

Matthew R.V. Ross

Assistant Professor of Water Quality, Colorado State University
1476 Campus Delivery, Fort Collins, CO 80523

✉ matt.ross@colostate.edu 🌐 [matthewross07](https://matthewross07.github.io) 🌐 matthewrvross.com | Updated: March 6, 2019

Education

Duke University, Ph.D. Ecology 2017
University of Colorado at Boulder, B.A. Ecology and Evolutionary Biology with a Minor in French 2010

Employment

Colorado State University Department of Ecosystem Science and Sustainability
Assistant Professor of water quality 2018–present
University of North Carolina at Chapel Hill
Post-doctoral researcher in the Global Hydrology Lab with Tamlin Pavelsky 2017–2018

Publications

2018

Barger, N. N., Gardner, T. A., Sankaran, M., Belnap, J., Broadhurst, L., Brochier, V., Isbell, F., Meyfroidt, P., Moreira, F., Nieminen, T. M., Okuro, T., Rodrgiues, R. R., Saxena, V., and **Ross, M.** Chapter 3: *Direct and indirect drivers of land degradation and restoration*. In IPBES (2018): The IPBES assessment report on land degradation and restoration. Montanarella, L., Scholes, R., and Brainich, A. (eds.). Secretariat of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, Bonn, Germany, pp. 137-218

MRV Ross, F Nippgen, BA Hassett, BL McGlynn, ES Bernhardt. *Pyrite oxidation drives exceptionally high weathering rates and geologic CO₂ release in mountaintop-mined landscapes*. Global Biogeochemical Cycles. 2018. doi: [10.1029/2017GB005798](https://doi.org/10.1029/2017GB005798)

AA Perişak CJ Thomas, DA Kroodsma, MF Wasson, **MRV Ross**, NE Clinton, DJ Campagna, Y Franklin, ES Bernhardt, JF Amos. *Mapping the yearly extent of surface coal mining in Central Appalachia using Landsat and Google Earth Engine*. PLOS ONE. 2018. doi: [10.1371/journal.pone.0197758](https://doi.org/10.1371/journal.pone.0197758)

2017

F Nippgen, **MRV Ross**, ES Bernhardt, BL McGlynn. *Creating a more perennial problem? Mountaintop removal coal mining enhances and sustains saline baseflows of Appalachian watersheds*. Environmental science & technology. 2017. doi: [10.1021/acs.est.7b02288](https://doi.org/10.1021/acs.est.7b02288)

2016

MRV Ross, BL McGlynn, ES Bernhardt. *Deep impact: effects of mountaintop mining on surface topography, bedrock structure, and downstream waters*. 2016. Environmental science & technology. doi: [10.1021/acs.est.5b04532](https://doi.org/10.1021/acs.est.5b04532)

2015

MRV Ross, ES Bernhardt, MW Doyle, JB Heffernan. *Designer ecosystems: incorporating design approaches into applied ecology*. 2015. Annual Reviews of Environment and Resources. doi: [10.1146/annurev-environ-121012-100957](https://doi.org/10.1146/annurev-environ-121012-100957)

MC Arnold, LA Friedrich, TT Lindberg, **MRV Ross**, NM Halden, ES Bernhardt, VP Palace, RT Di Giulio. *Microchemical analysis of selenium in otoliths of two West Virginia fishes captured near mountaintop removal coal mining operations*. 2015. Environmental Toxicology and Chemistry. doi: [10.1002/etc.2885](https://doi.org/10.1002/etc.2885)

2012

MRV Ross, SC Castle, NN Barger. *Effects of fuels reductions on plant communities and soils in a Pi~non Juniper woodland*. 2012. Journal of arid environments. doi: [10.1016/j.jaridenv.2011.11.019](https://doi.org/10.1016/j.jaridenv.2011.11.019)

Publications in review

MRV Ross, S Topp, AP Appling, C Kuhn, D Butman, M Simard, T Pavelsky. *AquaSat: a dataset to enable remote sensing of water quality for inland waters*. In review at Water Resources Research

S Topp, T Pavelsky, D Jensen, M Simard, **MRV Ross**. *Remote sensing of water quality: a 50-year review of methods and applications*. In review at Limnology and Oceanography

Publications in prep (manuscript in internal review)

AC Brooks, **MRV Ross**, F Nippgen, BL McGlynn, ES Bernhardt. *Mountaintop removal coal mining watersheds export excessive nitrate*.

A Whittermore, **MRV Ross**, X Yang, W Dolan, T Langhorst, T Pavelsky, S Januchowski-Hartley. *The construction and validation of a citizen science derived Gloval River Obstruction Database (GROD)*.

M Simonin, JD Rocca, J Gerson, E Moore, **MRV Ross**, A Brooks, J Craine, L Czaplicki N Fierer ES Bernhardt. *Biodiversity loss across multiple kingdoms of life associated with surface coal mining activities in Central Appalachian rivers*.

Grants and Awards

Pending

2019

Google Artificial Intelligence Impact Challenge, Lead PI of 7 institutions. *Using AI, Satellites, and Geoscience Knowledge to Build a Global Water Quality Monitoring Network* (\$1,967,427)

NSF Frontiers in Earth Science, CO-PI *Using big data and machine learning to understand the phasing and processes that link upland sediment sources to coastal wetland change* (CSU portion: \$686,379)

NSF DEB Macrosystems and NEON-Enabled Science, CO-PI *Collaborative Research: The Inland Water Clarity Project: Integrating Lakes, Rivers and People at Continental Scales* (CSU portion: \$326,526)

NSF DEB Macrosystems and NEON-Enabled Science, CO-PI *Collaborative Research: MACRO-Sheds: Comparative Ecosystem Biogeochemistry at Continental Scales* (CSU portion: \$420,864)

Awarded

2019

NSF EAR Hydrological Sciences Post-DOC awarded directly to Anna Bergstrom. *Controls on weathering, solute fluxes, and geologic carbon cycling in glacierized catchments* Faculty adviser for post-doc (\$174,000).

2018

Colorado Water Institute, CO-PI with Ed Hall. *Tools for improving knowledge of reservoir water quality in the Front Range of Colorado* (\$49,991) - Recommended for funding

2016

- Grand Prize AGU/NASA Data Visualization and Storytelling Competition
- Fellow for Intergovernmental Panel on Biodiversity and Ecosystem Assessment
- Finalist for Mozilla Fellowship for Open Science

2015

- Third Place Duke Data Visualization Contest

- Duke Data+ Mentor
- Gordon Research Conference Rising Star

2013

- NSF Graduate Research Fellowship

2012

- NSF IGERT for Wireless Intelligent Sensor Networks
- Honorable Mention NSF Graduate Research Fellowship

Presentations

F Nippgen, MRV Ross, ES Bernhardt, BL McGlynn. *Deconstructing the deconstruction of Appalachia: Mountaintop mining effects on hydrology across temporal and spatial scales*. Fall Meeting of the American Geophysical Union, New Orleans, December 2017.

MRV Ross, F Nippgen, BL McGlynn, ES Bernhardt. *Yesterdays forest, tomorrows savannah? Legacies in the man-made mountains of Appalachia*. Fall Meeting of the American Geophysical Union, New Orleans, December 2017. *Invited

F Nippgen, MRV Ross, ES Bernhardt, BL McGlynn. *Short and long-term effects of a large-scale critical zone disturbance on hydrologic response*, UCOWR, Fort Collins, June 2017

MRV Ross, F Nippgen, BL McGlynn, ES Bernhardt. *Disturb 1% of the land, generate 50% of the regional ion flux*. Society for Freshwater Science, Raleigh, June, 2017.

MRV Ross, F Nippgen, BL McGlynn, ES Bernhardt. *Tracing disturbance impacts on water quantity and quality through a stream network*. European Geophysical Union, Vienna, April, 2017

MRV Ross, F Nippgen, Hassett B., BL McGlynn, ES Bernhardt. *Melting mountains of Appalachia: exceptionally high weathering rates in mined watersheds*, American Geophysical Union Fall Meeting, 2016

Nippgen F., MRV Ross, ES Bernhardt, McGlynn, B.L. *Mountaintop removal mining: from ephemeral to perennial streams*, American Geophysical Union Fall Meeting 2016

Brooks, A.C., MRV Ross, F Nippgen, ES Bernhardt, McGlynn, B.L. *Old mountains, new nutrients: Mountaintop mining's impact on watershed scale nitrogen export*, American Geophysical Union Fall Meeting 2016

MRV Ross, Visualizing complex spatiotemporal data using R and ShinyR. Duke Data+ Seminar Series. July 2016. *Invited

MRV Ross, F Nippgen, BL McGlynn, ES Bernhardt. *Contaminants in time and space: Mountaintop mining impacts on stream hydrology, biogeochemistry and macroinvertebrates*. Society for Freshwater Sciences, Sacramento, May 2016

MRV Ross, F Nippgen, BL McGlynn, ES Bernhardt. *Geomorphic signals of the Anthropocene: Mountaintop Mining impacts on the morphology of Central Appalachia*. American Association of Geographers (AAG) Annual Meeting, San Francisco, 2016.

F Nippgen, MRV Ross, BL McGlynn, ES Bernhardt, *Mountaintop mining effects on watershed hydrology*, American Geophysical Union Fall Meeting 2015 *Invited

MRV Ross, F Nippgen,, BL McGlynn, ES Bernhardt. *When everything changes: Catchment scale biogeochemical impacts of mountaintop mining*. Gordon Research Seminar, Hanover, NH, June, 2015

MRV Ross, F Nippgen,, BL McGlynn, ES Bernhardt. *Watershed scale biogeochemical impacts of mountaintop mining*. Ecological Society of America Meeting, Baltimore, MD August 2015

MRV Ross, ES Bernhardt. *Not just scratching the surface: Estimating the deep impacts of mountaintop mining*. Joint Aquatic Sciences Meeting, Portland, OR, May, 2014.

MRV Ross, ES Bernhardt, Marani, M. *Controls on soil oxygen by salt marsh plants in the Venice Lagoon*. Duke Wireless Sensor Network IGERT seminar. Durham, NC. October, 2013.

Posters

MRV Ross, *Sensing rivers and streams*. Gordon Research Conference, Lewiston, ME, June 2017

KL Jaeger, MRV Ross, *Process domains in synthetic landscapes: slope-area relationships in the mountaintop mining region of central Appalachia*. American Geophysical Union Fall Meeting. San Francisco, CA. (12/2014)

Other Publications

Grimbert, Pierre., *The Secret of Ji: The Shadow of the Ancients*. Translated by Matt Ross. Amazon Crossing, Seattle, 2014

Grimbert, Pierre., *The Secret of Ji: The Orphan's Promise*. Translated by Matt Ross and Eric Lamb. Amazon Crossing, Seattle, 2013

Grimbert, Pierre., *The Secret of Ji: The Six Heirs*. Translated by Matt Ross and Eric Lamb. Amazon Crossing, Seattle, 2012.