

# SARAH K. FORTNER

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## EDUCATION

University of Wisconsin-Madison	Geology & Geophysics	B.S. 1999
The Ohio State University	Geology	M.S. 2002
The Ohio State University	Earth Sciences	Ph.D. 2008

## APPOINTMENTS

2019-	<b>Director</b> , Environmental Science Program, <i>Wittenberg University</i>
2017-	<b>Associate Professor</b> , Department of Geology, Environmental Science Program, <i>Wittenberg University</i>
2017-2018	<b>Geological Society of America Scholar in Residence (Sabbatical)</b> at the <i>American Geosciences Institute</i>
2011-2017	<b>Assistant Professor</b> , Department of Geology & Environmental Science Program, <i>Wittenberg University</i>
2016-2019	<b>Faculty Academic Council and Research Mentor</b> , <a href="#">Juneau Icefield Research Program</a>
2015-2019	<b>Chair, Innovation &amp; Collaboration Committee</b> , <i>Council on Undergraduate Research</i>
2012-	<b>Geoscience Councilor-elected</b> , <i>Council on Undergraduate Research</i>
2009-2011	<b>Postdoctoral Research Fellow</b> , <i>The Ohio State University Climate Water &amp; Carbon Program (advisors: W. Berry Lyons, Anne Carey, Rattan Lal)</i>
2008, 2007	<b>Graduate Research Associate &amp; Teaching Assistant</b> , <i>The Ohio State University</i>
2006-2007	<b>NSF Graduate K-12 Fellow</b> , <i>Columbus Public Schools &amp; The Ohio State University</i>
2004-2006	<b>Graduate Research Associate &amp; Teaching Assistant</b> , <i>The Ohio State University</i>
2006	<b>Faculty Instructor</b> , <a href="#">Girls on Ice</a> (now <i>Inspiring Girls</i> )
2002-2004	<b>Aquatic Ecology Researcher</b> , GIS Specialist, <i>The Ohio Department of Natural Resources, in collaboration with The Ohio State University</i>
2001-2002	<b>Graduate Research Associate &amp; Teaching Assistant</b> , <i>The Ohio State University</i>
1998-2000	<b>Hydrologist</b> , GS-7, <i>United States Geological Survey, Wisconsin, National Water Quality Assessment</i>

## NATIONAL LEADERSHIP AND SERVICE

- **Advisory Committee AAC&U Civic Prompts in the Major: Designs in Social Responsibility and the Public Good** (2019-) Advising faculty development leading [institutes](#) to shape civic engagement in the liberal arts.
- **NAGT [Traveling Workshop Program](#)** Facilitator (2016-) Conducting program and cross-program site visits to improve curricular planning in geoscience, sustainability, & environmental justice.

- **NAGT [Teach the Earth](#)** (2018-): Co-leading the collaborative development of the largest open-source curriculum site in the geosciences (if not physical sciences).
- **Chair of the Innovation & Collaboration Committee for the Council on Undergraduate Research (CUR)** (2014-present), compiling & disseminating case studies of crowd science, industry collaboration, service learning, & other collaborative strategies that increase learning & employment opportunities for undergraduates.
- **CUR Geoscience Division Councilor**, creating and vetting faculty teaching excellence & excellence in undergraduate research awards, membership recruitment, evaluating Posters on the Hill, supporting synergies with other national organizations & across CUR (e.g. GeoLEAD effort with AGU, creating [CUR Code of Ethics](#)), developing faculty resources, creating advocacy resources and engaging geoscientists at meetings.
- **Geological Society of America-American Geoscience Institute Scholar in Residence** (2017-2018). Leading the effort to build a community of practice for civic engagement in the geosciences. Created and compiled a toolkit and expanding practitioners (see: [Geoscience for Community Priorities](#))
- **NAS Steering Committee and White Paper Author** for the [Workshop on Service-Learning in the Undergraduate Geosciences](#) (2016) Identifying transformative benefits of service-learning in the geosciences.
- **Associate Editor of Applied Geochemistry** (2012-2016)
- **Polar Curriculum Advisor for Polar Ice & Academic Council for the Juneau Icefield Research Program** (2016-) Consultant on learning goals, assessment, & alignment with future needs of polar scientific community.

#### PROGRAM AND INSTITUTIONAL SUSTAINABILITY AND CIVIC LEADERSHIP

- **Wittenberg lead for NSF-Broadening the Fusion of STEM and Business Curricula in Undergraduate Sustainability Education** (2019- We now plan to grow a community of practice and expand STEM-Business Curriculum through a 5 year 3 college NSF Improving Undergraduate STEM Education grant: Broadening the fusion of STEM and Business that will engage 8 faculty at Bentley, Wittenberg, and Northern Illinois in building the transdisciplinary culture and open source curriculum needed to address sustainable development goals. Our effort will inform sustainability educators nationally. (Collaborators: David W. Szymanski, Eric A. Ochse, Otgo Erhemjamts, Rachel Wilson, Christine H. Mooney, Melissa Lenczewski, Ellen Iverson)
- **Project Lead for Sustainability from Curriculum to Community** (2014-2016), NSF InTeGrate Project Implementation Program. Since 2014, sustainability course offerings have doubled and participating programs have increased by more than 75%. All students at Wittenberg participate in sustainability curriculum because my team has developed a personal action project as part of our Freshmen Experience. We are one of [16 NSF InTeGrate Sustainability Implementation Programs](#) (along with top-funded geoscience departments in the country: Pennsylvania State University & Stanford). (Collaborators: Amber Burgett, Sheryl Cunningham, David Finster, Ruth Hoff). Faculty from Wittenberg co-produced 3 out of 30 modules in collaboration with faculty from diverse institutional settings.
- **Project Lead for Wittenberg Case Study, Civic Learning in the Major by Design** (2017) Wittenberg's Geology and Environmental Science Programs are recognized by the American Association of Colleges & Universities through the Endeavour Foundation as a [top model for civic engagement](#). (Collaborators: John Ritter, Amber Burgett, Richard Phillips)
- **Strategic Planning Thematic Group: Community Outreach & Partnerships** (2016) Contributed all of the evidence for our curricular strengths and much of the co-curricular evidence in described in the current state document. Shared other institutional evidence with other

strategic planning thematic groups including Program Growth & Excellence & Academics/Student Success.

- **Princeton Review Green College Recognition for Wittenberg** (2013 and 2015) Provided curricular and co-curricular evidence to AASHE STARS
- **President's Climate Commitment Committee** (2012): Drafted the curriculum section and added language on the broader impacts of climate change. My role included drafting aspects of our curricular plans to address this topic. This has been accepted and signed by Wittenberg President's.

## TRANSDISCIPLINARY RESEARCH

- **Unearthing Injustice: Environmental Justice Working Group**, led by Sarah Fortner (2019-) Jennifer Latimer, ISU, Melisa Diaz and Berry Lyons, OSU, Carmen Nezat, Central Washington University, Sue Ebanks, Savannah State University, Kim Landsbergen, Antioch College, Cynthia Fadem, Earlham, testing a shared environmental justice question across Indianapolis, Terre Haute, Richmond, Dayton, Springfield, Columbus, Spokane, and Savannah and exploring the potential to co-achieve biogeochemistry research and community outcomes through partnering and advocacy. Advocacy and curricular collaboration includes ~10 local partners (John Wheeler, Springfield Promise Neighborhood; Brandy Phipps, Clark County Local Food Council; Ashley Shearer, Clark County Combined Health District; Leslie McDermott, City of Springfield, Ohio Water Utilities; Miami Valley Developmental Services; and faculty curriculum/research-to-community partners Elena Dahl (Art), Kate Polyak (English), Ray Dudek (Chemistry), Nancy McHugh (Philosophy), Brooke Wagner (Sociology), Wittenberg University
- **Civic, Sustainability, and Education Research**, multiple collaborators including Hannah Scherer, Virginia Tech, Cathy Manduca, SERC Carleton & Board on Science Education, Ben Mandler, Cassaundra Rose, Carolyn Wilson, American Geosciences Institute, John Ritter, Wittenberg University, Anne Egger, Central Washington University, David Szymanski, Bentley University. Researching the effectiveness of active pedagogies, civic, and sustainability education for improving student, faculty, and community outcomes. Leading implementation projects to build civic capacity.
- **McMurdo Long Term Ecological Research Program**, led by Berry Lyons, OSU (former) & Michael Gooseff, CSU (present), and many collaborators NSF Funded (2001-2002, 2004-2008, 2016-) <http://mcm.lternet.edu/> Investigating how increasing ecosystem connectivity drives ecosystem responses. I specifically explore glacier originating questions in this water scarce polar desert environment.
- **Terrestrial Records of Holocene Climate Change: Fire, climate and humans on the Juneau Icefield**, led by Natalie Kehrwald, USGS Funded (2016- ) [https://www.usgs.gov/centers/geoscience/terrestrial-records-holocene-climate-change-fire-climate-and-humans?qt-science\\_center\\_objects=0#qt-science\\_center\\_objects](https://www.usgs.gov/centers/geoscience/terrestrial-records-holocene-climate-change-fire-climate-and-humans?qt-science_center_objects=0#qt-science_center_objects) Exploring the fire climate signal in Alaska and the change underway.
- **Buck Creek Educational Corridor**, led by John Ritter, Wittenberg University and Amber Burgett, Richard Phillips (2011-) Monitoring and informing water and land use decision making on campus and in the community especially the ecological services of Buck Creek. Student research in service to community outcomes.
- **Agroecosystem Research Cluster** (led by Lyons, B., and Lal, R. and many collaborators in Carbon, Water & Climate Program at OSU), 2012-2017, Connecting soil, water, and carbon flux associated with land use in managed landscapes.

## PEER REVIEWED PUBLICATIONS

### In Review:

1. Diaz, M., Fortner, S., Lyons, W.B. High resolution concentration-discharge relationships in managed watersheds: a 30+ year analysis, (revising to resubmit), *Geophysical Research Letters*
2. Kehrwald, N.M., Jasmann, J., Dunham, M., Ferris, D., Osterberg, E., Kennedy, J., Havens, J., Barber, L., Fortner, S., Boreal blazes: Biomass burning and vegetation types archived in the Juneau Icefield, *Environmental Research Letters* (submitted 10/19).

### Book Chapters, & Edited Volumes:

1. Fortner, S., Scherer, H., Ritter, J., & Burgett, A. Civic engagement in the earth and environmental sciences: a situated learning model at Wittenberg University, Forthcoming: *Preparing Students for Community-engaged Scholarship in Higher Education*, Ed. Zimmerman, A., IGI Global (accepted for inclusion in 2019 book).
2. Fortner, S., and Munk, L.. Sources, Transport and Fate of Trace and Toxic Elements in the Environment – International Applied Geochemistry Symposium Special Issue 2009.  
<https://doi.org/10.1016/j.apgeochem.2011.06.001>

### Journal Articles:

1. Fortner, S., Manduca, C., Guertin, L., Syzmanski, D., Villalobos, J. Teaching for earth resilience: A strategy for increased diversity and equity, 2019, *GSA Today*  
<https://www.geosociety.org/gsatoday/groundwork/G388GW/article.htm>
2. Fortner, S.K. & Lyons, W.B., 2018. Contributions of glacier surface waters to global ocean chemistry: McMurdo Dry Valleys, Antarctica, Special Issue: Cold region melt water controls, *Frontiers in Geochemistry* (eds. Martyn Tranter, Mark Skidmore, Andy Hodson)  
<https://www.frontiersin.org/articles/10.3389/feart.2018.00031/full>
3. Eddy, A.M., Mark, B.G., Baraer, M., McKenzie, J., Fernandez, A., Welch, S., & Fortner, S. K., Exploring patterns and controls on the hydrochemistry of proglacial streams in the upper Santa River, Peru (2018) *Glaciology and Mountain Ecosystems*, INAIGEM
4. Fortner, S.K., Scherer, H., Murphy, M., 2016. Engaging undergraduates in soil sustainability decision making through an InTeGrate Module, *Journal of Geoscience Education*.
5. Baraer, M., McKenzie J., Mark, B.G., Gordon, R., Bury J., Condom T., Gomez J., Knox, S., & Fortner, S.K. 2015. Contribution of groundwater to the outflow from ungauged glacierized catchments: a multi-site study in the tropical Cordillera Blanca, Peru." *Hydrological Processes* 29, no. 11 (2015): 2561-2581.
6. Fortner, S.K., Scherer, H., Murphy, M.A 2014. A growing concern: sustaining soil resources through local decision making,  
[http://serc.carleton.edu/integrate/teaching\\_materials/sustain\\_agriculture/index.html](http://serc.carleton.edu/integrate/teaching_materials/sustain_agriculture/index.html)
7. Fortner, S.K., Lyons, W.B., Munk, L.A. 2013. Diel stream geochemistry, Taylor Valley, Antarctica, *Hydrological Processes* 27(3):394-404..  
<http://onlinelibrary.wiley.com/doi/10.1002/hyp.9255/abstract>
8. Fortner, S.K., Lyons, W.B., Carey, A.E., Shipitalo, M.J., Welch, S.A., Welch, K.A., 2012. Silicate weathering & CO<sub>2</sub> consumption within agricultural landscapes, the Ohio-Tennessee River Basin, USA. *Biogeosciences*: 9, 941–955.  
<http://www.biogeosciences.net/9/941/2012/doi:10.5194/bg-9-941-2012>
9. Fortner, S.K., Mark, B.G., McKenzie, J.M., Bury, J., Trierweiler, A., Baraer, M., Burns, P.J., &

- Munk, L. 2011. Elevated stream trace & minor element concentrations in the foreland of receding tropical glaciers. *Applied Geochemistry* 26(11): 1792-1801.  
doi:10.1016/j.apgeochem.2011.06.003
10. Fortner, S.K., Lyons, W.B., & Olesik, J., Eolian deposition of trace elements onto Taylor Valley Antarctic glaciers. 2011. *Applied Geochemistry* 26(11): 1897-1904.  
doi:10.1016/j.apgeochem.2011.06.013
  11. Fortner, S.K., Lyons, W.B., Fountain, A.G., Welch, K.A., Kehrwald, N. M., 2009. Trace element & major ion concentrations & dynamics in glacier snow & melt: Eliot Glacier, Oregon Cascades. *Hydrological Processes* 23: 2987-2996.
  12. Fortner, S.K., Fourth & fifth grade students learn about renewable & nonrenewable energy through inquiry, 2009. *Journal of Geoscience Education* 57(2): 121-127.
  13. McGill, S.F., Wells, S.G., Anderson, H. Kuzma, Fortner, S.K., & McGill, J.D., 2009. Slip rate of the Western Garlock fault, at Clark Wash, near Lone Tree Canyon, Mojave Desert, California. *Geological Society of America Bulletin* 3-4: 536-554.
  14. Fortner, S.K., Tranter, M., Fountain, A., Welch, K.A., & Lyons, W.B., 2005. The geochemistry of supraglacial streams of Canada Glacier, Taylor Valley (Antarctica) & their evolution into proglacial waters. *Aquatic Geochemistry* 11(4): 391-412.

#### **NATIONAL ACADEMIES PRESS**

1. Savanick, S. & Fortner, S. 2016. Geoscience Service Learning Literature Themes [http://sites.nationalacademies.org/cs/groups/dbassesite/documents/webpage/dbasse\\_171831.pdf](http://sites.nationalacademies.org/cs/groups/dbassesite/documents/webpage/dbasse_171831.pdf)
2. NAP, 2016, Proceedings of a Workshop: Service-learning in Undergraduate Geosciences <https://www.nap.edu/read/24621/chapter/1>

#### **GOVERNMENT & MUNICIPAL RESOURCES**

1. Columbus Climate Action Plan, <https://byrd.osu.edu/columbus> (contributor via Byrd Polar and Climate Research)
2. ODNR, River and Stream Fishing Maps, <http://wildlife.ohiodnr.gov/public-hunting-fishing-wildlife-viewing-areas/lake-and-reservoir-fishing-maps/river-and-stream-fishing-maps> (created 6 maps noting steelhead fisheries)
3. ODNR, Lake and Reservoir Fishing Maps, <http://wildlife.ohiodnr.gov/public-hunting-fishing-wildlife-viewing-areas/lake-and-reservoir-fishing-maps> (surveyed 10 reservoirs, digitized 15-20 reservoirs for final publication)
4. USGS, OFR 01-459, Physical, Chemical, and Biological Methods and Data from the Urban Land-Use-Gradient Study, Des Plaines and Fox River Basins, Illinois, 1999-2001 (contributed ecological survey data)
5. USGS, SIR 2005, 5218, Physical, Chemical, and Biological Responses to Urbanization in the Fox and Des Plaines River Basins of Northeastern Illinois and Southeastern Wisconsin (contributed ecological survey data)

#### **ONLINE VIDEOS OR OPEN ACCESS CURRICULUM DEVELOPED FOR EDUCATORS**

1. Fortner, S., Service Learning Module *with 2 activities*: [Personal temperature Monitoring to Build Context for Climate Justice](#). 2019.
2. Fortner, S. *InTeGrate Module with multiple activities*: [Community and Political Engagement in the Geosciences](#), InTeGrate, Science Education Resource Center. 2018
3. PBS Think TV, [The Dry Valleys, Scientist Vignette](#), 2009
4. PBS Think TV, [Glacial Melt & Water Quality in the Peruvian Andes](#), 2009
5. Fortner, S. [Natural Hazards and Climate Change Risks](#), Science Education Resource Center, 2016.
6. Fortner, S. [Undergraduate Global Climate Change Course Collaboration with a Museum](#), 2016.
7. Fortner, S., Murphy, M. Scherer, H. (McConnell, D. ed) *InTeGrate Module with multiple activities* [A Growing Concern: Sustaining Soil Resources through Local Decision Making](#)

## **NATIONAL FACULTY DEVELOPMENT LEADERSHIP (~1000 faculty since 2015)**

1. Environmental Justice Curriculum: Getting started & building networks (forthcoming *National Association of Geoscience Teachers*)
2. Multiple campus site visits and curriculum development for course, program, and transdisciplinary strategic planning through the [National Association of Geoscience Teachers Traveling Workshop](#) (2016-)
3. Sustainability And Social Justice Curriculum Planning at Clark Atlanta University, Atlanta, GA (Leaders: Sarah Fortner, Wittenberg University, Richard Gragg, FAMU, Ellen Metzger San Jose State), offered through the *National Association of Geoscience Teachers*, Traveling Workshop Program, 2019.
4. [Engaging Environmental Justice In The Geosciences](#), at the *American Geophysical Union*, Washington, D.C. (Leaders: Sarah Fortner, *Wittenberg University*, Cathy Manduca, *Science Education Research Center*, Richard Gragg, *FAMU*, Rob Rohrbaugh, *El Paso Community College*), 2018.
5. [Geoscience for Community Priorities](#) (Moderator: Ben Mandler, *American Geosciences Institute*, Speaker: Raj Pandya, *Thriving Earth Exchange*, Natasha Udu-gma, *Thriving Earth eXchange*, Sarah Fortner, *Wittenberg University*, Cassaundra Rose, *American Geosciences Institute*), 2018.
6. [Addressing Critical Issues in Your Program: Examples for Introductory Courses](#) (Moderator: Mitchell Awalt, Speakers: Sarah Fortner, *Wittenberg University*, Laura Guertin, *Pennsylvania State University- Brandywine*, Kenneth Brown, *West Virginia University*.), *American Geosciences Institute*, *Council on Undergraduate Research*, *Geological Society of America*, *National Association of Geoscience Teachers*, 2018.
7. [Teaching Sustainability And Environmental Justice In The Humanities](#), *InTeGrate* (Moderator Rory McFadden, Speakers: Kate Darby, *Western Washington University*, Ruth Hoff, *Wittenberg University*, Sarah Fortner, *Wittenberg University*, 2016.
8. Innovation & Collaboration Without Reinventing The Wheel (Workshop Co-leaders: Cynthia Merriwether-DeVries, Sarah Fortner. Gretchen Edwalds-Gilbert, Jon, Grahe), *Council on Undergraduate Research Biennial Workshop*, 2016.
9. Service Learning in the Undergraduate Geosciences, *American Geophysical Union* (Workshop Leader) <https://agu.confex.com/agu/fm16/preliminaryview.cgi/Session13357>, 2016.
10. [Service Learning in Your Course or Program](#), *Earth Educators Rendezvous*, Madison, WI (Workshop Leader), 2015.
11. [Building Societal Relevance into Your Course or Program](#), *Earth Educators Rendezvous*, Boulder, Co. (Workshop Leader), 2015.

## **FACULTY DEVELOPMENT LEADERSHIP AT WITTENBERG**

1. Wittenberg's InTeGrate Sustainability Implementation Program, [Developing Community based Projects](#) (Workshop Co-leader), 2016

2. Wittenberg's InTeGrate Sustainability Implementation Program, [High Impact Modules Across the Curriculum](#) (Workshop Co-leader), 2015
3. Active Learning Strategies, Wittenberg Faculty Retreat, 2014 (Sarah Fortner, Margaret Goodman, Brooke Wagner)
4. Active Learning in the Sciences, Wittenberg Workshop, 2014 (Sarah Fortner and Amber Burgett)
5. Active Learning in the Sciences, Noyce Scholars Workshop, 2014 (Sarah Fortner and Amber Burgett)

## GRANTS (\$2.5M)

2019-2023	NSF-Improving Undergraduate STEM Education Broadening the fusion of STEM and Business (\$2.4 Million, \$369,563 to Wittenberg) Collaborative at Wittenberg, Bentley, and Northern Illinois University with David W. Szymanski (project lead), Eric A. Oches, Otgo Erhemjamts, Sarah Fortner (Wittenberg lead), Rachel Wilson, Christine H. Mooney, Melissa Lenczewski, Ellen Iverson
2019	American Geophysical Union 100 Grant, Empowering environmental lead pollution science and advocacy with the Springfield Promise Neighborhood (\$5,000)
2012-2018	9 Wittenberg FDB Travel Awards (\$6000)
2017-2018	1 FDB Research Project Award (\$3,000)
2014-2016	NSF InTeGrate Sustainability Implementation Program (\$75,000 with match) (Lead PI)
2014	Wittenberg Campus Rain Garden, City of Springfield (\$50,000) (Collaborator)
2013	NSF-COSI Portal to the Public Award: Disseminate Science (\$10,000) (Collaborator)
2013	NSF- CC-NIE Networking Infrastructure (Co-PI) (\$50,000)
2013	NSF-InTeGRATE Agricultural Teaching Module (\$15,000) (Co-PI)
2013	GroundWater Guardian (\$1,500) (Collaborator)
2012	OSU Agroecosystems Seed Grant (\$50,000) (Co-PI)
2012	Lily Foundation Natural Springs Assessment Grant (\$1,500)

## Instruments & analyses donated by community partners (\$150,000)

- Dionex Ion Chromatograph & Autosampler (\$80,000)
- Niton XRF (\$50,000)
- Trace metal analysis (\$20,000)
- Pocket Lab Air (\$300)

## AWARDS AND RECOGNITION

- Geological Society of America-American Geosciences Institute
- Council on Undergraduate Research Volunteer of the Year (2016)
- Lou Loux Environmental Sustainability Award at Wittenberg University (2015)
- USGS Ecological Survey Leadership Excellence (2000)
- Antarctic Service Medal (2002)
- NSF GK 12 Fellowship (2006)

## PROFESSIONAL MEETING ABSTRACTS \*=student author, italic= invited

### 2019

1. Fortner, S.K., *Environmental Justice and Human Rights Panel, 2019 Social Practice of Human Rights Conference. Dayton, October (invited by AAAS and Union of Concerned Scientists).*

2. Fortner, S.K., Place-based approach to climate change: improving student and community outcomes, GSA abstracts with programs, v. 51. no. 5, T199. Enhancing the Geosciences by Empowering Indigenous and Latinx Students II. Phoenix, Arizona
3. Lyons, W.B., Carey, A. E., Welch, S. A., Gardner, C. B., Diaz, M., Fortner, S., Gilbert, D., Monagle, C., Calero, A., The geochemistry of soils from around the world, An earth science perspective, Soil Science Research Day, March 2019, OARDC Symposium, Columbus, Ohio

## 2018

4. Chien, A., Zhu, E., Gallop, M., Starr, L. D., & Fortner, S. K. (2018, December). Proglacial and Subglacial Meltwater Ion Concentrations for the Llewellyn Glacier, BC, summer 2018. In AGU Fall Meeting Abstracts. Washington D.C. December.
5. Fortner, S.K., 2018. *Supporting science literacy takes work, but first what are faculty and programs doing? American Geophysical Union, Townhall Panel. Washington, D.C. December.*
6. Fortner, S.K., 2018. *Cultivating science based change agency. American Association for the Advancement of Science (AAAS Annual Meeting) Austin, Texas. February.*
7. Fortner S.K. and Wilson, C.A., 2018. Civic engagement in our classes, programs, and outreach practices: implications for supporting science literacy and our workforce. GSA abstracts with programs. T66. The Twenty-First–Century Geoscience Workforce: What Is It? Who Is In It? Who is Missing? Indianapolis
8. Manduca, C.A., Pandya, R., Feinstein, N., Fortner, S., 2018. Community science: strengthening community capacity to use science. AAAS Annual Meeting, Austin, TX. February.
9. Fortner, S.K., Scherer, H.H., Murphy, M., 2017. *Helping students advocate for the earth using InTeGrate Modules, T115. Hands-on teaching demonstrations that combine geoscience and societal issues: Audience participation requested!*

## 2017

10. Huston\*, K., Gianotti\*, Z., Fortner, S. K., Kehrwald, N.M., John\*, Ch., 2017. Snow melt chemistry: Major and trace cation contributions to downstream systems from the Llewellyn and Matthes Glaciers, Juneau Icefield. In: Characterizing spatial and temporal variability of hydrological and biogeochemical processes across scales. AGU Fall Meeting, New Orleans.
11. Kehrwald, N. M., D. Battistel, E. Argiriadis, C. Barbante, L. B. Barber, S. K. Fortner, J. Jasmann, T. Kirchgeorg, and P. Zennaro. Fire, Climate, and Human Activity: A Combustive Combination. In American Geophysical Union Fall Meeting Abstracts. New Orleans 2017.
12. Scherer, H., Fortner, S., Murphy, M., 2017. Engaging undergraduates in soil sustainability decision-making, NACTA Conference. 6/28-7/1. Purdue University

## 2016

13. Fortner, S.K., and Burgett, A., 2016. *Wicked Problems: Curricular Solutions, GSA Abstracts with Programs, T80. Implementing Discovery-Based Research Experiences in Undergraduate Geoscience Courses and Curricula.*
14. Diaz\*, M.A., Fortner, S.K., Lyons, W.B., 2016. Land management impacts on hydrology, yields, and concentration vs. discharge relationships in small, unglaciated, central Ohio watersheds. GSA Abstracts with Programs. T110. Landscape Disturbance in Coupled Hydrologic, Ecologic, and Geomorphologic Systems
15. Guertin, L., Fortner, S., Lord, M. 2016. Engaging students in course-based research: reports from PCAST, NAS, and examples from earth/environmental sciences. CUR Biennial Meeting, Tampa Florida.
16. Merriwether-DeVries, C.A., Fortner S.K., Edwalds-Gilbert, G., Grahe, J. E., 2016. Innovation and collaboration: creating opportunities without reinventing the wheel. CUR Biennial Meeting, Tampa Florida.



17. Miele\*, C., Christensen\*, K., Clark\*, A., Holt\*, A., Peek\*, Zaccarin\*, A., Ziola\*, K., Fortner, S., Kehrwald, N., 2016. Chemical weathering on the Llewellyn Glacier, Juneau Icefield, AGU Fall Meeting, San Francisco, CA
18. Shaffer\*, L., Alexander\*, R., Helterbrandt\*, F., Fortner, S., 2016. Winter chloride behavior in Ohio Rivers and the influence of land use and climate, GSA Abstracts with Programs, T30. Sigma Gamma Epsilon—Undergraduate Research
19. Simek\*, V., Kaupp Fett, A. Fortner, S.K., 2016: Soil Safe Springfield: Wittenberg Undergraduates collaborate to reduce urban garden lead risk. Ohio Environmental Protection Agency Meeting at Sinclair University, OH.
20. Sullivan, S., Brenner, K., Fortner, S., O'Connell, S., 2016, Service learning in the Undergraduate Geosciences, American Geophysical Union Annual Conference, Session 13357.

## 2015

21. Bartell\*, C., Fortner, S.K., 2015. Soil organic carbon & nitrate profiles associated with land management history: The Antioch Farm, Yellow Springs, Ohio. Geological Society of America Abstracts with Programs.
22. Fortner, S.K., Ritter, J.B., Burgett, A.A., Finster, D.C., Hoff, R.J., Phillips, R.S, 2015 (Invited). *InTeGrate modules and authentic community-based research as sustainability program opportunities. GSA Abstracts with Programs, T81. Intentional integration of research into the curriculum: Undergraduate Research as a teaching practice.*
23. Fortner, S.K., Dowling, C.B., Goldsmith, S.T., Johannesson, K., Leslie, D., Neumann, K., Nezat, C.A., Welch, K.A., Welch, S.A., 2015. Key contributions of W. Berry Lyons to transdisciplinary geochemical explorations. GSA Abstracts with Programs, T35. Honoring the Diverse Career of Dr. W. Berry Lyons: Geochemistry from Polar Deserts to Tropical Watersheds
24. Freeman\*, M. R., Fortner, S.K., 2015. Sulfate concentrations and dynamics in the Maumee & Great Miami Rivers. Geological Society of America Abstracts with Programs, Baltimore.
25. Glaser\*, J.K., Fortner, S.K., 2015. Sodium and chloride concentrations and seasonal behavior in the Ohio River and it's subwatershed, the Great Miami River. GSA Abstracts with Programs
26. Murphy, M., Scherer, H., Fortner, S., 2015, Building a strong collaborative team: factors for success, Earth Educators Rendezvous, Boulder, Colorado.
27. Ngyuen\*, C., Fortner, S.K., 2015. Agricultural land use influence on the behavior and delivery of calcium and magnesium ions in the Great Miami River, Ohio. PittConn, New Orleans.

## 2014

28. Fortner, S.K., Lyons, W.B., 2014. Trace and minor elements in cryoconites and supraglacial streams, Canada Glacier, Antarctica, SCAR Biennial Meetings and Open Science Conference 2014, Sept 2014.
29. Provost, J., Childress, H., Grahe, J., Fortner, S., Moore, D., 2014. CUR Task force on Innovation through Collaboration: Update of survey and report on best practices, CUR Conference 2014
30. Scherer, H., Fortner, S.K., Murphy, M., 2014. Sustainable Agriculture as a context for developing earth systems thinking in undergraduate geoscience courses:GSA Abstracts with Programs, Annual Meeting.
31. Starr\*, L.D., Fortner, S.K., Seasonal chloride behavior in the Great Miami River, 2014. OH. Geological Society of America Abstracts with Programs v. 46. No.208, p. 35
32. Wilson\*, E.L., Breslin\*, K., Marvelle\*, K.A., Thacker\*, T. N., Fortner, S.K., and Ritter, J. B., 2014 Soil lead distribution at two sites: implications for lead soil outreach in the Promise Neighborhood, Springfield, OH. Geological Society of America Abstracts with Programs v. 46, No 208, p. 40

## 2013

33. Coutts\*, K.E., Crisp\*, A.A., Goodwin\*, G.M., Hagen\*, B. P., Mobley\*, T. J., Wilson\*, E. L., and Fortner, S.K., 2013. Seasonal and long-term, (1996-2012) trends in the concentrations and ratios

of dissolved silica and dissolved inorganic nitrogen in the Great Miami River at Miamisburg, Ohio, GSA Abstracts with Programs v. 45, No. 4, p.62.

34. Fortner, S.K., Lyons, W.B., Shipitalo, M. J., Carey, A. E., Goldsmith, S., Deuerling\*, K., 2013. Agricultural land use controls on critical zone interactions in soil and water in unglaciated east central Ohio. GSA Abstracts with Programs v. 45., No.7, p. 511.
35. Hamilton\*, B. B., Fortner, S. K., Lyons, W.B., Deuerling\*, K. M., 2013. Leaching and SEM-EDS analyses of glacial and proglacial sediments in Taylor Valley, Antarctica. GSA Abstracts with Programs v. 45, No. 7, p. 211
36. Starr\*, L.D., Fortner, S.K., 2013. Spring chloride behavior in Buck Creek and the Great Miami River, OH. GSA Abstracts with Programs v. 45. No.7, p. 596.

## 2012

37. Fortner, S.K., Ritter, J.B., and Austin, B.A., 2012. Integrated service learning across geoscience courses including biogeochemistry: Building depth, scholarship, and community identity: Geological Society of America Abstracts with Programs, Vol. 44, No. 7, p. 496.
38. Fox, L.K., Guertin, L.A., Manley, P.L., Fortner, S.K., 2012. The geosciences division of the council on undergraduate research (GeoCUR): supporting faculty that mentor undergraduate researchers, AGU Fall Meeting, San Francisco, CA
39. Wilson\*, E. L., Fortner, S.K., and Ritter, J.B., 2012. Nitrate and alkalinity during the July 2012 drought: Urban and agricultural watershed response observed in Buck Creek, Ohio, U.S.A.: GSA Abstracts with Programs, v. 44, No. 7, p. 565.

## 2011

40. Mark, B.G., Baraer, M., Fortner, S., and Schoenfelt\*, M., 2010. Hydrochemical insights to changing tropical glacier environments in Peru. Association of American Geographers Annual Meeting, Washington D.C., April.
41. Fortner, S.K., Welch, K.A., Lyons, W.B., Olesik, J., and Witherow, R.A., 2009. Spatial assessment of trace elements in Taylor Valley Antarctic Glaciers: Dominance of eolian deposition. 24th International Applied Geochemistry Symposium, Fredericton, New Brunswick, Canada, June.
42. Fortner, S.K., Lyons, W. B., and Munk, L., 2009. Diel concentrations and hysteresis behaviors of major, minor, and trace solutes in Taylor Valley, Antarctic Streams. Geological Society of America 2009 Joint Annual Meeting, Houston, TX, U.S.A., October.
43. Schoenfelt\*, M., Fortner, S.K., and Mark, B.G., 2009. Silicate weathering in glacial meltwater in the Cordillera Blanca. Denman Undergraduate Research Forum, The Ohio State University, May.
44. Fortner, S.K., Mark, B.G., McKenzie, J.M., Baraer, M., and Schoenfelt\*, M., 2008. Metal concentrations and hydrochemical dynamics in a tropical-glacier watershed. EOS Trans., AGU, 89(53), Abstract C23A-0598, Fall Meeting Suppl.
45. Whisner\*, C., Fortner, S.K., and Lyons, W.B., 2008. The impact of agricultural land use on the carbon cycle measured from streams in Coshocton, Ohio watersheds. Mathematical and Physical Sciences Undergraduate Research Forum, The Ohio State University.
46. Fortner, S.K., Trace metal dynamics in polar valley glacier snow and melt, 2007. McMurdo LTER Site Meeting, Boulder, Colorado, U.S.A. August.
47. Fortner, S.K., Lyons, W.B., Munk, L., and McKnight, D., Diel cycling of As, Cu, Fe, Mn, and V in McMurdo Dry Valley, Antarctic Streams: identifying controls on metal geochemistry. Geological Society of America 2008 Joint Annual Meeting, Houston, TX, U.S.A.
48. Fortner, S.K., Lyons, W.B., Welch, K.A., Olesik, J.W., 2007. Trace metal dynamics and transport in a polar glacier dominated watershed: Taylor Valley, Antarctica., 2007. Goldschmidt, Cologne, Germany, August.
49. Fortner, S.K., 2007. Trace metals in Taylor Valley Waters. McMurdo Long-Term Ecological Research Program Annual Meeting, Boulder, Colorado, August.
50. Fortner, S.K., Lyons, W.B., Fountain, A.G., Welch, K.A., 2007. Snow fluxes and melt dynamics of trace elements at Eliot Glacier: South Cascades Oregon. Geological Society of America Abstracts with Programs, 103rd annual meeting, Cordilleran Section, Bellingham, WA May.

51. Fortner, S.K., Lyons, W.B., Fountain, A.G., Welch, K.A., 2006. Fluxes and Dynamics of Trace Metals in Glaciers: McMurdo Dry Valleys, Antarctica and South Cascades, Oregon. All-Site Long Term Ecological Research Meeting, Estes Park Colorado, September, 2006.
52. McGill, S.F., Anderson Kuzma, H., Daneke, T., Grant, J., Slates, M., Stroud, J., Tegt (Fortner), S.K., and McGill, J.D., 2003. Slip rate of the Western Garlock Fault near Lone Tree Canyon, Mojave Desert, California. Geological Society of America Abstracts with Programs, 99th annual meeting, Cordilleran Section, April.
53. Lyons, W.B., Welch, K.A., Graham, E.Y., and Tegt (Fortner), S.K., 2002. The importance of aeolian transport to the geochemistry of McMurdo Dry Valley Lakes, Antarctica. ASLO 2003 Meeting Abstracts, February.

**Undergraduate Research Students (# of professional abstracts with me, those not presenting abstracts did independent sustainability-tied action projects)**

Carla Whisner (1), Michael Shoenfelt (1), Beth Wilson (3), Lindsay Starr (2), Kim Coutts (2), Alexis Crisp (1), Grant Goodwin (1), Kyle Breslin (1), Ben Hagen (1), Biniyam Melese, Grace Gielink, Tyler Thacker (1), TJ Mobley (1), Kate Bartell (2), Whitney Koehling, Alex Scheumann, Rebecca Agnor, Rachel Ross, Chi Nguyen (1), Brandi Hamilton (1), Eric Roberts, Faith Helterbrandt, Tori Simek (1), Sage Pence, Leighanne Shaffer (1), MacKenzie Freeman (1), Jade Glaser (1), Arek Barzaski, Auri Clark (1), Kit Cunningham (1), Annie Holt (1), Molly Peek (1), Annie Zaccarin(1), Kiana Ziola (1), Chris Miele (1), Haley Jackson, Victoria Simek (1), Zach Gianotti (1), Kelcy Huston (1), Chelly Johnson (1), Annie Chien (1), Eric Zhu (1), Madeleine Gallop (1), Diana Castro (1), Alexia Fabiani (1), Lizzie Hebel (1), Emily Wilcox (1)

**INSTITUTIONAL SERVICE**

- Chair, Faculty Programing Committee, Wittenberg Series (Fall 2019)
- Faculty Programming Committee (Fall 2018-Present)
- Director, Wittenberg in Wittenberg, Germany (Spring 2019)
- Faculty Endowment Fund Board (2014-2015 sabbatical replacement, 2015- 2018) Evaluated faculty proposals for guest speakers.
- Wittenberg Commitment Task Force (2014-2015)
- Development of the First Year Experience Task Force (2014-2015)
- Innovation Task Force (2013-2015)
- Student Development Board (2016-2019)
- Archaeology Minor Advisory Committee (2014-)

**LOCAL SERVICE**

- EQUIP Advisory Committee, Clark County Water & Soil District (2016-)
- Education Division, Clark County Local Food Council (2018-)

**PROFESSIONAL MEMBERSHIPS**

- American Association for the Advancement of Science (Since 2017)
- American Geophysical Union (2008-2013, 2017-)
- Council on Undergraduate Research (Since 2012): *Served in multiple leadership roles.*
- Geological Society of America (Since 2001)
- Geochemical Society (Since 2009)
- Earth Science Women's Network (Since 2014)
- National Association of Geoscience Teachers (Since 2014)

**FIELD RESEARCH**

- McMurdo Dry Valleys, Antarctica (2001-2002, 2006-2007, 2007-2008, 2016-2017)

- Juneau Icefield (2016-2019, 2001,1995)
- USDA North Appalachian Experimental Watershed (2008-2009)
- Cordillera Blanca, Peru (2008)
- North Cascades, USA (2006, 2007)
- Ohio Inland Reservoirs (2002-2004)
- Iceland (1999)
- Death Valley (1997)
- Upper Mississippi Watershed (1997)

## COURSES I TEACH & COMMUNITY PARTNERS

- Biogeochemistry (Environmental Science 350)
- Geology of the Critical Zone (Geology 170)
- Environmental Science Research Methods, including GIS (ESCI 250)
- Global Climate Change (Environmental Science 100)
- Introductory Environmental Science (Environmental Science 101)
- Sustainable Earth (Geology 115)

Students in my classes provide **600 project hours** in research or literacy programming in collaboration with the campus and Springfield community each year. Community-based participatory research is featured in my courses. This includes climate outreach and advocacy events, soil lead analyses, water quality testing for urban and agricultural pollutants. We provide partners with information, maps, fact sheets, and reports. Students present at professional or partner meetings. This rich-network results in internships with partners and resources for student learning. It also results in gained knowledge for decision making (e.g. climate change impacts on city stormwater infrastructure capacity- **a \$200 million dollar issue** in *Springfield, Ohio*, lead soil mapping and community gardening, monitoring campus soil nutrients and informing fertilizer applications, mapping heat island impacts and suggesting landscaping opportunities). Biogeochemical and GIS strategies are emphasized.

Partners who have collaborated with my students on course projects (\*alumni)

1. Kate Causbie\*, Springfield Promise Neighborhood
2. Anne Kaup Fett, Clark County Combined Health District
3. Andy Aichele, Center Of Science and Industry (COSI)
4. Pam Bennett, OSU Extension
5. Michael Brady, Wittenberg Physical Plant (formerly)
6. Susie Broidy, OSU Extension
7. Sherry Chen, Springfield Ohio Urban Plantfolk
8. Sheryl Cunningham, Sustainability Task Force
9. Dr. Mary Davis, The Ohio State University
10. Lisa D'Allessandri\*s, Clark County Emergency Management Agency
11. Mark DeVilbiss, Wittenberg University (formerly Residential Life)
12. Mike Ekberg, Miami Conservancy District
13. Dave Faulkner, CRSI Strive
14. Sarah Hippensteel Hall, Miami Conservancy District
15. Kim Landsbergen, Antioch College, The Farm
16. Kali Lawrence, Springfield Promise Neighborhood
17. Shannon Meadows\*, City of Springfield Community Development
18. Courtney Price, Center Of Science and Industry (COSI)
19. Eric Roberts\*, Springfield Promise Grows
20. Kevin Rose\*, The Turner Foundation
21. Sky Schelle\*, City of Piqua Water Utilities
22. Steve Schlather, Clark County Waste Management District, & Citizen's Climate Lobby

23. Eric Smith, Springfield Promise Neighborhood (formerly)
24. Leonard Sparks, Center Of Science and Industry (COSI)
25. Carla Tamplin, Springfield Promise Grows (formerly)
26. Bob Welker, Springfield Promise Neighborhood
27. John Wheeler, Springfield Promise Neighborhood Association
28. Marta Wojcik, The Westcott House/Solar House
29. Trish Demeter, Ohio Environmental Council

## **PUBLIC ENGAGEMENT**

- 2019, FA. Justice Teach-In, A Day of Action at Wittenberg, leading the Environmental Justice Panel
- 2019, FA. Hands on Geology with Snowhill Elementary School second graders
- 2019, FA. Climate literacy and Citizen Science Event with the Global Impact STEM Academy at Snyder Park
- 2019, FA. Lead testing and Art Advocacy Event, Springfield Promise Neighborhood
- 2019, FA. Environmental Lead Pollution in Springfield, Ohio, Mother Stewart's Brewery
- 2018, SU. Global Climate Change activity station at the Monarch Butterfly Festival, Springfield, Ohio
- 2018, SU. Speaker to Women Supporting Girls Philanthropy group on local climate impacts.
- 2018, SP, Invited Speaker, Ohio Environmental Leadership Institute (OSU & Miami Conservancy District)
- 2018, SP, Climate Panel at Founders hosted by Wittenberg Student Senate
- 2018, SP, Volunteer, Amazing Place Earth Day Education, National Trail Park & Recreation district
- 2018, SP Q&Q at Wittenberg: Realizing Our Civic Potential
- 2018, SP, Growing Food in Antarctica, PechaKucha, Westcott House, Mother Stewart's Brewery
- 2018, SP, Global Climate Change Solutions, Global Impact STEM Academy
- 2018, 3 time science activity volunteer at Snowhill Elementary
- 2016, SP, Global Education & Peace Network Series: Sustainability at Wittenberg and into the Community, <http://www.wittenberg.edu/news/2016/Global-education>
- 2016, SP, Glaciers and Flubber Presentation and Inquiry Activity at Snowhill Elementary
- 2015, FA, Global Education Series: Wittenberg Environmental Science in the Springfield community, <http://www.wittenberg.edu/news/2015/Global-Education-Wittenberg>
- 2015, 3 Local Food Events hosted by OSU Extension & the Springfield Promise Neighborhood
- 2014, FA, Green Holidays at the Westcott Solar House, presented by Global Climate Change students in collaboration with COSI and informed by 8 local experts
- 2014, FA, Oakwood Village, Climate Change What do we know? An Interdisciplinary panel at Oakwood Village
- 2014, SU, Westcott House Solar House Opening PechaKucha Night, Phosphorus: Too much, but not enough
- 2014, SP, 'Chasing' Ice Global Climate Change Panel at Wittenberg
- 2014, SP, Climate Literacy Modules presented by Wittenberg Global Climate Change students (ESCI 100) at COSI. Reach: 500 plus visitors interacted with our students.
- 2014, SP Wittenberg Open Classroom Melt in the Antarctic dry valleys, lessons learned from the ice
- 2014, SP Community Development Speaker, Hagen Center for Civic & Urban Engagement What role can you play in preserving the local watershed? (explored the homeowner role in water quality, and efforts homeowners can employ to reduce negative water quality impacts; 2 students assisted).
- 2012, FA Wittenberg Saturday Science Series w/ 2 undergraduate co-leaders, Glacier Change
- 2002-2008, Led tours, gave talks on Antarctic travel, research, hosted interactive workshops engaging with more than 1,000 visitors to Byrd Polar Research Center

- Visits to more than 5 Columbus K-12 schools discussing work in Antarctica

## **NATIONAL PRESS**

1. Union of Concerned Scientists, (Guest Blog) Science Citizenship: Making Science Actionable <https://blog.ucsusa.org/science-blogger/science-citizenship-making-science-actionable>
2. AGI, AGI Welcomes Member Society Scholar-in-Residence, Sarah K. Fortner, Ph.D. <https://www.americangeosciences.org/news/agi-welcomes-member-society-scholar-residence-sarah-k-fortner-phd>
3. AAC&U, Civic Prompts, Civic learning in the major by design, 2017, <https://www.aacu.org/civic-prompts>
4. AGU Blogs (Laura Guertin), 2016, Helping Students Advocate for the Earth-from InTeGrate; <http://blogs.agu.org/geoedtrek/2017/04/20/helping-students-advocate-earth-integrate/>
5. AGU Blogs (Laura Guertin), 2016, Day 1 PM – Service Learning in Undergraduate Geosciences: A Workshop, <http://blogs.agu.org/geoedtrek/2016/04/20/day-1-pm-service-learning-undergraduate-geosciences-workshop/>
6. EOS, 2016, Earth and Space Science News, AGU signs agreement with Council on Undergraduate Research; <https://eos.org/agu-news/agu-signs-agreement-with-council-on-undergraduate-research>
7. CUR, 2016, AGU and CUR to partner to advance undergraduate science education; [http://www.cur.org/agu\\_and\\_cur\\_partner\\_to\\_advance\\_undergraduate\\_science\\_education/](http://www.cur.org/agu_and_cur_partner_to_advance_undergraduate_science_education/)
8. NAGT & SERC, Helping the Next Generation Save the Planet (Includes press for Wittenberg's Sustainability Implementation Program), 2016, [http://apps.carleton.edu/now/stories/?story\\_id=1284023](http://apps.carleton.edu/now/stories/?story_id=1284023)
9. NAGT & SERC, 2015, Congratulations to InTeGrate author Sarah Fortner and her team at Wittenberg University (published separately in two major geoscience education resource websites), [http://serc.carleton.edu/serc/news/integrate\\_autho.html](http://serc.carleton.edu/serc/news/integrate_autho.html)
10. NAGT, 2014, InTeGrate Module Author in the News Wittenberg Students Team Up With Springfield To Fight Storm Water Problem, *Geospectrum Quarterly Geoscience Newsletter & E-Zine* <http://www.americangeosciences.org/sites/default/files/GeoSpectrum-2014-Winter.pdf>

## **LOCAL PRESS**

1. Springfield News Sun, 2019, Wittenberg to join multi-million dollar research project, <https://www.springfieldnewssun.com/news/local/wittenberg-join-multi-million-dollar-research-project/0gbTINGrPZUTLGzzKhoFLM/>
2. Springfield News Sun, 2017, Springfield woman's climate change studies include trips to Antarctica, <http://www.springfieldnewssun.com/news/local-education/springfield-woman-climate-change-studies-include-trips-antarctica/WPC9EmhNc5RFHYzNbCwznL/>
3. Springfield New Sun, 2015, Global Ed Series kicks of its 14th season, <http://www.springfieldnewssun.com/news/news/local/global-ed-series-kicks-off-14th-season-thursday/nnXtc/>

4. Springfield News Sun, 2015, Springfield, Wittenberg partner on a rain garden  
<http://www.springfieldnewssun.com/news/news/local/springfield-wittenberg-partner-on-rain-garden/nmyCG/>
5. WYSO, 2014, Wittenberg students team up to fight stormwater problem  
<http://wyso.org/term/sarah-fortner> (written);  
<http://wyso.org/post/wittenberg-students-team-springfield-fight-storm-water-problem> (radio release)
6. Springfield News Sun, 2013, Springfield, Witt team up on a survey  
<http://www.springfieldnewssun.com/news/news/local/springfield-witt-team-up-on-survey/nYbDb/>

## **CAMPUS PRESS**

1. STEM-Business Endeavor. <https://www.wittenberg.edu/news/08-30-19/stem-business-endeavor>
2. Climate change scientist Sarah Fortner contemplates whether we can slow the devastating effects of a warming planet. [https://static1.squarespace.com/static/59ac40138419c2a53ccc7268/t/59b464af37c581fbf87b1899/1504994497173/ChasingIce\\_Story.pdf](https://static1.squarespace.com/static/59ac40138419c2a53ccc7268/t/59b464af37c581fbf87b1899/1504994497173/ChasingIce_Story.pdf)
3. Wittenberg University students examine their role in sustainability issues  
<http://www.wittenberg.edu/news/2016/Earth-Week>
4. Wittenberg to host Global Education and Peace Network Series  
<http://www.wittenberg.edu/news/2016/Global-education>
5. Springfield's Global Earth Education Series to open with Wittenberg Scientists  
<http://www.wittenberg.edu/news/2015/Global-Education-Wittenberg>
6. Wittenberg Student Wins James Manner Award At Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy  
<http://www.wittenberg.edu/news/2015/chemistry-student-wins-james-manner-award-at-pittcon>
7. Wittenberg Featured In "The Princeton Review's Guide To Green Colleges,"  
<http://www.wittenberg.edu/news/2015/princeton-review-guide-to-green-colleges> (cites our sustainability curricular effort)
8. Rain Garden to add beauty and purpose to campus, <http://www.wittenberg.edu/news/2015/rain-garden>
9. Wittenberg Raises Funds for Campus Sustainability Initiatives on #GivingTuesday  
[http://www.wittenberg.edu/news/2014/12\\_2-giving-tuesday.html](http://www.wittenberg.edu/news/2014/12_2-giving-tuesday.html) (mentored students in 2 of these videos; helped launch a Green Giving Tuesday)
10. Wittenberg Students Present Local Research to Geological Society of America  
[http://www.wittenberg.edu/news/2014/11\\_10-gsa-conference.html](http://www.wittenberg.edu/news/2014/11_10-gsa-conference.html)
11. Wittenberg University Students Take Part in Largest Climate March in History  
[http://www.wittenberg.edu/news/2014/10\\_17-sustainability-march.html](http://www.wittenberg.edu/news/2014/10_17-sustainability-march.html) (Climate March)
12. COSI Collaboration Reflects Innovative Learning (Wittenberg Magazine, Spring 2014)
13. Wittenberg University Students Participate in Portal to the Public, Collaborate with COSI  
[http://www.wittenberg.edu/news/2014/05\\_27-geology-cosi.html](http://www.wittenberg.edu/news/2014/05_27-geology-cosi.html)
14. Hands-on learning at its best <http://www.wittenberg.edu/features/hands-on-learning>

## **OTHER**

1. On the Juneau Icefield, Women reimagine who does science, 2018. *Sierra*. Drew Higgins.  
<https://www.sierraclub.org/sierra/juneau-icefield-women-reimagine-who-does-science>
2. Glacier Hub, Geochemical Evolution of Meltwater from Glacier Snow to Proglacial Lake, Tae Hamm  
<https://glacierhub.org/2018/02/20/geochemical-evolution-meltwater-glacier-snow-proglacial-lake/>
3. As wildfires blaze, southeast glaciers will be feeling the melt, 2016. KTOO, Juneau, Alaska. Elizabeth Jenkins  
<http://www.ktoo.org/2016/08/17/as-interior-wildfires-blaze-southeast-glaciers-could-be-feeling-the-melt/>