ELIZABETH AGEE

Oak Ridge National Laboratory
P.O. Box 2008 MS 6301
Oak Ridge, TN 37831-6301

E-mail: agee.elizabeth.a@gmail.com
Phone: 317-626-2422
Twitter: @EcoHydroLiz
http://laagee.github.io

EDUCATION

University of Michigan — Ann Arbor, MI
Department of Civil and Environmental Engineering — August, 2019
Ph.D. Environmental Engineering
Thesis: *Below-ground Root Structure and Ecophysiological Controls of Plant Water Flux During Drought: from Individual to Ecosystem*

University of Michigan — Ann Arbor, MI
Department of Civil and Environmental Engineering — April, 2017
M.S.E. Environmental Engineering, Ecohydrology focus
Certificate in Graduate Teaching, Center for Research on Learning & Teaching

Indiana University – Purdue University Indianapolis — Indianapolis, IN
Department of Physics, Purdue School of Science — December, 2012
B.S. Physics, Minor Mathematics

APPOINTMENTS

***Postdoctoral Research Associate*, Environmental Sciences Division, Oak Ridge National Laboratory,** 09/2019 – present
Supervisor: Anthony Walker
- NGEE-Tropics Project Team

***Graduate Research Assistant,* Department of Civil and Environmental Engineering, Univ. of Michigan,** 09/2013-08/2019.
Advisor: Valeriy Ivanov, Associate Professor
- NASA Earth Science Fellow, NASA
- Blue Waters Graduate Fellow, National Center for Supercomputing Applications/NSF

***Undergraduate Research Assistant,* Department of Earth Sciences, IUPUI,** 10/2010-12/2012.
Advisor: Meghna Babbar-Sebens, Assistant Professor (now of Oregon State Univ.)

***Ronald E. McNair Summer Scholar,* Department of Physics, IUPUI,** 06/2012-08/2012.
Advisor: Yogesh Joglekar, Associate Professor

PUBLICATIONS

Atkins, J.W., and **Agee, E**. Phenological and Structural Linkages to Seasonality Inform Productivity Relationships in the Amazon Rainforest*. 2019. *New Phytologist*; 222(3), 1165–66, doi:10.1111/nph.15783. **Commentary*

Xu, D., **Agee, E.**, Wang, J., and Ivanov,V.Y. Estimation of Evapotranspiration of Amazon rainforest with Maximum Entropy Production Theory. 2019. *Geophysical Research Letters.* doi: 10.1029/2018GL080907

Agee, E., and Li Y. Fighting the Leaky Pipeline: Developing Peer Support for Women in the Earth and Environmental Sciences. 2018. *Michigan Journal of Sustainability*. Volume 6, Issue 1. doi: 10.3998/mjs.12333712.0006.107

CONFERENCE PROCEEDINGS

Agee, E., Atkins, J.W., Gough, C.M., Bond-Lamberty, B.P., Mathes, K.C., Matheny, A.M., and Ivanov, V.Y. 2019. Below-ground structural and ecohydrological feedbacks across disturbance severity gradients. American Geophysical Union Fall Meeting. San Francisco, CA.

Restrepo Acevedo, A.M., **Agee, E**., and Matheny, A.M. 2019 Influence of tree water content in the zero-flow maximum temperature difference: A theoretical and experimental approach.American Geophysical Union Fall Meeting. San Francisco, CA.

Agee, E., Ivanov, V.Y., Xu, D., Oliveira, R.S., Brum, M., Saleska, S.R., Bisht, G., Prohaska, N., Taylor, T., Albert, L., Oliveira, R.C., Christoffersen, B., and Restrepo-Coupe, N. 2018. Exploring linkages between below-ground plant hydraulic processes and multi-scale evapotranspiration during the 2015-2016 Amazon dry season. American Geophysical Union Fall Meeting. Washington, D.C.

Matheny, A.M., Bohrer, G., **Agee, E.**, Rechner, A. F., Restrepo Acevedo, A.M., and Mursinna, A. R. 2018. Dynamics of Ecosystem-Scale Water Use Efficiency as a Product of Plant Hydraulic Strategy. American Geophysical Union Fall Meeting. Washington, D.C.

Mursinna, A.R., Matheny, A.M., and **Agee, E.** 2018. Beyond isohydricity: a whole-plant approach to understanding hydraulic strategy. American Geophysical Union Fall Meeting. Washington, D.C.

Agee, E., Ivanov, V.Y., Oliveira, R.S., Brum, M., Saleska, S.R., Bisht, G., Albert, L., Prohaska, N., Taylor, T., Oliveira, R.C., and Restrepo-Coupe, N. 2018. Quantifying the contributions of root systems to individual and community drought resilience in the Amazon rainforest. XXII International Conference Computational Methods in Water Resources. Saint-Malo, France.

Agee, E., Ivanov, V.Y., Oliveira, R.S., Brum, M., Saleska, S.R., Bisht, G., Prohaska, N., Taylor, T., Oliveira, R.C., and Restrepo-Coupe, N. 2017. Quantifying the contribution of root systems to community and individual drought resilience in the Amazon rainforest. American Geophysical Union Fall Meeting. New Orleans, LA.

Xu, D., **Agee, E.,** Wang, J., and Ivanov, V.Y. 2017. Evapotranspiration estimation using a parameter-parsimonious energy partition model over Amazon basin. American Geophysical Union Fall Meeting. New Orleans, LA.

Agee, E., He. L., Bisht, G., Gough, C.M., Couvreur, V., Fatichi, S., Matheny, A., Bohrer, G., and Ivanov, V.Y. 2016. Root water uptake and lateral interactions among root systems in a temperate forest. American Geophysical Union Fall Meeting. San Francisco, CA.

Ivanov, V.Y., Oliveira, R.S., Brum, M., Prohaska, N., Albert, L., Taylor, T., Fatichi, S., **Agee, E.**, Saleska, S., Oliveira, R.C., Dye, D.G., and Wiedemann, K.T. 2016. Hydraulic Strategies and Response to El Niño Drought in Amazon Rainforest. American Geophysical Union Fall Meeting. San Francisco, CA.

Agee, E., Ivanov, V.Y., He, L., Bisht, G., and Couvreur, V. 2016. Evaluating the impact of root hydraulic traits at the forest scale. XXI International Conference Computational Methods in Water Resources. Toronto, Canada.

Agee, E., Ivanov, V.Y., He. L., Bisht, G., Shahbaz, P.J., Fatichi, S., Gough, C.M., Couvreur, V., Matheny, A., and Bohrer, G. 2015. Compensatory root water uptake of overlapping root systems. American Geophysical Union Fall Meeting. San Francisco, CA.

PRESENTATIONS

Agee, E. 2019. Tree roots: the hidden half of forest drought response. Earth, Coffee, and Climate Seminar. Climate and Space Sciences Department, University of Michigan. Ann Arbor, MI. ***(invited)***

Agee, E. 2018. Individual and landscape water fluxes using sap flow technology. Seminar. Universidade Federal do Amazonas (UFAM). Manaus, Brazil. ***(invited)***

Agee, E. 2018. The root of the matter: quantifying the role of tree roots in forest drought response. Environmental and Water Resources Seminar. Ann Arbor, MI. ***(invited)***

Agee, E., Bisht, G., Oliveira, R.S., Saleska, S.R., Ivanov, V.Y. 2017. Quantifying the contributions of root system function to forest drought resilience in the Amazon rainforest. Blue Waters Symposium. Sunriver, OR.

Agee, E., Bisht, G., Couvreur, V., Ivanov, V.Y. 2017. The hidden contributions of roots to forest drought resilience and sustainability. Michigan University-wide Sustainability & Environment Conference. Ann Arbor, MI.

Agee, E., 2016. Green Infrastructure: Blurring the lines between urban and natural landscapes. Water Sciences Pop-up Talk. American Geophysical Union Fall Meeting. San Francisco, CA.

Agee, E., He., L., Couvreur, V., Bisht, G., Ivanov, V.Y. 2016. Modeling the impacts of competition and meteorological conditions on root water uptake in a northern temperate forest stand. University of Michigan Engineering Graduate Symposium. Ann Arbor, MI.

Agee, E. 2015. Ecohydrology and Plant Hydraulics: Water flows in living pipes. Guest Lecture. CEE325: Fluid Mechanics, Dept of Civil & Environmental Engineering, University of Michigan. Ann Arbor, MI.

Agee, E. 2015. Modeling root water uptake partitioning at the plot scale. Plant Functional Response to Drought Workshop. State University of Campinas (UNICAMP). Campinas, Brazil.

Agee, E., and Joglekar, Y. 2012. Examination of the Boussinesq approximation as applied to a 2-D hydrodynamic model. IUPUI Summer Research Program Poster Symposium. Indianapolis, IN.

Agee, E., and Babbar-Sebens, M. 2012. The use of a multi-objective genetic algorithm for calibration of water quality numerical model of Eagle Creek Reservoir, IN. IUPUI Research Day. Indianapolis, IN.

Agee, E., and Babbar-Sebens, M. 2011. Spatial risk assessment of nitrate loads in the Eagle Creek Watershed. Indiana University Undergraduate Research Conference. Kokomo, IN.

GRANTS AND FELLOWSHIPS

2018 Rackham Research Grant, UM ($3,000)
2017-2018 NASA Earth and Space Sciences Fellowship, NASA ($90,000 cumulative)
2017-2018 J.B. and Marilyn McKenzie Graduate Fellowship, UM Biological Station ($2,000 cumulative)
2017 Rackham Predoctoral Fellowship, UM – *declined for NASA fellowship*
2016 Rackham Interdisciplinary Workshop Grant with Y.Li, A. Steiner, and R.Cory, UM ($5,000)
2016 Google Earth Engine Research Award with V.Y. Ivanov (PI), Google ($45,000)
2016 Blue Waters Graduate Fellowship, NCSA/NSF ($50,000 and computation time)
2016 Rackham International Research Award, UM ($8,200)
2015-2018 Rackham Conference Travel Grants, UM ($3,200 cumulative)
2015 Tinker Foundation Field Research Grant, Tinker Foundation/UM-LACS ($1,400)
2015 International Institute Individual Fellowship, UM ($4,800)
2015 Lewis & Clark Field Exploration Grant, American Philosophical Society ($2,000)
2013 Victor L. Streeter Fellowship, Departmental Fellowship, UM
2012 Ronald E. McNair Scholar, IUPUI ($2,500)
2010 Undergraduate Research Opportunities Program Grant, IUPUI ($2,000)

AWARDS

2016 First Place Poster, University of Michigan Engineering Graduate Symposium
2016 Chi Epsilon Engineering Honor Society Inductee
2016 ASCE Graduate Student Instructor of the Year

2016 Willie Hobbs Moore Award Nominee
2015 NSF Graduate Research Fellowship Honorable Mention

TEACHING EXPERIENCE

***Graduate Student Instructor*, Department of Civil and Environmental Engineering, Univ. of Michigan** 09/2015-05/2016.
Course: CEE421 Hydrology and Floodplain Hydraulics

***Grader*, Department of Civil and Environmental Engineering, Univ. of Michigan,** 09/2016-12/2018.
Courses: CEE521 Open Channel Flow, CEE520 Physical Processes of Land-Surface Hydrology, CEE428 Groundwater Hydrology

***Teaching Assistant,* Joint Workshop, Univ. of Michigan Biological Station,** 08/2015.
Workshop:Modeling plant functional response to drought

WORKSHOPS/PROFESSIONAL DEVELOPMENT

2019 Sensing Forest Water Dynamics from Space, Keck Institute for Space Studies
2019 Emerging Frameworks for Understanding Memory in Ecological Systems, ORNL
2017 Methods in Plant Water Relations and Transport Workshop, University of Idaho
2016 Preparing Future Faculty Workshop, CRLT, University of Michigan
2015 Google Earth Engine Summit, Google, Mountain View, CA
2015 Plant Hydraulics Workshop, UNICAMP, Campinas, Brazil

PROFESSIONAL SERVICE

***Conference Session Chair*, AGU Fall Meeting** 12/2019
H54C. Forest Water Dynamics, Plant Hydraulics, and Drought Responses in the Earth System

***Committee Member,* AGU Hydrology Section, Ecohydrology Technical Committee** 01/2017-2020.

***Peer reviewer,* Multiple Journals** 2017-present.
- Ecology, Journal of Geophysical Research Biogeosciences, Agricultural and Forest Meteorology, Water Resources Research, Plant & Soil, Geophysical Research Letters, Biogeosciences

***Founder/Graduate Coordinator*, Michigan Earth Science Women's Network** 09/2016-09/2017.

***Editor,* Chi Epsilon Civil Engineering Honor Society,** 05/2016-09/2017.

Other Relevant Activities
- Engineering Graduate Symposium Volunteer, 2016
- Lunch and Lab Mentor for Undergraduate Students, 2016, 2017, 2018
- UROP Symposium Poster Judge, 2016, 2017, 2018
- CEE Department Visit Committee, 2016
- CEE Department Visit Panel Speaker, 2015

COMMUNITY SERVICE

***Assistant Den Leader*, Boy Scouts of America,** 09/2019 – present

***Event Coach*, Washtenaw Elementary Science Olympiad, A2STEAM School,** 09/2013-05/2017.
Events: Water Rockets, Back to Nature

***Assistant Coordinator & Event Coach*, Michigan Science Olympiad, A2STEAM School,** 09/2016-present.
Events: Ecology, Invasive Species, Meteorology

***K-12 Ecohydrology Outreach,* Various Schools, Washtenaw County, MI**.

***Workshop Instructor*, Indiana Science Olympiad, Indiana Univ.-Purdue Univ. Indpls,** 07/2012.
Events: Awesome Aquifers! (groundwater hydrology),Meteorology

PROFESSIONAL SOCIETIES

- American Geophysical Union, Young Hydrologic Society
- American Meteorological Society

TECHNICAL SKILLS

- Programming languages: C/C++, FORTRAN, Matlab, Python, Javascript, MPI, HPC architecture knowledge
- GIS and Image Analysis software: ESRI ArcMap, ERDAS Imagine, Google Earth Engine; IJRhizo, ImageJ, Photoshop
- Extensive knowledge of hydrological field and plant ecophysiological measurement techniques and sensing technologies; field experience at temperate and tropical rainforest sites

SOFTWARE RELEASES

Agee, E., He., L., Bisht, G., Couvreur, V. and V.Y. Ivanov. PFLOTRAN-Root: a three-dimensional model of soil water physics and root water uptake. 2019. laagee/pflotran-dev-root-system: PFLOTRAN-Root v0.0 (Version v0.0). Zenodo. http://doi.org/10.5281/zenodo.3540881

PRESS

"Solve for Life." *Re-engineering Radio* and *Michigan Engineering*. Story: Gabriel Cherry. Photos: Joseph Xu. 2019. https://shows.pippa.io/re-engineering-radio/episodes/solve-for-life (podcast); https://news.engin.umich.edu/features/solve-for-life/ (article).

"Hands-on in the Amazon." *Michigan Engineering*. Story: Gabriel Cherry. Photos: Joseph Xu. July 2019. https://news.engin.umich.edu/2019/07/hands-on-in-the-amazon/

"Stories of #HerEngineering." *Michigan Engineering*. Story and photos: Somya Bhagwager. March 2019. https://news.engin.umich.edu/2019/03/stories-of-herengineering/