

REBECCA RYALS – CURRICULUM VITAE

Assistant Professor
Department of Life and Environmental Sciences
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EMPLOYMENT

- 2018 - present **Assistant Professor**, Dept. of Life and Environmental Sciences
University of California, Merced
- 2015 – 2017 **Assistant Professor**, Dept. of Natural Resources and Environmental Management
University of Hawai'i at Mānoa
- 2012 – 2015 **Voss Postdoctoral Research Associate**
Brown University & Marine Biological Laboratory
- 2008 – 2012 **Graduate Research Assistant**, University of California, Berkeley
- 2007 – 2008 **Graduate Student Instructor**, University of California, Berkeley
- 2006 – 2007 **Graduate Research Assistant**, University of California, Berkeley
- 2005 – 2006 **Climate Change Policy Partnership Fellow**, Duke University
- 2005 **Stanback Intern**, Union of Concerned Scientists

EDUCATION

- 2012 **Ph.D.** Environmental Science, Policy, and Management, University of California, Berkeley
- 2006 **M.E.M.** Ecosystem Science and Management, Duke University
- 2004 **B.Sc. (summa cum laude)** Environmental Science, Marywood University

RESEARCH EXPERIENCE

I am a biogeochemist and agroecologist. My research program is motivated by a complex sustainability challenge – how do we grow food for a growing global population in an equitable way in a changing climate, while protecting ecosystems and the services they provide? To address it, I work hard to create productive, interdisciplinary collaborations with researchers and agricultural practitioners. Major research themes in my lab include: (1) nature-based climate solutions, (2) ecological approaches to sanitation, and (3) diversification of agroecosystems. I use field, laboratory, modeling, and life cycle assessment tools to advance our understanding of soil carbon persistence, greenhouse gas fluxes, and nutrient cycling. The specific research questions that I pursue tackle critical gaps in knowledge, yielding scientific knowledge beneficial to society.

SELECT PUBLICATIONS

*undergraduate research mentees, **graduate student mentees, ***postdoctoral research mentees

Harrison, B. **, S. Gao ***, M. Gonzales, T. Ghezzehei, A.A. Berhe, **R. Ryals**. In review. Dairy manure biochar-composting plays a critical role in meeting global methane goals.

Ryals, R., E. Bischak **, K. Porterfield *, S. Heisey **, J. Jeliavoski, S. Kramer, S. Pierre. 2021. Towards zero hunger through coupled ecological sanitation-agriculture systems. *Frontiers in Sustainable Food Systems*. DOI: 10.3389/fsufs.2021.716140

Villa, Y. **, **R. Ryals**. 2021. Soil carbon response to long-term biosolids application. *Journal of Environmental Quality*. 50: 1084-1096. DOI: 10.1002/jeq2.20270

Cusack, D.F., C.E. Kazanski, A. Hedgpeth, K. Chow, A.L. Cordeiro, J. Karpman, **R. Ryals**. 2021. Reducing climate impacts of beef production: a synthesis of life cycle assessments across management systems and global regions. *Global Change Biology*. 27(9):1721-1736.

McNicol, G. **, J. Jeliavoski, J.J. François, S. Kramer, **R. Ryals**. 2020. Climate change mitigation potential in sanitation via off-site composting of human waste. *Nature Climate Change*. 1-5.

Harrison, B.P. **, E. Chopra, **R. Ryals**, J.E. Campbell. 2020. Quantifying the farmland application of compost to help meet California's organic waste diversion law. *Environmental Science & Technology*. DOI: 10.1021/acs.est.9b05377.

CURRICULUM VITAE - REBECCA RYALS

- Ryals, R.**, G. McNicol^{***}, S. Porder, S. Kramer. 2019. Greenhouse gas fluxes from human waste management pathways in Haiti. *Journal of Cleaner Production*. doi:10.1016/j.jclepro.2019.04.079
- Clark, M.* , M. G. Hastings, **R. Ryals**. 2019. Soil carbon and nitrogen dynamics in two agricultural soils amended with manure-derived biochar. *Journal of Environmental Quality*. doi:10.2134/jeq2018.10.0384
- Harden, J., G. Hugelius, A. Anders, J. Blankinship, B. Bond-Lamberty, C. Lawrence, J. Loisel, A. Malhotra, R. Jackson, S. Ogle, C. Phillips, **R. Ryals**, K. Todd-Brown, R. Vargas, S. Vargas, F. Cotrufo, M. Keiluweit, K. Heckman, S. Crow, W. Silver, M. DeLonge, N. Lucas. 2018. Networking our science to characterize the state, vulnerabilities, and management opportunities of soil organic matter. *Global Change Biology* 24:e705-718.
- Tully, K., **R. Ryals**. 2017. Nutrient cycling in agroecosystems: Balancing food and environmental objectives. *Agroecology and Sustainable Food Systems* 41:761-798.
- Cayuela, M.L., E. Aguilera, A. Sanz-Cobena, D.C. Adams, D. Abalos, **R. Ryals**, W. Silver, L. Barton, M.A. Alfaro, V. Pappa, P. Smith, J. Garnier, G. Billen, A. Bondeau, L. Bouwman, L. Lassaletta. 2016. Nitrous oxide emission factors in Mediterranean climate cropping systems: a revision of the available literature and assessment of difference with official national estimates. *Agriculture, Ecosystems and Ecology* 238:25-35.
- Ryals, R.**, V. Eviner, C.E. Stein, W.L. Silver. 2016. Grassland compost amendments increase forage production without changing plant communities. *Ecosphere*. 7:e01270.
- Ryals, R.**, M. Hartmann, W.J. Parton, M.S. DeLonge, and W.L. Silver. 2015. Simulating soil carbon and greenhouse gas dynamics in grasslands amended with compost. *Ecological Applications*. 25:531-545.
- Ryals, R.**, M. Kaiser, M.S. Torn, A.A. Berhe, and W.L. Silver. 2014. Impacts of organic matter amendments on carbon and nitrogen dynamics in rangeland soils. *Soil Biology and Biochemistry*. 68: 52-61.
- DeLonge, M.S., **R. Ryals**, and W.L. Silver. 2013. A lifecycle model to evaluate carbon sequestration potential and greenhouse gas dynamics of managed grasslands. *Ecosystems*. 16: 963-979.
- Ryals, R.** and W.L. Silver. 2013. Effects of organic matter amendments on net primary productivity and greenhouse gas emissions in annual grasslands. *Ecological Applications* 23:46-59.

HONORS

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| 2022 | Climates of Inequality and the COVID Crisis: Building Leadership at Minority Serving Institutions Fellowship; Humanities Action Lab |
| 2021 | Faculty Success Initiative Extramural Funding Fellowship, UC Merced |
| 2019 & 2020 | Outstanding Associate Editor Award, <i>Agronomy Journal</i> |
| 2015 | Young Scientist Award, International Symposium on Organic Matter Management and Compost Use in Horticulture |
| 2013 | Scholar, DISSCRS Dissertation Initiative for the Advancement of Climate Change Research |
| 2009 | Outstanding Graduate Student Instructor Award, UC, Berkeley |
| 2007 | Graduate Research Fellowship Program Honorable Mention, National Science Foundation |
| 2005 & 2006 | Most Outstanding Student Award, Nicholas School of the Env., Duke University |
| 2005 | Nicholas School Alumni Fellowship, Duke University |
| 2004 | Award for Environmental Excellence, Phillip E. Mulry Medal for Excellence in Chemistry, and Kappa Gamma Pi Medal for General Excellence, Marywood University |

PROFESSIONAL MEMBERSHIPS:

American Geophysical Union (AGU), Ecological Society of America (ESA), American Association for the Advancement of Science (AAAS), Soil Science Society of America (SSSA)