

# BRENDAN M. ROGERS

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## EDUCATION

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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

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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

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### JOURNAL ARTICLES

- [19] Werf, G. R. van der, 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.
- [18] **Rogers, B. M.**, Jantz, P. and Goetz, S. J.: Vulnerability of eastern US tree species to climate change, *Glob Change Biol*, doi:10.1111/gcb.13585, 2016.
- [17] 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.
- [16] 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.
- [15] 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.
- [14] Mouteva, G. O., Czimeczik, 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.

- [13] 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.
- [12] 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.
- [11] **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.
- [10] **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.
- [9] 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.
- [8] 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.
- [7] **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.
- [6] 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.
- [5] 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.
- [4] **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:201110.1029/2011JG001695, 2011.
- [3] 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.
- [2] Bachelet, D., Johnson, B. R., Bridgman, 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.
- [1] 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.

## BOOK CHAPTERS

- [5] **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.
- [4] 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.
- [3] 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.

- [2] **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.
- [1] 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.

## REPORTS

- 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.
- 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.

## CONFERENCE PROCEEDINGS

- 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.

## DATA SETS

- 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/ORNLDAAC/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/ORNLDAAC/1282>, 2015.

## PRESENTATIONS

- American Geophysical Union Fall Meeting | San Francisco, CA | Dec 2015 | Poster & Oral Presentation (invited)
- Alaska Fire Science Consortium | Oct 2015 | Webinar
- 5<sup>th</sup> NACP Principal Investigators Meeting | Washington, DC | Jan 2015 | Poster
- Ecological Society of America Annual Meeting | Sacramento, CA | Aug 2014 | Oral Presentation
- International Boreal Forest Research Association Conference | Edmonton, AB, Canada | Oct 2013 | Oral Presentation
- CESM Annual Workshop | Breckenridge, CO | Jun 2013 | Oral Presentation
- NASA Terrestrial Ecology Science Team Meeting | San Diego, CA | May 2013 | Poster
- American Geophysical Union Fall Meeting | San Francisco, CA | Dec 2012 | Poster & Oral Presentation (invited)
- CCSM Land Model & Biogeochemistry Working Group Meetings | Boulder, CO | Mar 2012 | Oral Presentation
- NASA Carbon Cycle & Ecosystems Science Joint Science Workshop | Alexandria, VA | Oct 2011 | Poster
- CESM Annual Workshop | Breckenridge, CO | Jun 2011 | Poster
- CCSM Land Model & Biogeochemistry Working Group Meetings | Boulder, CO | Mar 2011 | Oral Presentation
- American Geophysical Union Fall Meeting | San Francisco, CA | Dec 2009 | Poster
- Forest Ecosystems and Society Graduate Student Symposium | Corvallis, OR | May 2009 | Oral Presentation
- Second NACP All-Investigators Meeting | San Diego, CA | Feb 2009 | Poster
- The International Biogeography Society Biennial Meeting | Merida, Mexico | Jan 2009 | Poster
- American Geophysical Union Fall Meeting | San Francisco, CA | Dec 2008 | Poster
- Forest Science Graduate Student Symposium | Corvallis, OR | Apr 2008 | Poster
- 10<sup>th</sup> Annual Joint Campus Conference: Conservation and Sustainability | Corvallis, OR | Apr 2008 | Poster

## GRANTS AWARDED

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

*Understanding the causes and implications of enhanced seasonal CO<sub>2</sub> 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

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

Outstanding Oral Presentation by a Young Scientist, 16<sup>th</sup> 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

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Biogeosciences | Carbon Management | Climatic Change | DOE Office of Biological & Environmental Research (BER) | Ecological Applications | Environmental Research Letters | Eos, Transactions, American Geophysical Union | 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

## SYNERGISTIC ACTIVITIES

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Session Organizer | 18th International Boreal Forest Research Association Conference | Jun 2017 | *The resilience and vulnerability of boreal forests to climate change*

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 2015 | *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

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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