

GILLIAN GALFORD

Research Associate Professor
Gillian.Galford@UVM.edu
802.656.2920

Gund Institute for Environment
Rubenstein School of Environment & Natural Resources
University of Vermont

AREAS OF EXPERTISE

I pursue “science for society’s sake” by conducting transdisciplinary research, building strong collaborative teams nationally and internationally, and communicating to non-technical audiences. I work across scales ranging from plot-level field studies to regional-scale mapping and modeling. My research themes focus on the emerging field of coupled human-natural systems: 1) ecosystems health and sustainability in frontiers of land use change and 2) integrative climate change adaptation and mitigation science for local decision support. I collaborate with researchers, practitioners and stakeholders from NGOs, government and civil society. My diverse teaching portfolio is a reflection of my transdisciplinary research.

EDUCATION

Ph.D. 2010 | Geological Sciences, *Brown University* with *The Ecosystems Center (MBL)*

B.A., cum laude 2004 | Earth & Planetary Sciences and Environmental Studies (social science track),
Washington University in St. Louis

APPOINTMENTS

University of Vermont

Research Associate Professor Rubenstein School of Environment & Natural Resources	<i>2012-pres.</i>
Co-Chair Diversity Committee, Gund Institute for Environment	<i>2019-pres.</i>
Faculty Complex Systems and Data Science Program	<i>2020-pres.</i>
Committee Member Diversity Committee, Gund Institute for Environment	<i>2019-pres.</i>
Faculty Food Systems Graduate Program	<i>2018-pres.</i>
Faculty Quantitative and Evolutionary STEM Training (QuEST) Program	<i>2018-pres.</i>
Academic Director Geospatial Technologies Minor & Professional Certificate	<i>2018-pres.</i>
Fellow Gund Institute for Environment	<i>2017-pres.</i>
Sustainability Faculty Fellow University of Vermont	<i>2017-pres.</i>
Research Assistant Professor Rubenstein School of Environment & Natural Resources	<i>2012-2019</i>
Steering Committee Food Systems Initiative	<i>2013-2017</i>
Fellow Gund Institute for Ecological Economics	<i>2012-2017</i>

Woods Hole Research Center | Postdoctoral Fellow *2011-2012*

Earth Institute, Columbia University | Fellow, Adjunct *2010, 2011-2018*

PEER REVIEW PUBLICATIONS

*Denotes a student at the time of research, ^ denotes a postdoctoral researcher

40. E. Kinnebrew*, C.K. Molander*, S. Wilcox Warren*, C.E. Horner*, V. Izzo, S. Lewins, R Maden, G.L. Galford, V.E. Méndez. Tradeoffs of a rising agroecological practice: addressing uncertainty around tarping with mixed methods and PAR. **Agroecology and Sustainability**.
<https://doi.org/10.1080/21683565.2022.2146254>

39. M. Clark*, E. Nkonya, G.L. Galford (2022). Flocking to Fire: How Climate and Natural Hazards Shape Human Migration Across the United States. **Frontiers in Human Dynamics**. <https://doi.org/10.1089/env.2021.0063>
38. Q. Ren*, B. Panikkar, G.L. Galford (2022). Vermont Environmental Disparity Index and Risks. **Environmental Justice**. <https://doi.org/10.3389/fhumd.2022.886545>
37. E. Kinnebrew*, D.A. Neher, T.H. Ricketts, K.F. Wallin, H. Darby, S.E. Ziegler, S.A. Alger, G.L. Galford (2022). Cultivated milkweed hosts high diversity of above and belowground soil arthropods. **Agriculture, Ecosystems and Environment**. <https://doi.org/10.1016/j.agee.2021.107749>
36. C. Costa Jr.^, G.L. Galford, M.T. Coe, M. Macedo, K.J. Jankowski^, C. O'Connell*, C. Neill (2021). Modeling Nitrous Oxide Emissions from Large-scale Intensification of Soybean-maize Cropping Systems in the Southern Amazon. **Frontiers in Sustainable Food Systems**. <https://doi.org/10.3389/fsufs.2021.701416>
35. M. Jian, R. Fishman, P. Mondal, G.L. Galford, N. Bhattarai, S. Naeem, U. Lall, Balwinder-Singh, R.S. DeFries (2021). The Impact of Groundwater Depletion on Cropping Intensity in India. **Science Advances**. <https://doi.org/10.1175/2010EI327.1>
34. E. Kinnebrew*, G.L. Galford, L. Champlin*, C. Neill (2020). Woody plant encroachment into coastal grasslands: consequences for soil properties and plant diversity. **Regional Environmental Change** 20:94. <https://doi.org/10.1007/s10113-020-01687-6>
33. A.M. Huddell*, G.L. Galford, D.N.L. Menge, K.L. Tully, C.A. Palm, C. Neill, M.N. Macedo, J.E. Hickman (2020). Environmentally-important impacts of intensive nitrogen use in tropical agroecosystems. **Global Change Biology** 26:1668-1680. <https://doi.org/10.1111/gcb.14951>
32. H. Tallis et al. (2019). Aligning Evidence Generation and Use Across Health, Development and Environment. **Current Opinion in Environmental Sustainability**. <https://doi.org/10.1016/j.cosust.2019.09.004>
31. K. Watson*, G.L. Galford, L. Sonter^, T. Ricketts (2020). Conserving ecosystem services and biodiversity: Measuring the tradeoffs involved in splitting conservation budgets. **Ecosystem Services** 42, 101063. <https://doi.org/10.1016/j.ecoser.2020.101063>
30. G.L. Galford, O. Peña*, A.K. Sullivan*, J. Nash^, N. Gurwick, G. Pirolli, M. Richards, J. White, E. Wollenberg (2020). Agricultural development addresses food loss and waste while reducing greenhouse gas emissions. **Science of the Total Environment**. <https://doi.org/10.1016/j.scitotenv.2019.134318>
29. A. Adams*, J. Pontius, G.L. Galford, D. Gudex-Cross* (2020). Simulating forest cover change in the northeastern U.S.: Decreasing forest area and increasing fragmentation. **Landscape Ecology**. <https://doi.org/10.1007/s10980-019-00896-7>
28. C. Kirchoff, G.L. Galford, A. Karmalkar, A. Seth, G. Wang, M. Barlow, K. Lombardo, S. Stephenson, J. Barsugli (2019). Climate Assessments for local action. **BAMS Inbox**. <https://doi.org/10.1175/BAMS-D-18-0138.1>
27. D. Thom^, M. Golivets^, L. Edling*, G. Meigs^, J. Gourevitch*, L.J. Sonter, G.L. Galford, W.S. Keeton (2019). Climate sensitivity of carbon, timber, and species richness in the boreal-temperate ecotone co-varies with forest development. **Global Change Biology** 25: 2446-2458. <https://doi.org/10.1111/gcb.14656>
26. C. Ramirez-Reyes^, K. Brauman, G.L. Galford, B. Chapin-Kramer, S.B. Adamo, G.R.H. Allington, C. Anderson, K. Bagstad, M.T. Coe, A.F. Cord, L.E. Dee, M. Jain, V.G. Kowal, F. Muller-Karger, P. Potapov, J. Qiu, J. Rieb, L.H. Samberg, N. Singh, R. Sharp, S. Szeto (2019). Improving Integration of Earth Observations into Ecosystem Service Models. **Science of the Total Environment** 665:1053-1063. <https://doi.org/10.1016/j.scitotenv.2019.02.150>

25. K. Watson*, G.L. Galford, L. Sonter, I. Koh[^], T. Ricketts (2019). The effect of accounting for beneficiary demand in prioritizing conservation actions to meet biodiversity and ecosystem service goals. **Conservation Biology** 33(4), 942-952. <https://doi.org/10.1111/cobi.13276>
24. S. Ahamed*, J. Sperling, G.L. Galford, J. Stephens, D. Arent (2019). Gas rich, water poor: Integrated assessment of the food-energy-water nexus in the Denver region, USA. **Case Studies in the Environment**, pp. 1-21. DOI: [10.1525/cse.2018.001735](https://doi.org/10.1525/cse.2018.001735).
23. K.J. Jankowski[^], C. Neill, E.A. Davidson, M.N. Macedo, C. Costa Jr[^], G.L. Galford, L. Maracahipes*, P. Lefebvre, D. Nunes, C.E.P. Cerri, R.M. McHorney, C. O'Connell*, M.T. Coe (2018). Fate of nitrogen fertilizer in intensive soybean-maize tropical cropland in Mato Grosso, Brazil. **Scientific Reports** 8:13478 DOI: [10.1038/s41598-018-31175-1](https://doi.org/10.1038/s41598-018-31175-1). <https://doi.org/10.1038/s41598-018-31175-1>
22. U. Grewer, J. Nash[^], N. Gurwick, L. Bockel, G.L. Galford, M. Richards, C. Costa Junior[^], J. White, G. Pirolli, E. Wollenberg (2018). Analyzing the greenhouse gas impact of smallholder development actions across a global food security program. **Environmental Research Letters** <https://doi.org/10.1088/1748-9326/aab0b0>
21. A.B. Adams*, J. Pontius, G.L. Galford, S.C. Merrill, D. Gudex-Cross* (2018). Modeling carbon storage across a heterogeneous mixed temperate forest: the influence of forest type specificity on regional-scale carbon storage estimates. **Landscape Ecology**. <https://doi.org/10.1007/s10980-018-0625-0>
20. G.L. Galford, M. Fernandez, J. Roman, I. Monasterolo, S. Ahamed*, G. Fiske, P. González, L. Kaufman (2018). Cuban land use and conservation, from rainforests to coral reefs. **Bulletin of Marine Science** 94(2). <https://doi.org/10.5343/bms.2017.1026>
19. L.J. Sonter[^], D. Herrera[^], D.J. Barrett, G.L. Galford, C.J. Moran, B.S. Soares-Filho (2017). Mining drives extensive deforestation in the Brazilian Amazon. **Nature Communications** 8:1013. <https://doi.org/10.1038/s41467-017-00557-w>
18. M. Jain*, P. Mondal[^], G.L. Galford, G. Fiske, R.S. DeFries (2017). An Automated Approach to Map Winter Cropped Area of Smallholder Farms across Large Scales Using MODIS Imagery. **Remote Sensing** 9(6): 566. <https://doi.org/10.3390/rs9060566>
17. G. Galford, J. Nash*, A.K. Betts, S. Carlson*, A. Hoogenboom*, D. Markowitz, A. Nash, E. Palchak*, S. Pears*, K.L. Underwood* (2016). Bridging the climate information gap: A framework for engaging knowledge brokers and decision makers in state climate assessments. **Climatic Change** 138(3-4), 383-395. <https://doi.org/10.1007/s10584-016-1756-4>
16. A. Zia, A. Bomblies, A.W. Schroth, C. Koliba, P.D.F. Isles, Y. Tsai[^], I.N. Mohammed, G. Bucini[^], P.J. Clemins, S. Turnbull, M. Rodgers, A. Hamed, B. Beckage, J. Winter, C. Adair, **G.L. Galford**, D. Rizzo, J. Van Houten (2016). Coupled impacts of climate and land use change across a river-lake continuum: insights from an integrated assessment model of Lake Champlain's Missisquoi Basin, 2000-2040. **Environmental Research Letters** 11(11). <https://doi.org/10.1088/1748-9326/11/11/114026/>
15. K. Bryan Watson*, T.H. Ricketts, G. Galford, S. Polasky, J. O'Neil-Dunne (2016). Avoided flood damages on the Otter Creek, VT: Impacts of intact wetland complexes. **Ecological Economics** 130, 16-24. <https://doi.org/10.1016/j.ecolecon.2016.05.015>
14. S. Spera*, G.L. Galford, M.T. Coe, M.N. Macedo, J.F. Mustard (2016). Land-use change affects water recycling in Brazil's Last Agricultural Frontier. **Global Change Biology** 22(10), 3405-3413. <https://doi.org/10.1111/gcb.13298>
13. P. Mondal[^], M. Jain*, M. Zukowski, G. Galford, R.S. DeFries (2016). Quantifying fluctuations in winter productive cropping area in the Central Indian Highlands. **Regional Environmental Change** 16(1), 69-82. <https://doi.org/10.1007/s10113-016-0946-y>
12. G. Galford, B.S. Soares-Filho, N. Laporte, L. Sonter[^] (2015). Will Passive Protection Save Congo Forests? **PLoS ONE** 10(6). <https://doi.org/10.1371/journal.pone.0128473>

11. E. Palchak*, J. Nash*, G. Galford (2015). The Vermont Climate Assessment: A Problem-Based Model to Bridge National Climate Research and Local Resilience. **Michigan Journal of Sustainability** (3). <https://doi.org/10.3998/mjs.12333712.0003.005>.
10. P. Mondal[^], M. Jain*, R.S. DeFries, G. Galford, C. Small (2015). Sensitivity of crop cover to climate variability: Insights from two Indian agro-ecoregions. **Journal of Environmental Management** 148:21-30. <https://doi.org/10.1016/j.jenvman.2014.02.026>
9. M.J. Lathuilière*, M.S. Johnson, G.L. Galford, E.G. Couto (2014). Environmental footprints show China and Europe’s evolving resource appropriation for soybean production in Mato Grosso. **Environmental Research Letters** 9(7): 074001. <https://doi.org/10.1088/1748-9326/9/7/074001>
8. P. Mondal[^], M. Jain*, A.W. Robertson[^], G.L. Galford, C. Small, R.S. DeFries (2014). Winter crop sensitivity to inter-annual climate variability in central India. **Climatic Change** 125(2). <https://doi.org/10.1007/s10584-014-1216-y>
7. G.L. Galford, B. Soares-Filho, C.E.P. Cerri (2013) Prospects for land-use sustainability on the agricultural frontier of the Brazilian Amazon. **Philosophical Transactions of the Royal Society B-Biological Sciences** 368 (1619). <https://doi.org/10.1098/rstb.2012.0171>
6. M. Jain*, P. Mondal, R.S. DeFries, C. Small, G.L. Galford (2013). Mapping cropping intensity of smallholder farms: A comparison of methods using multiple sensors. **Remote Sensing of Environment**, 134: 210-233. <https://doi.org/10.1016/j.rse.2013.02.029>
5. M.N. Macedo*, R.S. DeFries, D.C. Morton, C.M. Stickler*, G.L. Galford, Y.E. Shimabukuro (2012). Decoupling deforestation and soy production in the southern Amazon during the late 2000s. **Proceedings of the National Academy of Sciences** 109(4):1341-1346. <https://doi.org/10.1073/pnas.1111374109>
4. G.L. Galford, J.M. Melillo, D.W. Kicklighter, J.F. Mustard, T.W. Cronin, C.E.P. Cerri, C.C. Cerri (2011). Carbon emissions and uptake from 105 years of land-cover and land-use change at the agricultural frontier of the Brazilian Amazon. **Ecological Applications** 21(3):750-763. <https://doi.org/10.1890/09-1957.1>
3. G.L. Galford, J.M. Melillo, D.W. Kicklighter, T.W. Cronin, C.E.P. Cerri, J.F. Mustard, C.C. Cerri (2010). Estimating greenhouse gas emissions from land-cover and land-use change: Future scenarios of deforestation and agricultural management. **Proceedings of the National Academy of Science** 107:19649-19654. <https://doi.org/10.1073/pnas.1000780107>
2. G.L. Galford, J.M. Melillo, J.F. Mustard, C.E.P. Cerri, C.C. Cerri (2010). The Amazon frontier of land-use change: croplands and consequences for greenhouse gas emissions. **Earth Interactions** 14:14. <https://doi.org/10.1175/2010EI327.1>
1. G.L. Galford, J.F. Mustard, J. Melillo, A. Gendrin, C.C. Cerri, C.E.P. Cerri (2008). Wavelet analysis of MODIS time series to detect expansion and intensification of row-crop agriculture in Brazil. **Remote Sensing of Environment** 112: 576-587. <https://doi.org/10.1016/j.rse.2007.05.017>

BOOK CHAPTERS

- E. Kinnebrew*, K. Palawat*, D.A. Neher, G.L. Galford (2023). Chapter 14: Detritivores’ roles in soil carbon cycling and agricultural ecosystem services. In, *Biological Approaches to Regenerative Soil Systems* (Norman Thomas Uphoff, Janice Thies, Eds.). CRC Press.
- G. Galford, T.H. Ricketts (2016). Chapter 25: Ecosystems Services: Provisioning. In, *Handbook of Ecosystems Services* (Marion Potcham, Kerry Turner, Eds.). EarthScan: London, pp. 316-327.
- Neibur, C.S., R.E. Arvidson, E.A. Guinness, and G.L. Galford (2003). Lower Missouri River Flood Plain at Arrow Rock Before and After the Great Floods of 1993. In, *At the Confluence: Rivers, Floods, and*

Water Quality in the St. Louis Region (R. E. Criss, D. A. Wilson, Eds.). Missouri Botanical Gardens Press.

WHITE PAPERS

- Brauman, K.A., Chaplin-Kramer, R., Galford, G.L., Ramirez-Reyes, C., Adamo, S.B., Anderson, C.B., Anderson, C., Allington, G.R.H., Bagstad, K.J., Cavender-Bares, J., Cardille, J.A., Coe, M.T., Cord, A.F., Dee, L.E., Gould, R.K., Jain, M., Kowal, V.A., Muller-Karger, F.E., Potapov, P., Qiu, J., Rieb, J.T., Robinson, B.E., Samberg, L.H., Singh, N., Staminirova, R., Szeto, S.H., Voigt, B., Watson, K., Wright, T.M. 2019. *Improving Integration of Earth Observation Products in Ecosystem Service Assessments. White Paper to NASA Biodiversity and Ecological Forecasting*. 32 pages.
- Galford, G.L. (2018). *Deforestation and soybean in Brazil: Soybean supply chain. Principles for Responsible Investment (PRI) and Ceres*, 12 p.
- Michelson, H., Galford, G.L. (2016). *Agricultural production subsidies and child health: Evidence from Malawi. Agriculture and Applied Economics Association*, Issue 236815, Boston, Massachusetts, 45 p.
- Nash J, Grewer U, Bockel L, Galford GL, Pirolli G, White J. 2016. *Accelerating Agriculture Productivity Improvement in Bangladesh: Mitigation co-benefits of nutrient and water use efficiency. CCAFS Info Note*. Copenhagen, Denmark: International Center for Tropical Agriculture (CIAT) and the Food and Agriculture Organization of the United Nations (FAO). Accessed online at <http://cgspace.cgiar.org/rest/bitstreams/85311/retrieve>
- Nash J, Grewer U, Bockel L, Galford GL, Pirolli G, White J. 2016. *ACCESO in Honduras: Mitigation co-benefits of perennial crop expansion, soil management, and livestock improvements. CCAFS Info Note*. Copenhagen, Denmark: International Center for Tropical Agriculture (CIAT) and the Food and Agriculture Organization of the United Nations (FAO), 11 pages. Accessed online at <https://cgspace.cgiar.org/rest/bitstreams/85616/retrieve>
- Grewer U, Bockel L, Nash J, Galford GL. 2016. Agricultural Development and Value Chain Enhancement Activity II (ADVANCE II) in Ghana: Climate change mitigation co-benefits from sustainable intensification of maize, soybean and rice. **CCAFS Info Note**. Copenhagen, Denmark: International Center for Tropical Agriculture (CIAT) and the Food and Agriculture Organization of the United Nations (FAO). Accessed online at <http://cgspace.cgiar.org/rest/bitstreams/85615/retrieve>
- Nash J, Grewer U, Bockel L, Galford GL, Pirolli G, White J. 2016. Better Life Alliance in Zambia: Climate change mitigation as a co-benefit of improved landscape, agroforestry, soil, and fertilizer management. **CCAFS Info Note**. Copenhagen, Denmark: International Center for Tropical Agriculture (CIAT) and the Food and Agriculture Organization of the United Nations (FAO). Accessed online at <http://cgspace.cgiar.org/rest/bitstreams/84795/retrieve>
- Nash J, Grewer U, Bockel L, Galford GL, Pirolli G, White J. 2016. Pastoralist Areas Resilience Improvement through Market Expansion (PRIME) in Ethiopia: Mitigation co-benefits of livestock productivity. **CCAFS Info Note**. Copenhagen, Denmark: International Center for Tropical Agriculture (CIAT) and the Food and Agriculture Organization of the United Nations (FAO). Accessed online at: <http://hdl.handle.net/10568/77619>
- Nash J, Grewer U, Bockel L, Galford GL, Pirolli G, White J. 2016. *Peru Cacao Alliance: Carbon sequestration as a co-benefit of cacao expansion. CCAFS Info Note*. Copenhagen, Denmark: International Center for Tropical Agriculture (CIAT) and the Food and Agriculture Organization of the United Nations (FAO). Accessed online at <http://hdl.handle.net/10568/77617>
- Nash J, Grewer U, Bockel L, Galford GL, Pirolli G, White J. 2016. Resilience and Economic Growth in Arid Lands – Accelerated Growth in Kenya: Mitigation co-benefits of herd size and feed quality management. **CCAFS Info Note**. Copenhagen, Denmark: International Center for Tropical Agriculture

- (CIAT) and the Food and Agriculture Organization of the United Nations (FAO). Accessed online at <http://hdl.handle.net/10568/77632>
- Grewer U, Nash J, Bockel L, Galford GL. 2016. *Rwanda Dairy Competitiveness Program II: Efficiency gains of dairy production systems strongly decrease GHG emission intensity*. **CCAFS Info Note**. Copenhagen, Denmark: International Center for Tropical Agriculture (CIAT) and the Food and Agriculture Organization of the United Nations (FAO). Accessed online at <http://hdl.handle.net/10568/77622>
- Grewer U, Nash J, Galford GL, Bockel L (2016). *Chanje Lavi Planté in Haiti: Hillside soil conservation as a measure to increase yields and sequester carbon in Haiti*. **CCAFS Info Note**. Copenhagen, Denmark: International Center for Tropical Agriculture (CIAT) and the Food and Agriculture Organization of the United Nations (FAO). Accessed online at <https://cgspace.cgiar.org/rest/bitstreams/84848/retrieve>
- Grewer U, Bockel L, Galford GL, Gurwick N, Nash J, Pirolli G, Wollenberg E. 2016. A methodology for greenhouse gas emission and carbon sequestration assessments in agriculture: Supplemental materials for info note series analysing low emissions agricultural practices in USAID development projects. **CCAFS Working Paper no. 187**. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS); International Center for Tropical Agriculture (CIAT); Food and Agriculture Organization of the United Nations (FAO).
- Nash J, Costa C, Galford GL, Gurwick N, Wollenberg E. 2015. *Methods for Identifying Low Emissions Development Options in Agriculture*. **CCAFS Working Paper no. 147**. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Copenhagen, Denmark.
- Galford GL, Hoogenboom A, Carlson S, Ford S, Nash J, Palchak E, Pears S, Underwood K, Baker DV (2014). *Vermont Climate Assessment: Considering Vermont's Future in a Changing Climate*. **Gund Institute for Ecological Economics**, 219 pp. Accessible online at www.VTclimate.org or <https://scholarworks.uvm.edu/rsfac/3/>
- Nkonya E, Karsenty A, Msangi S, Souza Jr. C, Shah M, van Braun J, Galford GL, Park SJ. (2012). *Rio+20: The state of the world's forests*. **World Bank Report**. <https://agritrop.cirad.fr/566934/>
- Farr, T. G., ed. (2003). *Terrestrial Analogs to Mars*. **Planetary Decadal Study Community White Paper**, Solar System Exploration Survey, 2003-2013. <http://hdl.handle.net/2014/8514>

RESEARCH GRANTS AND AWARDS

Pending

- PI R. Chaplin-Kramer et al., Co-I G. Galford. Enhancing and measuring the value of Earth Observations for informing decisions. **NASA Socioeconomic Analysis**. 7/2022-6/2027, Total Award Amount: \$8,492,057, 1.5 mo/year.
- PI G. Galford, H. Darby, D. Neher, E. von Wettberg. Food System Sustainability Starts with Soils. **USDA ARC Food Systems Research Center Sustainability Research Grants Program**. Total Award Amount: \$600,000, 7/1/2023-6/1/2026, 1.5 mo/year.

Currently Funded

- PI G. Galford. Land-cover and Land-use Change at the Frontier: Socioeconomic and Environmental Factors Influencing Land-Use Transitions in the Cerrado Biome. **NASA Land Cover and Land Use Change Program**. 1/2023-12/2025, Total Award Amount: \$750,000, 1.5 mo/year.
- PI G. Galford, Co-Is H. Darby, D. Neher, E. von Wettberg. Sustainability Starts with Soils. **USDA ARC Food Systems Research Center**. Total Award Amount: \$49,500, 11/2022-9/2023, 1 mo/year.
- PI G. Galford. Impacts and interactions of climate change with human migration and agriculture. **USDA Economic Research Service Cooperative Agreement**, Total Award Amount: \$22,312, 10/2022-9/2023, 0 mo/year.

- PI E. Hamin et al., Co-I G. Galford. SRS RN: Preparing Receiving Regions for a Just and Sustainable Climate Migration- Systems and Scenarios for New England, **NSF Research Coordination Network**, 09/2021-08/2022, Total award amount: \$100,000, 0 mo/year
- PI C. Adair, Co-I G. Galford. The state of carbon in Northeast forests: Creating an Integrated Soil Carbon (iSoC) inventory to explore and understand what drives variation in soil carbon across scales and with management, **USDA Forest Service McIntire-Stennis**, 10/2019-09/2021, Total Award Amount: \$500,754, 1.0 mo/year.
- PI G. Galford, Sustainability research, **private donor**, 01/2022, Total Award Amount: \$40,000, 1.0 mo/year.

Past Funded Projects

- PI B. Lee, Co-I G. Galford. Assessing Citizen Science Labeling to Improve Training Data Quality for Land Cover Protocols within the GLOBE Observer Community, **NASA EPSCoR**, 06/2021-12/2022, Total Award Amount: \$100,000, 0.9 mo/year.
- PI G. Galford. Vermont Climate Assessment. **TNC Vermont**, 05/2020-12/31/2022, Total Award Amount: \$25,000, 1.0 mo/year.
- PI G. Galford. Vermont Climate Assessment. **Gund Catalyst Award**, 02/2020-08/2021, Total Award Amount: \$50,000, 1.0 mo/year.
- PI L. Chase et al., Co-PI G. Galford. “The Farm-Community Nexus: Metrics for Socioeconomic and Ecosystems Sustainability of Agritourism and Direct Farm Sales in Vermont” **USDA ARS Food Systems Research Center**, 07/01/2020-12/31/2021, Total Award Amount: \$50,000, 1.0 mo/year.
- PIs H. Darby, G. Galford. “Commercialization of milkweed” **Gund Catalyst Award**, 02/2018, Total Award Amount: \$44,000.
- PI K. Brauman, Co-I & Institutional PI G. Galford, “Workshops to connect ecosystem services model developers with earth observation producers,” **NASA Earth Science Applications NNN16ZDA001N-ECO4CAST**, 02/21/2017-08/20/2018, Total Award Amount: \$264,173, 0.5 mo/year.
- PI W. Keeton et al., Co-I G. Galford. 9/2014-8/2019. “Managing the Matrix” **U.S. Department of Agriculture McEntire-Stennis Program**, 0.5 months/year.
- PI G. Galford, **private donor**, 01/01/2017, Total Award Amount: \$10,000
- PI Wollenberg, Co-PI G. Galford. 01/01/15-06/30/2017. “Reducing and accounting for agriculture-driven greenhouse gas emissions in USAID’s agriculture related work” **U.S. Agency for International Development**, \$1,624,178 (UVM direct funds \$752,991).
- PI G. Galford, Co-I H. Michelson, Environmental & socioeconomic outcomes of the new African Green Revolution, **NASA Land-Cover and Land-Use Change Program** (New Investigators), Total Award Amount: \$319,869. Total Award Period Covered: 01/1/13-12/31/17, Months Per Year Committed to the Project: 2 mo/yr
- PI E. Davidson et al., Co-I G. Galford. Disrupted Nitrogen Cycles in the Brazilian Amazon, **NSF Division of Environmental Biology (Ecosystems)**, Total Award Amount: \$889,083, Total Award Period Covered: 10/01/13-09/30/16, Months Per Year Committed to the Project: 2.0 mo/yr
- PI G. Galford, Co-I B Wemple. 9/2014-5/30/2016. Evaluating hydrological services in ecosystems. **Gund Collaborating Funds**, Total Award Amount: \$10,000
- PI G. Galford. 7/1/2014-06/30/2015. The sensitivity of agricultural output to climate variability across smallholder farms in South Asia. **Google Research**, Total Award Amount: \$67,690
- PI A. Zia et al., co-I G. Galford. Regional Adaptation to Climate Change. **Vermont EPSCOR program**. 7/1/2014- 6/30/2015. Months Per Year Committed to the Project: 1.0 mo/yr
- PI J. Pontius, Co-I G. Galford. 30 years of forest conversion in the northeast: Historical impacts and future projections. **Northeastern States Research Cooperative**.

- PIs T. Ricketts and G. Galford. April 1, 2014, Ecosystems Services of Vermont's Conservation Lands (Various small donors)
- PI G. Galford. 06/20/2012-7/20/2014. Intelligent Intensification of Agriculture. **Betsy & Jesse Fink Foundation**, \$15,000
- PI G. Galford. 9/25/2012-5/30/2013. Vermont Climate Assessment. **Gund Collaborating Funds**, Total Award Amount: \$10,000
- PI J. Mustard. 03/01/2010-02/28/2013. Rates and Drivers of Land Use Land Cover Change in the Agricultural Frontier of Mato Grosso, Brazil. **NASA LCLUC**, Total Award Amount: \$745,210, Months Per Year Committed to the Project: consultant
- PI Ruth DeFries, Co-I G. Galford 05/01/2011-04/30/2014. Multi-sensor Fusion to Determine Climate Sensitivity of Agricultural Intensification in South Asia. **NASA LCLUC**, Total Award Amount: \$758,077, Months Per Year Committed to the Project: 5.25 mo/yr1, 3.0 mo/yr2
- PI: M. Coe. 01/01/11-12/31/13. Linking Historical and Future Land-Use Change to the Economic Drivers and Biophysical Limitations of Agricultural Expansion in the Brazilian Cerrado. **NASA LCLUC**, Total Award Amount: \$781,205, Months Per Year Committed to the Project: 3.0 mo/yr
- PI: G.L. Galford. 01/01/2010-12/31/2011. Earth Institute Post-doctoral Fellowship, **Columbia University**. \$100,000, effort: 12 mo/yr
- PI: G.L. Galford. 09/01/06-05/31/09. Biogeochemical Consequences of Land Use Transitions Along Brazil's Agricultural Frontier. **NASA Earth System Science Fellowship Program**, budget: \$144,000, effort: 12 mo/yr

TEACHING EXPERIENCE

- Academic Director | Geospatial Technologies**, University of Vermont 2017-pres.
Coordinate faculty and courses, advise students, develop new opportunities. Lead Strategic Planning Process (2018) and re-design of Geospatial Technologies Minor (2018). Created non-credit, professional GIS Certificate program (2020).
- Research Associate and Assistant Professor | University of Vermont** 2012-pres.
Global Environmental Assessment (ENSC130) | 2014-pres.
Expanded this course from 28 students (SP 2014) to 115 students by 2017. Introduces GPS, GIS and remote sensing from an environmental science perspective. Sophomore level course.
- Climate Change Science, Communication & Policy (HCOL 185) | 2020
Developed Honors College seminar with an applied research project for 24 students
- Vermont Climate Assessment (NR 385) | 2020, 2013
Utilized a team-driving, service learning graduate course to conduct research on climate change and its impacts for the Vermont Climate Assessment.
- Cuba: Ridges to Reefs (NR 385) | 2018
Co-lead this travel course with Cuban colleagues and students examining agroecology, environment and sustainability
- Spatial Modeling for Ecological Economics (NR 385) | 2013
Applied spatial modeling concepts to ecological economics questions in this theory and project-based course
- Ecological Economics Methods | 2016
Created graduate course for the Ecological Economics certificate program
- Ecosystems Ecology (NR 228/FOR 228) | 2013
Developed new course for 20 undergraduate and graduate students
- Sustainability Facility Fellow Training | University of Vermont** 2012-2013
- Teaching Staff | The Woods Hole Research Center, Pantropical Scholars Program** 2011

Leadership in Spatial Modelling | Co-taught approaches in modelling and leadership skills
GPS and GIS for Forestry | Facilitated exercises for professional foresters in Malawi

Intern Mentor | The Earth Institute at Columbia University, Sustainability & Development 2011
Teaching Assistant | Land Use Science, Watson Scholars on Environment, Brown University 2005
Teaching Assistant | Introduction to GIS, Brown University 2005
Teaching Consultant | Sheridan Center for Teaching, Brown University 2005-2006
Teaching Certificate II | Sheridan Center for Teaching and Learning, Brown University 2006
Teaching Certificate I | Sheridan Center for Teaching and Learning, Brown University 2005
Teaching Assistant | Freshman Seminar on Missouri's Natural Environment, Environmental Sustainability of the Mojave Desert, Capstone in Hawaii; Pathfinder Program in Environmental Sustainability, Washington University in St. Louis 2002-2004

SERVICE

Board Member | The American Chestnut Foundation, VT/NH Chapter 2020-pres.
Interim Co-Chair | Diversity Committee, Gund Institute for Environment 2020-2022
Faculty | Complex Systems and Data Science Program 2019-pres.
Committee Member | Diversity Committee, Gund Institute for Environment 2018-pres.
Faculty | Food Systems Graduate Program 2018-pres.
Faculty | Quantitative and Evolutionary STEM Training (QuEST) Program 2018-pres.
Session chair | Ecological Society of America "Disrupted Nitrogen Cycling in the Tropics: Tracking the Effects of Global Change Impacts on N Biogeochemistry from Soil to Stream" 11 Aug 2015
Community Advisor & Volunteer | Champlain Valley Union High School Sustainability Hub 2014-pres.
Sustainability Faculty Fellow | University of Vermont 2012-pres.
Committee Member | UVM Food Systems Steering Committee 2013-2017
Committee Member | RSENR Community Sustainability Committee 2013-2016
Committee Member | Gund Fellows Selection Committee 2013-2017
Trainer (invited) | Vermont Land Trust 05 Nov 2015
Expert Witness | VT Senate Committee on Natural Resources & Energy 25 March 2015
Steering Committee | Food Systems Initiative 2013-2017
Panel reviewer | EPA, NSF, NASA, Netherlands Organisation for Scientific Research (NWO) 2012-pres.
Journal reviewer | Climate, Climatic Change, Conservation Letters, Ecosystems, Environmental Entomology, Environmental Research Letters, Forest Ecology, Frontiers, Gaia, Global Environmental Change, Geophysical Research Letters, International Journal of Remote Sensing, Land Use Policy, Land Use Science, Nature Climate Change, Nature Sustainability, PeerJ, Proceedings of the National Academy of Sciences, Philosophical Transactions of the Royal Society, Remote Sensing of Environment, Science of the Total Environment, Scientific Reports
Publication reviewer | State of Connecticut Physical Climate Change Assessment; CCAFS Working Papers; Pearson Publishing; Lake Champlain Basin Program
Media interviews | Associated Press, Reuters, Fast Company, Grist, Vermont Public Radio, Green Energy Times, Climate Central, New Calcedonia Record

INVITED TALKS

2023

2022

2021

Climate change in Vermont. Across the Fence, WCAX and University of Vermont Extension, Burlington, Vermont.

2020

Engaging local knowledge brokers for state climate assessments. Gund Board of Directors, University of Vermont, Burlington, VT.

2019

Greenhouse gas emissions from agricultural intensification in the Amazon. St. Francis Xavier, Nova Scotia, Canada.

Cuban Land Use and Ecosystems. University of Florida, Gainesville, FL.

Vermont Climate Assessment. Lamoille Valley Osher Program for Lifelong Learning, Montpelier, VT.

2018

Natural Catastrophes: Understanding local changes, Vermont Captive Insurance Association Annual meeting, Burlington, VT

Mining drives extensive deforestation in the Brazilian Amazon, Imaflora, Piracicaba, Brazil.

Vermont Climate Assessment. Lamoille Valley Osher Program for Lifelong Learning, Stowe, VT.

2017

State climate assessments: Building saliency, relevancy and credibility on a budget. U. Connecticut.

The power of personal relationships—Using Bridge as a platform for cross-sectoral action. The Bridge Collaborative London, UK.

Greenhouse gas emissions from land use change. Intensification of the world's largest agriculture frontier: reconciling agricultural production and environmental integrity in a changing climate. Brasilia, Brazil.

Cuba: Rainforests to Reefs. Gund Research Slam.

Deforestation in the 21st Century. Engage the Chain, Ceres webinar.

2016

Vermont Climate Assessment. Lyndon State College Environmental Science Seminar.

Vermont Climate Assessment. Sterling College, VT.

Environmental and socioeconomic outcomes of the new African Green Revolution. NASA Land Cover and Land Use Change Webinar.

Multiscalar fusion and the case of homogeneous heterogeneity. NASA Land Cover and Land Use Change Science Team Meeting, North Bethesda, MD.

2015

Climate Training: Understanding global and local climate changes. Vermont Land Trust, Shelburne, VT.

Vermont's changing climate. Vermont Senators' Climate Caucus, Burlington, VT.

From plot to pixel: Tropical ecosystems in a fast-changing world. The Ecosystems Center, MBL, Woods Hole, MA.

Environmental and socioeconomic outcomes of the new African Green Revolution. NASA Land-cover and land-use change Science Team Meeting. College Park, MD.

Climate change challenges for Vermont. Expert testimony for VT Senate Committee on Natural Resources and Energy, Montpelier, VT.

How will regional and global climate change affect Vermont's future? Panel discussion at Vermont Council on Rural Development Climate Economy Summit.

2014

Vermont Climate Assessment. Vermont Youth Summit, Burlington, VT.

Vermont Climate Assessment (Multiple talks). Vermont Legislative Summit on Climate Change, Burlington, VT.

Modeling Greenhouse Gas Emissions from 100 Years of Land-Cover and Land-Use Change on the Amazon Agricultural Frontier. Laboratório de Processamento de Imagens e Geoprocessamento, Goiânia, Brazil.

Vermont Climate Assessment. Rutland Regional Planning Commission, Rutland, VT.

Vermont Climate Assessment: A regional look at climate change trends. Climate Science Center, U. Massachusetts, Amherst.

2013

Environmental & Socioeconomic Outcomes of the New African Green Revolution. IFPRI. Washington, DC.
Environmental and Socioeconomic Outcomes of the New African Green Revolution. NASA Science Team Meeting, LCLUC Program. Rockland, MD.

Tropical Agriculture—food security, poverty and environmental sustainability. U. of Vermont, Plant and Soil Sciences.

PROFESSIONAL ORGANIZATIONS

US-International Association of Landscape Ecologists	2015-pres.
Ecological Society of America	2004-pres.
American Geophysical Union	2002-pres.
Soil Science Society of America	2010-2013
American Association of Geographers	2007-2010

STUDENTS

PhD Advisor: Eva Kinnebrew (2022), R. Kirsten Taylor (2021), Keri B. Watson (2017; Faculty, University of the South), Sonya Ahamed (2021; Postdoc, Michigan State University)

PhD committee member: Lindsey Barbieri (2021) Suganya Pandian (2021), Qing Ren (2021), Lucia Orantes (2017)

Masters advisor: Alison Adams (2017), Benjamin Kauffman (2017), Anna Cimini (2016)

Masters committee member: Chris Brittain (2022), Maya Fein-Cole (2021), Lauren Bomeisl (2019), MaeKate Campbell (2021), Sarah Ford (2016), Matt Burke (2015)

Undergraduate thesis advisor: Julia Petty (2021), Clara Saurantopolis (2021)

Undergraduate thesis committee member: Emma Rosenau (2023), Lauren Cresanti (2023), Chloe Koval (2022), Julia Petty (2021), Clara Sarantopolis (2021), Maya Fein-Cole (2020), Landon Williamson (2020), Amanda Cole (2019)

REFERENCES

Dr. Stephen Polasky, Regents Professor, Fesler-Lampert Professor of Ecological/Environmental Economics, Department of Applied Economics, University of Minnesota, 612.625.9213, polasky@umn.edu

Dr. Ruth DeFries, Denning University Professor of Sustainable Development, Department of Ecology, Evolution, and Environmental Biology (E3B), Columbia University, rd2402@columbia.edu

Dr. Geoffery Henebry, Professor, Department of Geography, Environment and Spatial Sciences, Michigan State University, henebryg@msu.edu