

Stephanie A. Spera

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Professional Appointments

Neukom Institute for Computation Science Postdoctoral Fellow, 2016-present
Department of Geography, Dartmouth College

Education

- Ph.D. Earth, Environmental and Planetary Sciences, Brown University 2016
M.Sc. Earth, Environmental and Planetary Sciences, Brown University 2013
Advisors: Jack Mustard, Professor of Earth, Environmental and Planetary Sciences
Leah VanWey, Professor of Sociology
Dissertation: "Drivers and Consequences of Land Use Change Across
the Brazilian Cerrado, 2001-2013"
- B.A. Earth and Planetary Sciences, *summa cum laude*, Washington University 2011
in St. Louis

Publications

- [10] **Spera SA.** Agricultural intensification can preserve the Brazilian Cerrado: Applying lessons from Mato Grosso and Goiás to Brazil's last agricultural frontier. *Tropical Conservation Science*. *Accepted*.
- [9] Roy ED, Willig E, Richards PD, Martinelli LA, Vazquez FF, Pegorini F, **Spera SA**, Porder S. Soil phosphorus sorption capacity after three decades of intensive fertilization in Mato Grosso, Brazil. *Agriculture, Ecosystems & Environment*. *Accepted*.
- [8] **Spera SA**, VanWey LK, Mustard JF. (2017) Drivers of Sugarcane Expansion in Goiás, Brazil. *Land Use Policy*, 66, 111-119. <https://doi.org/10.1016/j.landusepol.2017.03.037>
- [7] Spangler KR, Lynch AH, **Spera SA**. (2017) Precipitation-Related Drivers of Cropping Frequency in the Brazilian Cerrado: Evidence and Implications for Decision-Making. *Weather, Climate and Society*, 9, 201-213. <http://dx.doi.org/10.1175/WCAS-D-16-0024.1>
- [6] **Spera SA**, Galford GL, Coe MT, Macedo MN, Mustard JF (2016) Land-Use Change Affects Water Recycling in Brazil's Last Agricultural Frontier. *Global Change Biology*, 22, 3405-3413. <http://dx.doi.org/10.1111/gcb.13298>
Media: Washington Post, Mongabay, O Estado de São Paulo

- [5] Roy ED, Richards PD, Martinelli LA, Coletta LD, Lins SRM, Vazquez FF, Willig E, **Spera SA**, VanWey LK, Porder S (2016) The phosphorus cost of agricultural intensification in the tropics, *Nature Plants*, 2: 16043. <http://dx.doi.org/10.1038/nplants.2016.43>
- [4] Cohn A, VanWey LK, **Spera SA**, Mustard JF (2016) Cropping frequency and area response to climate variability can exceed yield response, *Nature Climate Change*, 6, 601-604. <http://dx.doi.org/10.1038/nclimate2934>
- [3] Richards P, Pellegrina H, VanWey L, **Spera SA** (2015) Soybean Development: The Impact of a Decade of Agricultural Change on Urban and Economic Growth in Mato Grosso, Brazil, *PLoS One*, 10(4): e0122510. <http://doi.org/10.1371/journal.pone.0122510>
- [2] **Spera SA**, Cohn A, Mustard J, Rudorff B, VanWey L, Risso J, Adami M (2014) Recent cropping frequency, expansion, and abandonment in Mato Grosso, Brazil had selective land characteristics. *Environmental Research Letters*, 9: 065010. <http://doi.org/10.1088/1748-9326/9/6/064010>
- [1] VanWey LK, **Spera SA**, de Sa R, Mahr D, Mustard JF (2013) Socioeconomic Development and Agricultural Intensification in Mato Grosso. *Philosophical Transactions of the Royal Society B*, 368(1619): 20120168. <http://doi.org/10.1098/rstb.2012.0168>

Publications in Review

- [1] Parker, CL, Lynch AH, **Spera SA**, Spangler KR. The Relationship Between Tropical Cyclone Activity, Nutrient Loading, and Algal Blooms over the Great Barrier Reef. *Biogeosciences*. *Under Review*.

Grants and Fellowships

Neukom Institute for Computational Science Postdoctoral Fellowship [\$60,000]

Brown/Wheaton Faculty Fellowship [\$5000]

Institute at Brown for Environment and Society Graduate Fellowship [\$36,000]

Institute at Brown for Environment and Society Graduate Research & Travel Grant [\$2,900]

Brown University First Year Graduate Fellowship

Florence Moog Scholarship, Washington University in St. Louis

Awards and Honors

Brown/Wheaton Faculty Fellow	2016
NSF Graduate Research Fellowship Program, Honorable Mention	2013
NSF Graduate Research Fellowship Program, Honorable Mention	2012
Phi Beta Kappa	2011
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Teaching

Neukom Postdoctoral Fellow, Dartmouth College, New Hampshire	Summer 2017
<i>The Global Food and Energy Landscape</i> , 28 students	
Developed class focusing on land-use change and tradeoffs between ecosystem services	
Created original content, lectures, group work, and remote-sensing labs	
Lead lectures, discussions, and labs	
Faculty Fellow, Wheaton College, Massachusetts	Spring 2016
<i>Climate Change: Past and Present</i> , 31 students	
Created original content, lectures, group work, and labs	
Lead lectures, discussions, and role-playing activities	
Teaching Assistant, Brown University	Spring 2013, 2015
<i>Global Environmental Remote Sensing</i> , 23 students, 29 students	
Led weekly lab sections, rewrote lab assignments	
Worked with students to develop and complete research projects	
Graded all labs and homework assignments and held office hours	
Training:	
Dartmouth Center for the Advancement of Learning	
Faculty Voice Group	2016
Brown University Sheridan Center for Teaching and Learning	
Certificate 1: Reflective Teaching	2013
Certificate 3: Professional Development	2015
Certificate 4: Teaching Consulting	2015
Undergraduate Mentoring	
Edwin Willig, Brown University	2015-2016
Senior Thesis in Earth, Environmental and Planetary Sciences: "Phosphorus Constraints on Intensive Tropical Agriculture in Mato Grosso, Brazil"	
Graduate Student Leader, Earth, Environmental and Planetary Sciences	2015
Undergraduate Spring Break Trip to the American Southwest	
Micah Swann, Brown University	2012-2013
Senior Thesis in Earth, Environmental and Planetary Sciences: "Agricultural Development and the Emergence of Zoonotic Diseases in India"	
Klara Zimmerman, Brown University	2012
Summer research project: "Land Tenure Change in Mato Grosso, Brazil from 1995-2006"	

Professional Development and Research Experience

Social Media Editor, Global Sustainability Manage social media accounts for <i>Global Sustainability</i> Write and solicit blog posts Promote journal at conferences	2017-present
Workshop Participant, University of Brasília “Intensification of the world’s largest agriculture frontier: reconciling cattle ranching, cropping, and environmental integrity in a changing climate”; Two-day workshop led by IPAM and the Woods Hole Research Center on coordinating future research efforts	2017
WRF Tutorial Workshop Participant, NCAR Attended week-long workshop to learn how to use the Advanced Research Weather and Forecasting regional climate model at NCAR in Boulder, CO	2017
Water Quality Monitoring Team, Narragansett Bay, Rhode Island Assist with water quality monitoring field surveys, collecting water column profile data of chlorophyll, dissolved oxygen, salinity, and temperature with Save the Bay, Dr. Warren Prell, and Dr. Dave Murray	2012-2016
Dinamica Agent-Based Modelling Workshop Attended three-day course on using the agent-based model, Dinamica, led by Dr. Britaldo Soares-Filho at the University of Vermont	2014
Invited Workshop Participant, Brown University-Marine Biological Laboratory “Intensifying Agriculture: Environmental Impacts and Potential Solutions”; Three-day workshop led by Rebecca Ryals to discuss unresolved questions and how to address them	2013
Working Group Participant, Watson Institute for International and Public Affairs “Feeding 9 Billion: The Future of Large Scale Agriculture in Brazil”; Lead PI: Dr. Leah VanWey	2012
Remote Sensing Lab, Washington University in St. Louis Research assistant	2007-2011

Selected Presentations and Posters

2017

The Drivers of Sugarcane Expansion in Goiás, Brazil. April 7. American Association of Geographers Annual Meeting, Boston, MA.

Quantifying Two Decades of Expansion of Commercial Tropical Agriculture in Brazil. April 4. International Food Security Symposium: Commercial Agriculture in the Tropical Environments, University of Illinois, Urbana-Champaign, IL. (Invited)

2016

Land-Use Change and Its Effects on Regional Climate in the Brazilian Cerrado. September 29. Lyndon State College, Lyndon, VT. (Invited)

2015

The Expansion of Agriculture and Its Effects on Evapotranspiration in Brazil's Newest Agricultural Frontier. December 14. American Geophysical Union Fall Meeting, San Francisco, CA.

Examining Brazil's Agricultural Frontier. February 20. The Gund Institute for Ecological Economics, University of Vermont, Burlington, VT. (Invited)

2014

Mapping Large-Scale Mechanized Agriculture Across the Brazilian Cerrado Between 2001-2013. Poster. December 17. American Geophysical Union Fall Meeting, San Francisco, CA.

Examining Brazil's Agricultural Frontier. December 1. Yale Center for Earth Observation, Yale University, New Haven, CT. (Invited)

Quantifying and Assessing Land Use and Land Cover Change Dynamics in a Global Breadbasket. Poster. March 19. Second Global Land Project Open Science Meeting, Berlin, Germany.

2013

Climate Variability is Influencing Agricultural Expansion and Output in a Key Agricultural Region of Brazil. Poster. December 12. American Geophysical Union Fall Meeting, San Francisco, CA.

Characterizing Land Cover in a Global Breadbasket: Land Use Dynamics in Mato Grosso State, Brazil. November 8. Brown-Marine Biological Laboratory Retreat and Symposium. Providence, RI. (Invited)

Initial Work Towards Determining The Causes and Consequences of Land Use Transitions in the Cerrado. June 27. Universidade Federal de Goiás, Goiania, Goiás State, Brazil. (Invited)

Methods and dynamics of double cropping in Mato Grosso. April 9. Association of American Geographers Annual Meeting, Los Angeles, CA.

Temporal and Spatial of Double Cropping. January 15. Intensifying Agriculture: Environmental Impacts and Potential Solutions, Marine Biological Laboratory, Woods Hole, MA.

2012

Rapid Intensification of Agriculture in Brazil: Dynamics of Double Cropping in Mato Grosso State. December 7. American Geophysical Union Fall Meeting, San Francisco, CA.

Preliminary Work in Determining Rates and Drives of Agricultural Intensification in Mato Grosso, Brazil. May 7. New England Chapter of the Urban and Regional Information Systems Association: Ignite Spatial Providence, Providence, RI.

Service and Outreach

Reviewer: *Remote Sensing of Environment; Global Change Biology; Global Environmental Change; Land Use Polic; Hydrology and Earth Systems Sciences; Agricultural and Forest Meteorology; Land*

“What It’s Like to be a Woman in STEM”, Fontbonne Academy, Milton, MA	2017
Department Diversity Working Group, Brown University	2013-2016
First Year Mentor Program Leader Led program pairing incoming graduate students with students in the department who have advanced to candidacy to act as one-on-one resources and mentors	2014-2016
Vartan Gregorian Elementary School, Providence, RI Create and teach weekly science lessons to classroom of 3rd-6th graders with learning disabilities	2014-2016
Brown University Faculty/Graduate Club Secretary	2013-2016
Department Graduate Student WikiPage Coordinator, Brown University Created and moderated an internal departmental graduate student WikiPage that provided information on advising, qualification exams, courses, living in Providence, and other useful information	2011-2016
The Rhode Show, Providence, RI Discussed beach geology in Rhode Island Begins at minute 4, http://wpri.com/2015/07/09/hittin-the-sand-at-bristol-town-beach/	2015
Vartan Gregorian Elementary School, Providence, RI Created and taught weekly science lessons to second graders	2011-2014
Student Life, Washington University’s Independent Newspaper Senior Arts and Entertainment editor, reporter, copy editor	2007-2011
Delmar Harvard Elementary School, University City, MO Lead weekly after school program organizing arts and crafts for students	2009-2011

Memberships and Affiliations

American Geophysical Union, Association of American Geographers, Ecological Society of America, American Meteorological Society

Skills and Interests

Fluent in ArcGIS, ENVI, GeoDa, GeoDaSpace, Adobe Suite, NCAR's Weather Research and Forecasting Regional Climate Model

Versed in Python, IDL, Stata, Google Earth Engine, Dinamica Ego

Conversational Portuguese

I enjoy hiking, biking, podcasts, crosswords, and using popular culture to teach science