

Shirley Anne Papuga

formerly Shirley Anne Kurc

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Education

2006 PhD	Geological Sciences (Hydrology Focus)	University of Colorado – Boulder, CO
1998 BA	Mathematics <i>Cum Laude</i>	Kalamazoo College – Kalamazoo, MI

Professional Appointments

Associate Professor	Wayne State University , Detroit, MI <i>Department of Environmental Science and Geology</i>	2017-present
Associate Professor	University of Arizona , Tucson, AZ <ul style="list-style-type: none"><i>School of Natural Resources & the Environment</i><i>Department of Hydrology & Water Resources</i><i>Department of Soil, Water & Environmental Science</i>	2013-2017
Program Chair	University of Arizona , Tucson AZ <i>Watershed Management & Ecohydrology Program</i> <i>School of Natural Resources & the Environment</i>	2013-2016
Assistant Professor	University of Arizona , Tucson AZ <ul style="list-style-type: none"><i>School of Natural Resources & the Environment</i><i>Department of Hydrology & Water Resources</i><i>Department of Soil, Water & Environmental Science</i>	2007-2013
Post-Doctoral Scholar	University of Michigan , Ann Arbor, MI <i>School of Natural Resources</i>	2006
G Research Assistant	University of Colorado , Boulder, CO <i>Department of Geological Sciences</i>	2002-2006
G Research Assistant	New Mexico Tech , Socorro, NM <i>Department of Earth & Environmental Science</i>	2000-2002
G Research Assistant	University of Virginia , Charlottesville, VA <i>Department of Environmental Sciences</i>	1998-2000
G Research Assistant	Los Alamos National Lab , Los Alamos, NM <i>Earth & Environmental Science</i>	1998
UG Research Assistant	Los Alamos National Lab , Los Alamos, NM <i>Earth & Environmental Science</i>	1997

Honors and Awards

2021	NSF MCA Award in Hydrologic Sciences
2020	Executive Leadership in Academic Technology, Engineering, & Science (ELATES) Fellow
2015	UA SNRE Outstanding Faculty Award
2015	UA SNRE Outstanding Dissertation Award (<i>for Guido</i>)
2014	CALS Nominee for UA 1885 Society Distinguished Scholars Award
2014	UA SNRE Outstanding Dissertation Award (<i>for Sanchez-Mejia</i>)
2013	NSF CAREER Award in Hydrologic Sciences
2013	AGU 2013 Editor's Citation for Excellence in Refereeing (<i>Water Resources Research</i>)
2012	UA College of Ag and Life Sciences Research Career Development Award
2011	UA SNRE Outstanding Scholarly Achievement Award
2010	Santa Fe Institute (SFI) Global Sustainability Summer School Fellow
2010	Nominated for the UA College of Ag and Life Sciences A+ Advisor Award

Professional Development and Training

Fellow	Executive Leadership in Academic Technology, Engineering, and Science (ELATES) at Drexel®, a year-long national leadership development program designed to advance women STEM faculty	2019-2020
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into effective institutional leadership roles. Conducted an Institutional Action Project under mentorship of Wayne State Associate Provost Associate Provost for Faculty Affairs Boris Baltes: *Understanding the “undisciplinary” academic arena to grow an inclusive interdisciplinary culture.*

Participant	UA AAU STEM Faculty Learning Community , 6 – 8 participants with a facilitator meeting every two weeks to shift the UA culture toward greater emphasis on collaborative active-learning pedagogies	2013/2014
Fellow	Santa Fe Institute (SFI) Global Sustainability Summer School , an intensive two-week program on the role of cities as complex systems driving the global sustainability transition; organized around a set of cutting-edge, interdisciplinary lectures and discussions from leading international thinkers and practitioners	2010
Fellow	Wakonse , a week-long intensive experience bringing together faculty and professionals in a remote setting away from campus to explore teaching and learning through highly interactive large and small group presentations, discussion groups and hands-on experiential sessions	2008

Professional Leadership

Secretary (Nominated and Elected)	American Geophysical Union (AGU) Hydrology Section – Executive Committee <i>The Hydrology section is home to more than 7,000 AGU members taking on many of society’s most pressing complex challenges. Our successes have largely resulted from maintaining strength in our core disciplines while embracing an interdisciplinary culture. The Hydrology Section secretary works closely with the section President and President-Elect, students and early career researchers, the Water Resources Research journal and the section’s 11 Technical Committees.</i>	2021 - present
Chair	AGU Hydrology Section Outstanding Student Presentation Award (OSPA) Committee – As Chair of the OSPA committee I am tasked with handling the hundreds of hydrology section student presentations to be considered for section awards at the AGU Fall meeting.	2021 - present
Chair (Appointed)	American Geophysical Union (AGU) Ecohydrology Technical Committee (TC) As Chair, I grew our TC from 10 members to 27 active members all with active roles on subcommittees. Under my leadership, we embraced social media and inclusivity and have grown our community to include thousands of self-identified ecohydrologists from around the world. This TC has been highlighted by AGU as a new effective model for TC community development.	2017-2020
Board Member	Watershed Management Group (WMG), Board of Directors WMG (https://watershedmg.org) is a well-respected and highly active 501(c)3 non-profit in Tucson, AZ that develops community-based solutions to ensure long-term prosperity of people and health of the environment. They provide knowledge, skills, and resources for sustainable livelihoods. As a board member I promoted fundraising efforts and assisted with strategic planning.	2015-2016
Founder/ Director	University of Arizona (UA), waterWRLD Internship Program I partnered with local Tucson 501(c)3 non-profit Watershed Management Group WMG to develop a successful year-long experiential internship program – waterWRLD: water as a platform for Workforce Readiness and Leadership Development (http://waterwrlld.arizona.edu) giving students real world opportunities	2015-2017

	to develop workforce-relevant skills by engaging with the community on water-related issues.	
Member	UA Water, Environmental and Energy Solutions, Internal Advisory Committee Established by the UA and the Arizona Board of Regents, Water, Environmental, and Energy Solutions (WEES) is a funding initiative to support interdisciplinary and cross-sector collaborations concerning scientific, technological, and policy-related solutions to Arizona's water, environment, and energy issues.	2014-2016
Chair <i>(Appointed)</i>	UA Watershed Management & Ecohydrology Program (WSMEH) As Chair of the WSMEH Program within School of Natural Resources and the Environment (SNRE), I was the liaison between the 11 WSMEH faculty members and our SNRE staff, our SNRE students, and our SNRE Director. WSMEH functioned as a "mini department" with our own set of admission requirements and curricular development. As Chair, I served on SNRE's Strategic Planning Committee charged with strategizing for increasing student enrollment, generating new streams of revenue, increasing potential for conducting cutting edge research, evaluating potential in alternative educational programs, increasing social media presence, strengthening alumni network, donor cultivation and marketing. These charges were all set under the new Responsibility Center Management (RCM) model of budgeting.	2013-2016
President <i>(Elected)</i>	Tucson, AZ, Broadmoor-Broadway Village Neighborhood Association As President of our active Neighborhood Association (> 400 residences and a major historic shopping center), I held monthly board meetings and quarterly resident meetings (adhering to Robert's Rules of Order). I delegated responsibilities to board members: Vice Presidents; Secretary; Treasurer; Neighborhood Watch; Urban Wildlife and Forestry; Welcoming Committee; Historic Designation; Social Media; and Malvern Plaza. We worked through budget and policy questions impacting the quality of life for neighborhood residents. Under my leadership our neighborhood had several successes recognized by the City including embracing social media, developing a Little Free Library, hosting a city-wide "Porch Fest", an Adopt-A-Path ceremony, and multiple community water harvesting/green infrastructure projects. To be effective as President, I managed diverse perspectives of our residents and maintained strong relationships with our Ward 6 Council Member, City of Tucson staff and project leaders, private developers, other neighborhood presidents, and the Principals of nearby schools.	2010; 2014-2015

Editorial Service and Peer Review (External)		
Associate Editor	Water Resources Research (<i>an AGU journal</i>)	2016-present
Panel Member	(Proposals) – Various National Science Foundation (NSF) Directorates/Programs; NASA	multiple
Ad Hoc Reviewer	(Proposals) – NSF ; Department of Energy (DOE)	ongoing
Ad Hoc Reviewer	(Manuscripts) – <i>Advances in Water Resources</i> ; <i>Hydrological Processes</i> ; <i>Journal of Applied Remote Sensing</i> ; <i>Restoration Ecology</i> ; <i>Functional Ecology</i> ; <i>Journal of Geophysical Research – Atmospheres</i> ; <i>Global Change Biology Journal</i> ; <i>Journal of Geophysical Research – Biogeosciences</i> ; <i>Tree Physiology</i> ; <i>Geophysical Research Letters</i> ; <i>Water Resources Research</i> ; <i>Remote Sensing of the Environment</i> ; <i>Oecologia</i> ; <i>Journal of Arid Environments</i> ; <i>New Phytologist</i> ; <i>International Journal of Applied Earth Observation and Geoinformation</i> ; <i>Plant Ecology</i> ; <i>Applied</i>	ongoing

Panel Member	Vegetation Science; Journal of the American Water Resources Association; Ecohydrology; Journal of Hydrology (Proposals) - NSF Graduate Research Fellowship Program	2008-2013; 2017
Other Professional Service (External)		
Member (Ex-Officio)	AGU Hydrology Section Fall Meeting Program Committee – As an ex-officio member, I serve as the liaison to the AGU Hydrology Section Executive Committee.	2021 - present
Member	Water Resource Research Editor-in-Chief Search Committee American Geophysical Union, Washington, DC The committee will meet via telecom and all interviews will be conducted via telecom to have a new Editor-in-Chief in place by the end of 2020.	2020
Member	AGU Hydrology Section Langbein Lecture Award Committee The Walter B. Langbein Lecture is given for lifetime contributions to the science of hydrology and/or for unselfish cooperation in hydrologic research. Additional considerations may be the candidate’s renown as a lecturer and/or as an educator. Reviewed and evaluated nominations and letters of support for this award.	2018
Member	Tucson Citizen Task Force, Broadway Boulevard Improvement Project Use a “Context Sensitive Solutions” framework for public participation to understand diverse interests affected by project. Work with Project Team to design roadway concept that considers needs of all modes of transportation, maintains and strengthens a sense of community, and encourages economic vitality.	2012-2016
Other Professional Service (Internal)		
Member (College Representative)	Wayne State University (WSU) Academic Senate - The Academic Senate is the instrumentality by which the faculties of the University can express to the President of the University and the Board of Governors their considered opinion and judgment upon matters of educational policy affecting the University community.	2021 - present
Commissioner	WSU, Commission on the Status of Women (COSW) - The COSW advises WSU's Office of the President and the larger campus community on issues facing women students, staff, faculty, and alumni including gender equity and equality, social justice, and intersectionality. The Commission advocates for women through programming, university service, outreach, research, and policy recommendations.	2021-present
Faculty Coordinator	WSU, Sustainability Learning Community - The Sustainability Learning Community connects students who share an interest in learning more about local and global sustainability issues and how to live a more sustainable lifestyle. This LC provides the opportunity for WSU students from diverse backgrounds and any major who are interested in learning how to personally live in a manner that supports ecologically, socially, and economically healthy environments and communities. First-year students participating in this community are also encouraged to participate in the Sustainability Living Learning Community where students can live in on-campus housing with other students from the Sustainability LC.	2021 - present
Leader	WSU, Wayne Women LEAD: Next-Level Career Conversations (NLCC) Through this 8-month program, aspiring leaders are matched with a leader who is in a position that is at least one level above their current position (i.e., next-level leader). These matches meet a minimum of four times to discuss career goals, create a career development plan, and monitor progress towards the career development plan and celebrate successes.	2020

Member	WSU, President's Standing Committee on Environmental Initiatives This committee of faculty, staff, and students is working together to (1) integrate green practices into campus operations; (2) increase knowledge and awareness of environmental stewardship within the University community, and (3) immerse sustainability concepts, values and innovations into academic courses offered and research conducted by the university. The committee is also charged with oversight, tracking, and reporting of the 2017 - 2022 Sustainability Strategic Plan.	2018-present
Chair	WSU, Earth and Environmental Science Winter Session Seminar Series Invited and hosted speakers for an interdisciplinary seminar series open to the public and jointly convened by the Department of Geology and the Environmental Science Program.	2018, 2019
Member	WSU, CLAS Earth and Environmental Science Department Working Group A committee of faculty from Departments of Geology and Biological Sciences charged with working together to create a vibrant department integrating the Earth and Environmental Sciences at Wayne State.	2018-2019
Member	WSU, Department of Geology, Student Award Committee A committee of faculty and staff reviewing Department of Geology applications for endowed scholarships.	2018 - present
Member	WSU, Department of Geology, Salary Committee A committee of faculty reviewing the selective salary evaluation of departmental faculty.	2018 - present
Member	WSU, Department of Geology, Curriculum Committee A committee of faculty and staff reviewing Department of Geology curricular matters.	2018 - present
Member	UA, Office of Student Engagement, Student Engagement Committee Evaluated and approved non-credit engaged student learning experiences and oversaw distribution of central investment for the development of option for students to graduate with "Engaged Learning Experience" notation on their transcripts.	2015-2016
Member	UA, SNRE, Strategic Planning Committee Strategized to increase student enrollment, generate new streams of revenue, increase cutting edge research potential, strengthen alumni network, cultivate donor relationship, and improve marketing.	2013-2016

Synergistic Activities		
Team Member	WSU, Healthy Urban Waters WSU's Healthy Urban Waters Program directed by Dr. Carol Miller that promotes and delivers research, education, technology development and public engagement on urban water resources.	ongoing
Participant	Transformative Research in Urban Sustainability Training (T-RUST) WSU's T-RUST Program led by Dr. Donna Kashian to train STEM PhD and masters students from multiple disciplines to work together and with local communities, businesses, industries, scientists, and policy makers to address post-industrial urban challenges.	ongoing
Contributor /Investigator	Ameriflux and FLUXNET Eddy Covariance Networks Data portals developed to coordinate regional and global observations from micrometeorological tower sites.	ongoing
Convener /Chair	AGU Fall Meeting Oral and Poster Sessions "Urban Ecohydrology: New Concepts, Observations, and Models" "Plants as Builder and Plumbers of the Critical Zone" "Ecohydrology in the Critical Zone" "Predictive Understanding of Coupled Interactions Among Water, Life, and Landforms" "Ecosystem Resilience to Changing Climate Patterns: The Role of Hydrology"	multiple years
Co-Organizer	Research Insights in Semiarid Ecosystems Symposium	2012-2015

A Regional Symposium jointly hosted by the University of Arizona and the USDA-ARS to highlight local research.

Professional Publications

NOTE: NAME WAS CHANGED FROM KURC TO PAPUGA AFTER MARRIAGE IN 2009.

I have authored or co-authored 42 peer-reviewed publications which, according to *ISI Web of Science*, have been cited nearly 2000 times, an average of about 47 citations per publication, with an h-index of 21. Several of these publications have been written with my graduate students. I have also published with multiple undergraduate students. My very first publication that lists *me* as the lead author (in *Water Resources Research* 2004) has been cited over 225 times. My first publication that lists *one of my graduate students* as the lead author (in *Ecohydrology* 2011) has already been cited over 100 times. You can find me on [Google Scholar](#).

Refereed Journal Articles (published or accepted):

Note: underline indicates a student for whom I served as the major advisor with the superscript denoting the student degree seeking status at the time of initial manuscript preparation.

44. Hood, G.R., **Papuga, S.A.**, Socrates, C., Rankin, K. and K. Hwang. (2021) On the phytoscreening potential of insect-induced plant galls. *Plant and Soil*: <https://doi.org/10.1007/s11104-021-05068-8>.
43. Dwivedi, R., Eastoe, C., Knowles, J., Hamann, L.MS, Meixner, T., Ferré, P.T., Castro, C., Wright, W., Guo- Niu, G.-Y., Minor, R., Barron-Gafford, G, Abramson, N., Mitra, B^{PostDoc}, **Papuga, S.A.**, Stanley, M., and J. Chorover. (2021) An improved practical approach for estimating catchment-scale response functions through wavelet analysis. *Hydrological Processes*: <https://doi.org/10.1002/hyp.14082>.
42. Dwivedi, R., Eastoe, C., Knowles, J., Hamann, L.MS, Meixner, T., Ferré, P.T., Castro, C., Wright, W., Guo- Niu, G.-Y., Minor, R., Barron-Gafford, G, Abramson, N., Mitra, B^{PostDoc}, **Papuga, S.A.**, Stanley, M., and J. Chorover. (2021) An improved practical approach for estimating catchment-scale response functions through wavelet analysis. *Hydrological Processes*: <https://doi.org/10.1002/hyp.14082>.
41. Chu, H., et al., (2021) Representativeness of Eddy-Covariance flux footprints for areas surrounding AmeriFlux sites. *Agricultural and Forest Meteorology* 301–302: 108350.
40. Pastorello, G., et al., (2020) The FLUXNET2015 dataset and the ONEFlux processing pipeline for eddy covariance data. *Scientific Data* 7(1): p. 225.
39. Tague, C.L., **Papuga, S.A.**, Gerlein-Safdi, C., Dymond, S., Morrison, R.R., Boyer, E.W., Riveros-Iregui, D., Agee, E., Arora, B., Dialynas, Y.G., Hansen, A., Krause, S., Kuppel, S., Loheide II, S.P., Schymanski, S.J., and S.C. Zipper. (2020) Adding our leaves: A community-wide perspective on research directions in ecohydrology. *Hydrological Processes*.
38. Dwivedi, R., Eastoe, C., Knowles, J.F., Wright, W.E., Hamann, L.^{MS}; Minor, R., Mitra, B.^{PostDoc}, Meixner, T., McIntosh, J., Ferre, P.A.T., Castro, C., Niu, G.Y., Barron-Gafford, G.A., Abramson, N., **Papuga, S.A.**, Stanley, M., Hu, J., and J. Chorover. (2020) Vegetation source water identification using isotopic and hydrometric observations from a subhumid mountain catchment. *Ecohydrology* 13, (1), 17.
37. Luketich, A.M.^{MS}, **Papuga, S.A.**, and M.A. Crimmins. (2019) Ecohydrology of urban trees under passive and active irrigation in a semiarid city. *PLOS ONE* 14, (11), e0224804.
36. Mitra, B.^{PostDoc}, **Papuga, S.A.**, Alexander, M.R., Swetnam, T.L., and N. Abramson, N. (2019) Allometric relationships between primary size measures and sapwood area for six common tree species in snow-dependent ecosystems in the Southwest United States. *Journal of Forestry Research*, 10.
35. Szutu, D.J.^{MS} and **S.A. Papuga**. (2019) Year-Round Transpiration Dynamics Linked With Deep Soil Moisture in a Warm Desert Shrubland. *Water Resources Research* 55, (7), 5679-5695.
34. Biederman, J., Scott, R.L., Arnone III, J.A., Jasoni, R.L., Litvak, M.E., Moreo, M.T., **Papuga, S.A.**, Ponce-Campos, G.E., Schreiner-McGraw, A.P., and E.R. Vivoni. (2018) Shrubland carbon sink depends upon winter water availability in the warm deserts of North America. *Agricultural and Forest Meteorology* <http://dx.doi.org/10.1016/j.agrformet.2017.11.005>.
33. Brantley, S.L., Eissenstat, D.M., Marshall, J.A., Godsey, S.E., Balogh-Brunstad, Z., Karwan, D.L., **Papuga, S.A.**, Roering, J., Dawson, T.E., Evaristo, J., Chadwick, O., McDonnell, J.J., and K.

- Weathers. On the role of trees in building and plumbing the Critical Zone, *Biogeosciences* 14, 5115–5142.
32. Sanchez-Mejia, Z.^{PhD} and **S.A. Papuga**. Empirical modeling of planetary boundary layer dynamics under multiple precipitation scenarios using a two-layer soil moisture approach: an example from a semiarid shrubland, *Water Resources Research* 53. <https://doi.org/10.1002/2016WR020275>.
 31. Yao, Y., Liang, S., Li, X., Zhang, Y., Chen, J., Jia, K., Zhang, X., Fisher, J.B., Wang, X., Zhang, L., Xu, J., Shao, C., Posse, G., Li, Y., Magliulo, V., Varlagin, A., Moors, E.J., Boike, J., Macfarlane, C., Kato, T., Buchmann, N., Billesbach, D.P., Beringer, J., Wolf, S., **Papuga, S.A.**, Wohlfahrt, G., Montagnani, L., Ardö, J., Paul-Limoges, E., Emmel, C., Hörtnagl, L.H., Sachs, T., Gruening, C., Gioli, B., López-Ballesteros, C., Steinbrecher, R., and B. Gielen. (2017). Estimation of high-resolution terrestrial evapotranspiration from Landsat data using a simple Taylor skill fusion method. *Journal of Hydrology* 553:508-526.
 30. Biederman, J., Scott, R.L., Bell, T.W., Bowling, D.R., Dored, S., Garatuza-Payane, J., Kolb, T., Krishnan, P., Krofcheck, D.J., Litvak, M., Maurer, G.E., Meyers, T.P., Oechel, W.C., **Papuga, S.A.**, Ponce-Campos, G.E., Rodriguez, J.C., Vargas, R., Watts, C.J., Yopez, E.A., and M.L. Goulden. (2017) CO₂ exchange and evapotranspiration across dryland ecosystems of southwestern North America. *Global Change Biology*: DOI: 10.1111/gcb.13686.
 29. Wang, Z., C.B. Schaaf, Q. Sun, J. Kim, A.M. Erb, F. Gao, M.O. Román, Y. Yang, S. Petroy, J.R. Taylor, J.G. Masek, J.T. Morisette, X. Zhang, and **S.A. Papuga**. (2017) Monitoring land surface albedo and vegetation dynamics using high spatial and temporal resolution synthetic time series from Landsat and the MODIS BRDF/NBAR/albedo product. *International Journal of Applied Earth Observation and Geoinformation* 59:104-117.
 28. Johnson, J.E., Hamann, L.^{MS}, Dettman, D.L., Kim-Hak, D., Leavitt, S.W., Monson, R.K., and **S.A. Papuga**. (2017) Performance of induction module-cavity ring-down spectroscopy (IM-CRDS) for measuring $\delta^{18}\text{O}$ and $\delta^2\text{H}$ values of soil, stem, and leaf waters. *Rapid Communications in Mass Spectrometry*: 31:547-560.
 27. Guido, Z.^{PhD}, McIntosh, J.C., **Papuga, S.A.**, and T. Meixner. (2016) Seasonal glacial meltwater contributions to surface water in the Bolivian Andes: A case study using environmental tracers. *Journal of Hydrology: Regional Studies* 8: 260-273.
 26. Novick, K.A., Ficklin, D.L., Stoy, P.C., Williams, C.A., Bohrer, G., Oishi, A.C., **Papuga, S.A.**, Blanken, P.D., Noormets, A., Sulman, B.N., Scott, R.L., Wang, L. and R.P. Phillips. (2016) The increasing importance of atmospheric demand for ecosystem water and carbon fluxes. *Nature Climate Change*: 6:1023-1027.
 25. Cendrero-Mateo M.P.^{PhD}, Moran, M.S., **Papuga, S.A.**, Thorp, K.R., Alonso, L., Moreno, J., Ponce-Campos, G., Rascher, U. and G. Wang. (2016) Plant chlorophyll fluorescence: active and passive measurements at canopy and leaf scales with different nitrogen treatments, *Journal of Experimental Botany*: 67 (1): 275-286.
 24. Cendrero-Mateo, M.P.^{PhD}, Carmo-Silva, A.E., Nearing, G.S., Porcar-Castell, A., Hamerlynck, E.P., **Papuga, S.A.** and M.S. Moran. (2015) Dynamic response of plant chlorophyll fluorescence to light, water and nutrient availability, *Functional Plant Biology*: <http://dx.doi.org/10.1071/FP15002>.
 23. Field, J.P., Breshears, D.D., Law, D.J., Villegas, J.C., López-Hoffman, L. Brooks, P.D., Chorover, J., Barron-Gafford, G.A., Gallery, R.E., Litvak, M.E., Lybrand, R.A., McIntosh, J.C., Meixner, T., Niu, G.-Y., **Papuga, S.A.**, Pelletier, J.D., Rasmussen, C.R., and P.A. Troch. (2015) Critical zone services: Expanding context, constraints, and currency beyond ecosystem services. *Vadose Zone Journal*.
 22. Bunting, D.P.^{PhD}, **Kurc, S.A.**, Glenn, E., Nagler, P., and R.L. Scott. (2014) Insights for empirically modeling evapotranspiration influenced by riparian and upland vegetation in semiarid ecosystems, *Journal of Arid Environments*.
 21. Biederman, J.A., A.A. Harpold, D. Gochis, B.E. Ewers, D.E. Reed, **S.A. Papuga**, P.D Brooks. (2014) Increased evaporation following widespread tree mortality limits streamflow response, *Water Resources Research*, 50: 5395-5409.
 20. Sanchez-Mejia, Z. M.^{PhD}, **S.A. Papuga**, J.B. Swetish^{BS}, W.J.D. van Leeuwen, D. Szutu^{MS}, and K. Hartfield (2014), Quantifying the influence of deep soil moisture on ecosystem albedo: The role of vegetation, *Water Resources Research*, 50: 4038-4053.

19. Sanchez-Mejia, Z.^{PhD} and **S.A. Papuga** (2014) Observations of a two-layer soil moisture influence on surface energy dynamics and planetary boundary layer characteristics in a semiarid shrubland, *Water Resources Research*, 50: 306–317.
18. Nelson, K.^{MS}, **Kurc, S.A.**, John, G.P.^{BS}, Minor, R., and G.A. Barron-Gafford (2014) Influence of snow cover duration on soil evaporation and respiration efflux in mixed-conifer ecosystems, *Ecohydrology*, 7: 869–880.
17. Rosolem, R., Shuttleworth, W.J., Zreda, M., Franz, T., Zeng, X. and **S.A. Kurc** (2013) The effect of atmospheric water vapor on the cosmic-ray soil moisture signal, *Journal of Hydrometeorology*, 14:1659–1671.
16. Pelletier, J.P., Barron-Gafford, G.A., Breshears, D.D, Brooks, P.D., Chorover, J., Durcik, M., Harman, C.J., Huxman, T.E., Lohse, K.A., Lybrand, R., Meixner, T., McIntosh, J.C., **Papuga, S.A.**, Rasmussen, C., Schaap, M., Swetnam, T.L., and and P.A. Troch (2013) Coevolution of nonlinear trends in vegetation, soils, and topography with elevation and slope aspect: A case study in the sky islands of southern Arizona, *Journal of Geophysical Research – Earth Sciences*, 118:741–758.
15. Bunting, D.P.^{PhD}, **Kurc, S.A.**, and M.R. Grabau. (2013) Long-term vegetation dynamics after high-density seedling establishment: implications for riparian restoration and management, *River Research and Applications*, 29:1119–1130.
14. Martin, J.^{MS}, **Kurc, S.A.**, Zaines, G., Crimmins, M., Hutmacher, A., and D. Green (2012) Elevated air temperatures in riparian ecosystems along ephemeral streams: The role of housing density. *Journal of Arid Environments* 84:9-18.
13. Royer, P.D., Breshears, D.D., Zou, C.B., Villegas, J.C., Cobb, N.S., and **S.A. Kurc** (2012) Density-dependent ecohydrological effects of piñon-juniper woody canopy cover on soil microclimate and potential soil evaporation. *Rangeland Ecology and Management* 65: 11-20.
12. Cavanaugh, M.L.^{MS}, **Kurc, S.A.**, and R.L. Scott (2011). Evapotranspiration partitioning in semiarid shrubland ecosystems: a two-site evaluation of soil moisture control on transpiration. *Ecohydrology* 4:671-681.
11. Bunting, D.P.^{MS}, **Kurc, S.A.**, and M. R. Grabau (2011) Using existing agricultural infrastructure for restoration practices: Factors influencing successful establishment of *Populus fremontii* over *Tamarix ramosissima*. *Journal of Arid Environments* 75:851-860.
10. Chorover, J., Troch, P.A., Rasmussen, C., Brooks, P.D., Pelletier, J.D., Breshears, D.D., Huxman, T.E., **Kurc, S.A.**, Lohse, K.A., McIntosh, J.C., Meixner, T., Schaap, M.G., Litvak, M.E., Perdrial, J., Harpold, A., and M. Durcik (2011) How Water, Carbon, and Energy Drive Critical Zone Evolution: The Jemez-Santa Catalina Critical Zone Observatory. *Vadose Zone Journal* 10:884-899.
9. Neal, A.L.^{MS}, Gupta, H.V., **Kurc, S.A.**, and P.D. Brooks (2011) Modeling moisture fluxes using artificial neural networks: can information extraction overcome data loss? *Hydrology and Earth System Sciences* 15:359-368.
8. Royer, P.D., Breshears, D.D., Zou, C.B., Cobb, N.S., and **S.A. Kurc** (2010) Ecohydrological energy inputs in semiarid coniferous gradients: Responses to management- and drought-induced tree reductions. *Forest Ecology and Management* 260:1646-1655.
7. **Kurc, S.A.**, and L.M. Benton^{MS} (2010) Digital image-derived greenness links deep soil moisture to carbon uptake in a creosotebush-dominated shrubland, *Journal of Arid Environments* Volume 74, Issue 5: 585-594.
6. Jardine, K., Abrell, L., **Kurc, S.A.**, Huxman, T., Ortega, J., and A. Guenther (2010) Volatile organic compound emissions from *Larrea tridentata* (creosotebush). *Atmospheric Chemistry and Physics* 10:12191-12206.
5. **Kurc, S.A.** and E.E. Small (2007), Soil moisture control on ecosystem scale fluxes of water and carbon in semiarid grassland and shrubland, *Water Resources Research* 43(6): W06416, doi:10.1029/2006WR005011.
4. Turner, D.P., Ritts, W.D., Zhao, M., **Kurc, S.A.**, Dunn, A.L., Wofsy, S.C., Small, E.E., and S.W. Running (2006), Assessing interannual variation in MODIS-based estimates of gross primary production. *IEEE Transactions on Geoscience and Remote Sensing* 44(7): 1899 - 1907.
3. Turner, D.P., Ritts W.D., Cohen W.B., Maeirsperger T.K., Gower S.T., Kirschbaum A.A., Running S.W., Zhao M.S., Wofsy S.C., Dunn A.L., Law B.E., Campbell J.L., Oechel W.C., Kwon H.J., Meyers T.P., Small E.E., **Kurc S.A.** and J.A. Gamon (2005), Site-level evaluation of satellite-based global terrestrial

gross primary production and net primary production monitoring, *Global Change Biology*, 11(4): 666-684.

2. **Kurc, S.A.** and E.E. Small (2004), Dynamics of evapotranspiration in semiarid grassland and shrubland during the summer monsoon season, central New Mexico, *Water Resources Research*, 40, W09305, doi:10.1029/2004WR003068.
1. Small, E., and **S.A. Kurc** (2003), Tight coupling between soil moisture and the surface radiation budget in semiarid environments: Implications for land-atmosphere interactions, *Water Resources Research*, 39(10), 1278, doi: 10.1029/2002WR001297.

Refereed Journal Articles (submitted or in revision):

Note: underline indicates a student for whom I served as the major advisor with the superscript denoting the student degree seeking status at the time of initial manuscript preparation.

3. Hwang, K.^{PostDoc}, and **S.A. Papuga**. COVID-19 pandemic underscores role of green space in urban carbon dynamics, in revision for *Geophysical Research Letters*.
2. Eckert, S., Hendrickson, T., Brumley, K., **Papuga, S.A.**, Johnson, L., Yaprak, E., Kacin, S., and B. Baltes. How to launch a newly funded gender equity project during COVID-19: Wayne State University GEARS. in review at *IEEE Teaching Excellence Hub*.
1. Hood, G.R., Socrates, C.^{BS}, Rankin, K.^{BS}, Hwang, K.^{PostDoc}, and **S.A. Papuga**. Insect-induced plant galls expose hard-to-detect belowground chemical contaminants, under review at *Plant and Soil*.

Journal Articles (in prep):

4. Eklund, A.^{BS}, Hwang, K.^{PostDoc}, and **S.A. Papuga**. Toward Understanding the Impact of Urban Decline on Local Climatology. in prep for *Journal of Applied Meteorology*.
3. Seifert, E.S.^{BS}, Kopeck, S.J.^{BS}, Hwang, K.^{PostDoc}, and **S.A. Papuga**. Ecohydrology of Green Stormwater Infrastructure in Shrinking Cities: A Two-Year Case Study of a Retrofitted Bioswale in Detroit, MI. in prep for *Urban Ecosystems*.
2. Meixner, T. et al. Green stormwater infrastructure and water resources in the urban built environment: opportunities and barriers in a coupled natural-human system, in prep for *TBD*.
1. Hwang, K.^{PostDoc}, **Papuga, S.A.**, and E. Schwartz, E.^{BS}. CO₂ in the Shrinking City: The Role of Vegetation Phenology in Carbon Dynamics of Post-Industrial Urban Detroit, in prep for *Journal of Geophysical Research – Biogeosciences*.

Other Scholarly Publications (not peer-reviewed):

5. **Papuga, S.** (2010). Supporting Generation "E": Teaching and Research is Not Enough. *The Journal of Sustainability Education*. October, 2010.
4. (**Kurc**) **Papuga, S.A.** (2009), Highlight FLUXNET site Santa Rita Creosotebush, *FluxLetter: The Newsletter of FLUXNET*, Vol. 2 No. 4, December, 2009.
3. **Kurc, S.A.** (2008), Extreme makeovers: Crossing critical thresholds into desertification, *Arid Lands Newsletter*, 60, ISSN: 0277-9455, E-ISSN: 1092-5481.
2. Small, E.E. and **Kurc, S.** (2001). The influence of soil moisture on the surface energy balance in semiarid environments. *NM Water Resources Research Institute Technical Completion Report No. 318*.
1. **Kurc, S.** (1997). Hillslope runoff through grids of patchy vegetation: predictions using modified percolation theory. *Kalamazoo College Mathematics Senior Individualized Project*.

Scholarly Presentations

Note: underline indicates a student for whom I serve(d) as the major advisor with the superscript denoting the student degree seeking status at the time of the abstract submission.

Oral Presentations

- Papuga, S.A.**, Hood, G.R., Socrates, C.^{BS}, Rankin, K.^{BS}, Hwang, K.^{PostDoc}, and M. Whitfield^{BS}. Toward improved use of aboveground plant material to monitor belowground contaminants and their movement in urban environments. 2020. *Fall Meeting of the American Geophysical Union*.
- (INVITED) **Papuga, S.A.** 2019. Environmental science in the city: Ecohydrological strategies for understanding our complex urban systems. *Department of Earth and Environmental Sciences Seminar Series*, University of Illinois - Chicago, Chicago, IL.
- (INVITED) **Papuga, S.A.** 2018. Environmental science in the city: Strategies for understanding some of our most complex systems. *Great Lakes Institute for Environmental Research GLIER Seminar Series*, University of Windsor, Windsor, Canada.
- (INVITED) **Papuga, S.A.** 2018. Environmental science in the city: Strategies for understanding our complex urban systems. *Natural Sciences Colloquium*, University of Michigan-Dearborn, Dearborn, MI.
- (INVITED) **Papuga, S.A.** 2015. Importance of deep soil moisture in dryland land surface – atmosphere interactions. *Research Insights in Semiarid Ecosystems Symposium*, University of Arizona, Tucson, AZ.
- (INVITED) **Papuga, S.A.** 2015. Toward quantifying pecan water use in Arizona. *Annual Meeting of the Arizona Pecan Growers Association*. Tucson, AZ.
- (INVITED) **Papuga, S.A.** 2015. It's not easy being green - linking phenology and climate change at the Santa Rita Experimental Range. *Discovery Saturday Illustrated Talk at the Santa Rita Experimental Range*. Green Valley, AZ.
- (INVITED) **Papuga, S.A.** 2014. A two-layer soil moisture conceptual framework for exploring land surface-atmosphere interactions in water-limited ecosystems. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- (INVITED) **Papuga, S.A.** 2014. Toward quantifying pecan water use in Arizona. *Annual Meeting of the Arizona Pecan Growers Association*. Tucson, AZ.
- (INVITED) **Papuga, S. A.** 2014. Ecohydrological controls on land-atmosphere interactions in water-limited ecosystems. *Department of Soil, Water and Environmental Science Spring Colloquia*. University of Arizona, Tucson, AZ.
- Sanchez-Mejia, Z.M.^{PhD} and **S.A. Papuga**. 2013. Empirical relationships between soil moisture, albedo, and the planetary boundary layer height: a two-layer bucket model approach. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- (INVITED) **Papuga, S. A.** 2012. Feedbacks between vegetation and the water and energy cycles in semiarid regions. *Arid Lands Resources Sciences Spring Colloquia*. University of Arizona, Tucson, AZ.
- Papuga, S.A.**, Sanchez-Mejia, Z.M.^{PhD}, and A.L. Neal^{PhD}. 2011. Feedbacks between vegetation and the water and energy cycles in semiarid regions. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- Pelletier, J.D., Swetnam, T., **Papuga, S.A.**, Nelson, K.^{MS}, Brooks, P.D., Harpold, A.A. and J. Chorover. 2011. Distinguishing grass from ground using LiDAR: Techniques and applications. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- Chorover, J., Troch, P.A., Pelletier, J.D., Rasmussen, C., Brooks, P.D., McIntosh, J.C., Breshears, D.D., Huxman, T.E., **Papuga, S.A.**, Lohse, K.A., Meixner, T., Schaap, M.G., Litvak, M.E., Harpold, A.A., Perdrial, J.N., and M. Durcik. 2011. Carbon, water and weathering limitations in the semi-arid critical zone. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- (INVITED) **Papuga, S. A.** 2010. It's not easy being green: linking hydrology, phenology, and climate change. *Southwest Watershed Research Center Brown Bag Series*, USDA-ARS, Tucson, AZ.
- (INVITED) **Kurc, S.** 2009. The nature of the pulse: hydrologic triggers of phenological activity in creosotebush dominated ecosystems. *Research Insights in Semiarid Ecosystems Symposium*, University of Arizona, Tucson, AZ.
- Jardine, K., **Kurc, S.A.**, Guenther, A., Scott, R., Huxman, T., and Abrell, L. 2009. Net ecosystem exchange rates of carbon dioxide and volatile organic compounds between the Sonoran desert and the atmosphere during the North American Monsoon. *GEIA-ACCENT Open Conference* Oslo, Norway.

- (INVITED) **Kurc, S.** 2007. How the west was won: an eco-hydrological perspective on woody plant encroachment. *NSF ADVANCE Environmental Sustainability Data Blitz*, University of Arizona, Tucson, AZ.
- Kurc, S.** and Small, E. 2007. Simple hydro-ecological models: Is root zone average soil moisture an adequate driver in the functions for evapotranspiration and assimilation? *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- Kurc, S.** 2007. Patience is a virtue and other valuable principles: the tao of vegetation in dryland ecosystems. School of Natural Resources. Fall Brown Bag Series, University of Arizona, Tucson, AZ.
- (INVITED) **Kurc, S.** 2007. Hydrological triggers of ecological activity: Days in the lives of desert shrubs and grasses. *Soil, Water and Environmental Science Fall Colloquia*, University of Arizona, Tucson, AZ.
- (INVITED) **Kurc, S.** 2007. Dynamics of water, carbon, and energy cycling at semiarid grassland and shrubland. *Agricultural and Biosystems Engineering Spring Colloquia*, University of Arizona, Tucson, AZ.

Poster Presentations (national conference only)

- Schwartz, E.**^{BS}, **Papuga, S.A.**, and **K. Hwang**^{PostDoc}, CO₂ in the Shrinking City: The Role of Vegetation Phenology in Carbon Dynamics of Post-Industrial Urban Detroit. 2020. *Fall Meeting of the American Geophysical Union*.
- Hwang, K.**^{PostDoc}, and **S.A. Papuga**, Temporary decline in atmospheric carbon dioxide in Detroit, MI due to the COVID-19 pandemic. 2020. *Fall Meeting of the American Geophysical Union*.
- Eklund, A.**^{BS}, **Hwang, K.**^{PostDoc}, and **S.A. Papuga**. Toward Understanding the Impact of Urban Decline on Local Climatology. 2020. *Fall Meeting of the American Geophysical Union*.
- Papuga, S.A.**, Hood, G.R., **Socrates, C.**^{BS}, **Rankin, K.**^{BS}, **Hwang, K.**^{PostDoc}, and **M. Whitfield**^{BS}, Toward improved use of aboveground plant material to monitor belowground contaminants and their movement in urban environments. 2020. *NIH/NIEHS SRP Virtual Annual Meeting*.
- Chan, E.**^{BS}, **Papuga, S.A.**, and **A. Eklund**^{BS}. Developing tools to assess the long-term and multifunctional performance of green infrastructure: A case study in Detroit, Michigan. 2019. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- Hwang, K.**^{PostDoc}, **Eklund, A.**^{BS}, **Seifert, E.**^{BS}, and **S.A. Papuga**. Toward improving linkages between climatology, urban Fluxes, and greenspaces in shrinking cities. 2019. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- Kopeck, S.J.**^{BS}, **Papuga, S.A.**, Dittrich, T.M., Serreyn, M., Alexandrova, A., and S. Mobasser. Ecohydrology of green infrastructure retrofitting for stormwater management: A case study in Detroit, MI. 2018. *Fall Meeting of the American Geophysical Union*. Washington, D.C.
- Luketich, A.**^{MS}, **Papuga, S.A.** and M. Crimmins. Differential impact of passive versus active irrigation on urban forests in semiarid regions. 2017. *Fall Meeting of the American Geophysical Union*. New Orleans, LA.
- Papuga, S.A.** and **L. Hamann**^{MS}. Temporal dynamics of tree source water in sky island ecosystems with ephemeral snow pack: a case study using *Pseudotsuga menziesii* (Douglas Fir). 2017. *Fall Meeting of the American Geophysical Union*. New Orleans, LA.
- Meixner, T., **Papuga, S.A.**, **Luketich, A.M.**^{MS}, Rockhill, T., Gallo, E.L., Anderson, J., Salgado, L., Pope, K., Gupta, N., Korgaonkar, Y., and D.P. Guertin. Green infrastructure increases biogeochemical responsiveness, vegetation growth and decreases runoff in a semi-arid city, Tucson, AZ, USA. 2017. *Fall Meeting of the American Geophysical Union*. New Orleans, LA.
- Biederman, J., Scott, R., Goulden, M., Litvak, M., Kolb, T., Yezpe, E., Oechel, W., Meyers, T., **Papuga, S.**, Ponce-Campos, G., Crofcheck, D., Maurer, G., Dore, S., Garatuza, J., Bell, T., and P. Krishnan. Ecosystem carbon balance in a drier future: land-atmosphere exchanges of CO₂, water and energy across semiarid southwestern North America. 2015. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- Szutu, D.**^{MS} and **S.A. Papuga**. Differential use of shallow and deep soil moisture in a semiarid shrubland: Linking sap flow and stable isotope techniques to quantify temporal variability. 2015. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.

- Szutu, D.^{MS} and **S.A. Papuga**. Using stable water isotopes in a two-layer soil moisture conceptual framework to understand transpiration dynamics in a semiarid shrubland. 2014. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- Krell, N.^{BS}, **Papuga, S.A.**, Kipnis, E.^{BS}, and K. Nelson^{MS}. Dynamic Pulse-Driven Flowering Phenology in a Semiarid Shrubland. 2014. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- Swetish, J.^{BS}, **Papuga, S.A.**, Litvak, M., Barron-Gafford, G. and B. Mitra. 2012. Influence of understory greenness on trace gas and energy exchange in forested ecosystems. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- Sanchez-Mejia, Z.^{PhD} and **S.A. Papuga**. Quantifying the influence of deep soil moisture on ecosystem albedo: the role of vegetation. 2012. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- Mitra, B. and **S.A. Papuga**. Toward an improved understanding of the role of transpiration in critical zone dynamics. 2012. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- Lowry, F.^{BS} and **S.A. Papuga**. 2011. Vegetation-infiltration relationships along an elevational gradient in the semiarid southwestern United States. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- Nelson, K.^{MS}, **Papuga, S.A.**, John, G.P.^{BS}, Minor, R., and G.A. Barron-Gafford. 2011. Influence of snow cover duration on soil evaporation and respiration efflux in mixed-conifer ecosystems. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- Bunting, D.B.^{PhD}, Glenn, E., **Kurc, S.A.**, Scott, R.L, and P. Nagler. 2010. Estimating large-scale evapotranspiration in arid and semi-arid systems: a multi-site study linking MODIS and Ameriflux data. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- Nelson, K.^{BS} and **S.A. Kurc**. 2010. Continuous monitoring of dynamic pulse-driven phenological phases in a semiarid shrubland. *AGU Fall Meeting, Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- Neal, A.L.^{PhD}, **Kurc, S.A.**, and P.D. Brooks. 2010. Environmental controls on soil respiration in semiarid ecosystems: the role of the vertical distribution of soil moisture. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- John, G.P.^{BS}, **Papuga, S.A.**, Wright, C.L., Nelson, K.^{MS}, and G.A. Barron-Gafford. 2010. Investigating the impact of temporal and spatial variation in spring snow melt on summer soil respiration. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- Sanchez-Mejia, Z.^{PhD}, and **S.A. Kurc**. 2010. Influence of temporal variation in the vertical distribution of soil moisture on the surface energy budget: implications for semiarid land-atmosphere interactions. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- Kurc, S.** and Benton, L.^{MS}. 2008. Identifying hydrological triggers of green-up in the resilient and widespread creosotebush. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- Neal, A. L.^{MS}, **Kurc, S.A.**, and Huxman, T. 2008. Practical use of eddy covariance in non-ideal landscapes: pilot study on a small, enclosed turfgrass setting. *AGU Fall Meeting, San Francisco, CA.*
- Cavanaugh, M.^{MS}, **Kurc, S. A.**, Scott, R., and Bryant, R. 2008. Two-site comparison of transpiration by *Larrea tridentata*. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.
- Benton, L.^{MS} and **Kurc, S. A.** 2008. Digital image analysis of flowering in the repeat-blooming creosotebush (*Larrea tridentata*) in relation to climatic factors. *Fall Meeting of the American Geophysical Union*. San Francisco, CA.

Grants and Contracts

The majority of my funding is/has been associated with large multi-investigator interdisciplinary projects through National Science Foundation (NSF) opportunities that include the Critical Zone Observatory Network, Sustainability Research Networks, and Coupled Human-Natural Systems. However, I also was awarded a prestigious (>\$500,000) sole-investigator NSF CAREER award in the Hydrologic Sciences. Together these demonstrate my strengths as both an independent and a collaborative researcher.

PENDING:

- *NIEHS SRP: Center for Leadership in Environmental Awareness & Research | Core Project E1: Building Aboveground Strategies to Identify and Address Belowground Hot Spots for VOC Vapor Intrusion in Complex Urban Settings.* \$13,175,442 (\$1,798,130 to Project E1/ESG/BIO) 2022 –

2027. Papuga is Core Project E1 MPI with Hood and Co-PI Sperone and overall SRP PIs C Miller and M Runge-Morris. National Institute of Health – NIEHS Superfund Research Program.

WAYNE STATE EXTERNAL:

- *MCA: In Flux: The Role of Dynamic Urban Greenspace in Energy, Water and Carbon Cycling.* \$367,843. 2021-2024. Papuga is Sole PI. National Science Foundation (NSF) – Mid Career Advancement (MCA).
- *T34: MARC at Wayne State University.* \$3,907,825. 2021 – 2026. PIs Allen and Pile. Papuga is Participating Faculty/Preceptor. Maximizing Access to Research Careers (T34) Undergraduate NRSA Institutional Research Training Grants - NIH Research Training and Career Development.
- *ADVANCE Adaptation: Gender Equity Advances Retention in STEM at Wayne State University (WSU GEARS).* \$992,495. 2020 – 2023. PI Baltes. Papuga is Co-PI with Brumley, Hendrickson, Johnson, Kacin, and Yaprak. NSF HRD - ADVANCE.
- *CNH: Coupled networks in urbanized landscapes: linking ecosystem services and governance for water sustainability.* \$1,798,784 (\$51,481 to GEL) 2015 – 2021. Papuga is Sub-Award PI with PI Meixner and Co-PIs Pavao-Zuckerman, Gerlak, Henry. National Science Foundation - Coupled Human-Natural Systems; Sub-Award through University of Arizona.
- *SRN: Urban Water Innovations Network (U-WIN): Transitioning Toward Sustainable Urban Water Systems.* \$12,000,000 across 14 institutions; \$1,074,788 UA Portion (\$40,611 to GEL) 2015 – 2021. Papuga is Sub-Award PI with PI Arabi and Co-PIs Pivo, Sukop, Welty, Bou-Zeid, Haggerty. National Science Foundation – Sustainability Research Networks; Sub-Award through University of Arizona (UA).
- *CAREER: Ecohydrological Controls on Land-Atmosphere Interactions in Water-Limited Ecosystems: A Framework for Education and Research.* \$20,792 (\$20,792 to GEL) 2017 – 2018. Sole PI. National Science Foundation - CAREER.

award

WAYNE STATE INTERNAL:

- *Developing Critical Thinking Skills through Experiential Learning using Real-World Water Quality Issues in the Flipped Classroom.* \$4100. 2021. Papuga is Sole PI. 2021 WSU Office of Teaching and Learning Educational Development Grant Program.
- *Sustainability Learning Community.* \$6942. 2021. Papuga is Co-Coordinator with Daryl Pierson. WSU Office of Teaching and Learning - Learning Community Program.
- *Using aboveground plant material to screen for “Green Ooze” contaminants in midtown Detroit.* \$3000. 2020. PI with Co-I Hood (with student Socrates). WSU, Richard Barber Interdisciplinary Research Fall Program.
- *Assessing Viability of Detecting Spread of Belowground Contaminant Plume Using Aboveground Plant Material.* \$43,950. 2020. PI with Hood. WSU, Office of the Vice President for Research Pilot Funding.
- *Epidemiological Study of Volatile and Semi-Volatile Organic Compounds and Preterm Birth in Detroit.* \$18,000. 2020. Co - PI with PI Bushrow Cassidy. WSU, Office of the Vice President for Research Pilot Funding.
- *Using insect galls and other plant tissues to understand belowground contamination.* \$5952. 2020. Sole PI (with student Socrates). WSU, Richard Barber Interdisciplinary Research Winter Program.
- *Toward Improved Use of Insect Galls and Other Plant Tissue to Detect Organic Contaminants and their Movement in Urban Environments.* \$3600. 2019. Sole PI (with student Socrates). WSU, Richard Barber Interdisciplinary Research Fall Program.
- *Enabling post-tenure success: ELATES at Drexel® national leadership development program.* \$7564. 2019. Sole PI. WSU, Tenured Faculty/ESS Academic Staff Professional Development Program.
- *Insect Galls as Bioindicators to Detect Carcinogens and their Movement in the Environment.* \$24,980 (\$15,100 to GEL). 2019. CoI with PI Hood. WSU, Richard Barber Interdisciplinary Research Summer Program.
- *Ecohydrology in the City: Strategies for Understanding our Complex Urban Systems.* \$60,000. 2019. Sole PI. WSU, Faculty Competition for Postdoctoral Fellows - November 2018 cycle.

- *Ecohydrology of Green Infrastructure Retrofitting for Stormwater Management: A Case Study in Detroit, MI.* \$3228. 2018. Sole PI. WSU, Richard Barber Interdisciplinary Research Fall Program.
- *Science and Engineering of Environmental Stewardship in Urban Ecosystems.* \$22,638. 2018. Co-I with Dittrich and Serreyn. WSU, Richard Barber Interdisciplinary Research Summer Program.
- *Toward Quantifying the Risk of VOC Exposure via Vapor Intrusion in Post-Industrial Cities.* \$50,000. 2018. Col with Miller and Lemke. WSU, Office of the Vice President for Research Pilot Funding.

UNIVERSITY OF ARIZONA EXTERNAL:

- *NSF Career-Life Balance Supplemental Funding.* \$22,668. 2016. Sole PI. National Science Foundation - CAREER.
- *Coupled Networks in Urbanized Landscapes: Linking Ecosystem Services and Governance for Water Sustainability.* \$1,798,784. 2015 – 2020. CoPI with Crimmins, Gallo, Gerlak, Guertin, Henry, Meixner, Pavao-Zuckerman, Pivo, and Sanderford. NSF Coupled Human-Natural Systems.
- *Quantifying Variability in Arizona Pecan Water Use.* \$47,513. 2015 – 2017. Col with Brown and Walworth. Arizona Department of Agriculture (ADA) Specialty Crop Block Grant Program.
- *Urban Water Innovations Network (U-WIN).* \$1,074,788 – UA Portion. (\$12,000,000 total across 14 institutions) 2014 – 2019. Pivo is Lead UA PI with UA CoPIs Crimmins, Guertin, Meixner, and Papuga. National Science Foundation – Sustainability Research Networks.
- *Transformative behavior of Energy, Water and Carbon in the Critical Zone II: Interactions between Long- and Short-Term Processes that Control Delivery of Critical Zone Services.* \$5,000,000. 2013-2018. Col with PIs Chorover, Pelletier, Breshears, McIntosh, Rasmussen and Cols Barron-Gafford, Brooks, Durcik, Ferre, Gallery, Litvak, Losleben, Meixner, Niu, Parmenter, Rich, Schaap, Troch. NSF-CZO.
- *Ecohydrological Controls on Land-Atmosphere Interactions in Water-Limited Ecosystems: A Framework for Education and Research.* \$523,270. 2013 – 2017. Sole PI. National Science Foundation - CAREER.
- *Quantifying Pecan Water Use in Arizona.* \$94,112. 2012 – 2015. Co-I with Brown and Walworth. Arizona Department of Agriculture (ADA) Specialty Crop Block Grant Program.
- *Transformative Behavior of Energy, Water and Carbon in the Critical Zone: An Observatory to Quantify Linkages among Ecohydrology, Biogeochemistry, and Landscape Evolution.* \$4,271,856. 2009-2014. Papuga is Col with PIs Troch, Chorover, Brooks, Pelletier, Rasmussen and Cols Breshears, Huxman, Lohse, McIntosh, Meixner, Schaap. NSF-CZO.
- *Restoration of Managed Marsh Units to Benefit California Black Rails and Other Marsh Birds: An Adaptive Management Approach.* \$327,401. 2008-2010. Co-PI with PI Conway. United States Department of the Interior, Bureau of Reclamation.

UNIVERSITY OF ARIZONA INTERNAL:

- *Eddy Covariance System for Quantifying Water Use of AZ Pistachio Orchards.* \$25,711. 2016. Col with Brown and Walworth. UA Water, Environmental and Energy Solutions (WEES) Competitive Equipment Grants Program.
- *Acquisition of a Shared Benchtop Hyperspectral Imaging System.* \$43,000. 2016. Col with Tuller, Chorover, Rasmussen, and Troch. UA Water, Environmental and Energy Solutions (WEES) Competitive Equipment Grants Program.
- *waterWORLD: Water as a Platform for Workforce Readiness and Leadership Development.* \$12,086. 2015-2016. Papuga is PI in partnership with local NGO Watershed Management Group. 100% Student Engagement Initiative: UA Vice Provost of Digital Learning and Student Engagement.
- *Ecohydrological Controls on Water, Energy, and Carbon Cycling in Water-Limited Ecosystems.* \$14,988. 2012. Sole PI. SAHRA NSF STC, the SAHRA center of the UA Water Sustainability Program, and State of Arizona TRIF Support for WEES.
- *The Santa Rita Creosote Site: Representing Water, Carbon, and Energy Cycling in Arizona, the Southwestern US, and Water-Limited Ecosystems Worldwide.* \$4,651. 2011. PI. UA Water Sustainability Program.

- *Soil Moisture Controls on Water, Energy, and Carbon Cycling in Water-Limited Ecosystems*. \$10,927. 2011. Sole PI. SAHRA NSF STC, the SAHRA center of the UA Water Sustainability Program, and State of Arizona TRIF Support for WEES.
- *Water Resource Adaptation Strategies in Developing Countries: Climate Change “Realities”*. \$9,150. 2010-2011. Sole PI. UA-VPR Faculty Small Grant.
- *Ecological Implications of Climate Change in Dryland Ecosystems: Sensitivity of Carbon Uptake to Intra-Annual Variability of Plant-Available Moisture*. \$10,000. 2009-2010. Sole PI. UA-Institute for the Environment Faculty Exploratory Grant - TRIF.
- *Fingerprinting Water: Tracking Flow Paths and Residence Times from Mountain Catchment to Aquifer Extraction in the Tucson Basin*. \$50,000. 2008-2009. Co-PI with PIs Troch and Chorover and Co-PIs Brooks, Rasmussen, Pelletier, Huxman, McIntosh, Breshears, Meixner, Schaap, Goodrich, Unkrich. TRIF-WSP proposal FY 2009.
- *Vegetation Controls on Water, Energy, and Carbon Cycling in Water-Limited Ecosystems*. \$6,000. 2007 – 2011. Sole PI. The University of Arizona Agriculture Experiment Station.

Teaching (Courses)

EVS 1500	Introduction to Environmental Science	Wayne State University
EVS 3100	Air and Water in Environmental Systems	Wayne State University
GEL 5360	Hydrology of Natural and Urban Environments	Wayne State University
GEL 5610	Special Topics: Environmental Science in the City	Wayne State University
GEL 5610	Special Topics: Global Change and the Ecohydrology of Cities	Wayne State University
GEL 5610	Special Topics: Professional Skills Development for Earth and Environmental Scientists	Wayne State University
GEL 5610	Special Topics: Current Research in Earth and Environmental Science	Wayne State University
WSM 402/502	Air and Water: Physics of Environmental Fluids	University of Arizona
WSM 450/560	Watershed Hydrology	University of Arizona
WSM 696M	Using MATLAB® for Environmental Data Processing	University of Arizona
WSM 696Q	Practical and Applied Hydrometeorology	University of Arizona

Teaching (Mentees)

WAYNE STATE POSTDOCTORAL FELLOWS

1. Kyotaek Hwang (April 2019 – May 2021)

WAYNE STATE GRADUATE RESEARCHERS

As Lead Advisor

1. Oluwafemi Aregbesola (M.A. May 2019)

As Committee Member

5. Brendan O’Leary (Ph.D. in progress; WSU CEE)
4. Sadaf Teimoori (Ph.D. in progress; WSU CEE)
3. Amir Shahin Kamjou (Ph.D. in progress; WSU CEE)
2. Rayyan Mizra (Ph.D. in progress; WSU CEE)
1. Jasneel Mahal (M.S. May 2018; WSU GEL)

WAYNE STATE UNDERGRADUATE RESEARCH ASSISTANTSHIPS

11. Kelsey Hewett (2020 – present)
10. Connor Socrates (2019 – present)
9. Mary Whitfield (2019 – 2021)

8. Emily Seifert (2019 – 2020)
7. Alex Eklund (2018 – present)
6. Amy Leslie (2019)
5. Kennadi Rankin (2019)
4. Steven Kopeck (2018, 2019)
3. Isidore Harris (2018)
2. Anastasia Alexandrova (2018)
1. Orlando Rios (2017, 2018)

REU: UNDERGRADUATE RESEARCHERS HOSTED AT WAYNE STATE

2. Ema Schwartz - SUNY College of Environmental Science and Forestry (2020)
1. Elana Chan – Tufts University (2019)

WAYNE STATE UNDERGRADUATE HONORS THESES

2. Emily Seifert (2020)
1. Krystal Krygowski (2018)

WAYNE STATE UNDERGRADUATE DIRECTED RESEARCH

7. Mary Whitfield (2019)
6. Sarah Huskin (2019)
5. Devin Belt (2018)
4. Tyler White (2018)
3. Nic Gumowski (2018)
2. Garret Gumowski (2018)
1. Krystal Krygowski (2017)

UNIVERSITY OF ARIZONA POSTDOCTORAL FELLOWS

2. Aloah Pope (2016)
1. Bhaskar Mitra (2011-2013)

UNIVERSITY OF ARIZONA PHD DISSERTATIONS (5 total)

5. Zack Guido | PhD | *Informing Climate Adaptation: Climate Impacts on Glacial Systems and the Role of Information Brokering in Climate Services* | 2014
4. Zulia Mayari Sanchez-Mejia | PhD | *Monsoon Dependent Ecosystems: Implications of the Vertical Distribution of Soil Moisture on Land Surface-Atmosphere Interactions* | 2013
3. Maria Pilar Cendrero Mateo | PhD | *Chlorophyll Fluorescence Response to Nitrogen Stress in Wheat* | 2013
2. Daniel Bunting | PhD | *Riparian Restoration and Management of Arid and Semiarid Watersheds* | 2012
1. Andrew Neal | PhD | *Soil Moisture Controls on Spatial and Temporal Patterns of Carbon Dioxide Fluxes in Drylands* | 2012

UNIVERSITY OF ARIZONA MS THESES (10 Total)

10. Lejon Hamann | MS | *Temporal dynamics of tree source water in sky island ecosystems with ephemeral snow pack: a case study using Pseudotsuga menziesii (Douglas Fir)* | 2018
9. Anthony Luketich | MS | *Differential Impacts of Passive versus Active Irrigation on Urban Forests* | 2018
8. Matthew Rotunno | MS | *Understanding Source Water Dynamics for a Deep-Rooted Desert Shrub using Stable Water Isotopes: an Experimental Two-Layer Approach* | 2016
7. Daphne Szutu | MS | *Differential Use of Shallow and Deep Soil Moisture in a Semiarid Shrubland: Linking Sap Flow and Stable Isotope Techniques to Quantify Temporal Variability* | 2015

6. Ami Kidder | MS | *The Ecohydrological Conditions Contributing to the Distribution and Phenology of the Pima Pineapple Cactus (Coryphantha scheeri var. robustispina)* | 2014
5. Krystine Nelson | MS | *The Influence of Snow Cover Duration on Evaporation and Soil Respiration in Mixed-Conifer Ecosystems* | 2011
4. Daniel Bunting | MS | *Using Existing Agricultural Infrastructure for Restoration Practices: Factors Influencing Successful Establishment of Cottonwood over Tamarisk* | 2010
3. Lisa Benton | MS | *Automated Repeat Digital Photography for Continuous Phenological Monitoring: An Analysis of Flowering in a Semiarid Shrubland* | 2009
2. Michelle Cavanaugh | MS | *Evapotranspiration Partitioning in Semiarid Creosotebush Dominated Ecosystems: Climate Change Implications of Soil Moisture Control on Shrubland Transpiration* | 2009
1. Jonathan Martin | MS | *Effects of Urbanization on Microclimate of Riparian Corridors* | 2009

Promotion of STEM to K-12 and/or Underrepresented Groups

Judge | 2018, 2019, 2021 | Science & Engineering Fair of Metro Detroit (SEFMD) | Junior Earth and Environmental Science Section | Judge student posters and offer comments.

Mentor | 2019 | UCMST Junior Internship Program | Host two juniors from Stevenson High School in my research lab through their UCMST Junior Internship Program for 30 hours over three weeks.

Faculty Participant | 2019 | Cranbrook Girls in STEM Day | Lead STEM Activity on Precipitation and Weather for Cranbrook students in WSU GEL 5360 Lab.

Presenter | 2018 | AP Day at Wayne State | It's not easy being green: an introduction to phenology and climate change | Delivered example Environmental Science lecture to visiting high school students

Faculty Host | 2018 | Hosted 60 elementary students from Detroit's University Prep Schools for a STEM day with GEL 3100.

Instructor | 2012 – 2015 | UA Water Resources Technician Training Program | A summer outreach program for Native Americans with a GED or higher in collaboration with US Bureau of Indian Affairs. I taught about watersheds and the water, energy, and carbon budgets.

Tour Guide | 2012 – 2015 | UA Passport to High School | A summer outreach program for low-income 9th graders. I offered students a tour of my research lab where they learn about carbon sequestration.

Mentor | 2012 | UA Arizona Assurance | A program providing academic, financial and social support for low-income AZ residents to ensure success, retention and graduation. Met with mentee formally and extracurricularly.

News and Media Coverage

Wayne State awarded NSF grant to increase equity among STEM faculty. *On-Line News: Today@Wayne*. By Katie McMillan. August 20th 2020.
<https://today.wayne.edu/news/2020/08/20/wayne-state-awarded-nsf-grant-to-increase-equity-among-stem-faculty-38884>

Ecological wonder: In a Wayne State parking lot, bioswales provide unique stormwater solution. *On-Line News: Today@Wayne*. By Shawn Wright. August 2nd 2019.
<https://clas.wayne.edu/news/ecological-wonder-in-a-wayne-state-parking-lot-bioswales-provide-unique-stormwater-solution-36694>

Understanding the 'why' of higher water levels in the Great Lakes not as simple as you might think. *Corp! Magazine*. By J.D. Booth. August 1st 2019.

<https://www.corpmagazine.com/features/cover-stories/understanding-the-why-of-higher-water-levels-in-the-great-lakes-not-as-simple-as-you-might-think/>

A company tore down homes in Detroit. Then it hid and buried the debris in the holes. *Detroit Free Press*. By Kat Stafford. February 26th 2019.

<https://www.freep.com/story/news/investigations/2019/02/26/detroit-land-bank-contractor-razed-homes-hid-debris-under-dirt/2978137002/>

Watching Wayne's Weather. *On-Line News: Today@Wayne*. By Ted Montgomery. February 1st 2019.

<https://today.wayne.edu/news/2019/02/01/watching-waynes-weather-23575>

From Puerto Rico to Detroit: Orlando Rios finds his research home. *On-Line News: Today@Wayne*. April 11th 2018.

<https://today.wayne.edu/news/2018/04/11/from-puerto-rico-to-detroit-orlando-rios-finds-his-research-home-6669>

Young University of Arizona professors honored for outside-the-box ideas. *Arizona Daily Star*. By Tom Beal. July 21st 2013. Updated July 22nd 2014.

https://tucson.com/news/local/education/college/young-university-of-arizona-professors-honored-for-outside-the-box-ideas/article_b6de2da7-83aa-5b14-92f8-f27995a70ac8.html