences 120: 1000-1017. http://dx.doi.org/10.1002/2014JG002883

163. Iversen, C.M., V.L. Sloan, P.F. Sullivan, E. Euskirchen, A.D. McGuire, R.J. Norby, A.P. Walker, J.M. Warren, and S.D. Wullschleger. 2015. The unseen iceberg: plant roots in arctic tundra. New Phytologist 205: 34-58. http://dx.doi.org/10.1111/nph.13003

164. Jensen, A.M., J.M. Warren, P.J. Hanson, J. Childs, and S.D. Wullschleger. 2015. Needle age and season influence photosynthetic temperature repose and total annual carbon uptake in mature *Picea mariana* trees. Annals of Botany 116: 821-832. http://dx.doi.org/10.1093/aob/mcv115

165. Kang, S., D. Wang, J.A. Nichols, J. Schuchart, K.L. Kline, Y. Wei, D.M. Ricciuto, S.D. Wullschleger, W.M. Post, and R.C. Izaurralde. 2015. Development of mpi_EPIC model for global agroecosystem modeling. Computers and Electronics in Agriculture 111: 48-54. http://dx.doi.org/10.1016/j.compag.2014.12.004

166. Kole, C. , M. Muthamilarasan, R. Henry, D. Edwards, R. Sharma, M. Abberton, J. Batley, A. Bentley, M. Blakeney, J. Bryant, H. Cai, M. Cakir, L.J. Cseke, J. Cockram, A.C. de Oliveira, C. De Pace, H. Dempewolf, S. Ellison, P. Gepts, A. Greenland, A. Hall, K. Hori, G.T. Howe, S. Hughes, M.W. Humphreys, M. Iorizzo, A.M. Ismail, A. Marshall, S. Mayes, H.T. Nguyen, F.C. Ogbonnaya, R. Ortiz, A.H. Paterson, P.W. Simon, J. Tohme, R. Tuberosa, B. Valliyodan, R.K. Varshney, S.D. Wullschleger, M. Yano, and M. Prasad. 2015. Application of genomics-assisted breeding for generation of climate resilient crops: Progress and prospects. Frontiers in Plant Science 6: Article 563. http://dx.doi.org/10.3389/fpls.2015.00563

167. Mann, B.F., H. Chen, E.M. Herndon, R.K. Chu, N. Tolic, E.F. Portier, T. Roy Chowdhury, E.W. Robinson, S.J. Callister, S.D. Wullschleger, D.E. Graham, L. Liang, and B. Gu. 2015. Indexing permafrost soil organic matter degradation using high-resolution mass spectrometry. PLoS ONE 10: e0130557. http://dx.doi.org/10.1371/journal.pone.0130557

168. Newman, B.D., H.M. Throckmorton, D.E. Graham, B. Gu, S.S. Hubbard, L. Liang, Y. Wu, J.M. Heikoop, E.M. Herndon, T.J. Phelps, C.J. Wilson, and S.D. Wullschleger. 2015. Microtopographic and depth controls on active layer chemistry in Arctic polygonal ground. Geophysical Research Letters 42: 1808-1817. http://dx.doi.org/10.1002/2014GL062804

169. Roy Chowdhury, T., E.M. Herndon, T.J. Phelps, D.A. Elias, B. Gu, L. Liang, S.D. Wullschleger, and D.E. Graham. 2015. Stoichiometry and temperature sensitivity of methanogenesis and CO_2 production from saturated polygon tundra in Barrow, Alaska. Global Change Biology 21: 722-737. http://dx.doi.org/10.1111/gcb.12762

170. Warren, J.M., P.J. Hanson, C.M. Iversen, J. Kumar, A.P. Walker, and S.D. Wullschleger. 2015. Root structural and functional dynamics in terrestrial biosphere models – Evaluation and recommendations. New Phytologist 205: 59-78. http://dx.doi.org/10.1111/nph.13034

171. Weston DJ, C Timm, A Walker, L Gu, W Muchero, J Schmutz, JA Shaw, GA Tuskan, J Warren and SD Wullschleger. 2015. *Sphagnum* physiology in the context of changing climate: Emergent influences of genomics and host-microbiome interactions to ecosystem function. Plant, Cell and Environment 38: 1737-1751. http://dx.doi.org/10.1111/pce.12458

172. Weston, D.J., A. Rogers, T.J. Tschaplinski, L.E. Gunter, S.A. Jawdy, L.E. Heady, N.L. Engle, G.A. Tuskan and S.D. Wullschleger. 2015. Scaling nitrogen and carbon interactions: What are the consequences of biological buffering? Ecology and Evolution 5: 2839-2850. http://dx.doi.org/10.1002/ece3.1565

173. Wullschleger, S.D. J.M. Warren and P.E. Thornton. 2015. Leaf respiration (*GlobResp*) – Global trait database supports Earth System Models. New Phytologist 206: 483-485. http://dx.doi.org/10.1111/nph.13364

174. Wullschleger, S.D., A.L. Breen, C.M. Iversen, M.S. Olson, T. Nasholm, U. Ganeteg, M.D. Wallenstein, and D.J. Weston. 2015. Genomics in a changing Arctic: Critical questions await the molecular ecologist. Molecular Ecology 24: 2301-2309. http://dx.doi.org/10.1111/mec.13166

175. Xu, X., D.A. Elias, D.E. Graham, T.J. Phelps, S.L. Carroll, S.D. Wullschleger, and P.E. Thornton. 2015. A microbial functional-group module for simulating methane production and consumption: application to an incubated permafrost soil. JGR Biogeosciences 120: 1315-1333. http://dx.doi.org/10.1002/2015JG002935

176. Yang, X., J.C. Cushman, A.M. Borland, E.J. Edwards, S.D. Wullschleger, G.A. Tuskan, N.A. Owen, H. Griffiths, J.A.C. Smith, H.C. De Paoli, D.J. Weston, R. Cottingham, J. Hartwell, S.C. Davis, K. Silvera, R. Ming, K. Schlauch, P. Abraham, J.R. Stewart , H.B. Guo, R. Albion, J. Ha, S.D. Lim, B.W.M. Wone, W.C. Yim, T. Garcia, J.A. Mayer, J. Petereit, S.S. Nair, E. Casey, R.L. Hettich, J. Ceusters, P. Ranjan, K.J. Palla, H. Yin, C. Reyes-García, J.L. Andrade, L. Freschi, L.V. Dever, S.F. Boxall, J. Waller, J. Davies, P. Bupphada, N. Kadu, K. Winter, R.F. Sage, C.N. Aguilar, J. Schmutz, J. Jenkins, and J.A.M. Holtum. 2015. A roadmap for research on crassulacean acid metabolism (CAM) to enhance sustainable food and bioenergy production in a hotter, drier world. New Phytologist 207: 491-504. http://dx.doi.org/10.1111/nph.13393

177. Ali, A., C. Xu, A. Rogers, N.G. McDowell, B.E. Medlyn, R. Fisher, S.D. Wullschleger, P.B. Reich, J.A. Vrugt, W.L. Bauerle, L. S. Santiago, and C.J. Wilson. 2015. Global scale environmental control of photosynthetic capacity. Ecological Applications25: 2349-2365. http://dx.doi.org/10.1890/14-2111.1

178. Herndon, E.M., B.F. Mann, T. Roy Chowdhury, Z. Yang, D.E. Graham, S.D. Wullschleger, L. Liang, and B. Gu. 2015a. Pathways of anaerobic organic matter decomposition in tundra soils from Barrow, Alaska. JGR Biogeosciences 120: 2345-2359. http://dx.doi.org/10.1002/2015JG003147

179. Herndon, E.M., Z. Yang, J. Bargar, N. Janot, T.Z. Regier, D.E. Graham, S.D. Wullschleger, B. Gu, and L. Liang. 2015b. Geochemical drivers of organic matter decomposition in the active layer of arctic tundra. Biogeochemistry 126: 397-414. http://dx.doi.org/10.1007/s10533-015-0165-5

180. Throckmorton, H.M., J.M. Heikoop, B.D. Newman, G.L. Altmann, M.S. Conrad, J.D. Muss, G.B. Perkins, L.J. Smith, M.S. Torn, S.D. Wullschleger, and C.J. Wilson. 2015. Pathways and transformations of dissolved methane and dissolved inorganic carbon in Arctic tundra watersheds: Evidence from analysis of stable isotopes. Global Biogeochemical Cycles 29: 1893-1910. http://dx.doi.org/10.1002/2014GB005044

181. Ali, A.A., C. Xu, A. Rogers, R.A. Fisher, S.D. Wullschleger, E.C. Massoud, J.A. Vrugt, J.D. Muss, N.G. McDowell, J.B. Fisher, P.B. Reich and C.J. Wilson. 2016. A global scale mechanistic model of photosynthetic capacity (LUNA V1.0). Geoscientific Model Development 9: 587-606. http://dx.doi.org/10.5194/gmd-9-587-2016

182. Yang, Z., S.D. Wullschleger, L. Liang, D.E. Graham, and B. Gu. 2016a. Effects of warming on the degradation and production of low molecular-weight labile organic carbon in an Arctic tundra soil. Soil Biology and Biochemistry 95: 202-211. http://dx.doi.org/10.1016/j.soilbio.2015.12.022

183. Yang, Z., W. Fang, X. Lu, G-P Sheng, D.E. Graham, L. Liang, S.D. Wullschleger, and B. Gu. 2016b. Warming increases methylmercury production in an Arctic soil. Environmental Pollution 214: 504-509. http://dx.doi.org/10.1016/j.envpol.2016.04.069

184. Xu, X., S. Goswami, J. Gulledge, S.D. Wullschleger, and P.E. Thornton. 2016. Interdisciplinary research in climate and energy sciences. Wiley Interdisciplinary Reviews: Energy and Environment 5: 49-56. http://dx.doi.org/10.1002/wene.180

185. Xu, X., F. Yuan, P. J. Hanson, S.D. Wullschleger, P.E. Thornton, W.J. Riley, X. Song, D.E. Graham, C. Song, and H. Tian. 2016. Reviews and syntheses: Four decades of modeling methane cycling in terrestrial ecosystems. Biogeosciences 13: 3735-3755. http://dx.doi.org/10.5194/bg-13-3735-2016

186. Throckmorton, H.M., B.D. Newman, J.M. Heikoop, G.B. Perkins, X. Feng, D.E. Graham, D. O'Malley, V.V. Vesselinov, J. Young, S.D. Wullschleger, and C.J. Wilson. 2016. Active layer hydrology in an Arctic tundra ecosystem: quantifying water sources and cycling using stable isotopes. Hydrological Processes 30: 4972–4986. http://dx.doi.org/10.1002/hyp.10883

187. Langford, Z.L., J. Kumar, F.M. Hoffman, R.J. Norby, S.D. Wullschleger, V.L. Sloan, and C.M. Iversen. 2016. Mapping Arctic plant functional type distributions in the Barrow Environmental Observatory using WorldView-2 and LiDAR datasets. Remote Sensing 8: Article 733. http://dx.doi.org/10.3390/rs8090733

188. Abraham, P.E., H. Yin, A.M. Borland, D. Weighill, S.D. Lim, H.C. De Paoli, N. Engle, P.C. Jones, R. Agh, D.J. Weston, S.D. Wullschleger, T. Tschaplinski, D. Jacobson, J.C. Cushman, R.L. Hettich, G.A. Tuskan, and X. Yang. 2016. Temporal dynamics of transcripts, proteins, and metabolites that define crassulacean acid metabolism in *Agave*. Nature Plants 2: 16178. http://dx.doi.org/10.1038/nplants.2016.178

189. Raz-Yaseef, N., M.S. Torn, Y. Wu, D.P. Billesbach, A.K. Liljedahl, T.J. Kneafsey, V.E. Romanovsky, D.R. Cook, and S.D. Wullschleger. 2017. Large CO_2 and CH_4 emissions from polygonal tundra during spring thaw in northern Alaska. Geophysical Research Letters 44: 504-513. http://dx.doi.org/10.1002/2016GL071220

190. Walker, A.P, K.R. Carter, L. Gu, P.J. Hanson, A. Malhotra, R.J. Norby, S.D. Sebestyen, S.D.

Wullschleger, and D.J. Weston. 2017. Biophysical drivers of seasonal variability in *Sphagnum* gross primary production in a northern temperate bog. JGR Biogeosciences 122: 1078-1097. http://dx.doi.org/10.1002/2016JG003711

191. Raz-Yaseef, N., J. Young-Robertson, T. Rahn, V. Sloan, B. Newman, C. Wilson, S.D. Wullschleger, and M.S. Torn. 2017. Evapotranspiration across plant types and geomorphological units in polygonal arctic tundra. Journal of Hydrology 553: 816-825. https://doi.org/10.1016/j.jhydrol.2017.08.036

192. Rogers, A., S.P. Serbin, K.S. Ely, V.L. Sloan, and S.D. Wullschleger. 2017. Terrestrial biosphere models underestimate photosynthetic capacity and CO2 assimilation in the Arctic. New Phytologist 216: 1090-1103. http://dx.doi.org/10.1111/nph.14740

193. Walker, A.P., L. McCormack, J. Messier, I. Myers-Smith, and S.D. Wullschleger. 2017. Trait covariation: The functional warp of plant diversity? New Phytologist 216: 976-980. http://dx.doi.org/10.1111/nph.14853

194. Wullschleger, S.D. 2017. Scientist Profile, Stan D. Wullschleger. New Phytologist 216: 981-983. http://dx.doi.org/10.1111/nph.14869

195. Fisher, J.B., D.J. Hayes, C. Schwalm, D.N. Huntzinger, E. Stofferahn, K. Schaefer, Y. Luo, S.D. Wullschleger, S. Goetz, C.E. Miller, P. Griffith, S. Chadburn, A. Chatterjee, P. Ciais, T. Douglas, H. Genet, A. Ito, B. Poulter, B. Rogers, H. Tian, W. Wang, X. Yongkang, Z-L Yang, and N. Zeng. 2018. Missing pieces to modeling the Arctic-Boreal puzzle. Environmental Research Letters 13: 020202. https://doi.org/10.1088/1748-9326/aa9d9a

196. Chen, H.M., Z. Yang, R.K. Chu, N. Tolic, L. Liang, D.E. Graham, S.D. Wullschleger, and B. Gu. 2018. Molecular insights into Arctic soil organic matter degradation under warming. Environmental Science and Technology 52: 4555-4564. http://dx.doi.org/10.1021/acs.est.7b05469

197. Jubb, A.M., J.R. Eskelsen, X. Yin, J. Zheng, M.J. Philben, E.M. Pierce, D.E. Graham, S.D. Wullschleger, and B. Gu. 2018. Characterization of iron oxide nanoparticle biofilms at the air–water interface in Arctic tundra waters. Science of the Total Environment 633: 1460-1468. https://doi.org/10.1016/j.scitotenv.2018.03.332

198. Young-Robertson, J.M., N. Raz-Yaseef, L.R. Cohen, B. Newman, T. Rahn, V. Sloan, C.J. Wilson, and S.D. Wullschleger. 2018. Evaporation dominates evapotranspiration on Alaska's Arctic Coastal Plain. Arctic, Antarctic, and Alpine Research 50: e1435931. https://doi.org/10.1080/15230430.2018.1435931.

199. Asbjornsen, H., J.L. Campbell, K.A. Jennings, M.A. Vadeboncoeur, C. McIntire, P.H. Templer, R.P. Phillips, T.L. Bauerle, M.C. Dietze, S.D. Frey, P.M. Groffman, R. Guerrieri, P.J. Hanson, E.P. Kelsey, A.K. Knapp, N.G. McDowell, P. Meir, K.A. Novick, S.V. Ollinger, W.T. Pockman, P.G. Schaberg, S.D. Wullschleger, M.D. Smith, and L. Rustad. 2018. Guidelines and considerations for designing precipitation manipulation experiments in forest ecosystems. Methods in Ecology and Evolution 9: 2310-2325. https://dx.doi.org/10.1111/2041-210X.13094

200. Zheng, J., T. Roy Chowdhury, Z. Yang, B. Gu, S.D. Wullschleger, and D.E. Graham. 2018. Impacts of temperature and soil characteristics on methane production and oxidation in Arctic polygonal tundra. Biogeosciences 15: 6621-6635. https://doi.org/10.5194/bg-2017-566

201. Herndon, E., L. Kinsman-Costello, K. Duroe, J. Mills, E. Kane, S. Sebestyen, A. Thompson, and S.D. Wullschleger. 2019. Iron (oxyhydr)oxides serve as phosphate traps in tundra and boreal peat soil. JGR Biogeosciences 124: 227-246. https://dx.doi.org/10.1029/2018JG004776

202. Jensen, A.M., J.M. Warren, A.W. King, D.M. Ricciuto, P.J. Hanson, and S.D. Wullschleger. 2019. Simulated projections of boreal forest peatland ecosystem productivity are sensitive to observed seasonality in leaf physiology. Tree Physiology 39: 556-572.

https://dx.doi.org/10.1093/treephys/tpy140

203. Philben, M., J. Zheng, M. Bill, J. Heikoop, S.D. Wullschleger, D.E. Graham, and B. Gu. 2019. Stimulation of anaerobic organic matter decomposition by organic N addition in tundra soils. Soil Biology and Biochemistry 130: 195-204. https://dx.doi.org/10.1016/j.soilbio.2018.12.009

204. Zheng, J., P.E. Thornton, S.L. Painter, B. Gu, S.D. Wullschleger, and D.E. Graham. 2019. Modeling anaerobic soil organic carbon decomposition in Arctic polygon tundra: insights into soil geochemical influences on carbon mineralization. Biogeosciences 16: 663-680. https://doi.org/10.5194/bg-16-663-2019

205. Rogers, A., S.P. Serbin, K.S. Ely, and S.D. Wullschleger. 2019. Terrestrial biosphere models need to account for decreased quantum yield and convexity at low temperature or they will overestimate Arctic CO_2 assimilation. New Phytologist 223: 167-179. https://dx.doi.org/10.1111/nph.15750

206. Ladd, M.P., R.J. Giannone, P.E. Abraham, S.D. Wullschleger, and R.L. Hettich. 2019. Evaluation of untargeted nano-liquid chromatography-mass spectrometry approach to expand coverage of low molecular weight dissolved organic matter in Arctic soils. Scientific Reports 9: Article 5810. https://dx.doi.org/10.1038/s41598-019-42118-9

207. Yang, Z., Y. Liao, X. Fu, J. Zaporski, S. Peters, Y. Liu, S.D. Wullschleger, D.E. Graham, and B. Gu. 2019. Temperature sensitivity of mineral-enzyme interactions on the hydrolysis of cellobiose and indican by β-glucosidase. Science of the Total Environment 686: 1194-1201. https://doi.org/10.1016/j.scitotenv.2019.05.479

208. Chen, H.H., Z.M. Dai, H.I. Jager, S.D. Wullschleger, J.M. Xu, and C.W. Schadt. 2019. Influences of nitrogen fertilization and climate regime on the above-ground biomass yields of miscanthus and switchgrass: A meta-analysis. Renewable and Sustainable Energy Reviews 108: 303-311. https://doi.org/10.1016/j.rser.2019.03.037

209. Wang, Y.H., F.M. Yuan, B. Gu, M. Hahn, M. Torn, D.M. Ricciuto, J. Kumar, L.Y. He, D. Zona, D.L. Lipson, R. Wagner, W.C. Oechel, S.D. Wullschleger, P.E. Thornton, and X.F. Xu. 2019. Mechanistic modeling of micro-topographic impacts on CO_2 and CH_4 fluxes in an Alaskan tundra ecosystem using the CLM-Microbe model. Journal of Advances in Modeling Earth Systems 11: https://doi.org/10.1029/2019MS001771

210. Conroy, N.A., B.D. Newman, J.M. Heikoop, G. Perkins, X. Feng, C.J. Wilson, and S.D. Wullschleger. 2019. Timing and duration of hydrological transitions in Arctic polygonal ground from stable isotopes. Hydrological Processes 34: 749-764. https://doi.org/10.1002/hyp.13623

211. Frost, G.V., U.S. Bhatt, H.E. Epstein, D.A. Walker, M.K. Reynolds, L. Berner, J. Bjerke, A.L. Breen, B. Forbes, S. Goetz, C.M. Iversen, M.J. Lara, M.J. Macander, G. Phoenix, A. Rocha, V.G. Salmon, P.E. Thornton, H. Tommervik, and S.D. Wullschleger. 2019. NOAA Arctic Report Card – Tundra Greenness (https://arctic.noaa.gov/Report-Card/Report-Card-2019/ArtMID/7916/ArticleID/838/Tundra-Greenness).

212. Salmon, V.G., A.L. Breen, J. Kumar, M.J. Lara, P.E. Thornton, S.D. Wullschleger, and C.M. Iversen. 2019. Alder distribution and expansion across a tundra hillslope: implications for local N cycling. Frontiers in Plant Science 10: 1099. https://doi.org/10.3389/fpls.2019.01099

213. Wales, N., J.D. Gomez-Velez, B. Newman, C.J. Wilson, B. Dafflon, T. Kneafsey, and S.D. Wullschleger. 2019. Understanding the relative importance of vertical and horizontal flow in ice-wedge polygon landscapes using tracers. Hydrology and Earth System Sciences 24: 1109-1129. https://doi.org/10.5194/hess-2019-25

214. DeLisi, C., A. Patrinos, M. MacCracken, D. Drell, G. Annas, A. Arkin, G. Church, R. Cook-Deegan, H. Jacoby, M. Lidstrom, J. Melillo, R. Milo, K. Paustian, J. Reilly, R. Roberts, D. Segrè, S. Solomon,

D. Woolf, S.D. Wullschleger, and X. Yang. 2020. The role of synthetic biology in atmospheric greenhouse gas reduction: Prospects and challenges. BioDesign Research 1016207. https://doi.org/10.34133/2020/1016207

215. Iversen, C.M., W.R. Bolton, A. Rogers, C.J. Wilson, and S.D. Wullschleger. 2020. Building a culture of safety and trust in team science. EoS, Earth and Space Science News 101. https://doi.org/10.1029/2020EO143064

216. Kalluri, U., X. Yang, and S.D. Wullschleger. 2020. Plant biosystems design for a carbon-neutral bioeconomy. BioDesign Research 7914051. https://doi.org/10.34133/2020/7914051

217. Philben, M., N. Tas, H. Chen, S.D. Wullschleger, A. Kholodov, D.E. Graham, and B. Gu. 2020a. Influences of hillslope biogeochemistry on anerobic soil organic matter decomposition in a tundra watershed. JGR-Biogeosciences 125: e2019JG005512. https://doi.org/10.1029/2019JG005512

218. Yu, Y., J. Mao, P.E. Thornton, M. Notaro, S.D. Wullschleger, X. Shi, F.M. Hoffman, and Y. Wang. 2020. Quantifying the drivers and predictability of fire variability in Africa. Nature Communications 11: 2893. https://doi.org/10.1038/s41467-020-16692-w

219. Herndon, E., L. Kinsman-Costello, N. Di Domenico, K. Duroe, M. Barczok, C. Smith, and S.D. Wullschleger. 2020. Iron and iron-bound phosphate accumulate in surface soils of arctic polygonal tundra. Environmental Science: Processes and Impacts 22: 1475-1490. https://doi.org/10.1039/D0EM00142B

220. Krassovski, M.B., J.S. Riggs, C. Tavino, S.D. Wullschleger, and S.L. Heinz. 2020. Hybrid-energy module for remote environmental observations, instruments, and communications. Advances in Polar Science 31: 156-166. https://doi.org/10.13679/j.advps.2020.0008

221. Lara MJ, AD McGuire, ES Euskirchen, H Genet, S Yi, R Rutter, CM Iversen, V Sloan, and SD Wullschleger. 2020. Influence of local Arctic tundra heterogeneity on regional carbon modeling. Nature Communications 11: 4925. https://doi.org/10.1038/s41467-020-18768-z

222. Philben M, L Zhang, Z Yang, N Tas, SD Wullschleger, DE Graham, and B Gu (2020b) Anerobic respiration pathways and response to increased substrate availability of Arctic wetland soils. Environmental Science: Processes and Impacts 22: 2070-2083. https://doi.org/10.1039/D0EM00124D

223. Dusenge ME, EJ Ward, JM Warren, JR Stinziano, SD Wullschleger, PJ Hanson, and DA Way (2021). Warming induces divergent stomatal dynamics in co-occurring boreal trees. Global Change Biology 27: 3079-3094. https://doi.org/10.1111/gcb.15620

224. Ely KS, A Rogers, DA Agarwal, EA Ainsworth, L Albert et al. (2021). A reporting format for leaf-level gas exchange data and metadata. Ecological Informatics Article 101232. https://doi.org/10.1016/j.ecoinf.2021.101232

225. Ladd MP, DT Reeves, S Poudel, CM Iversen, SD Wullschleger, and RL Hettich (2021). Untargeted exometabolites reveals biogeochemical hotspots with vegetation and polygon type in Arctic tundra soils. Soil Systems 5: 10. https://doi.org/10.3390/soilsystems5010010

226. Lara MJ, AD McGuire, ES Euskirchen, H Genet, S Yi, R Rutter, CM Iversen, V Sloan, RJ Norby, and SD Wullschleger (2020). Influence of local Arctic tundra heterogeneity on regional carbon modeling. Nature Communications 11: 4925. https://doi.org/10.1038/s41467-020-18768-z

227. Poyatos R, V Granda, V Flo, MA Adams, B Adorjan et al. (2021). Global transpiration data from sap flow measurements: the SAPFLUXNET database. Earth System Science Data 13: 2607–2649. https://doi.org/10.5194/essd-13-2607-2021

228. Roy Chowdhury T, EC Berns, J-W Moon, B Gu, L Liang, SD Wullschleger, and DE Graham (2021). Temporal, spatial and temperature controls on methanogenesis and organic carbon mineralization in

Arctic high-centered polygonal soils. Frontiers in Microbiology Article 616518. https://doi.org/10.3389/fmicb.2020.616518

229. Warren JM, AM Jensen, EJ Ward, A Guha, J Childs, SD Wullschleger, and PJ Hanson (2021). Divergent species-specific impacts of whole ecosystem warming and elevated CO2 on vegetation water relations in an ombrotrophic peatland. Global Change Biology 27: 1820-1835. https://doi.org/10.1111/gcb.15543

230. Yaoping W, J Mao, M Jin, FM Hoffman, X Shi, SD Wullschleger, and Y Dai (2021). Development of observation-based global multi-layer soil moisture products for the period 1970-2016. Earth System Science Data 13: 4385-4405. https://doi.org/10.5194/essd-13-4385-2021

231. Xiaohan Y, JI Medford, K Markel, P Shih, H C De Paoli, CT Trinh, AJ McCormick, R Ployet, SG Hussey, AA Myburg, PE Jensen, MM Hassan, J Zhang, W Muchero, UC Kalluri, H Yin, R Zhuo, P Abraham, J-G Chen, D Weston, Y Yang, D Liu, Y Li, J Labbe, B Yang, J Lee, RW Cottingham, S Martin, M Lu, TJ Tschaplinski, G Yuan, H Lu, P Ranjan, J Mitchell, SD Wullschleger, and GA Tuskan (2020). Plant biosystems design research roadmap 1.0. BioDesign Research Article 8051764. https://doi.org/10.34133/2020/8051764

232. Arendt CA, JM Heikoop, BD Newman, CJ Wilson, H Wainwright, J Kumar, CG Andresen, NA Wales, B Dafflon, J Cherry, and SD Wullschleger (2022). Increased Arctic NO3- availability as a hydrogeomorphic consequence of permafrost degradation and landscape drying. Nitrogen 3: 314–332. https://doi.org/10.3390/nitrogen3020021

233. Bennett KE, G Miller, R Busey, M Chen, ER Lathrop, JB Dann, M Nutt, R Crumley, SL Dillard, B Dafflon, J Kumar, WR Bolton, CJ Wilson, CM Iversen, and SD Wullschleger (2022). Spatial patterns of snow distribution in the sub-Arctic. The Cryosphere 16: 3269-3293. https://doi.org/10.5194/tc-2021-341

234. Chai R, J Mao, H Chen, Y Wang, X Shi, M Jin, PE Thornton, FM Hoffman, DM Ricciuto, and SD Wullschleger (2021). Human-caused long-term changes in global aridity. NPJ Climate and Atmospheric Science 4: 65. https://doi.org/10.1038/s41612-021-00223-5

235. Conroy NA, JB Dann, BD Newman, JM Heikoop, C Arendt, B Busey, CJ Wilson, and SD Wullschleger (2022). Chemostatic concentration-discharge dynamics observed in a headwater catchment underlain with discontinuous permafrost. Hydrological Processes 36: e14591. https://doi.org/10.1002/hyp.14591

236. Curasi SR, N Fetcher, RE Hewitt, PM Lafleur, MM Loranty, MC Mack, JL May, IS Myers-Smith, SM Natali, SF Oberbauer, TC Parker, O Sonnentag, SD Wullschleger, and AV Rocha (2022). Range shifts in a foundational sedge induce large Arctic ecosystem carbon losses and gains. Environmental Research Letters 17: 045024. https://doi.org/10.1088/1748-9326/ac6005

237. McCaully RE, CA Arendt, BD Newman, VG Salmon, JM Heikoop, CJ Wilson, S Sevanto, NA Wales, GB Perkins, OC Marina, and SD Wullschleger (2022). High nitrate variability on an Alaskan permafrost hillslope dominated by alder shrubs. The Cryosphere 16: 1889-1901. https://doi.org/10.5194/tc-16-1889-2022

238. Wang Y, F Yuan, KA Arndt, J Liu, L He, Y Zuo, D Zona, DA Lipson, WC Oechel, DM Ricciuto, SD Wullschleger, PE Thornton, and X Xu (2022). Upscaling methane flux from plot level to eddy covariance tower domains in five Alaskan tundra ecosystems. Frontiers in Environmental Science 10: 939238. https://doi.org/10.3389/fenvs.2022.939238

239. Yang X, D Lui, H Lu, DJ Weston, J-G Chen, W Muchero, S Martin, Y Liu, MM Hassan, G Yuan, UC Kalluri, TJ Tschaplinski, JC Mitchell, SD Wullschleger, and GA Tuskan (2021). Biological parts for plant biodesign to enhance land-based carbon dioxide reduction. BioDesign Research 2021: 9798714. https://doi.org/10.34133/2021/9798714

240. Yu Y, J Mao, SD Wullschleger, A Chen, X Shi, Y Wang, FM Hoffman, Y Zhang, and E Pierce (2022). Machine learning-based observation-constrained projections reveal elevated global socioeconomic risks from wildfire. Nature Communications 13: 1250: https://doi.org/10.1038/s41467-022-28853-0

241. Zhang L, M Philben, N Tas, A Johs, Z Yang, SD Wullschleger, DE Graham, EM Pierce, and B Gu (2022). Unraveling biogeochemical drivers of methylmercury production in an Arctic fen soil and a bog soil. Environmental Pollution 299: 118878. https://doi.org/10.1016/j.envpol.2022.118878

242. Zheng J, EC Berns-Herrboldt, B Gu, SD Wullschleger, and DE Graham (2022). Quantifying pH buffering capacity in acidic, organic-rich Arctic soils: Measurable proxies and implications for soil carbon degradation. Geoderma 424: 116003. https://doi.org/10.1016/j.geoderma.2022.116003

243. Wang Y, J Mao, F Hoffman, C Bonfils, H Douville, M Jin, P Thornton, D Ricciuto, X Shi, H Chen, S Wullschleger, S Piao, and Y Dai (2022) Quantification of human contribution to soil moisture–based terrestrial aridity. Nature Communications (accepted).