

Ryan Harp, Ph.D.

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RESEARCH INTERESTS

Investigating the direct and indirect societal and environmental impacts of our changing climate with an emphasis on applicable results and science communication.

EDUCATION

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| PhD | 2020 |
| Atmospheric and Oceanic Sciences (ATOC) Cooperative Institute for Research in Environmental Sciences (CIRES) University of Colorado Boulder (CU) Advisor: Dr. Kristopher Karnauskas Graduate Certificate in Science and Technology Policy | |
| MS | 2018 |
| Atmospheric and Oceanic Sciences University of Colorado Boulder | |
| BS | 2012 |
| Double Major in Atmospheric and Oceanic Sciences (AOS) and Psychology University of Wisconsin – Madison (UW) | |

RESEARCH EXPERIENCE

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| Postdoctoral Research Fellow | 2020 to Present |
| <i>Advisor: Dr. Daniel Horton</i> Examining the predictability of climate variability on temperature and precipitation in Mozambique to facilitate greater lead-time of a malaria early warning system. | |
| Graduate Research Assistant – CU ATOC | 2016 to 2020 |
| <i>Advisor: Dr. Kristopher Karnauskas</i> Examined historical crime and climate data to determine a significant relationship between wintertime seasonal temperatures and violent crime rate that was then projected onto future climate states. Explored relationships between malaria incidence rates in Mozambique and modes of climate variability. | |

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| Literature Review Assistant—National Center for Atmospheric Research | 2016 |
| Assisted Dr. Brian O'Neill and Ms. Emily Laidlaw by reviewing over 1,500 references from the IPCC AR4 for project relevance. | |
| Undergraduate Research Assistant – UW AOS | 2011 to 2012 |
| <i>Advisor: Dr. Grant Petty</i> | |
| Cross-referenced satellite, radar, and snow and ice coverage data to differentiate satellite signatures of precipitation in progress from snow cover. | |
| Undergraduate Research Assistant – UW AOS | 2011 |
| <i>Advisor: Dr. Ankur Desai</i> | |
| Examined relationship between soil moisture levels and forest carbon uptake through data analysis and on-site support of the field campaign. | |
| Undergraduate Research Assistant – UW Chemistry | 2008 to 2009 |
| <i>Advisor: Dr. Frank Keutsch</i> | |
| Performed titration on field samples of Volatile Organic Compounds (VOCs). | |

REFEREED PUBLICATIONS

- Harp, R. D.**, Karnauskas, K. B., Colborn, K. L., and Colborn, J. M. (in preparation): Interannual Climate Variability and Malaria in Mozambique.
- Harp, R. D.**, and Karnauskas, K. B. (2020): Global Warming to Increase Violent Crime in the United States. *Environmental Research Letters*.
- Laidlaw, E., O'Neill, B., **Harp, R. D.** (2019): The Use of the Community Earth System Model in Human Dimensions Climate Research and Applications. *WIREs Climate Change*.
<https://doi.org/10.1002/wcc.582>
- Harp, R. D.**, and Karnauskas, K. B. (2018). The Influence of Interannual Climate Variability on Regional Violent Crime Rates in the United States. *GeoHealth*.
<https://doi.org/10.1029/2018GH000152>

CONFERENCE AND SEMINAR PRESENTATIONS

- Oral Presentation: Projections of Future Changes in United States Violent Crime Under Global Warming**
- American Meteorological Society (AMS) Annual Meeting 2020
- Flash Talk and Poster: Projecting Future Temperature-Driven Changes in Crime**
- Earth Lab/North Central Climate Adaptation Science Center Open House 2019
- Oral Presentation: Projecting Future Temperature-Driven Changes in Crime**
- ATOC Colloquium 2019
- Poster: Application of Seasonal Climate Forecasts to Predictions of Regional Crime Anomalies in the US**
- American Meteorological Society Annual Meeting 2019
- Oral Presentation: The Influence of Interannual Climate Variability on Regional Violent Crime Rates in the US**
- Colorado State University Young Scientist Symposium on Atmospheric Research 2018

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| <i>e-Poster: How We Created Our Own SciComm Class</i> | |
| National ComSciCon | 2018 |
| <i>Poster: Influence of Climate Variability on US Regional Assault Rates</i> | |
| CIRES Rendezvous | 2018 |
| University of Colorado Climate Change and Health Symposium | 2018 |
| American Geophysical Union Fall Meeting | 2017 |
| <i>Poster: Implications of Changing Temperatures on US Crime Rates</i> | |
| CIRES Rendezvous | 2017 |
| ATOC Earth System and Space Science Student Poster Conference | 2016 |

INVITED PRESENTATIONS

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| NCAR—Integrated Assessment Modeling Group | 2018 |
| <i>The Influence of Interannual Climate Variability on Regional Violent Crime Rates in the United States</i> | |

SIGNIFICANT AWARDS

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| Ubben Postdoctoral Research Fellowship (\$XX,XXX) | 2020 |
| Fellowship awarded to building a better understating of the linkages, interactions, and impacts of existing and future human systems with the greater Earth system. | |
| CIRES Graduate Student Research Award (\$70,000) | 2019 |
| Fellowship awarded to recognize the scholarship and merit of outstanding CIRES graduate students. | |
| Earth Lab Graduate Research Associate (\$34,000) | 2019 |
| Collaborative research associate position in global environmental change with CU Boulder's Earth Lab designed to use advanced computing techniques to examine the boundaries of coupled Earth and social system science. | |
| Carol B. Lynch Graduate Fellowship (\$2,000) | 2018 |
| Fellowship awarded to one CU Boulder student in the sciences conducting outstanding interdisciplinary research. | |
| University of Colorado Graduate School Summer Fellowship (\$6,000) | 2018 |
| Fellowship awarded to facilitate dissertation research over a summer. | |
| Funded Participant in AMS Summer Policy Colloquium (~\$11,000) | 2017 |
| National Science Foundation grant-funded participant in intensive 10-day science policy colloquium. | |

OTHER RECOGNITION AND HONORS

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| 3 Minute Thesis Finalist (non-monetary) | 2020 |
| Top 10 finisher in the University of Colorado-wide competition for PhD candidates describe their research in under three minutes. | |

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| ATOC Teaching Assistant Award (\$250) | 2019 |
| For outstanding performance as a lecture TA for ATOC 1060 – Our Changing Environment in Fall 2018. | |
| Outstanding Service to ATOC Award (\$100) | 2019 |
| For work as a member of the Department Action Team in developing an ATOC Industry Night, and other community building efforts. | |
| ATOC University Fellowship Award (\$1,250) | 2018 |
| Travel grant awarded to assist in participation in the 2019 American Meteorological Society (AMS) Fall Meeting. | |
| Outstanding Service to ATOC Award (\$250) | 2018 |
| Departmental service award for designing and hosting a one-credit seminar on communicating science effectively. | |
| Funded Participant in National ComSciCon (\$400) | 2018 |
| Engaged in three-day national science communication workshop as one of 50 selected participants among 900 applicants. | |
| United Government of Graduate Students Travel Grant (\$300) | 2017 |
| Travel grant awarded to assist in participation in the 2017 American Geophysical Union (AGU) Fall Meeting. | |
| ATOC University Fellowship Award (\$500) | 2017 |
| Travel grant awarded to assist in participation in the 2017 American Geophysical Union (AGU) Fall Meeting. | |
| Selected Participant in ComSciCon – Rocky Mountain West (non-monetary) | 2017 |
| Engaged in two-day regional science communication workshop. | |
| Outstanding Service to ATOC Award (\$250) | 2017 |
| Departmental service award for improving graduate student opportunities to participate in ATOC activities. | |
| Selected Participant in Climate Science Congressional Visit Day (non-monetary) | 2016 |
| Met with Colorado representatives in the United States Senate and House as one of 30 participants at the 2016 Climate Science Congressional Visit Day. | |
| ATOC University Fellowship Award (\$300) | 2016 |
| Travel grant awarded to assist in participation in the 2016 Climate Science Congressional Visit Day. | |

SERVICE AND OTHER ACTIVITIES

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| Member—AGU GeoHealth Early Career Researchers Subcommittee | 2020 to Present |
| Contribute to tasks designed to facilitate the success of early career researchers interested in the nexus of climate and health. | |
| Guest Speaker – Rocky Top Middle School (Thornton, CO) | 2020 |
| Presented high-level climate topics and career guidance to 400 8 th grade science students. | |
| Volunteer—Skype a Scientist | 2019 |
| Met virtually with around 60 elementary school students to answer climate and weather questions and put a human face on the role of scientist. | |

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| Volunteer – Mamie Doud Eisenhower Public Library (Broomfield, CO) | 2016 to 2019 |
| Produce and present science modules to 9-14 year-olds through the Science Task Force. | |
| Writer – Science Buffs | 2016 to 2019 |
| Write climate change and science policy articles for a graduate student-led STEM blog. | |
| Student Lead – ATOC Awards Committee | 2017 to 2020 |
| Improve opportunities for student recognition, including the creation of a new award to honor outstanding teaching assistants. | |
| Member – ATOC Departmental Action Team (DAT) | 2017 to 2020 |
| Contribute to small group of ATOC faculty, graduate students, and undergraduate students focused on sustainable change within the ATOC department. | |
| Member – ATOC Mentorship Committee | 2017 to 2019 |
| Assist in the creation of a new committee dedicated to a variety of mentor-mentee partnerships. | |
| Student Lead – ATOC Social Committee | 2015 to 2019 |
| Coordinate department functions to increase the cohesion and social capital of students, staff, and faculty. Personally organized more than ten functions with an average attendance of approximately twenty ATOC students and faculty. | |
| New Student Mentor – ATOC | 2016 to 2019 |
| Assist incoming ATOC graduate students as they begin graduate school. Mentored four incoming students over five semesters. | |
| Council Member – ATOC | 2018 to 2019 |
| Facilitate communication and coordinate between department committees to enhance their connectedness and overall effectiveness. | |
| Member – ATOC Club | 2017 to 2019 |
| Fundraise for various extraneous department purposes. Facilitate for other department committees. | |
| Member – ATOC Outreach Committee | 2018 to 2019 |
| Coordinate department activities with a public outreach component. | |
| Volunteer – Colorado Weatherfest (Fort Collins, CO) | 2017, 2018 |
| Helped create and support a booth of weather-related activities at the Colorado Weatherfest at Colorado State University (CSU) for CU ATOC. | |
| Planning Committee Member – ComSciCon Rocky Mountain West | 2018 |
| Organized panel and accompanying workshop on science policy and advocacy for 50 participants of a multi-state regional science communication conference. | |
| Member – ATOC Academic Review and Planning Advisory Committee | 2016 to 2017 |
| Provided graduate student perspective and input during the compilation of the periodic CU departmental self-review report. | |
| Member – ATOC Technology Committee | 2015 to 2016 |
| Assisted the department with various technology-related questions and issues. | |
| Member – University of Wisconsin Marching Band | 2007 to 2011 |
| Eagle Scout – Boy Scouts of America, Troop 88 (Eau Claire, WI) | 2007 |

TEACHING EXPERIENCE

- Instructor – CU Boulder** 2018
Co-organized the creation of a new graduate student-led seminar course on science communication with two ATOC graduate students. Created syllabus and course schedule, arranged guest speakers, distributed and graded student homework.
- Teaching Assistant – CU Boulder** 2015 to 2018
Assisted professors with class preparations and grading of student exams and assignments. Produced and presented several mini-lectures on relevant material. Classes taught include one semester of ATOC 3600 – Principles of Climate, and four semesters of ATOC 1060 – Our Changing Environment.
- Private Tutor** 2011 to 2012
Provided one-on-one assistance to students taking UW AOS 100.
- Greater University Tutorial Services Volunteer Biology Tutor – UW Madison** 2009
Provided one-on-one assistance to students taking introductory biology courses.

PROFESSIONAL ACTIVITIES

- Member – American Meteorological Society (AMS)** 2010 to 2012, 2016 to Present
- Member – American Geophysical Union (AGU)** 2016 to Present
- Member – American Association for the Advancement of Science (AAAS)** 2016 to Present

WORK EXPERIENCE

- Assistant Department Manager – Menards (Baraboo, WI)** 2014 to 2015
Directly oversaw eight employees in daily operations and served as the primary department contact for customer orders, questions, and issue resolution. Promoted from part-time employee to assistant department manager in five months.
- Professional Billing Technical Services – Epic Systems (Verona, WI)** 2012 to 2014
Performed issue resolution for three hospital systems using Caché, an M-based database language. Wrote and developed code routines to be added to the Epic software.
- Data Collection and Customer/Phone Support – Weather Central (Madison, WI)** 2011 to 2012
Gathered and documented meteorological data from around the United States.
Developed training materials outlining day-to-day operations and processes.

PROFESSIONAL DEVELOPMENT

- 3 Minute Thesis Workshops** 2019
Participated in scientific communication workshops on scientific storytelling, producing effective slides, and improv techniques as part of the 3 Minute Thesis competition.

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| Introduction to Python Short Course | 2019 |
| Nine-week long short course offered by the University of Colorado Research Computing team which covered the fundamentals of Python. | |
| National ComSciCon (Boston, MA) | 2018 |
| Three-day national science communication workshop attended as one of 50 selected participants among 900 applicants. | |
| Climate Change and Health Symposium (Denver, CO) | 2018 |
| Full day symposium and poster session discussing the connections between climate and health. | |
| ComSciCon—Rocky Mountain West (Boulder, CO) | 2017 |
| Two-day science communication conference attended as a selected participant. | |
| Colorado Climate Retreat (Boulder, CO) | 2017 |
| Full day symposium on connections between the social sciences and climate change hosted by the CU Department of Psychology | |
| NCAR/CDC Workshop on Weather, Climate, and Health (Boulder, CO) | 2017 |
| Four-day conference focused on the relationships between climate and health. | |
| American Meteorological Society Summer Policy Colloquium (Washington, DC) | 2017 |
| Ten-day intensive science policy colloquium attended as an NSF grant-funded participant. | |
| CU Boulder Climate and Health Workshop: Engaging Our Future (Boulder, CO) | 2017 |
| Full day symposium discussing the links between climate and health. | |
| American Geophysical Union Sharing Science Workshop (Fort Collins, CO) | 2016 |
| Full day workshop focused on how to effectively communicate science. | |
| CIRES Engaged Scientist Workshops I and III (Boulder, CO) | 2016 |
| Two parts of a three-part series on how to properly engage with communities when conducting research. | |
| Climate Science Congressional Visit Day (Washington, DC) | 2016 |
| Two-day event consisting of a workshop on how to craft and effectively deliver a message to policymakers and one day of meeting with Colorado representatives in the United States Senate and House. | |