

## CASCADE P. TUHOLSKE

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### EDUCATION

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- Ph.D., Geography, University of California, Santa Barbara** 2020  
*Committee:* Kelly Caylor (chair), Chris Funk, Stuart Sweeney, Tom Evans  
*Dissertation Title:* Linking Food Security, Urbanization, & Climate Change in Africa
- M.A., Geography, University of California Santa Barbara** 2016  
*Committee:* David López-Carr (chair), Dar Roberts, Susan Cassels  
*Thesis Title:* Climate Change versus Human Population and Development: Hurricanes, Urbanization, and Tourism Impacts on Land Change in the Tropical Island Ecosystems of Roatán, Honduras
- B.A., International Affairs, The George Washington University** 2010  
*Honors:* Special Honors, Elliott School of International Affairs; *magna cum laude*  
*Concentrations:* Global Public Health and Conflict and Security

### RESEARCH AFFILIATIONS

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- Postdoctoral Research Scientist**, Earth Institute, Columbia University 2020 – Present  
*Advisors:* Alex de Sherbinin (CIESIN), Robert Chen (CIESIN)
- Graduate Research Assistant**, Earth Research Institute, UCSB 2017–2020
- Graduate Student Researcher**, Climate Hazards Center, UCSB 2019–2020
- Graduate Research Assistant**, National Center for Ecological Analysis and Synthesis, UCSB 2019
- Graduate Research Associate**, Broom Center for Demography, UCSB 2014–2020

### PEER-REVIEWED PUBLICATIONS

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\* equal authorship

- In revision Berger, M., Canty, S., **Tuholske, C.**, & Halpern, B. Sources and discharge of nitrogen pollution from agriculture and wastewater in the Mesoamerican Reef region. *Ocean and Coastal Management*.
- In press Blekking, J., Giroux, S., Waldman, K., Battersby, J., **Tuholske, C.**, & Siame, G. The Impacts of Climate Change and Urbanization on Food Distribution in sub-Saharan Africa. *Current Opinion in Environmental Sustainability*.
- 2021 **Tuholske, C.\***, Halpern, B. S.\*, Blasco, G., Villasenor, J. C., Frazier, M., & Caylor, K. Mapping global inputs and impacts from of human sewage in coastal ecosystems. *PLOS ONE*, 16(11), e0258898.
- 2021 Zaitchk, B. & **Tuholske, C.** Earth Observations of Extreme Heat Events: leveraging current capabilities to enhance heat research and action. *Environmental Research Letters*, 16 (11).

- 2021 **Tuholske, C.**, Caylor, K., Funk, C., Verdin, A., Sweeney, S., Grace, K., ... & Evans, T. Global urban population exposure to extreme heat. *Proceedings of the National Academy of Sciences*, 118(41).
- 2021 **Tuholske, C.**, Gaughan, A. E., Sorichetta, A., de Sherbinin, A., Bucherie, A., Hultquist, C., ... & Yetman, G. Implications for Tracking SDG Indicator Metrics with Gridded Population Data. *Sustainability*, 13(13), 7329.
- 2020 Verdin, A., Chris Funk, C., Peterson, P., Landsfeld, M., **Tuholske, C.**, & Grace, K. Development and validation of the CHIRTS-daily quasi-global high-resolution daily temperature data set. *Scientific Data*, 7, 303.
- 2020 Zimmer, A., Guido, Z., **Tuholske, C.**, Pakalniskis, A., Lopus, S., Caylor, K., & Evans, T. Variability of Urban Population Growth Trajectories in Southern Africa. *Landscape Ecology*, 1-16.
- 2020 Blekking, J., Waldman, K., **Tuholske, C.**, Evans, T. The Role of Employment in Urban Food Security in Sub-Saharan Africa. *Applied Geography*, 114, 102131.
- 2020 **Tuholske, C.**, Andam, K., Blekking, J., Evans, T., & Caylor K. Comparing Measures of Urban Food Security in Accra, Ghana. *Food Security*, 1-15.
- 2019 **Tuholske, C.**, Caylor, K., Evans, T., & Avery, R. Variability in urban population distributions across Africa. *Environmental Research Letters*, 14(8).
- 2018 Brissett, D. I., **Tuholske, C.**, Allen, I. E., Larios, N. S., Mendoza, D. J., Murillo, A. G., & Bloch, E. M. Zika Virus: Knowledge Assessment of Residents and Health-Care Providers in Roatán, Honduras, following an Outbreak. *The American journal of tropical medicine and hygiene*, 99(1), 211-215.
- 2017 **Tuholske, C.**, Tane, Z., López-Carr, D., Roberts, D., & Cassels, S. Thirty Years of Land Use/Cover Change in the Caribbean: Assessing the Relationship between urbanization and Mangrove Loss in Roatán, Honduras. *Applied Geography*, 88C, 84-93.
- 2017 Blekking, J., **Tuholske, C.**, & Evans, T. Adaptive Governance and Market Heterogeneity: An Institutional Analysis of Urban Food Systems in Sub-Saharan Africa. *Sustainability*, 9(12).
- 2017 Brooks, T., Roy-Burman Bloch, A., **Tuholske, C.**, Busch, M., Bakkour, S., Stone, M., Linnen, J. M., Gao, K., Coleman, J., & Bloch, E. Real-Time Evolution of Zika Virus Disease Outbreak, Roatán, Honduras. *Emerging Infectious Disease-CDC*, 23(8).

## OTHER PUBLICATIONS

\*Book Chapter †NGO/Government Report ^Conference proceeding ~Media author/contributor

- 2021~ **Tuholske, C.**, Funk, C., Grace, K. "Dangerous urban heat exposure has tripled since the 1980s, with the poor most at risk". *The Conversation*. Oct. 4.

2021~ National Public Radio & Columbia Journalism Investigations. "Heat Is Killing Workers In The U.S. — And There Are No Federal Rules To Protect Them." Aug. 17.

2021~ **Tuholske, C.** "Watching My Dad Die Changed My Life." *Outside Magazine*. May 20.

2018† **Tuholske, C.**, Andam, K., Blekking J., Evans, T., & Caylor, K. Comparative Estimates of Urban Food Security: Evidence from Accra, Ghana. Washington, DC: International Food Policy Research Institute.

2018\* Ervin D., **Tuholske, C.**, and D. López-Carr. "Global Hunger." in *Food and Place: A Critical Exploration*, edited by Pascale Joassart-Marcelli and Fernando Bosco. Washington, DC: Rowman and Littlefield.

2017† Food and Agriculture Organization of the United Nations. 2017 The State of Food and Agriculture leveraging Food Systems for Inclusive Rural Transformation. Rome: FAO.

2015^ **Tuholske, C.**, López-Carr, D., & Roberts, D. Anthropogenic impacts on Roatán, Honduras: 30 Years of land-cover and land-use change. In *Plurimondi. An International Forum for Research and Debate on Human Settlement*, 8(16), 179-190.

#### RESEARCH GRANTS

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In Review	Co-I, Dept. of Defense FOA #WHS-AD-FOA-21 Minerva Research Initiative "Impacts of the Belt & Road Initiative on the climate-food-conflict nexus in Africa Submission"	\$2,771,549
In Review	Co-PI, GEO-Microsoft Planetary Computer Programme Group on Earth Observation.	\$60,000
Step-1 In Review	Co-I, NASA ROSES SERVIR Applied Sciences Team. "Improving decision-making for long-term food security in refugee foodsheds across Uganda and Kenya."	~\$600,000
2021	Co-I, NASA ROSES Early Career A.2 Land-Cover/Land-Use Change "A Remote Sensing Analysis of Heat Stress, LCLUC, and Women's Health in sub-Saharan Africa" (21-LCLUC21_2-0021)	\$404,947

#### HONORS, AWARDS, AND FELLOWSHIPS

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2020	Earth Institute Postdoctoral Fellowship, Columbia University	\$149,090
2020	National Science Foundation SBE Postdoctoral Fellowship (declined)	\$140,000
2020	UCSB Department of Geography Excellence in Research Award	\$500
2019	UCSB President's Dissertation Year Fellowship	\$24,500
2019	UCSB Faculty Senate Graduate Travel Fellowship	\$1,350
2019	Earth Research Institute Graduate Student Conference Travel Fellowship	\$800
2019	Jack & Laura Dangermond Geography Travel Scholarship	\$1,000
2018	UCSB Dept. of Geography Graduate Summer Research Funding	\$2,400
2018	Earth Research Institute Graduate Student Conference Travel Fellowship	\$800
2018	Jack & Laura Dangermond Geography Travel Scholarship	\$1,400

2017	Earth Research Institute Graduate Fellowship	\$1,500
2017	Graduate Student Research and Travel Grant, Broom Center for Demography	\$2,000
2016	U.S. Borlaug Fellows in Global Food Security	\$23,835
2016	Graduate Student Research and Travel Grant, Broom Center for Demography	\$1,995
2016	Jack & Laura Dangermond Geography Travel Scholarship	\$500
2015	Jack & Laura Dangermond Geography Travel Scholarship	\$600
2015	Graduate Student Research and Travel Grant, Broom Center for Demography	\$1,000
2011	Fulbright Scholar - English Teaching Assistant, Sliven, Bulgaria	\$14,000

## TEACHING EXPERIENCE

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**Co-Instructor**, Department of Earth & Environmental Sciences, Columbia University  
Threats to Urban Food Security: Climate, Cost, & COVID (graduate reading seminar) Spring 2021

**Instructor of Record**, Department of Geography, University of California, Santa Barbara  
Geography of Surfing (GEOG 20) Winter 2018, Summer 2019

**Teaching Assistant**, Department of Geography, University of California, Santa Barbara  
 Geography of Surfing (GEOG 20) Winter 2015, 2016, 2017  
 Coastal Pollution (GEOG 132) Fall 2017, 2018  
 Population Geography (GEOG 141A) Spring 2016, 2017  
 Urban Geography (GEOG 108) Fall 2016  
 People, Place & the Environment (GEOG 05) Fall 2014, Spring 2015, Fall 2015

**Professor de Inglés**, Centro de Estudios Superiores de la Industria Farmacéutica, Madrid  
Graduate-level Professional English classes 2013–2014

**Fulbright Scholar – English Teaching Assistant**, U.S. Fulbright Program, Sliven Bulgaria  
High school English classes 2011–2012

## PRESENTATIONS, TALKS, AND POSTERS

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\*Invited

- 2021\* **Tuholske, C.** Urban Extreme Heat Exposure. 2021 GEO Week. Everywhere, 24 Nov.
- 2021\* **Tuholske, C.** Gridded population data to support SDG indicator needs. Using the EO Toolkit for Sustainable Cities and Human Settlements to Support Equitable Development and Climate Resilience side event for 2021 AmeriGEO Week. Everywhere, 24 Nov.
- 2021\* **Tuholske, C.** Urban Food Security in the Age Climate Change - Are we flying blind?. Climate Hazards Center, University of California, Santa Barbara, 4 Nov.
- 2021\* **Tuholske, C.,** Halpern, B. S., Blasco, G., Villasenor, J. C., Frazier, M., & Caylor, K. Mapping global inputs and impacts from of human sewage in coastal ecosystems. National Center for Ecological Analysis and Synthesis, Santa Barbara, CA, 3 Nov.
- 2021\* **Tuholske, C.** Code Red: Vulnerability to Extreme Heat, Floods, and Displacement. New York Climate Week 2021. Everywhere, 22 Sep.

- 2021 **Tuholske, C.** Urban Extreme Heat Exposure Trajectories in AmeriGEO Countries. 2021 AmeriGEO Week. Everywhere, 24 Aug.
- 2021\* **Tuholske, C.,** Caylor, K., Funk, C., Verdin, A., Sweeney, S., Grace, K., Peterson, P., & Evans, T. Too Hot to Handle: A Global Analysis of Urban Extreme Heat Exposure Trajectories. Talk given at At What Point Managed Retreat? Resilience, Relocation and Climate Justice. Everywhere, 24 June.
- 2020\* **Tuholske, C.,** Gaughan, A. E., de Sherbinin, A. M., Stevens, F. R., Sorichetta, A., Yetman, G., Huyck, C., & Chen, R. S. A Comparison of Gridded Population Data Products in Disaster Response. eLightning talk given at 2020 American Geophysical Association Fall Meeting. Everywhere, 11 Dec.
- 2020 **Tuholske, C.,** Caylor, K., Funk, C., Verdin, A., Sweeney, S., Grace, K., Peterson, P., & Evans, T. Global Urban Population Exposure to Extreme Heat. 2020 American Geophysical Association Fall Meeting. Everywhere, 11 Dec.
- 2020\* **Tuholske, C.** Global Urban Population Exposure to Extreme Heat. International Research Institute for Climate and Society, Columbia University, 29 Sep.
- 2019 **Tuholske, C.,** Funk, C., Caylor, K., Evans, T., and Sweeney, S. A Fine-Resolution, Global Comparison of Urban Exposure to Extreme Temperatures. 2019 American Geophysical Association Fall Meeting. San Francisco, CA. 9-13 Dec.
- 2019 **Tuholske, C.,** and K. Caylor. Inventorying population pressures across Sub-Saharan Africa. The Global Land Programme Open Science Meeting 2019. Bern, Switzerland, 24 - 26 April.
- 2019\* **Tuholske, C.** Linking Food Security, Urbanization, and Climate Change in Sub-Saharan Africa. Stanford Center for Food Security and the Environment. Palo Alto, CA, 28 Jan.
- 2018 **Tuholske, C.,** and K. Caylor. Fusing Remote Sensing and Demography to Assess which Sub-Saharan African Cities Are Growing the Fastest. 2018 American Geophysical Association Fall Meeting. Washington, DC. 10-14 Dec.
- 2018 **Tuholske, C.,** Andam K., Blekking J., Evans. T, and Caylor K. Towards linking climate change and urban food security: Evidence from Accra, Ghana. 2018 Graduate Climate Conference. Pack Forest, WA. 2-4 Dec.
- 2018 **Tuholske, C.,** Andam K., Blekking J., Evans. T, and Caylor K. Urban Food Security and Nutritional Challenges in West Africa: Evidence from Accra, Ghana. 2018 UC Global Health Day, UC San Diego, CA. 22 April.
- 2018 **Tuholske, C.** Andam, K., Blekking, J., Evans, T., and Caylor, K. Towards Assessing Urban Food Security and Nutrition in West Africa. 2018 American Association of Geographers Annual Meeting, New Orleans, LA. 9-13 April.

- 2016 **Tuholske, C.** The Effects of Tourism on Land Cover and Land Use Change in Roatán, Honduras. 2016 American Association of Geographers Annual Meeting Annual Meeting, San Francisco, CA. 28 March – 2 April.
- 2015 **Tuholske, C.,** and T. Brooks. Bridging Epidemiology and Remote Sensing: A Case Study of Dengue Fever and Land Use and Land Cover Change in Roatán, Honduras. American Geophysical Association Fall Meeting, AGU, San Francisco, CA. 3-7 Dec.
- 2015 **Tuholske, C.** Reconciling Space and Place to Reveal the Determinate of Health: Integrated Research in Roatán, Honduras. SPATIAL 2015 Spatial Information on Human Health. The University of California, Santa Barbara. Santa Barbara, CA. 9-11 Dec.
- 2015 **Tuholske, C.,** López-Carr, D., Roberts, D. Anthropomorphic impacts on Roatán, Honduras: 30 Years of Land-Cover and Land-Use Change. The XIX European Colloquium in Theoretical and Quantitative Geography (ECTQG2015). Technical University of Bari, Italy, 3-7 Sep.
- 2015 Ervin, D., Lopez-Carr, D., Hodges, C, Miller, K, and **Tuholske, C.** The Geographic Advantage in Coupled Migration-Health Research. University of California, Los Angeles Blum Center on Poverty and Health in Latin America Workshop on Migration and Health, Los Angeles, CA, 6 March.
- 2014 **Tuholske C.,** López-Carr, D., Elwell, T., Ervin, D, Miller, K.M. Human Health and Human-Environment Dynamics. Roatán Inter-Professional Program Symposium. Global Health Sciences, University of California, San Francisco, CA. November 17.

#### **SERVICE & DIVERSITY, EQUITY and INCLUSION ADVANCEMENT**

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- Co-chair,** GEO Health Community of Practice Small Working Group 2020 – Present
- NASA-led working group to support use of earth observations to understand, predict, and reduce health risks from heat across time scales.
- Member,** Steering Committee for EO Toolkit for Sustainable Cities and Communities 2020 – Present
- Working group to assist the UN-Habitat's Global Urban Observatory (GUO) specialized statistics Toolkit development to track UN Sustainable Development Goal 11.
- Contributor,** Columbia Journalism Investigations and National Public Radio 2021
- Developed climate dataset for a multi-part invest investigation on occupational heat-related fatalities in the United States; stories ran nationally, and in California and Texas
- Mentor,** Graduate Scholar Program, University of California, Santa Barbara 2019 – 2020
- Mentored 3 first-year PhD students from historically under-represented groups in academia.
- Participant,** Lamont Pod, Unlearning Racism in Geosciences (URGE) 2021
- Eight-week course work designed to promote antiracism in geo sciences that includes developing deliverables to present to decisionmakers your academic institution.
- Session Convener,** AGU Fall Meeting 2021

**Reviewer** *GeoJournal, Food Security, African Geographic Review, Population and Environment, Earth's Future, Global Food Security, Global Environmental Change, Journal of Coastal Conservation*

### SELECTED PRESS COVERAGE

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- 2021 **The Associated Press** "AP analysis: Exposure to extreme heat has tripled since 1983"  
 2021 **Scientific American** "Half of the World's Coastal Sewage Pollution Flows from Few Dozen Places"  
 2021 **The Daily Beast** "Poop From Meat Eaters Is Killing Coral Reefs"  
 2021 **The Washington Post** "Exposure to extreme urban heat has tripled worldwide since the 1980s, study finds"  
 2021 **Scientific American** "Risk of Dangerous Heat Exposure Is Growing Quickly in Cities"  
 2021 **NBC News** "Extreme heat in cities a growing problem as climate warms, study finds"  
 2021 **Nat. Geo.** "Weather disaster-related deaths are down—warming could undo that trend"  
 2021 **Axios** "Study: Urban extreme heat exposure has increased by 200% since the 1980s"  
 2021 **Science Magazine** "Extreme heat is broiling people in developing cities"  
 2021 **Times of India** "Heat exposure: 4 India cities in worst 10 list"  
 2021 **The Guardian** "Nearly 25% of world population exposed to deadly city heat"  
 2021 **The Washington Post** "Wet-bulb temperature is important, climate experts say. So what is it?"  
 2016 **Pacific Standard Magazine** "What Happens When a Tiny Island Becomes a Tourist Destination?"  
 2016 **NASA Earth Observatory** "How Tourism Changed the Face of Roatán"

### FIELD EXPERIENCE

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- 2017 Urban food security surveys, Accra, Ghana  
 2017 Climatological sensor installation and urban food security surveys, Zambia  
 2015 Land cover & epidemiological research, Roatán, Honduras  
 2011 – 2012 Piloted study on student perceptions of the European Union, Sliven, Bulgaria  
 2009 Community-based disease surveillance program assessment, northern Ghana

### RELEVANT EMPLOYMENT EXPERIENCE

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- Intern**, The Food and Agriculture Organization of the United Nations, Rome 2016  
 - Penned sections on urbanization for FAO's 2017 State of Food and Agriculture Report  
 - Researched rural-urban food security issues for the United Nation's Committee on Food Security policy negotiations
- Director of Organizing**, Montana Abolition Coalition, The ACLU of Montana, Missoula MT 2012 – 2013  
 - Designed and implemented grassroots efforts in targeted legislative districts to abolish the death penalty during the 2013 Montana Legislature

### PROFESSIONAL AFFILIATIONS

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- The American Geophysical Union, member 2015 – Present  
 The American Association of Geographers, member 2016 – Present  
 The Global Land Programme, member 2019 – Present