

Christa Brelsford

Oak Ridge National Laboratory
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EDUCATION

Ph.D. Sustainability, Arizona State University, 2014
Dissertation: Whiskey is for Drinking; Water is for Fighting Over: Population Growth, Infrastructure Change, and Conservation Policy as Drivers of Residential Water Demand

Chair: Joshua Abbott

Committee: Abigail York, W. Michael Hanemann, Timothy McPherson

M.A. Climate and Society, Columbia University, 2008

B.S. Civil Engineering (cum laude), Columbia University, 2007

B.A. Liberal Studies, Bard College at Simons Rock, 2007

PROFESSIONAL APPOINTMENTS

2020 Research Scientist, Oak Ridge National Laboratory
Human Dynamics Section

2017 – 2020 Liane Russell Fellow, Oak Ridge National Laboratory
Geographic Information Science and Technology Group

2014 – 2017 Postdoctoral Fellow, Santa Fe Institute
Mentor: Luís Bettencourt

PUBLICATIONS

Peer Reviewed

2021

Pearsall, H., V. Gutierrez-Velez, M. Gilbert, S. Hoque, H. Eakin, E. Brondizio, W. Solecki, L. Toran, J. Baka, J. Behm, **C. Brelsford**, C. Hinrichs, K. Henry, J. Mennis, L. Roman, C. Rosan, E. South, & R. Valletta. Advancing equitable health and well-being across urban–rural sustainable infrastructure systems. *Npj Urban Sustainability*, 1(1), 1–6. doi:10.1038/s42949-021-00028-8

- 2021 **Brelsford, C.**, & Abbott, J. K. How smart are ‘Water Smart Landscapes’? *Journal of Environmental Economics and Management*, 106, 102402. doi:10.1016/j.jeem.2020.102402
- 2021 McManamay, R. A., B. Kc, M. Allen-Dumas, S.-C. Kao, **C. Brelsford**, B. Ruddell, J. Sanyal, R. Stewart, & B. Bhaduri. Reanalysis of water withdrawal for irrigation, electric power, and public supply sectors in the conterminous United States, 1950 to 2016. *Water Resources Research*, e2020WR027751. doi:10.1029/2020WR027751
- 2020 Tonne, C., L. Adair, D. Adlakha, I. Anguelovski, K. Belesova, M. Berger, **C. Brelsford**, P. Dadvand, A. Dimitrova, B. Giles-Corti, A. Heinz, N. Mehran, M. Nieuwenhuijsen, F. Pelletier, O. Ranzani, M. Rodenstein, D. Rybski, S. Samavati, D. Satterthwaite, ... M. Adli. (2021). Defining pathways to healthy sustainable urban development. *Environment International*, 146, 106236. doi:10.1016/j.envint.2020.106236
- 2020 **Brelsford, C.**, E. Coon, E. Moran, & M. Allen-Dumas. (2020). Urban Scaling as Validation for Predictions of Imperviousness From Population. *Geophysical Research Letters*, 47(23), e2020GL089742. doi:10.1029/2020GL089742
- 2020 **Brelsford, C.**, M. Dumas, E. Schlager, B. Dermody, M. Aiuvalasit, M. Allen-Dumas, J. Beecher, U. Bhatia, P. D’Odorico, M. Garcia, P. Gober, D. Groenfeldt, S. Lansing, K. Madani, L. Méndez-Barrientos, E. Mondino, M. Müller, F. O’Donnell, P. Owour, J. Rising, M. Sanderson, F. Souza, S. Zipper. Developing a sustainability science approach for water systems. *Ecology and Society*, 25(2), art23. doi:10.5751/ES-11515-250223
- 2019 **Brelsford, C.**, G. Thakur, R. Arthur, & H. Williams. Using Digital Trace Data to Identify Regions and Cities. *Proceedings of the 2nd ACM SIGSPATIAL International Workshop on Advances on Resilient and Intelligent Cities* doi:10.1145/3356395.3365539
- 2019 Berdahl, A., **C. Brelsford**, C. De Bacco, M. Dumas, V. Ferdinand, J. Grochow, L. Hébert-Dufresne, Y. Kallus, C. Kempes, A. Kolchinsky, D. Larremore, E. Libby, E. Power, C. Stern, & B. Tracey. Dynamics of beneficial epidemics. *Scientific Reports*, 9(1), 1–9. doi: 10.1038/s41598-019-50039-w
- 2019 Zipper, S., K. Whitney, J. Deines, K. Befus, U. Bhatia, S. Albers, J. Beecher, J., **C. Brelsford**, M. Garcia, T. Gleeson, F. O’Donnell, D. Resnik, & E. Schlager. Balancing Open Science and Data Privacy in the Water Sciences. *Water Resources Research*, 55(7), 5202–5211. doi: 10.1029/2019WR025080

- 2018 Allen-Dumas, M., S. Zaidi, V. Chandola, A. Morton, **C. Breilsford**, R. McManamay, B. KC, J. Sanyal, R. Stewart, and B. Bhaduri. 2018. "A Survey of Analytical Methods for Inclusion in a New Energy-Water Nexus Knowledge Discovery Framework." *Big Earth Data* 2 (3): 197–227. doi: 10.1080/20964471.2018.1524344.
- 2018 **Breilsford, C.**, T. Martin, J. Hand, & L. Bettencourt. Toward cities without slums: Topology and the spatial evolution of neighborhoods. *Science Advances*, 4(8). doi: 10.1126/sciadv.aar4644
- 2018 **Breilsford, C.**, and C. De Bacco. "Are 'Water Smart Landscapes' Contagious? An Epidemic Approach on Networks to Study Peer Effects." *Networks and Spatial Economics*, July 2018. doi: 10.1007/s11067-018-9416-z
- 2017 **Breilsford C.**, T. Martin and L. Bettencourt. Optimal Re-blocking as a Practical Tool for Neighborhood Development. *Environment and Planning B: Urban Analytics and City Science*, Jun. 2017. doi:10.1177/2399808317712715
- 2017 **Breilsford C.**, J. Lobo, J. Hand, L. Bettencourt. The Heterogeneity and Scale of Sustainable Development in Cities. *Proceedings of the National Academy of Science* May 2017 p. 201606033 doi:10.1073/pnas.1606033114
- 2017 **Breilsford, C.**, and J. Abbott. "Growing into Water Conservation? Decomposing the Drivers of Reduced Water Consumption in Las Vegas, NV." *Ecological Economics* 133 (March 2017): 99–110. doi:10.1016/j.ecolecon.2016.10.012.
- 2015 Bettencourt, LMA., and **C. Breilsford**. "Industrial Ecology: The View From Complex Systems: Industrial Ecology: The View From Complex Systems." *Journal of Industrial Ecology* 19 (2): 195–97. 2015. doi:10.1111/jiec.12243.
- 2014 Lu, X., and **C. Breilsford**. Network Structure and Community Evolution on Twitter: Human Behavior Change in Response to the 2011 Japanese Earthquake and Tsunami. *Nature Scientific Reports*, 4. 2014 doi: 10.1038/srep06773
- 2014 **Breilsford, C.**, and D. Shepherd. "Using Mixture-Tuned Match Filtering to Measure Changes in Subpixel Vegetation Area in Las Vegas, Nevada." *Journal of Applied Remote Sensing* 8 (1): 083660. 2014 doi:10.1117/1.JRS.8.083660.

Popular Press

- 2018 **Brelsford, C.**, C. Camargo, T. Cuijpers. Who is the Threatening Minority? *Sage Ocean Research Blog*. August 30th, 2018 <https://ocean.sagepub.com/blog/2018/8/30/automated-text-analysis-who-is-the-threatening-minority>
- 2016 **Brelsford, C.**, Water management is a wicked problem, but not an unsolvable one. *Christian Science Monitor*. July 13th, 2016 <http://www.csmonitor.com/Science/Complexity/2016/0713/Water-management-is-a-wicked-problem-but-not-an-unsolvable-one>

White Papers & Book Chapters

- 2021 **Brelsford, C.**, & Jones, A. (2021). *Multi-Sectoral Urban Interactions. Fundamental Science Needs to Inform Pathways to More Resilient Communities in a Changing Climate* [Workshop Report]. <https://multisectordynamics.org/working-groups/urban/workshop-report-multi-sectoral-urban-interactions/>
- 2021 Levine, A., B. Pracheil, T. Curtis, L. Smith, J. Cruce, M. Aldrovandi, **C. Brelsford**, H. Buchanan, E. Fekete, E. Parish, R. Uria-Martinez, M. Johnson, D. Singh. *An Examination of the Hydropower Licensing and Federal Authorization Process*. Golden, CO: National Renewable Energy Laboratory (NREL). nrel.gov/docs/fy21osti/79242.pdf
- 2019 de Souza, F.; N. Bhattacharya-Mis; G. Blöschl, **C. Brelsford**; A. Buarque; S. Montenegro; V. de Oliveira; E. Mendonzo “Why Should Brazilian Researchers Join Socio-Hydrological Research Opportunities?” *XXIII Simpósio Brasileiro De Recursos Hídricos* <http://anais.abrhidro.org.br/works/5696>
- 2019 **Brelsford, C.** & Martin, T. The Mathematical Foundations of the Science of Cities. in *Handbook of the Mathematics of the Arts and Sciences* (Springer Nature).
- 2018 Sims, B. & **C. Brelsford**. Resilience: Concepts from Engineering, Ecology, and the Social Sciences. *Los Alamos National Laboratory White Paper*. LA-UR-18-31254.

GRANTS & FUNDING

- 2020 M. Dumas-Allen, C. Brelsford, J. New. "Urban Scale Modeling" 200k project in the Integrated Multi-Sector Modeling Science Focus Area, phase 2, for the Multi Sector Dynamics Program Area within the Biological and Ecological Research Program.

- 2019 M. Dumas-Allen, C. Brelsford, R. McManamay. "Urban Scale Modeling" 300k project in the Integrated Multi-Sector Modeling Science Focus Area, phase 1 for the Multi Sector Dynamics Program Area within the Biological and Ecological Research Program.
- 2019 Rose, A. C. Brelsford, G. Thakur, D. Lunga, L. Yang. Community Detection from Social Media Prototype, 280k funding from Federal Research Agency.
- 2019 M. Gilbert, K. Baja, J. Behm, C. Brelsford, E. Brondizio, V. Gutierrez, S. Hoque, F. Montalto, H. Pearsall, A. Shipp, W. Solecki, L. Toran, R. Valetta. How Does Infrastructure Shape Equity and Well-being across the Urban-Rural Gradient? 50k National Science Foundation Conference Grant.
- 2017 Dumas, M., C. Brelsford. Socio-Hydrological Dynamics Workshop. 70k National Science Foundation Conference Grant.
- 2016 Bettencourt, LMA., C. Brelsford, J. Lobo. 10k Grant. OpenIDEO Urban Resilience Challenge: How might urban slum communities become more resilient to the effects of climate change?

FELLOWSHIPS AND AWARDS

- 2020 *40 Under 40*. Knoxville News Sentinel.
- 2020 Finalist. *Your Science in a Nutshell Competition*. Oak Ridge National Laboratory.
- 2019 W. Anbtawi, A. Ayivor, **C. Brelsford**, M. Chouchene, J. Jünger, W. Liao, T. Nikolov, D. Trilling. First Prize in the Datathon on Computational Extremism at *International Conference on Computational Social Systems*. July 17th. Amsterdam, Netherlands.
- 2013 Scholar Award, Dissertation Writing Fellowship, Philanthropic Educational Organization
- 2012 Earl A. and Lenore H. Tripke Professional Workshop Travel Award
- 2012 School of Sustainability Travel Grant
- 2010 Spirit of Service Award, Tempe Festival of the Arts
- 2008 School of Sustainability Graduate Fellowship, Arizona State University

- 2007 Environmental Protection Agency P3 Awards - Phase 1. Columbia University. Development Plan of a Sustainable Water Management Plan for a Rapidly Urbanizing Ghanaian Village (16 co-authors)
- 2007 N.G. Kaul Scholarship, New York Water Environment Association

WORKSHOPS ORGANIZED

- 2021 Artificial Intelligence for Earth System Predictability: Session on Human Systems and Dynamics. Virtual workshop sponsored by the US Department of Energy. Session co-chair. 10/25 – 12/3, 2021. www.ai4esp.org
- 2021 Urban Research in the Multi-Sector Dynamics Community. Virtual Snowmass Meeting. Co-PI, July 21-23, 2021 emf.stanford.edu/events/multi-sectoral-urban-interactions-fundamental-science-needs-inform-pathways-more-resilient-0
- 2019 How Does Infrastructure Shape Equity and Well-being across the Urban-Rural Gradient? September 2019. Temple University, Philadelphia PA. Organizing Committee.
- 2018 Modeling and Measuring Socio-Hydrological Dynamics Across Scales. June 2018. Santa Fe Institute, Santa Fe, NM. Co-PI. santafewaterworkshop.com
- 2015 Human Cooperation: From Theory to Practice. Sept 28-29th. Santa Fe Institute, Santa Fe, NM. Principal Investigator.

INVITED TALKS

- 2022 World-Wide Human Geography Data Working Group, Webinar on Measuring and Mapping Neighborhoods. January 19. www.wwhgd.org
- 2022 Alan Turing Institute, Urban Analytics Program, Spatial Analytics and Data Seminar Series. March 8.
- 2021 National Academy of Sciences Mapping Science Committee and Geographical Sciences Committee Joint Fall 2021 Meeting on Accelerating the Analysis of Geographic Change. December 8. www.nationalacademies.org/event/12-08-2021/accelerating-the-analysis-of-geographic-change
- 2021 Green Economy Workshop, University of Guyana GREEN Institute. ws.eventact.com/2021greeneconomywork21/Programme

- 2021 Exeter School on Urban Analytics, University of Exeter. July 26th. (Virtual presentation)
- 2020 Santa Fe Institute, Interplanetary Festival (July 25th, event cancelled)
- 2019 Computer Science Department, University of Exeter. July 15. Exeter, UK
- 2019 Grantham Research Institute at London School of Economics. July 11. London, UK
- 2018 National Social and Environmental Synthesis Center. November 27. Annapolis, MD
- 2018 University of Chicago, November 14. Chicago, IL.
- 2018 Empirical Strategies for the Analysis of Coupled Social and Physical Systems. Georgia Tech. October 18. Atlanta, Georgia.
- 2018 Water, Diphtheria, and Coupled Systems. August 22nd. Science of Cities Studio. Santa Fe Institute, Santa Fe, NM
- 2018 Empirical Strategies for the Analysis of Coupled Social and Physical Systems, May 4th. School of Forestry & Environmental Studies, Yale University. New Haven, CT.
- 2018 Are 'Water Smart Landscapes' Contagious? Invited Seminar, Civil Engineering Department. Feb 15th. University of Tennessee Knoxville, Knoxville, TN.
- 2018 Are 'Water Smart Landscapes' Contagious? Invited Seminar, Global Urban Studies Brownbag Series. January 30th. Michigan State University, East Lansing, MI.
- 2016 The Topology of Cities. Invited Seminar. March 1st. Oak Ridge National Laboratory, Knoxville, TN.
- 2015 Keynote Address, Expanding Your Horizons Conference. Sept 19th. Santa Fe Community College, Santa Fe, NM.
- 2015 Growing into Water Conservation? Understanding the Drivers of Reduced Residential Water Consumption in Las Vegas NV. Invited Seminar. Sept 18th. Economics Department, University of New Mexico, Albuquerque, NM.

- 2012 Keynote Address, 23rd annual New Mexico Supercomputing Challenge. October 13th. New Mexico Institute of Mining and Technology. Socorro, NM
- 2011 Invited Talk. January 17th. Annual Meeting of the Southwest Orthopaedic Trauma Association. Phoenix, AZ.
- 2010 Commencement Address. May 15th. Bard College at Simons Rock, Great Barrington, MA.

CONFERENCE PRESENTATIONS

- 2021 **Brelsford, C.**, S. Dasgupta, C. Mitra. Improving Urban Form Predictions to Improve Urban Microclimate Models. *American Geophysical Union Fall Meeting*. Dec 13. Hybrid Session.
- 2021 Vallario, B. G. Geernaert, Z. Davis, R. Joseph, **C. Brelsford**, P. Ullrich. DOE Town Hall: DOE's Earth and Environmental System Modeling: Opportunities in Coastal Systems, Urban Resilience, and Extreme Events. *American Geophysical Union Fall Meeting*. Dec 8. Virtual Townhall.
- 2021 **Brelsford, C.**, J. Moehl, E. Weber, K. Sparks, A. Rose. What does SafeGraph data actually tell us about POI visitors? Georgia Tech College of Design Virtual Points of Interest (POInt) Research Symposium. April 30, 2021. Virtual Symposium.
- 2021 Brelsford, C., M Barnard, A. Daughton, S. Erwin. Temporal Dynamics of COVID-19 as a predator-prey system. *American Association of Geographers Annual Meeting*. April 10. Virtual Conference.
- 2020 **Brelsford, C.**, Spatially Embedded Social Networks in Urban Environments. *American Association of Geographers Annual Meeting*. April 7. Virtual Conference.
- 2019 **Brelsford, C.**, G. Thakur, R. Arthur, H. Williams. Using Digital Trace Data to Identify Regions and Cities. *2nd ACM SIGSPATIAL International Workshop on Advances on Resilient and Intelligent Cities*. November 5th, 2019. Chicago, IL.
- 2019 **Brelsford, C.**, R. Arthur, H. Williams. Regional Delineation from Twitter. *International Conference on Computational Social Systems*. July 19th. Amsterdam, Netherlands.

- 2019 **Brelsford, C.**, Determinants of Residential Water Demand and Conservation Program Effectiveness in Las Vegas, Nevada. *5th Urban Water Demand Roundtable*. April 9. Arizona State University. Tempe, AZ.
- 2019 **Brelsford, C.**, R. Arthur, H. Williams. Using Social Processes to Inform our Understanding of Urban Structure. *American Association of Geographers Annual Meeting*. April 3. Washington, DC.
- 2019 **Brelsford, C.**, R. Arthur, H. Williams. Regional Delineation from Twitter. *Workshop on Small Adaptations, Large Impact*. Mansueto Institute for Urban Innovation. University of Chicago. March 27th. Chicago, IL
- 2018 **Brelsford, C.** Dumas, M. Institutions Matter. *American Geophysical Union Fall Meeting*. Dec 14. New Orleans, Louisiana.
- 2018 **Brelsford, C.** How can coastal systems research incorporate people and cities? *Earth and Environmental System Modeling (EESM) PIs Meeting* November 6. Bethesda MD
- 2018 **Brelsford, C.**, Chico Camargo, Teun Cuijpers. Who is the Threatening Minority? *2018 International Conference on Computational Social Systems, Datathon Competition*. July 13th. Northwestern University, Chicago, IL.
- 2018 **Brelsford, C.**, Resilience vs Robustness Water Management Strategies. *Workshop On Modeling and Measuring Socio-Hydrological Dynamics Across Scales*. June 11th. Santa Fe, New Mexico.
- 2018 **Brelsford, C.**, C. De Bacco. Is 'Cash for Grass' Contagious? *American Association of Geographers Annual Meeting*. April 11th. New Orleans, Louisiana.
- 2018 **Brelsford, C.**, C. De Bacco. Peer Effects in Conservation Program Adoption. *2nd International Workshop on Sustainability Innovations in Infrastructure*. March 15th. University of Tennessee, Knoxville, Tennessee.
- 2017 **Brelsford, C.**, M. Dumas. Choices Matter, but How Do We Model Them? *American Geophysical Union Fall Meeting*. December 15th. New Orleans, Louisiana.
- 2017 **Brelsford, C.**. Applications of Urban Scaling Theory. *Current Challenges in Global Security: The Impact of Human Behavior on Cyber Security, Climate Change, and Terrorism*. August 29th. Los Alamos, New Mexico.

- 2017 **Brelsford, C.**, De Bacco, C, and J Abbott. Is ‘Cash for Grass’ Contagious? Maybe. *International Conference on Computational Social Systems*. July 12th. Cologne, Germany.

- 2016 **Brelsford, C.**, J. Lobo and LMA Bettencourt. Agglomeration and heterogeneity in cities. *Convening on Urban Data Science*. April 27th. Chicago Innovation Exchange. Chicago, IL.

- 2015 **Brelsford, C.** The topology of cities. *Reinventing the Grid: Designing Resilient, Adaptive and Creative Power Systems*. April 14. Santa Fe Institute, Santa Fe, NM.

- 2015 **Brelsford, C.** and J Abbott. Drivers of change in residential water consumption in Las Vegas, Nevada. *American Water Resources Association Spring Specialty Conference. Water for Urban Areas: Managing Risks and Building Resiliency*. March 30. Los Angeles, CA.

- 2015 **Brelsford, C.** Using counterfactual scenarios to estimate drivers of demand changes. *Urban Water Demand Roundtable*, Feb 10, 2015 Tempe, AZ.

- 2015 **Brelsford, C.**, J. Hand and LMA Bettencourt. The topology of cities. *Presentations to Slum and Shack Dwellers International board members and the Commissioner for Sanitation for the City of Mumbai*. January 15. Mumbai, India.

- 2014 **Brelsford, C.** Interactive tools for community development. *Acting Locally, Understanding Globally Workshop*. Nov. 20. Santa Fe Institute, Santa Fe, NM.

- 2014 **Brelsford, C.** Whiskey is for drinking; Water is for fighting over. Seminar, June 2. Santa Fe Institute, Santa Fe, NM.

- 2013 **Brelsford, C.** From conflict to cooperation: changes in water allocation institutions in Las Vegas, Nevada. *World Water Week*. September 5. Stockholm, Sweden.

- 2013 **Brelsford, C.**, D. Shepherd. Using mixture tuned match filtering to measure changes in subpixel vegetation area in Las Vegas, Nevada. *SPIE Optics + Photonics*. August 28. San Diego, CA.

- 2012 **Brelsford, C.**, D. Judi, T. McPherson, and M. Ewers. Water distribution system criticality assessment: Business-type impacts to economic consequence projections. *World Environmental & Water Resources Congress*, May 21. Albuquerque, NM.

- 2012 Judi, D., **C. Brelsford**, B. Edwards, T. McPherson, G. Wolde Gabriel, S. Larsen. Impacts of new infrastructure on the Nile River and its tributaries. *2012 World Environmental & Water Resources Congress*, May 20. Albuquerque, NM.
- 2011 **Brelsford C.** Understanding the likelihood of institutional adaptation to climate change. *Spring Specialty Conference of the American Water Resources Association. Managing Climate Change Impacts on Water Resources: Adaptation Issues, Options, and Strategies*, April 20. Baltimore, MD.
- 2011 **Brelsford C.**, O. Ahmad M. R. Delany E. Freeman, C. Kunzweiler, and Q. Wang. Measuring resilience after a catastrophic natural disaster: A case study of Fayette, Haiti after the 2010 earthquake. *Resilience 2011 Second International Science and Policy Conference*, March 16. Arizona State University, Tempe, AZ.

TEACHING & MENTORING EXPERIENCE

Graduate Committees:

Sukanya Dasgupta (Ph.D. student, Auburn University)
Bhartendu Pandey (Ph.D. spring 2021, Yale University)
Jonathan Russo (M.A. spring 2018, Arizona State University)

Undergraduate:

Regan Westwood (Virginia Tech, Summer 2020)
Mollie Gaines (College of William and Mary, Summer 2018 & 2019)
Jonah Nonomaque (Marlboro College, Summer 2014 & 2015)

High School:

Edward Moran (Oak Ridge High School, 2019-2020)
Eliza Harrison (Santa Fe Preparatory School, Summer 2015)
Grace Graham (Inspire Santa Fe, 2014-2015)
Madison Park Academy STEM Interviews (Oakland CA, 2018, 2021)

Oak Ridge National Laboratory

Cities Book Club (August 2018 – present)

Arizona State University, Course Leader

Graduate Workshop on Resilience in Haiti (Fall 2010)

Arizona State University, Teaching Assistantships

Economics of Sustainability (Fall 2012, Fall 2013)
Decision Making and Collective Action for Sustainability (Fall 2009)

Guest Lectures

Introductory Evolution and Ecology, University of California Riverside (2021)
Global Sustainability Summer School, Santa Fe Institute (2016, 2019)
Science of Cities Studio, Santa Fe Institute (2018)

RESEARCH EXPERIENCE & WORKSHOPS

- 2018 Modeling the World Workshop. An Open Platform for Anticipatory
 GEOINT Discoveries. National Geospatial Intelligence Agency
- 2013 Summer Student, Center for Nonlinear Studies in T-division, Los Alamos
 National Laboratory
- 2009 - 2013 Graduate Research Assistant, Energy and Infrastructure Group, Los
 Alamos National Laboratory
- 2012 Complex Systems Summer School, Santa Fe Institute
- 2009 - 2010 Graduate Research Assistant, Decision Center for a Desert City, Tempe AZ
- 2009 Global Sustainability Summer School, Santa Fe Institute

PROFESSIONAL SERVICE

Author for the 5th National Climate Assessment Complex Systems Chapter, 2021-2023.

Science Steering Group Member for the Multi-Sector Dynamics Community of Practice.
2020-2022.

Reviewer for Science, Proceedings of the National Academy of Sciences, National
Academy of Sciences, Nature Sustainability, Science Advances, Royal
Society Interface, Royal Society Open Science, Royal Statistical Society,
Journal of Applied Remote Sensing, International Journal of Urban
Sustainable Development, Cities, Entropy, Journal of Urban Affairs,
Journal of Landscape and Urban Planning.

Postdoctoral Representative to the Science Board, Santa Fe Institute, 2015-2016

Omidyar Fellowship Selection Committee, Santa Fe Institute, 2014-2016

Postdoctoral Representative to the Faculty, Santa Fe Institute, 2014- 2016

COMMUNITY OUTREACH

2019-2022 Board of Directors, Haiti Partners

2010 - 2021 Public Speaking, Education, and Outreach about my experience in the Haiti earthquake in Phoenix, AZ; Anchorage, Aniak, & Dillingham, AK; Denver, CO; Los Angeles & San Francisco, CA; Vero Beach & Miami, FL; Los Alamos, Santa Fe & Socorro NM, Oak Ridge, TN. Appearances on Larry King Live, the Today Show, People Magazine, Women's Health, and numerous local TV, radio, and newspapers.

MEDIA COVERAGE

Brenda McDermott. "40 under 40" *Knoxville News Sentinel*. January 2021 <https://www.knoxnews.com/story/money/2021/01/04/40-under-40-class-presented-knox-biz-and-knoxville-news-sentinel/6482506002/>

Oak Ridge National Laboratory. "GIS: More than a map" *The Sound of Science*. February 2020 <https://www.ornl.gov/media/74117>

Bettencourt, L., C. Brelsford & T. Martin. "The Fabric of Our Lives" *Siam News*. May 2019; <https://sinews.siam.org/Details-Page/the-fabric-of-our-lives>

Ornes, S. May 2019. "Science and Culture: Can the principles of topology help improve the world's slums?" *Proceedings of the National Academy of Sciences*. 116 (20) 9686-9689; <https://doi.org/10.1073/pnas.1904847116>

Phillips, T. October 2018. "Tony Phillips' Take on Math in the Media, A monthly survey of math news." *American Mathematical Society*. <http://www.ams.org/publicoutreach/math-in-the-media/10-2018-media#three>

Schembri, F. August 2018. "Urban planners aim to eliminate slums—with computer programs." *Science*. <https://doi.org/10.1126/science.aav2594>; <https://youtu.be/YuRjeUkNf9o>

Camargo, C. August 2018. "Vacinando um País Todo." *BlábláLogia*. <https://youtu.be/UiYhn2bAiBM> [In Portuguese and English with subtitles]

Poon, L. May 2017. "Putting Sustainable Development Under a Microscope." *City Lab*. <https://www.citylab.com/equity/2017/05/a-better-way-of-measuring-sustainable-development/525408/>

Bliss, L., A. Marshall. Feb 2016. "How High-Tech Maps Could Help Urban Slums Plan Better Streets." *City Lab*. <https://www.citylab.com/solutions/2016/02/high-tech-map-urban-slums-open-reblock/470910/>

Emerging Technology from the arXiv. April 2016. "Why Beneficial Epidemics Spread More Quickly than Harmful Ones." *MIT Technology Review*. <https://www.technologyreview.com/s/601298/why-beneficial-epidemics-spread-more-quickly-than-harmful-ones/>

Ouellette, J. April 2016. "When Things Go Viral and Everybody Wins." *Gizmodo*. <http://gizmodo.com/when-things-go-viral-and-everybody-wins-1769950969>

Matlock, S. November 2014. "Sunday Spotlight: Young Scientist Who Lost Leg in Haitian Quake Perseveres as Climber." *Santa Fe New Mexican*. http://www.santafenewmexican.com/life/features/sunday-spotlight-young-scientist-who-lost-leg-in-haitian-quake/article_oe4de3c6-eff8-5e08-be98-a9c5c32b0fd6.html

Schwartz, M. September 2014. "ASU sustainability alum overcomes challenges to climb to the top." *ASU News*. <https://asunow.asu.edu/content/asu-sustainability-alum-overcomes-challenges-climb-top>

Faherty, J. December 2010. "ASU Student repays Haitian who saved her." *The Arizona Republic*. <http://archive.azcentral.com/arizonarepublic/news/articles/2010/12/05/20101205haiti-christa-brelsford-returns.html>

Wolfe, J. August 2010. "Survivor Story: Healing After Haiti" *Women's Health*. <https://www.womenshealthmag.com/beauty/a19984989/haiti-disaster/>

Mascia, K. May 2010. "A Haiti Survivor's Brave Comeback" *People Magazine*. <https://people.com/archive/a-haiti-survivors-brave-comeback-vol-73-no-17/>

Celizic, M. January 2010. "She lost leg in Haiti, but she's glad to be alive." *The Today Show*. <https://www.today.com/news/she-lost-leg-haiti-she-s-glad-be-alive-wbna34876138>

REFERENCES AVAILABLE UPON REQUEST