Natasha T. Krell

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Education

University of California at Santa Barbara, USA — 2016 – 2021 anticipated
Ph.D. candidate in Geography
Advisor: Dr. Kelly K. Caylor
Research: Dryland hydrology & agriculture, geospatial analysis, human impacts

College of the Atlantic (COA), Bar Harbor, ME, USA — 2014 – 2016
B.A. in Human Ecology with foci in geoscience and botany
Advisor: Dr. David P. Feldman

Smith College, Northampton, MA, USA — 2012 – 2014
Majored in environmental geosciences
Advisor: Dr. Drew Guswa

Honors and Awards

2019: Environmental Solutions Fellowship, *Schmidt Family Foundation*
Science, Mathematics, and Research for Transformation Scholarship, *DoD*

2017: Finalist for Fulbright Fellowship to Kenya, *Institute of International Education*
Graduate Scholars Program, *UCSB Graduate Division*
NASA Remote Sensing Hydrology Workshop Student Travel Grant, *Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI)*

2016: Maine Space Grant Consortium Award, *NASA*

2015: Shelby Cullom Davis International Advanced Studies Award, *COA*
Kathryn W. Davis Global and Civic Engagement Fund Award, *COA*
Maine Space Grant Consortium Award, *NASA*
Presidential Scholarship, *COA*
Sierra Club Coalition SPROG Scholarship, *COA*

2014: International Student Travel Grant, *American Geophysical Union*
Rothschild Student-Faculty Collaboration Grant, *COA*
Presidential Scholarship, *COA*
Sierra Club Coalition SPROG Scholarship, *COA*

2013: Len Assante Scholarship, *National Groundwater Association*
Environmental Leadership Grant, *Henry David Thoreau Foundation*

Research Experience

Graduate Student Researcher, Climate Hazards Center — Sept. 2019 – current
Mentor: Dr. Chris Funk
Collaborated with researchers from UCSB's Climate Hazards Center (CHC) on research project on smallholder agriculture and climate variability in east Africa. Conducted spatial analysis of farmer planting decisions in central Kenya. Currently preparing manuscript for publication.

Graduate Student Researcher, Earth Research Institute — March 2018 – current
Mentor: Dr. Kelly Caylor & Dr. Tom Evans
Led two household surveys in Kenya. Hired and employed a team of eight Kenyan

enumerators between May and August 2018. Orchestrated a household survey of 600 farmers in the Mt. Kenya region to understand climate variability impacts, farmer management, use of ICTs for agriculture, and use of weather forecasts. Orchestrated a pilot survey of 160 households in Rumuruti, Kenya in August 2018 to better understand food security and nutrition challenges in an urbanizing context.

Graduate Student Researcher, Earth Research Institute Sept. 2016 – current
Mentor: Dr. Kelly Caylor
Graduate student in Dr. Caylor's lab at UCSB studying smallholder agriculture and dryland ecohydrology. Completed four field campaigns to Zambia and Kenya deploying Arable Mark environmental sensors.

Research Internship, Mpala Research Centre, Laikipia, Kenya June – Aug. 2015
Mentor: Dr. Kelly Caylor
Collected data for undergraduate thesis on geostatistical analysis of gilgai microrelief formation using UAV-based imagery. Assisted the Princeton Ecohydrology Lab's ongoing projects including troubleshooting and deploying Pulsepod environmental sensors (c.f. Arable Marks).

Independent Research, College of the Atlantic, USA Sept. 2014 – June 2016
Mentor: Dr. Nishanta Rajakaruna
Investigated edaphic-climatic influences on the ecology and evolution of two common herbaceous perennials found on serpentine and granite outcrops of Deer Isle, ME. Conducted a reciprocal transplant experiment with *H. perforatum* and *A. millefolium* to test for local adaptation. Organized citizen scientists to monitor plant phenology.

Research Assistant, Acadia National Park, USA April – June 2015
Mentor: Caitlin McDonough MacKenzie
Monitored spring leaf-out and flowering phenology in Acadia National Park to assist study for a doctoral dissertation in Botany at Boston University.

NSF-REU Internship, University of Arizona, USA June – Aug. 2014
Mentor: Dr. Shirley (Kurc) Papuga
Conducted research analyzing flowering phenology of *Larrea tridentata* (creosotebush) using MATLAB digital image processing and meteorological and flux tower data at the Santa Rita Experimental Range. Co-authored manuscript in preparation.

Research Assistant, Smith College, USA Nov. 2012 – May 2013
Mentor: Dr. Andrew Guswa
Assisted research project to improve ecoinfrastructure for stormwater management on campus. Co-presented poster at Student-Faculty Collaborations Symposium.

Publications

Guido, Z., Lopus, S., Waldman, K., Hannah, C., Zimmer, A., **Krell, N.T.,** Estes, L., Caylor, K., Evans, T. 2020. Climate Change Undermines the Use of Weather Forecasts in Smallholder Agriculture. *In review.*

Hannah, C., Lopus, S., Giroux, S., **Krell, N.T.,** McCann, L., Zimmer, A., Caylor, K., Evans, T. 2020. Has the vision of a gender quota rule been realized for community-based water management committees in Kenya? *In review.*

Guido, Z., Zimmer, A., Lopus, S., Hannah, C., Gower, D., Waldman, K., **Krell, N.T.,** Caylor, K., Evans, T. 2020. Farmer Forecasts: Impacts of Seasonal Rainfall Expectations on Agricultural Decision-Making in Sub-Saharan Africa. *In review.*

Krell, N.T., Giroux, S.A., Guido, Z., Hannah, C., Lopus, S.E., Caylor, K.K. and Evans, T.P., 2020. Smallholder farmers' use of mobile phone services in central Kenya. Climate and Development, pp.1-13. https://doi.org/10.1080/17565529.2020.1748847

Boyd, R. S., **Krell, N.T.,** and Rajakaruna, N. 2016. Extreme Environments. In: Oxford Bibliographies in Ecology Ed. David Gibson. New York: Oxford University Press.

Peer-Reviewed Oral Presentations

Krell, N.T., Evans T.P., Estes, L.D., and Caylor, K.K. "Real-time monitoring of smallholder farmer responses to intra-seasonal climate variability in central Kenya." American Geophysical Union Fall Meeting (2017). New Orleans, LA.

Talks & Lightning Talks

Krell, N.T. "Use of mobile phones for agriculture in Kenya." Lightning Talk. Schmidt Environmental Solutions Fellows Open House at UCSB (2020). Santa Barbara, CA.

Krell, N.T. "To what extent does climate variability explain farmers' planting decisions in central Kenya?" Graduate associate lunch talk for UCSB Broom Center for Demography (2019). Santa Barbara, CA.

Krell, N.T. "Muddling through with muddy boots: Conducting Fulbright research in Kenya." Invited talk for Climate Change Seminar Series (2019). College of the Atlantic, Bar Harbor, ME.

Krell, N.T. "Gender differences in access/use of mobile phones, agricultural management, and engagement in farmer cooperatives in central Kenya." Graduate associate lunch talk for UCSB Broom Center for Demography (2018). Santa Barbara, CA.

Peer-Reviewed Poster Presentations

Krell, N.T., Davenport, F, Peterson, S., Shukla, S., Husak, G.J, Turner, W., Funk, C.C., Caylor, K.K., "To What Extent Does Climate Variability Explain Farmers? Planting Decisions in Central Kenya?" American Geophysical Union Fall Meeting (2019). San Francisco, CA.

Krell, N.T. "When Mentee Becomes Mentor: Graduate Perspectives on Mentorship." American Geophysical Union Fall Meeting (2019). San Francisco, CA.

Krell, N.T., DeCarlo, K.F., and Caylor, K.K. "Analysis of Biophysical Mechanisms of Gilgai Microrelief Formation Using Ultra-High Resolution Aerial Imagery." American Geophysical Union Fall Meeting (2015). San Francisco, CA.

Krell, N.T., Dawson, H.R, and Rajakaruna, N. "Edaphic-climatic influences on the ecology and evolution of plants found on serpentine and granite outcrops of Deer Isle, Maine." Northeast Natural History Conference (2015). Springfield, MA.

Krell, N.T., Papuga, S.A., Kipnis, E., Nelson, K. "Dynamic Pulse-Driven Flowering Phenology in a Semiarid Shrubland." American Geophysical Union Fall Meeting (2014). San Francisco, CA.

Krell, N.T., Papuga, S.A., Kipnis, E., Nelson, K. "Dynamic Pulse-Driven Flowering Phenology in a Semiarid Shrubland." Research Insights in Semiarid Ecosystems (RISE) Symposium (2014). Tucson, AZ.

Krell, N.T., Papuga, S.A., Kipnis, E., Nelson, K. "Dynamic Pulse-Driven Flowering Phenology in a Semiarid Shrubland." Phenology Research and Observations of South-

west Ecosystems (PROSE) Symposium (2014). Tucson, AZ.

Teaching

Certificate, Pillars of Teaching Assistantship Certificate — Spring 2020
Completed UCSB Instructional Development's Pillars of Teaching Assistantships workshops for training in effective and research-based teaching practices.

Teaching Assistant, GEOG 3A, U.C. Santa Barbara, USA — Fall 2017
Led three discussion sections for introductory undergraduate Geography course: Oceans and Atmosphere. Professor: Ms. Tessa Montini.

Teaching Assistant, EEMB 120, U.C. Santa Barbara, USA — Summer 2017
Led three discussion sections for undergraduate course in the Department of Ecology, Evolution, and Marine Biology: Intro to Ecology. Professor: Dr. Hillary Young.

Teaching Assistant, GEOG 167, U.C. Santa Barbara, USA — Spring 2017
Led discussions and activities for upper-division undergraduate Biogeography class at UCSB (GEOG / ENV S 167). Professor: Dr. Kelly Caylor.

Community Outreach and Service

Representative, Chair's Graduate Advisory Committee — Sept. 2019 – Present
Selected to be a graduate student representative on the Advisory Committee to the Chair of the Department of Geography at UCSB.

Graduate Mentor, Graduate Scholars Program — Oct. 2019 – Present
Mentors three first-year graduate students on their academic progress, career development, and general adjustment to graduate school.

Rising Stars Mentor, Wedu Global Foundation — June 2017 – Present
Mentors young Nepali women via Skype once a month. Provide guidance, support, and lead mentees in personal and professional development activities.

Graduate Mentor, PIPELINES Program — June 2019 – Aug. 2019
Mentored three undergraduate students on an independent research project using unmanned aerial systems for environmental monitoring and image processing as part of NAVFAC EXWC summer mentorship program in partnership with UCSB's Center for Science and Engineering Partnerships (CSEP).

Technical Committee on Ecohydrology, AGU — Jan. 2016 – Dec. 2019
Student representative for AGU Ecohydrology Technical Committee.

Hydrology Section Student Subcommittee, AGU — Jan. 2015 – June 2016
Elected for two-year position on the American Geophysical Union's Hydrology Section Student Subcommittee. Organizer of 2015 Student Conference and co-convener of 2015 and 2016 Social Dimensions of Geoscience pop-up talks.

Admissions Committee, College of the Atlantic — Dec. 2014 – April 2015
Served as undergraduate representative on admissions committee at College of the Atlantic. Reviewed applications to admit transfer and first-year students to College of the Atlantic's class of 2019.

Languages

Spoken — Spanish (fluent), Kiswahili (advanced), Mandarin (intermediate)
Computational — Python (4 yrs.), R (4 yrs.), QGIS (4 yrs.), MATLAB (2 yrs.), LaTeX