

Annalise Blum

EDUCATION

Ph.D., Tufts University, Environmental and Water Resources Engineering, August 2017

Dissertation: Characterizing streamflow variability: distributions, trends, and ecological impacts

Certificate in Water Systems, Science, and Society

M.S., University of North Carolina at Chapel Hill, Environmental Sciences and Engineering, August 2014

Thesis: Rural water source choice: A choice experiment from Meru, Kenya

B.S., Stanford University, Environmental Engineering with distinction and honors, June 2010

Thesis: Are equitable and sustainable rural water systems a pipe dream? A case study of Borbón, Ecuador

Minor in Comparative Politics, Goldman Honors Program in Environmental Science, Technology, and Policy

AWARDS

National Science Foundation Graduate Research Fellowship	2012-2017
Presidential Management Fellowship Finalist	2017
National Science Foundation Graduate Research Internship Program (GRIP)	2016-2017
Provost's Fellowship, Tufts University	2014-2016
National Science Foundation Future Leaders in Engineering Fellowship	2015-2017
Chancellor's Fellowship, University of North Carolina at Chapel Hill	2012-2014
Ibrahim Fellowship, University of North Carolina at Chapel Hill	2012
Tau Beta Pi Honor Society	<i>elected in 2009</i>
President's Award for Academic Excellence in the Freshman Year, Stanford University	2007
The Boothe Prize, Honorable Mention, Stanford University	2007
NetAid Global Action award for the Darfur Green Ribbon Project	2005

PROFESSIONAL EXPERIENCE

US Department of Defense, AAAS Science & Technology Policy Fellow, Washington, DC, Sept 2019- present

- Support stabilization and peacekeeping operations in the office of Stability and Humanitarian Affairs
- Coordinate Cultural Heritage Protection across DoD and lead the DoD working group

Johns Hopkins University, Pim Postdoctoral Fellow of Global Change, Baltimore, MD, Nov 2017-Aug 2019

- Created statistical models to predict Nile River flow to inform regional stakeholders
- Led quantitative evaluation of Nile River flow forecast and qualitative evaluation of communication
- Adapt economic models for hydrology and estimate impacts of urbanization on flooding

Policy Office, American Meteorological Society, Visiting Fellow, Washington, DC, Nov 2017-Aug 2019

- Co-led workshop & Hill briefing on Translating Forecasting Advances to Inform Water Management
- Co-authored AMS Policy Program Studies on improved water and natural hazard policies

National Academy of Sciences, Science & Technology Policy Fellow, Washington DC, Jan 2019--April 2019

- Supported activities of Policy & Global Affairs division, including science diplomacy workshops
- Led development of grant applications and designed materials on water, terrorism, and conflict
- Prepared the Workshop in Brief: "The Convergence of Violent Extremism and Radiological Security"

U.S. Geological Survey (USGS), National Science Foundation GRIP Fellow, Reston, VA, Sept -May 2016

- Conducted simulation experiments on changing streamflow (with Environmental Protection Agency)
- Designed research to attribute causes of changes in floods (with Federal Highway Administration)

Conte Fish Anadromous Research Center, USGS, Student Contractor, Turners Falls, MA, Sept 2015-Aug 2016

- Developed models to estimate the impact of seasonal floods and droughts on brook trout abundance
- Applied statistical approaches including generalized additive models and Bayesian estimation

Environment for Development-Kenya, Consultant, Meru, Kenya, June-Aug 2013

- Designed an economic choice experiment to study selection of water sources in rural Kenya
- Trained field team and analyzed choice experiment data

Harvard Kennedy School of Government, Research/Faculty Assistant, Cambridge, MA, June 2011- June 2012

- Trained 30 enumerators and piloted evaluation of community health promoters in Uganda
- Supervised field teams gathering data on water and health in Kenya and Sierra Leone
- Designed sampling procedures, wrote household surveys, hired and managed contractors

Border Green Energy Team, Schneider Sustainable Energy Fellow, Mae Sot, Thailand, Jan-Apr 2011

- Designed and implemented water and energy needs assessment of 60 Burmese migrant schools
- Supported development of grant proposals and pursued funding opportunities

Stanford and Centers for Disease Control, Research Coordinator, Kibera, Kenya, Aug-Nov 2010

- Helped to hire, train, and lead local field team for randomized control trial in six primary schools
- Managed budget, scheduling of data collection, and equipment
- Analyzed data on effectiveness of hand sanitizer intervention and impact of peer effects

Population Services International (PSI), Child Survival Intern, Washington, DC, Jan-Mar 2009

- Prepared a chapter for a Harvard Business School publication on PSI-Madagascar
- Conducted literature reviews and wrote articles on household water treatment
- Designed practices for tracking funding and managed global water treatment sales data

Water and Health Study, Stanford University, Research Assistant, Dar es Salaam, Tanzania, Apr-Dec 2008

- Contributed to survey development, field team training, project management, and data analysis
- Led qualitative project on fecal sludge management practices in Dar es Salaam

Office of California Assembly-member Lois Wolk, Stanford in Govt Fellow, Sacramento, CA, June-Aug 2007

- Conducted research to support Bay-Delta legislation with Water, Parks and Wildlife Committee

Carnegie Institution for Global Ecology, Research Assistant, Stanford, CA, Jan-Apr 2007

- Collected samples of gases released by plants at Jasper Ridge Biological Preserve
- Analyzed soil and gaseous samples

LEADERSHIP, POLICY ENGAGEMENT AND TRAININGS

<i>Co-Chair</i> , AAAS policy fellow Water Affinity Group	2019-present
<i>Participant</i> , Budyko Synthesis workshop at USGS Powell Center, Fort Collins, Colorado	2019
<i>Participant</i> , AGU Fall Meeting Congressional Visits Day	2018
<i>Participant</i> , Geosciences Congressional Visits Day	2018
<i>Participant</i> , Science Diplomacy Dissertation Enhancement Workshop, Tufts University	2017
<i>NSF-supported participant</i> , Summer Policy Colloquium, American Meteorological Society	2017
<i>Co-founder</i> , USGS Early Career Scientists and Fellows Network	2017
<i>Teaching Fellow</i> , National Science Foundation Future Leaders in Engineering Teacher Training	2016-2017
<i>Committee Member</i> , Tufts CEE Graduate Program Student Advisory Committee	2015-2016
<i>Participant</i> , Eawag Summer School in Environmental Systems Analysis, Dübendorf, Switzerland	2016

PEER-REVIEWED PUBLICATIONS

- Blum, A G**, Ferraro, P J, Archfield, S A, & Ryberg, K R. (2020). Causal effect of impervious cover on annual flood magnitude for the United States. *Geophysical Research Letters*.
- Dudley, R, Hirsch, R M, Archfield, S A, **Blum, A G**, & Renard, B. (2020). Low streamflow changes at human impacted and reference basins in the United States. *Journal of Hydrology*.
- Lee, G O, Whitney, H J, **Blum, A G**, Lybik, N, Cevallos, W, Trueba, G, Levy, K & Eisenberg, J N. (2019) Household coping strategies associated with unreliable water supplies and diarrhea in Ecuador, an upper-middle-income country. *Water Research*.
- Blum, A G**, Zaitchik, B, Alexander, S, Wu, S, Zhang, Y, Shukla, S, Alemneh, T Y and Block, P. (2019). A Grand Prediction: Communicating and Evaluating 2018 summertime Upper Blue Nile rainfall and streamflow forecasts in preparation for Ethiopia's new dam. *Frontiers in Water*. 1(3), 1-12.
- Blum, A G**, Archfield, S A, Hirsch, R, Vogel, R M, Kiang, J E & Dudley, R. (2019). Updating estimates of low streamflow statistics to account for possible trends. *Hydrological Sciences Journal*.
- Blum, A G**, Kanno, Y & Letcher, B H. (2018). Seasonal streamflow extremes are key drivers of Brook Trout young-of-the-year abundance. *Ecosphere*. 9(8), e02356.
- Blum, A G**, Archfield, S A & Vogel, R M. (2017). On the probability distribution of daily streamflow in the United States. *Hydrology and Earth System Sciences*. 21, 3093-3103.
- Cook, J, Kimuyu, P, **Blum, A G** & Gatua, J. (2016). A Simple Stated Preference Tool for Estimating the Value of Travel Time in Rural Africa. *Journal of Benefit Cost Analysis*. 7(02), 221-247.
- Blum, A G**, Null, C, & Hoffmann, V. (2014). Marketing Household Water Treatment: Willingness to Pay Results from an Experiment in Rural Kenya. *Water*. 6(7), 1873-1886.
- Pickering A J, **Blum A G**, Breiman R F, Ram P K, & Davis J. (2014). Video Surveillance Captures Student Hand Hygiene Behavior, Reactivity to Observation, and Peer Influence in Kenyan Primary Schools. *PLoS ONE*. 9(3), e92571.
- Pickering, A J, Davis, J, **Blum, A G**, Scalmanini, J, Oyier, B, Okoth, G, & Ram, P K. (2013). Access to Waterless Hand Sanitizer Improves Student Hand Hygiene Behavior in Primary Schools in Nairobi, Kenya. *American Journal of Tropical Medicine and Hygiene*. 89(3), 411-418.
- Pickering, A J, Davis, J, Walters, S, Horak, H, Keymer, D, Mushi, D, Strickfaden, R, Chynoweth, J, Liu, J, **Blum, A G**, Rogers, K, Boehm, A. (2010). Hands, Water, and Health: Fecal Contamination in Tanzanian Communities with Improved, Non-Networked Water Supplies. *Environmental Science and Technology*. 44(9), 3267-3272.

POLICY & OTHER PUBLICATIONS

- Blum, A G** and Miller, A. (2019). Opportunities for Forecast-Informed Water Resources Management in the United States. *Bulletin of American Meteorological Society*.
- Blum, A G**. (2019). Nile River Water Supply Forecasts May Reduce the Chance of Conflict. *New Security Beat* blog.
- Miller, A, **Blum, A G**, and Higgins, P A T. (2018). Opportunities for Forecast-Informed Water Resources Management. An AMS Policy Program Study. The American Meteorological Society, Washington, D.C.

- Higgins, P A T, Seid-Green, Y, Miller, A, and **Blum, A G.** (2018). Toward an Integrated Approach to Water. An AMS Policy Program Study. The American Meteorological Society, Washington, D.C
- Blum, A G.** (11 Oct 2018.) "Students, please vote. You too, STEM majors." Op-ed in *Johns Hopkins News-Letter*.
- Alexander, S, Block, P, **Blum, A G.**, Shukla, S, Wu, S, Yimane, T, Zaitchik, B, &Zhang, Y. (May 23, 2018) Average to above average blue Nile river flow expected in 2018. *Climate Hazards Group Blog*.
- Blum, A G.** & Vichit-Vadakan, V. (2011). Mae Sot Migrant Schools: Energy, Water, Cooking Fuel and Sanitation Needs Assessment. Border Green Energy Team.
- Blum, A G.** (16 May 2008.) "Janitors Consider Striking." *The Stanford Daily*.
- Blum, A G.** (2007). Hugo Chavez's Debut: Rhetoric and Petro-Politics in the World Theater, A Dramatic Essay in Three Acts. *The Boothe Prize Essays 2007*. Stanford University.
- Blum, A G.** (2004) "Donate Money." Chapter in *50 Ways to Love Your Country*. Novato: New World Library, pp 88-89.