

Samuel Negusse Araya

<https://SamuelNA.com/>

EDUCATION

- **Doctor of Philosophy in Environmental Systems** (Concentration: Environmental Soil Physics)
University of California, Merced (08/2014 – 08/2019)
 - **Master of Science in Environmental Systems** (Concentration: Soil Biogeochemistry)
University of California, Merced (08/2011 – 06/2014)
 - **Bachelor of Science in Land Resources and Environment**
University of Asmara (09/2002 – 06/2006)
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EMPLOYMENT

- **Postdoctoral Research Fellow**, Earth System Science, Stanford University (09/2019 – to date)
Faculty Sponsor: Professor Scott Fendorf
 - **Teaching Assistant**, University of California, Merced (01/2011 – 05/2019)
Courses taught: Stable Isotope Ecology (BIO 174/ESS 174) • Fundamentals of Soil Science (ES 170) • Contemporary Biology (BIOL 01) • Earth Resources and Society (ESS 010) • Sustainability Science (ESS 002).
 - **Graduate Assistant**, Hamelmalo Agricultural College, Eritrea (08/2006 – 08/2010)
Courses taught: Fundamentals of Soil Science (LREN212D) • Fundamentals of Remote Sensing and GIS (LREN241) • Land Use Planning (LREN202).
 - **Academic Programming Director**, Hamelmalo Agricultural College, Eritrea (05/2007 – 08/2010)
Job description: Managed the college courses database • scheduled class and exam timetables • prepared semester reports and recommendations to the school dean.
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PUBLICATIONS

Peer-reviewed

- Araya, S. N., & Ghezzehei, T. A. (2019). Using Machine Learning for Prediction of Saturated Hydraulic Conductivity and its Sensitivity to Soil Structural Perturbation. *Water Resources Research*, 55(7), 5715-5737. doi:10.1029/2018WR024357
- Araya S. N., Fogel L. M. & Berhe A. A. (2017). Thermal alteration of soil organic matter properties: A systematic study to infer response of Sierra Nevada climosequence soils to forest fires, *Soil*, 3(1), 31-44, doi: 10.5194/soil-3-31-2017.
- Araya S. N., Meding M. & Berhe A. A. (2016). Thermal alteration of soil physico-chemical properties: a systematic study to infer response of Sierra Nevada climosequence soils to forest fires. *Soil*, 2(3), 351-366, doi: 10.5194/soil-2-351-2016.
- Berhe A. A., Arnold C., Stacy E., Lever R., McCorkle E. & Araya S. N. (2014). Soil erosion controls on biogeochemical cycling of carbon and nitrogen. *Nature Education Knowledge* 5(8):2

Manuscripts in preparation

- Araya, S. N., Fryjoff-Hung, A., Anderson, A., Viers, J. H., & Ghezzehei, T. A. Prediction of Soil Moisture at High Spatial Resolution Using Machine Learning and Unmanned Aircraft Systems-Based Remote Sensing. Manuscript in preparation.

- Araya, S. N., Mitchell, J. P., Hopmans J. W. & Ghezzehei, T. A. Long-Term Impact of Cover Cropping and Reduced Disturbance Tillage on Soil Hydraulic Properties and Soil Moisture Storage. Manuscript in preparation.

Conference presentations

- Araya, S. N., Mitchell J. P., and Ghezzehei T. (2019), How 20-Years of Conservation Agriculture Modified Soil Hydraulic Properties: Lab Analysis and Numerical Simulations. Poster presented at the 2019 International Soils Meeting, San Diego, CA, 6 – 9 January.
- Araya, S. N., et al. (2018), Estimating Soil Moisture from UAV and Machine Learning. Poster presented at the 2018 AGU Fall Meeting, Washington, DC, 10 – 14 December.
- Araya, S. N. and Ghezzehei T. (2018), Using Machine Learning for Prediction of Saturated Hydraulic Conductivity and its Sensitivity to Soil Structural Perturbations. Poster presented at the 2018 AGU Fall Meeting, Washington, DC, 10 – 14 December.
- Araya, S. N., et al. (2018) Estimating Soil Moisture from Unmanned Aerial Vehicle and Machine Learning. Poster presented at the Inaugural Data Science Workshop, Data Science Institute, Lawrence Livermore National Laboratory, Livermore, 7 – 8 August.
- Araya, S. N. and Ghezzehei T. (2018), Machine Learning to Predict the Effect of Soil Structure on Saturated Hydraulic Conductivity. Oral presentation at the W-3188: Soil, Water, and Environmental Physics Across Scales Meeting, Las Vegas, NV, 2 – 4 January.
- Araya, S. N. and Ghezzehei T. (2017), Using Machine Learning to Predict the Effect of Soil Structure on Saturated Hydraulic Conductivity. Poster presented at the 2017 AGU Fall Meeting, New Orleans, LA, 11 – 15 December.
- Araya, S. N., Berli M. and Ghezzehei T. (2017), Soil moisture recharge estimation: a mass balance approach for quantifying effective precipitation. Poster presented at the 26th Groundwater Resources Association of California Annual Meeting, Sacramento, CA, 3 – 4 October.
- Araya, S. N. (2016), Exploring the effectiveness of active learning methods in a discussion classes of an introductory environmental science course. Poster presented at the Assessment as Research Symposium, UC Merced, 2 March.
- Araya, S. N., Berhe A. (2014), Effect of Combustion Temperature on Soil and Soil Organic Matter Properties: A Study of Soils from the Western Elevation Transect in Central Sierra Nevada, California. Poster presented at the 2014 AGU Conference, San Francisco, CA, 15 – 19 December.

PROFESSIONAL ACTIVITIES

Peer review

- Journal articles for: Forest Ecology and Management • Geoderma • Soil • Water Resources Research.
- Grant proposals for U. S. Department of Energy.

Teaching certification

- Developing Teaching Strategies. A set of four workshops offered by Center for Engaged Teaching and Learning (CETL). UC Merced, Spring 2016.
- Mastering the Classroom with First Generation College Students. A certificate in general pedagogy. Center for engaged teaching and learning (CETL). UC Merced, Spring 2015

COMPUTING SKILLS

R • Python • JavaScript • MATLAB • SLURM • Git • ArcGIS • QGIS • Google Earth Engine API.