

Bryce Currey

Curriculum Vitae
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Current appointment

2022-present Joint post-doctoral researcher at Montana State University and NASA
Goddard Space Flight Center

Relevant Interests

Bryce Currey's expertise includes applying a robust knowledge of data collection, data analyses, geographic information systems, and remote sensing techniques to answer multiscale biogeochemical and ecological questions. His primary interests consist of integrating *in-situ* measurement with large-scale ecosystem data and process-based modeling to understand how regional and global change will lead to future ecological and biogeochemical changes across scales. Bryce Currey also strongly ascribes to the academic tenets of collaboration and science communication.

Education

- 2016-2022 Ph.D. Ecology and Environmental Sciences. Montana State University
Advisor: Dr. Jack Brookshire
- 2012-2016 B.S. Civil Engineering with Environmental Emphasis, minor in Applied Mathematics. Graduated *Magna Cum Laude*. Loyola Marymount University.
Advisor: Dr. Jeremy Pal

Academic Experience

- 2020-2022 Instructor of Remote Sensing (GPHY 426/429R/525) at Montana State University
- 2017-2020 Graduate research assistant, Montana State University. Bureau of Land Management Grant # L16AS00082. *Multi-scale analysis of the effects of prescribed fire on terrestrial ecosystem dynamics in the Missouri and Musselshell River Breaks, central Montana.*
- 2018-2020 Graduate research assistant, Montana State University, EPSCoR Track II NSF project #OIA-1632810. *Water Agriculture Food Energy Research Nexus (WAFERx).*
- 2018 Two-week field expedition to Trinidad to collect tree measurements and tree cores and measure N-fixation.
- 2018 Participant at the week-long North American Dendroecological Fieldweek (NADEF) training camp in dendrochronology resulting in a publication.
- 2017 Founding member of the graduate section of the interdisciplinary *Grassland Resilience Working Group* at Montana State University.
- 2017 Established long-term study and creating 45 20x20m sampling plots in Central Montana.
- 2015 Research Experience for Undergraduates (REU) at Colorado State University.

Technical Expertise

- Fluent in R, ArcGIS Pro, QGIS, Microsoft Office suite.
- Proficient in frequentist and Bayesian, multivariate, spatial- and time-series statistical methods.
- Proficient in C, Python, JavaScript, MATLAB, Google, Earth Engine, ERDAS IMAGINE
- Frequent use of high-powered computing
- Frequent use of machine learning algorithms (e.g., deep neural networks, gradient boosted machines, random forests)
- Proficient with field sampling/monitoring techniques (e.g., soil sampling, forest monitoring, dendrochronology, data logging, flux measurement)
- Trained using analytical laboratory equipment (Lachat QuickChem8500; Costech ECS 4010)

Research Products

- 2022 Gay, J. D., H. Goemann, **B. Currey**, P.C. Stoy, P. Miller... E. N. J. Brookshire. *Climate mitigation potential and soil microbial response of cyanobacteria-fertilized bioenergy crops in a cool semi-arid cropland.*
- 2022 Blomdahl E.M., D. Alving, G. Cahalan, **B. Currey**, B. Hagedorn... R. J. DeRose. *An assessment of ecotone shift and mechanisms of change in the high elevation forests of the Greater Yellowstone Ecosystem.*
- 2022 **Currey, B. D. B.** McWethy, N. Fox, E.N.J. Brookshire. *Large contribution of woody plant expansion to recent vegetative greening of the Northern Great Plains.* Journal of Biogeography.
- 2021 Epstein, K., D. J. A. Wood, K. Roemer, **B. Currey**, H. Duff, J. D. Gay, H. Goemann, S. Loewen, M. C. Milligan, J. A. F. Wendt, E. N. J. Brookshire, L. McNew, D. B. McWethy, B. D. Maxwell, P. C. Stoy, and J. H. Haggerty. *Towards an urgent yet deliberate conservation strategy: sustaining social-ecological systems in rangelands of the Northern Great Plains, Montana.* Ecology and Society.
- 2020 **Currey, B.**, M. P. Oatham, and E. N. J. Brookshire. *Negative trait-based association between abundance of nitrogen fixing trees and long-term tropical forest biomass accumulation.* Journal of Ecology.
- 2020 Brookshire, E. N. J., P. C. Stoy, **B. Currey**, and B. Finney. *The greening of the Northern Great Plains and its biogeochemical precursors.* Global Change Biology.
- 2019 Brookshire, E. N. J., N. Wurzburger, **B. Currey**, D. N. L. Menge, M. P. Oatham, and C. Roberts. *Symbiotic N fixation is sufficient to support net aboveground biomass accumulation in a humid tropical forest.* Scientific Reports.
- 2018 McWethy, D. B., A. Pauchard, R. A. García, A. Holz, M. E. González, T. T. Veblen, J. Stahl, and **B. Currey**. *Landscape drivers of recent fire activity (2001-2017) in south-central Chile.* PLOS ONE.
- In review* Gay, J. D., **B. Currey**, E. N. J. Brookshire. *Global distribution and climate sensitivity of soil nitrogen in tropical montane forests.*
- In review* Poulter, B. E.N.J. Brookshire, L. Calle, **B. Currey**, A. Raiho ... Z. Zhang. *Simulating global dynamic surface reflectances for imaging spectroscopy*

- spaceborne missions - LPJ-PROSAIL.*
- In prep* East, A. A. Hansen, P. Jantz, **B. Currey**, D.W. Roberts, D. Armenteras. *Validation and error minimization of GEDI relative height metrics in the South American Tropics.*
- In prep* **Currey, B.**, J. D. Gay, E. N. J. Brookshire. *Woody plant expansion drives reallocation of carbon, nitrogen and phosphorous in the Northern Great Plains.*
- In prep* Gay, J. D., **B. Currey**, E. N. J. Brookshire. *Interactions between woody plant expansion and pyrogenic soil carbon storage in temperate grassland ecosystems.*

Conference contributions and invited talks

- 2022 Montana State University Earth Science Seminar Series (Invited Talk)
Moving towards a more colorful future: hyperspectral remote sensing as the frontier of earth observation.
- 2022 European Space Agency 2nd Hyperspectral workshop, Frascati, Italy (Talk)
Simulating global dynamic surface reflectances for imaging spectroscopy spaceborne missions - LPJ-PROSAIL.
- 2021 British Ecological Society, Macroecology annual meeting, Virtual (Talk)
Large contribution of woody plant expansion to recent vegetative greening of the Northern Great Plains.
- 2020 Society of Rangeland Management, Denver, CO (Invited Talk)
Recent vegetative changes in the Northern Great Plains.
- 2019 Ecological Society of America annual meeting, Louisville, KY (Talk)
Recent woody plant encroachment and vegetative greening in the Northern Great Plains of North America.
- 2019 Musselshell Watershed Coalition stakeholder meeting, Roundup, MT (Invited Talk)
Causes and consequences of recent vegetative changes across central Montana.
- 2018 Ecological Society of America annual meeting, New Orleans, LA (Talk)
Diversity, stability and long-term carbon sequestration in a mature tropical forest landscape.
- 2014 American Geophysical Union annual meeting, San Francisco, CA (Poster)
Geographic Variability of the Width of the Topical Belt.

Awards and Honors

- 2018 \$1,000. North American Dendroecological Fieldweek
- 2018 \$8,500. Nielson Graduate Research Assistantship
- 2019 \$15,000. Murdock Trust Partners in Science Award
- 2020 \$1,000. Undergraduate Research Program grant (mentored)
- 2021 College of Agriculture Award of Excellence – North American Colleges and Teachers of Agriculture Teaching Award of Merit for Graduate Students

Teaching Experience

- Spring 2017 Ecosystem Biogeochemistry (400/500-level); Teacher's Assistant

Spring 2018 Ecosystem Biogeochemistry (400/500-level); Teacher's Assistant
Spring 2019 Ecosystem Biogeochemistry (400/500-level); Teacher's Assistant
Spring 2021 Remote Sensing (400/500-level); Co-Instructor
Spring 2022 Remote Sensing (400/500-level); Instructor

Affiliations

Ecological Society of America
American Geophysical Union
Society for Range Management
Grasslands Resilience Working Group