

JESSICA SIJIA GUO

Digital Agriculture Group
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EDUCATION

PhD, May 2019, Biology, Northern Arizona University
Certificate of Statistics, 2015, Mathematical and Statistical Sciences, Arizona State University
MS, December 2013, Biology, Northern Arizona University
BA, May 2010, *magna cum laude*, Environmental Biology, Columbia University

APPOINTMENTS

2020- Scientific programmer, Digital Agriculture Group, University of Arizona
2019-2020 Postdoctoral Research Scientist, Geology and Geophysics, University of Utah
2016-2019 Graduate Teaching Assistant, Biological Sciences, Northern Arizona University
2015 STEM Outreach Fellow, NASA Space Grant, Arizona State University

PUBLICATIONS

*undergraduate co-author

Published

Guo, J.S., L. Gear*, K.R. Hultine, G.W. Koch, and K. Ogle. 2020. Non-structural carbohydrate dynamics associated with antecedent stem water potential and air temperature in a dominant desert shrub. *Plant, Cell & Environment*. 43(6): 1467-1483.
Guo, J.S., K.R. Hultine, G.W. Koch, H. Kropp, and K. Ogle. 2020. Temporal shifts in iso/anisohydry revealed from daily observations of plant water potential in a dominant desert shrub. *New Phytologist*. 225(2): 713-726.
Ogle, K., D.M.P. Peltier, M.K. Fell, **J.S. Guo**, H. Kropp, J.J. Barber. 2019. Should we be concerned about multiple comparisons in hierarchical Bayesian models? *Methods in Ecology and Evolution*. 10(4): 553-564.
Guo, J.S. and K. Ogle. 2019. Antecedent soil water content and vapor pressure deficit interactively control water potential in *Larrea tridentata*. *New Phytologist*. 221(1): 218-232.
Guo, J.S., B. Hungate, T. Kolb, and G. Koch. 2018. Water source niche overlap increases with site moisture availability in woody perennials. *Plant Ecology*. 219(6):719-735.

In review

Bush, S., **J.S. Guo**, D. Dehn, K. Grady, J. Hull, E. Johnson, D. Koepke, R. Long, D. Potts, K. Hultine. Adaptive versus non-adaptive responses to drought in a non-native riparian tree / shrub (*Tamarix* spp.). In review at *Agricultural and Forest Meteorology*.

Fiorella, R.P., S.P. Good, S.T. Allen, **J.S. Guo**, C.J. Still, D.C. Noone, W.R.L. Anderegg, C.R. Florian, H. Luo, N. Pingingtha-Durden, G.J. Bowen. Macroscale Patterns in Calibrated NEON Atmospheric Carbon Isotope Observations. In review at *Journal of Geophysical Research – Biogeosciences*.

Peltier, D.M.P., **J. Guo**, P. Nguyen, M. Bangs*, L. Gear*, M. Wilson*, S. Jefferys*, K. Samuel-Crow, L.L. Yocom, Y. Liu, M.K. Fell, D. Auty, C. Schwalm, W.R.L. Anderegg, G.W. Koch, M.E. Litvack, K. Ogle. Temporal controls on crown non-structural carbohydrates and links to sapwood storage in southwestern US tree species. In review at *Tree Physiology*.

FELLOWSHIPS

2019 Columbia University Earth Institute Postdoctoral Fellowship (declined)
 2015 ASU/NASA Space Grant Fellowship (Spring/Summer/Fall, \$25,400)
 2011 Science Foundation of Arizona Graduate Fellow (\$8400)
 2006-10 TW Lewis Foundation Scholar (\$20,000)

TEACHING

Instructor of record

Scientific Writing in Microbiology, upper-division	Spr 2018, Fa 2018, Spr 2019
Ecology Lab, upper division	Spr 2017

Teaching assistant

Applied Bayesian Modeling Lab, graduate	Fa 2016, Fa 2017
Biometry Lab, graduate	Fa 2014
Diversity of Life Lab, introductory	Spr 2013
Unity of Life Lab, introductory	Spr 2012, Fa 2012, Fa 2013

Guest lecturer

Plants and Climate, upper-division	Spr 2017
Biometry, graduate	Fa 2014

AWARDS AND HONORS

Research/Teaching

2019 Research and Creativity Award: Most Promising Graduate Student
 2018 Outstanding Graduate Teaching Award
 2018 Graduate College Scholarship
 2018 Jerry O. Wolff Student Enrichment Scholarship
 2017 Honorable mention: Billings Award for an oral presentation at the ESA
 2016 Brian Layton Cardall Memorial Scholarship
 2015 Michael A. Cichan Memorial Award for Excellence in Botany
 2012 Honorable Mention: NSF Graduate Research Fellowship

Travel

2019 AGU Ecohydrology Tiny Grant award

- 2018 AGU Biogeosciences Section Caregiver Support award
- 2017 ESA Minority Ecologists Forum travel award
- 2016 ESA Physiological Ecology Section travel award

CONFERENCE ACTIVITY

Invited

- 2020 **Guo, J.S.**, K.R. Hultine, G.W. Koch, H. Kropp, K. Ogle. Talk title: Temporal patterns of plant water use: combining novel data and modeling approaches. 105th Ecological Society of America, Annual Meeting, Virtual, August 3-6.

Contributed

- 2019 **Guo, J.S.**, H. Kropp, G. Koch, K. Hultine, W.R.L. Anderegg, S. Allen, G. Bowen, K. Ogle. Poster title: Declines in nighttime water potential vary seasonally in a common desert shrub. American Geophysical Union, Fall Meeting, San Francisco, CA, U.S.A., December 9-13.
- 2018 **Guo, J.S.**, K. Hultine, G. Koch, H. Kropp, K. Ogle. Poster title: Testing iso/anisohydry as a plant-environment interaction in *Larrea tridentata*. American Geophysical Union, Fall Meeting, Washington, D.C., U.S.A., December 10-14.
- 2018 **Guo, J.S.**, B. Hungate, T. Kolb, G. Koch. Talk title: Water source niche overlap increases with site moisture availability in woody perennials. Geological Society of America, Joint Rocky Mountain/Cordilleran Section Meeting, Flagstaff, U.S.A., May 15-17.
- 2017 **Guo, J.S.**, L. Gear*, K. Hultine, K. Ogle. Talk title: Seasonal trends in leaf non-structural carbohydrates driven by depletion of starch in *Larrea tridentata*. 102nd Ecological Society of America, Annual Meeting, Portland, U.S.A., August 6-11.
- 2016 **Guo, J.S.**, K. Ogle. Talk title: Antecedent soil moisture and VPD interactively control water potential and hydraulic thresholds in *Larrea tridentata*. 101st Ecological Society of America, Annual Meeting, Fort Lauderdale, U.S.A., August 7-12.
- 2015 **Guo, J.S.**, Hultine, K., Ogle, K. Poster title: Non-structural carbohydrates of woody plants in the Sonoran Desert. 100th Ecological Society of America, Annual Meeting, Baltimore, U.S.A., August 9-14.
- 2014 **Guo, J. S.**, B. Hungate, T. Kolb, and G. Koch. Poster title: Low water availability decreases niche overlap of soil water resources in woody perennials. 99th Ecological Society of America, Annual Meeting, Sacramento, U.S.A., August 10-15.
- 2012 **Guo, J.S.**, B. Hungate, T. Kolb, and G. Koch. Poster title: Variation in functional rooting depth and soil water partitioning along an elevation gradient in the southwestern U.S. American Geophysical Union, Fall Meeting, San Francisco, U.S.A., December 3-7.
- 2010 **Guo, J. S.**, J. I. Burton, M. I. Palmer, and D. J. Mladenoff. Poster title: Inter- and intra-specific functional trait response to environmental change in an herbaceous forest understory. 95th Ecological Society of America, Annual Meeting, Pittsburgh, U.S.A., August 1-6.

Secondary

- 2019 Allen, S.T, R.P. Fiorella, **J.S. Guo**, S.P. Good, D. Noone, W.R.L. Anderegg, G.J. Bowen. Poster title: Accounting for interception loss in evapotranspiration partitioning. US CLIVAR, Water Isotopes and Climate Workshop, Boulder, U.S.A., October 1-3.

- 2018 Koch, G., M. Enright, K. Samuels-Crow, **J. Guo**. Talk title: Toward a prognostic understanding of drought ecophysiology: What can we do better? 103rd Ecological Society of America, Annual Meeting, New Orleans, U.S.A., August 5-10.
- 2017 Peltier, D.M.P., **J. Guo**, K. Samuels-Crow, L. Yocom-Kent, Y. Liu, W. Anderegg, M. Fell, G. Koch, K. Ogle. Talk title: Differential growth responses of *Pinus edulis* during La Niña periods. 102nd Ecological Society of America, Annual Meeting, Portland, U.S.A., August 6-11.
- 2017 Gear, L.*, **J.S. Guo**, K. Ogle. Poster title: Seasonal trends in leaf non-structural carbohydrates in *Larrea tridentata*. NAU Undergraduate Symposium, Flagstaff, U.S.A., April 28.
- 2017 Gear, L.*, **J.S. Guo**, K. Ogle. Talk title: Seasonal trends in leaf non-structural carbohydrates in *Larrea tridentata*. Arizona Space Grant Consortium, Tempe, U.S.A., April 22.

SERVICE, OUTREACH, AND MENTORSHIP

Professional service

- 2020 NSF-IOS panel review, Integrative Ecological Physiology Program
- 2020 Organizer, Organized Oral Session at ESA “Plant water use strategies in a changing world”
- 2019 Ad-hoc review, NSF-IOS proposal, Integrative Ecological Physiology Program
- 2018 Co-organizer, Organized Oral Session at ESA “Ecophysiology of drought resilience and recovery”
- 2017 Organizer, Organized Oral Session at ESA “Evaluating lags and legacies of drought recovery”
- 2015 Travel grant reviewer, ASU Graduate and Professional Student Association
- 2014 Alumni career panelist, TW Lewis Foundation Leadership Conference, Phoenix, AZ
- 2012 Travel award reviewer, ESA-SEEDS
- Ongoing Member: Ecological Society of America, American Geophysical Union, Earth Science Women’s Network
- Ongoing Reviewer: *New Phytologist* (4), *Plant, Cell & Environment* (2), *American Journal of Botany* (1), *Tree Physiology* (1), *Methods in Ecology and Evolution* (1), *Trees* (1), *Plant and Soil* (1), *Conservation Physiology* (1)

Professional development - Research

- 2019 NEON Science Summit, Boulder, CO (invited)
- 2019 SPATIAL short course, Salt Lake City, UT
- 2019 NextProf: Science workshop, Ann Arbor, MI (invited)
- 2016 1st annual PhysFest workshop on plant ecophysiology, Manhattan, KS (invited)
- 2015 NIMBioS graduate student workshop on ecological statistics, Knoxville, TN (invited)
- 2014 Software Carpentry workshop for R and Linux, Tempe, AZ

Professional development - Pedagogy

- 2019 Project EDDIE curriculum development workshop, Northfield, MN (invited)
- 2019 University Teaching Day, Flagstaff, AZ
- 2013 Seminar on Scientific Teaching, Tempe, AZ
- 2011 Seminar on College Teaching, Flagstaff, AZ

Mentorship

- 2020 Remotely mentored Annelise Kelly and Bethany Alston as part of the MS for Secondary School Teachers program on R coding with NEON data
- 2019-20 Mentored U of U transfer student Michelle Williams
- 2016-17 Mentored NAU undergraduates Ryan Bishop and Linnea Gear; Linnea was funded as a NAU/NASA Space Grant Intern
- 2015 Alumni Mentor, ESA-SEEDS at 2015 ESA Annual Meeting, Baltimore, MD
- 2014-15 Mentored ASU undergraduates Samantha Daly, Joan Kwamboka, Brian Lopez, and Sam Teegarden; Sam was funded as an undergraduate research fellow by the School of Life Sciences
- 2012 Mentored NAU undergraduate Hannah Russell; Hannah was funded as a NAU/NASA Space Grant Intern
- 2011 Alumni Mentor, ESA-SEEDS at 2011 ESA Annual Meeting, Austin, TX

Outreach

- 2020 Developed R lesson on spatial analysis of urban tap water isotopes, distributed to network of citizen scientists volunteering for waterisotopes.org
- 2019 “Isotope forensics with human breath”, Picarro activity, Geology Open House, Salt Lake City, UT
- 2019 “Why do plants matter?” presentation to Southwest Youth Camp at Dine College, Flagstaff, AZ
- 2017-18 Scientist in the Classroom, Kathryn Wertz’s 6th grade science class, Flagstaff, AZ
- 2017 Organized the NAU chapter of ESA-SEEDS students on a regional fieldtrip to the Mt. Lemmon Sky School and the Biosphere II, Tucson, AZ
- 2017 Science in the Park, Flagstaff Festival of Science, Flagstaff, AZ
- 2017 Public talk, “Life on the edge: carbohydrate dynamics of the creosote shrub”, Desert Botanical Garden, Scottsdale, AZ
- 2016-17 Consulting ecologist to AP Bio teacher Linda Lenz, Flagstaff, AZ
- 2016-17 Math/Science tutor at Kinlani Bordertown Dormitory, Flagstaff, AZ
- 2014 Co-organized ESA-SEEDS field trip to CAP-LTER, Phoenix, AZ
- 2013-14 Contributor to ASU Ask a Biologist website (<https://askbiologist.asu.edu/>)

Organized training workshops

- October 12-16, 2015: Developed a statistical programming and data visualization workshop for high school girls, Mesa Public Schools (press release by [ASU News](#))
- July 7, 2015: Created and demonstrated lesson on the quantitative impacts of rainfall on an urban stream, Advance Water Educator workshop, The Decision Center for a Desert City, ASU
- June 17, 2015: Created and demonstrated lesson on the quantitative impacts of rainfall on an urban stream, middle and high school teacher training, Global Institute of Sustainability, ASU
- January 12-30, 2015: Designed and taught a supplementary statistics and programming workshop for a capstone environmental science class, BASIS Chandler