

BRENDAN M. ROGERS

Phone: 508-444-1507 • Email: brogers@whrc.org

EDUCATION

University of California, Irvine, CA | Ph.D. in Earth System Science | March 2014

Thesis: *Toward a better understanding of boreal forest fires and their role in the climate system.*

University of California, Irvine, CA | Masters of Science in Earth System Science | October 2011

Oregon State University, Corvallis, OR | Masters of Science in Environmental Sciences | August 2009

Thesis: *Potential impacts of climate change on vegetation distributions, carbon stocks, and fire regimes in the U.S. Pacific Northwest.*

Hamilton College, Clinton, NY | Bachelors of Arts in Mathematics | May 2003

PROFESSIONAL EXPERIENCE

Assistant Scientist | Woods Hole Research Center | Apr 2016 – present

Postdoctoral Fellow | Woods Hole Research Center | Apr 2014 – Apr 2016

Assessed the vulnerability of mid- and high-latitude ecosystems to climate change.

Research Fellow | University of California, Irvine, Department of Earth System Science | Sep 2009 – Mar 2014

Characterized fire-climate feedbacks using field measurements, remote sensing, land surface models, and climate models.

Teaching Assistant | University of California, Irvine, Department of Earth System Science | Oct 2011 – May 2012

Courses: Physical Geology, Field Methods.

ASP Graduate Student Visitor | National Center for Atmospheric Research | Mar 2011 – Jun 2011

Developed fire and succession modules in a land surface model.

Graduate Research Assistant | Oregon State University, Department of Forest Science | Oct 2007 – Sep 2009

Modeled potential changes in vegetation distribution, carbon storage, and fire regimes in the Pacific Northwest.

Intern | Lawrence Berkeley National Laboratory | Mar 2006 – Jun 2007

Assessed the impacts of irrigation on the atmospheric boundary layer.

Math and science tutor | Bay Area Tutoring Center; ClubZ! In-Home Tutoring Services; TEAM Ed Services; IvyWest Educational Services | Jun 2005 – July 2007

Environmental Science and Education Intern | Conservancy of Southwest Florida | Sep 2003 – May 2004

Lead environmental education programs and naturalist activities.

PUBLICATIONS

2017

Rogers, B. M., Jantz, P. and Goetz, S. J.: Vulnerability of eastern US tree species to climate change, *Glob Change Biol*, 23(8), 3302–3320, doi:10.1111/gcb.13585, 2017.

Reported by Mongabay, GreenNews, Humanitarian News, and the Duluth News Tribune; featured in the Boston Globe.

Veraverbeke, S., **Rogers, B. M.**, Goulden, M. L., Jandt, R. R., Miller, C. E., Wiggins, E. B. and Randerson, J. T.: Lightning as a major driver of recent large fire years in North American boreal forests, *Nature Clim. Change*, 7(7), 529–534, doi:10.1038/nclimate3329, 2017.

Reported by National Geographic, Phys.org, and Scientific American.

van der Werf, G. R., Randerson, J. T., Giglio, L., Leeuwen, T. T. van, Chen, Y., **Rogers, B. M.**, Mu, M., Marle, M. J. E. van, Morton, D. C., Collatz, G. J., Yokelson, R. J. and Kasibhatla, P. S.: Global fire emissions estimates during 1997–2015, *Earth System Science Data Discussions*, 1–43, doi:10.5194/essd-2016-62, 2017.

2016

Rogers, B. M., Jantz, P., Goetz, S. J. and Theobald, D. M.: Vulnerability of Tree Species to Climate Change in the Appalachian Landscape Conservation Cooperative, in *Climate Change in Wildlands: Pioneering Approaches to Science and Management in the Rocky Mountains and Appalachians*, edited by A. Hansen, B. Monahan, T. Olliff, and D. Theobald, pp. 212–233, Island Press, Washington, DC., 2016.

Reported by NASA Visible Earth, Mountain Forum, and Pro Arb Magazine.

Jantz, P., Monahan, B., Hansen, A., **Rogers, B. M.**, Zolkos, S., Cormier, T. and Goetz, S.: Modeling Potential Impacts of Climate Change on Vegetation for National Parks in the Eastern United States, in *Climate Change in Wildlands*:

Pioneering Approaches to Science and Management in the Rocky Mountains and Appalachians, edited by A. Hansen, B. Monahan, T. Olliff, and D. Theobald, pp. 151–173, Island Press, Washington, DC., 2016.

Guay, K., Jantz, P., Gross, J. E., **Rogers, B. M.** and Goetz, S. J.: Historical and Projected Climates as a Basis for Climate Change Exposure and Adaptation Potential across the Appalachian Landscape Conservation Cooperative, in *Climate Change in Wildlands: Pioneering Approaches to Science and Management in the Rocky Mountains and Appalachians*, edited by A. Hansen, B. Monahan, T. Olliff, and D. Theobald, pp. 78–94, Island Press, Washington, DC., 2016.

Hoover, D. L. and **Rogers, B. M.**: Not all droughts are created equal: the impacts of interannual drought pattern and magnitude on grassland carbon cycling, *Glob. Change Biol.*, 22(5), 1809–1820, doi:10.1111/gcb.13161, 2016.

Holden, S. R., **Rogers, B. M.**, Treseder, K. K. and Randerson, J. T.: Fire severity influences the response of soil microbes to a boreal forest fire, *Environ. Res. Lett.*, 11(3), 035004, doi:10.1088/1748-9326/11/3/035004, 2016.

Reported by Environmental Research Web and Frontiers in Ecology and the Environment.

Abbott, B. W. and 98 co-authors including **B. M. Rogers.**: Biomass offsets little or none of permafrost carbon release from soils, streams, and wildfire: an expert assessment, *Environ. Res. Lett.*, 11(3), 34014, doi:10.1088/1748-9326/11/3/034014, 2016.

Featured in ERL 'Highlights of 2016'.

2015

Boike, J., Lawrence, D., Natali, S., **Rogers, B.**, Romanovsky, V., Schaefer, K. and Spawn, S.: Permafrost: The Frozen Amplifier, in *Thresholds and Closing Windows: Risks of Irreversible Cryosphere Climate Change*, edited by P. Pearson, pp. 11–14, International Cryosphere Climate Initiative., 2015.

Mouteva, G. O., Czimczik, C. I., Fahrni, S. M., Wiggins, E. B., **Rogers, B. M.**, Veraverbeke, S., Xu, X., Santos, G. M., Henderson, J., Miller, C. e. and Randerson, J. T.: Black carbon aerosol dynamics and isotopic composition in Alaska linked with boreal fire emissions and depth of burn in organic soils, *Global Biogeochem. Cycles*, 29, 1977–2000, doi:10.1002/2015GB005247, 2015.

Featured by the Alaska Fire Science Consortium.

Fisher, R. A., Muszala, S., Verstein, M., Lawrence, P., Xu, C., McDowell, N. G., Knox, R. G., Koven, C., Holm, J., **Rogers, B. M.**, Spessa, A., Lawrence, D. and Bonan, G.: Taking off the training wheels: the properties of a dynamic vegetation model without climate envelopes, *CLM4.5(ED)*, *Geosci. Model Dev.*, 8(11), 3593–3619, doi:10.5194/gmd-8-3593-2015, 2015.

Fisher, R., Muszala, S., Verstein, M., Lawrence, P., Xu, C., McDowell, N., Knox, R., Koven, C., Holm, J., **Rogers, B. M.**, Spessa, A., Lawrence, D., and Bonan, G.: CLM(ED) model: Technical Documentation, National Center for Atmospheric Research, Boulder, CO., 2015.

Rogers, B. M., Bachelet, D., Drapek, R. J., Law, B. E., Neilson, R. P. and Wells, J. R.: Drivers of Future Ecosystem Change in the US Pacific Northwest: The Role of Climate, Fire, and Nitrogen, in *Global Vegetation Dynamics: Concepts and Applications in the MC1 Model*, edited by D. Bachelet and D. Turner, pp. 91–114, John Wiley & Sons, Inc., Washington, D. C., 2015.

Bachelet, D., **Rogers, B. M.** and Conklin, D. R.: Challenges and Limitations of Using a DGVM for Local to Regional Applications, in *Global Vegetation Dynamics: Concepts and Applications in the MC1 Model*, edited by D. Bachelet and D. Turner, pp. 31–40, John Wiley & Sons, Inc., Washington, D.C., 2015.

Veraverbeke, S., **Rogers, B. M.** and Randerson, J. T.: Daily burned area and carbon emissions from boreal fires in Alaska, *Biogeosciences*, 12(11), 3579–3601, doi:10.5194/bg-12-3579-2015, 2015.

Featured in the Washington Post and NASA Earth Observatory.

Rogers, B. M., Soja, A. J., Goulden, M. L. and Randerson, J. T.: Influence of tree species on continental differences in boreal fires and climate feedbacks, *Nature Geosci.*, 8, 228 – 234, doi:10.1038/ngeo2352, 2015.

Reported by DailyMail, EurekAlert, Europapress, Flipboard, Gizmodo, io9, La Recherche, NASA Earth Observatory, National Fire Protection Association, ScienceDaily, and Smithsonian Online Magazine.

2014

Rogers, B. M., Veraverbeke, S., Azzari, G., Czimczik, C. I., Holden, S. R., Mouteva, G. O., Sedano, F., Treseder, K. K. and Randerson, J. T.: Quantifying fire-wide carbon emissions in interior Alaska using field measurements and Landsat imagery, *J. Geophys. Res. Biogeosci.*, 119, 1608–1629, doi:10.1002/2014JG002657, 2014.

Lin, H.-W., McCarty, J. L., Wang, D., **Rogers, B. M.**, Morton, D. C., Collatz, G. J., Jin, Y. and Randerson, J. T.: Management and climate contributions to satellite-derived active fire trends in the contiguous United States, *J. Geophys. Res. Biogeosci.*, 119, 645-660, doi:10.1002/2013JG002382, 2014.

Veraverbeke, S., Sedano, F., Hook, S. J., Randerson, J. T., Jin, Y. and **Rogers, B. M.**: Mapping the daily progression of large wildland fires using MODIS active fire data, *Int. J. Wildland Fire*, 23(5), 655-667, doi:10.1071/WF13015, 2014.

2009 - 2013

Rogers, B. M., Randerson, J. T. and Bonan, G. B.: High-latitude cooling associated with landscape changes from North American boreal forest fires, *Biogeosciences*, 10(2), 699-718, doi:10.5194/bg-10-699-2013, 2013.

Randerson, J. T., Chen, Y., Werf, G. R. van der, **Rogers, B. M.** and Morton, D. C.: Global burned area and biomass burning emissions from small fires, *J. Geophys. Res. Biogeosci.*, 117, G04012, doi:10.1029/2012JG002128, 2012.

Ward, D. S., Kloster, S., Mahowald, N. M., **Rogers, B. M.**, Randerson, J. T. and Hess, P. G.: The changing radiative forcing of fires: global model estimates for past, present and future, *Atmos. Chem. Phys.*, 12(22), 10857-10886, doi:10.5194/acp-12-10857-2012, 2012.

Rogers, B. M., Neilson, R. P., Drapek, R., Lenihan, J. M., Wells, J. R., Bachelet, D. and Law, B. E.: Impacts of climate change on fire regimes and carbon stocks of the U.S. Pacific Northwest, *J. Geophys. Res. Biogeosci.*, 116, G03037, doi:10.1029/2011JG001695, 2011.

French, N. H. F., De Groot, W. J., Jenkins, L. K., **Rogers, B. M.**, Alvarado, E., Amiro, B., De Jong, B., Goetz, S., Hoy, E., Hyer, E., Keane, R., Law, B. E., McKenzie, D., McNulty, S. G., Ottmar, R., Perez-Salicrup, D. R., Randerson, J., Robertson, K. M. and Turetsky, M.: Model comparisons for estimating carbon emissions from North American wildland fire, *J. Geophys. Res. Biogeosci.*, 116, G00K05, doi:10.1029/2010JG001469, 2011.

Bachelet, D., Johnson, B. R., Bridgham, S. D., Dunn, P. V., Anderson, H. E. and **Rogers, B. M.**: Climate change impacts on western Pacific Northwest prairies and savannas, *Northwest Sci.*, 85(2), 411-429, doi:10.3955/046.085.0224, 2011.

Kerns, B. K., Naylor, B. J., Buonopane, M., Parks, C. G. and **Rogers, B.**: Modeling tamarisk (*tamarix* spp.) habitat and climate change effects in the Northwestern United States, *Invasive Plant Sci. Manag.*, 2(3), 200-215, doi:10.1614/IPSM-08-120.1, 2009.

DATA SETS AND CONFERENCE PROCEEDINGS

Rogers, B. M., Soja, A. J., Goulden, M. L. and Randerson, J. T.: Fire Intensity and Burn Severity Metrics for Circumpolar Boreal Forests, 2001-2013, [online] Available from: <https://doi.org/10.3334/ORNLDAAAC/1520>, 2017.

Veraverbeke, S., **Rogers, B. M.**, Goulden, M. L., Jandt, R., Miller, C. E., Wiggins, E. B. and Randerson, J. T.: ABoVE: Ignitions, burned area and emissions of fires in AK, YT, and NWT, 2001-2015, [online] Available from: <https://doi.org/10.3334/ORNLDAAAC/1341>, 2017.

Mouteva, G. O., Czimczik, C. I., Fahrni, S. M., Wiggins, E. B., **Rogers, B. M.**, Veraverbeke, S., Xu, X., Santos, G. M., Henderson, J., Miller, C. E. and Randerson, J. T.: CARVE: Fire-Related Aerosol and Soil Elemental and Isotopic Composition, Alaska, 2013, ORNL DAAC, Oak Ridge, Tennessee, USA. <https://doi.org/10.3334/ORNLDAAAC/1340>, 2016.

Veraverbeke, S., **Rogers, B. M.**, and Randerson, J. T.: CARVE: Alaskan Fire Emissions Database (AKFED), 2001-2013, ORNL DAAC, Oak Ridge, Tennessee, USA. <http://dx.doi.org/10.3334/ORNLDAAAC/1282>, 2015.

Bachelet, D., Conklin, D., **Rogers, B.**, McGlinchy, M., Lenihan, J., Neilson, R., Drapek, R.: Can global models reproduce the current increase in Western United States Wildfires and project a reliable future trend?, *Nature Precedings*, doi:10.1038/npre.2009.3618, 2009.

GRANTS AWARDED

NASA Carbon Cycle Science | 2017 - 2020 | PI | \$1,378,730

Understanding the causes and implications of enhanced seasonal CO₂ exchange in boreal and arctic ecosystems.

NASA Arctic-Boreal Vulnerability Experiment (ABoVE) | 2015 - 2018 | PI | \$741,804

Developing a spatially-explicit understanding of fire-climate forcings and their management implications across the ABoVE domain.

NASA Arctic-Boreal Vulnerability Experiment (ABoVE) | 2015 - 2019 | Co-I | \$940,471

Mapping and modeling attributes of an arctic-boreal biome shift: Resource and management implications within the ABoVE domain.

NASA Arctic-Boreal Vulnerability Experiment (ABoVE) | 2015 - 2019 | Postdoc | \$897,415

Increasing fire severity and the loss of legacy carbon from forest and tundra ecosystems of northwestern North America.

National Center for Atmospheric Research Large Computing Request | 2012, 2013 |

Collaborative research: Improved regional and decadal predictions of the carbon cycle.

INTERFACE Student Collaborative Exchange Program, Purdue University | 2011 | Co-I | \$430

Examining the effects of water availability on land surface temperatures in grassland and forest ecosystems.

National Center for Atmospheric Research Large Computing Request | 2010

Assessing fire impacts on vegetation and climate within a global Earth system model.

HONORS, AWARDS, AND FELLOWSHIPS

2013 Editor's Citation for Excellence in Refereeing for Eos | Apr 2014

Outstanding Oral Presentation by a Young Scientist, 16th Conference of the International Boreal Forest Research Association
| Oct 2013

NSF Graduate Research Fellowship | Oct 2009 – Sep 2011; Oct 2012 – Sep 2013

University of California, Irvine Chancellor's Fellowship | Oct 2009 – Sep 2011; Oct 2012 – Sep 2013

Jenkins Graduate Fellowship | Jan 2012 – Mar 2012

International Biogeography Society Student Travel Award | Jan 2009

Tarbell Book Prize in Organic Chemistry, Hamilton College | May 2003

Kirkland Prize in Mathematics, Hamilton College | May 2003

Oren Root Scholarship for Mathematics, Hamilton College | May 2003

Phi Beta Kappa, Hamilton College | May 2003

Summa Cum Laude, Hamilton College | May 2003

Departmental Honors in Mathematics, Hamilton College | May 2003

General Honors, Hamilton College | May 2003

REVIEWER

Biogeosciences | Carbon Management | Climatic Change | DOE Office of Biological & Environmental Research (BER) | Ecological Applications | Environmental Research Letters | Eos, Transactions, American Geophysical Union | European Research Council | Functional Ecology | Journal of Advances in Modeling Earth Systems | Geophysical Model Development | Geophysical Research Letters | Global Change Biology | International Journal of Wildland Fire | NASA Interdisciplinary Science | Nature Climate Change | New Phytologist | NOAA Climate Program Office, Ocean and Atmospheric Research | NSF Division of Environmental Biology | Proceedings of the National Academies of Sciences, U.S.A | Remote Sensing | Remote Sensing of the Environment | Scientific Reports

SYNERGISTIC ACTIVITIES

Co-Lead | IARPC Terrestrial Ecology Fire Working Group | 2017

Science Team Member | NASA Arctic-Boreal Vulnerability Experiment (ABOVE) | 2015 - 2017

Lead Guest Editor | Environmental Research Letters | 2015-2017 | *Focus on Changing Fire Regimes: Interactions with Climate, Ecosystems, and Humans*

Session Convener | American Geophysical Union Fall Meeting | Dec 2017 | *Drivers and Consequences of Changing Boreal Forest Productivity*

Session Convener | American Geophysical Union Fall Meeting | Dec 2015, 2017 | *The Role of Fire in the Earth System: Understanding Drivers, Feedbacks, and Interactions with the Land, Atmosphere and Society*

Session Presider | Ecological Society of America Annual Meeting | Aug 2014 | *Modeling: Communities, Disturbance, and Succession*

OUTREACH

Woods Hole Research Center Community Lecture | Falmouth, MA | Mar 2017 | *In the line of fire: Northern forests under threat*

Guest Lecturer | Clark University, Introduction to Arctic System Science | Oct 2015

Seminar Speaker | Harvard Atmospheric Sciences Seminar Series | Sep 2015 | *The Role of Fire in the Earth System: Perspectives on Different Forcings, Regions, and Timescales*

Course Designer and Presenter | Climate, Literacy, Empowerment, And iNquiry (CLEAN) education program | 2009 – 2014

Tutor | Hamilton College HAVOC Volunteer Outreach Program | Feb 2000 – May 2000