

Carson MacPherson-Krutsky, Ph.D.

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PROFESSIONAL INTERESTS

Natural Hazard and Risk Education, Disaster Risk Reduction, Disaster Preparedness, Co-Production of Knowledge, Applied/Actionable Science, Information-Seeking and Behavior Change, Design Thinking, User-Centered Design, Community Resilience

CURRENT POSITION

October 2021- Present **Research Associate, The Natural Hazards Center, University Colorado Boulder, Boulder, CO (Remote)**

Develop interactive workshops for practitioners that focus on risk communication best practices with specific emphasis on socially vulnerable groups. This work is in partnership with the U.S. Army Corps of Engineers and builds upon existing Natural Hazard Center resources.

May 2021- Present **Research Associate, Department of Geoscience, Boise State University, Boise, ID**

Develop projects, collect and analyze data to better understand what motivates people to prepare for hazard events. I am currently developing interactive workshops to help Portland, OR residents learn about their earthquake hazards risks and what they can do to prepare.

EDUCATION

2017 – 2021 **Ph.D. Geosciences, Boise State University, Boise, ID**

Dissertation: Translating risk information into protective action: examining household response to information about earthquake hazards and risk. *Advisors: Dr. Brittany Brand and Dr. Michael K. Lindell*

2014 - 2016 **M.S. Geosciences, University of Montana, Missoula, MT**

Thesis: HazardReady – a geographically based natural hazard education and preparedness web application – hazardready.org. *Advisor: Dr. Rebecca Bendick*

2008 - 2012 **B.S. Geology, Western Washington University, Bellingham, WA**

Concentration: Geophysics, Minor: Mathematics. *Advisor: Dr. Jackie Caplan-Auerbach*

PROFESSIONAL EXPERIENCE

1/2019-9/2023 **Co-Founder/Community Engagement Coordinator, Hazard and Climate Resilience Institute at Boise State University, Boise, ID**

Co-founded the institute with Dr. Brand. I work with Dr. Brand to develop partnerships, organize, and facilitate monthly community engagement events, write grant proposals, and plan our resilience conference (postponed due to COVID-19).

- 2/2017-
8/2017 **Education Supervisor, The Discovery Center of Idaho, Boise, ID**
Coordinated, supported, and trained both paid and volunteer floor staff at Idaho's only hands-on science center. I oversaw onsite and outreach programs in the Treasure Valley. I was offered full-time salaried position prior to leaving to pursue a Ph.D.
- 5/2016-
Present **Co-Owner/Data Specialist, HazardReady LLC, Missoula, MT**
Create webpage content, acquire and process ArcGIS data, coordinate with web developers. I also collaborate with stakeholders to tailor content to fit user needs. See: HazardReady.org for all active locations.
- 6/2016-
10/2016 **Curriculum Developer, UN Environment Program in Afghanistan, Remote**
Developed 14-week curricula for two disaster management courses, *Science/Hazard Communication* and *Natural Hazard Investigation and Planning in Afghanistan*. I was offered 7-month position in Afghanistan after submitting curriculum.
- 8/2014-
5/2016 **Teaching Assistant, University of Montana, Missoula, MT**
Taught lab portion of introductory geology class. I created exams and extra credit assignments, performed scientific demonstrations, and managed grade books for more than fifty students each semester.
- 6/2015-
7/2015 **Education & Community Engagement (ECE) Intern, UNAVCO, Boulder, CO**
Developed materials to engage early career and graduate students with geodesy and geosciences. As a result of my work, I was asked to and did serve as the student representative for the 2016 ECE Advisory Committee.
- 5/2013-
10/2013 **USGS/NAGT Intern, U.S. Geological Survey, Menlo Park, CA**
Assisted with gravity, magnetic, and magnetotelluric field methods as well as digitizing well log data using ArcMap. *Principal Investigators: Jonathan Glen, Vicki Langenheim, and David Ponce*

Software/Computer Skills: ArcGIS, SPSS (Statistical Analysis Software), Adobe Illustrator, iMovie

Educational products I developed– see [my website](#) to view:

- **Modified Mercalli Intensity Explained Video**, I made a stop-action video with hand drawn images to explain what the Modified Mercalli Intensity Scale is and what it is used for (36,290 views as of June 2022).
- **Document Checklist for Emergencies**, A printable sheet made to help people understand which important documents they should have and why in case of an emergency.
- **Let's Make Infographics – A Science Communication Activity**, I developed an activity to help students think about communicating data through infographics. I successfully ran this activity at a Boise State STEM workshop for high school girls in 2019.

GRANTS, AWARDS & HONORS

Grants

- Insittu
- NSF/NIST Disaster Risk Research Grants, *Household response to wildfire? Integrating behavioral science & evacuation modeling to improve community wildfire resilience.*

- Boise State Grand Challenges: *Resource Nexus for Sustainability* (Support role)
- FEMA Risk MAP: *Humanizing Flood and Other Hazard Information for Use in Local Resilience Planning*. Principal Investigator (2022)
- Natural Hazards Center Mitigation Matters Research Grant (2020)
- Geological Society of America Graduate Student Research Grant (2018)
- Geological Society of America Graduate Student Research Grant (2014)

Awards & Honors

- Geological Society of America Geology & Society Division Best Student Paper Award (2018)
- Nomination for USGS/National Association of Geoscience Teachers (NAGT) Internship (2012)
- Emerald City Rotary Scholarships (2012, 2000)
- NCAA Division II National Champion, WWU Women's Rowing Team (2009, 2010, 2011)
- WWU Athletic Gender Equity Scholarship, Full Tuition (2010, 2011, 2012)
- WWU Haskell Crew Scholarship, Partial Tuition (2008)

COMMUNITY SERVICE/OUTREACH

- 2022-2023, Flash Drought Working Group, NOAA-National Integrated Drought Information System, The aim of the working group is to explore current gaps related to drought monitoring, prediction, and response with a diverse group of stakeholders.
- 2022, Flood Mitigation Library Steering Committee, Association of State Floodplain Managers. I provided feedback and guidance on the user experience and content for the website www.reducefloodrisk.org.
- 2020-2021, Vice President & Co-founding Member, Geoscience Graduate Organization (GGO), Boise State University, Boise, ID, (09/20 – 06/21) I was elected by my peers with five other students to establish the GGO. GGO advocates on behalf of all graduate students and works to actively promote a welcoming, respectful, and inclusive environment by partnering with faculty and other university leaders on diversity, equity, and inclusion initiatives.
- 2017-2020, Boise State Student Outreach, Boise, ID, I participated in outreach events with other BSU geology students. I performed different demonstrations on earth processes for grades K-12.
- 2016, University of Montana: Expanding Your Horizons STEM Conference, Missoula, MT, I developed and led a one-hour workshop on earthquakes for 6th-8th grade girls
- 2015, Sentinel High School, Missoula, MT, I volunteered in a freshman earth science classroom and provided lessons and information on natural hazards relevant to Missoula, MT
- 2014 and 2015, Spirit at Play Preschool, Missoula, MT, I taught preschoolers about earthquakes and how to prepare during the nationwide Great Shake Out Drill

PROFESSIONAL DEVELOPMENT & AFFILIATIONS

Professional Development:

2021 Research Mentor Training, Southern California Earthquake Center, July 8-9, virtual.

In this two-day training, I learned strategies for effective mentoring and discussed scenarios and tools to mentor more effectively. Since then, I implemented these strategies with three student mentees.

- 2021 IDEO U Course: Designing Strategy, IDEO, January 21-February 29, virtual.
I took this five-week course (4+ hours per week) with Dr. Brand. We learned how to develop and test a business strategy using design thinking principals. Throughout the course, we applied what we learned to help design a business strategy for the Boise State Hazard and Climate Resilience Institute.
- 2020 Negotiation Theory and Practice Course, Boise State University, April 4-5, Online.
This course presented communication and negotiation theories to assist in understanding, analyzing, and managing conflict and negotiation. The course focused on Ury and Fisher's negotiation theory and included the influence of style on conflict. The course was pragmatic as well as theoretical.

Professional Affiliations: American Geophysical Union, Geological Society of America, Association of Women Geoscientists, Earthquake Engineering Research Institute

Peer-Review Service for Journals: Natural Hazards, Natural Hazards Review, Geoscience Communication, Annals of Geography

PUBLICATIONS & PRESENTATIONS

Publications:

MacPherson-Krutzky, C., Lindell, M.K., Brand, B., (*in prep - expected spring 2024*), Earthquake Workshops for Spanish Speakers: Do Engagement Best Practices Motivate Preparedness Intentions? Submitting to Risk Analysis.

MacPherson-Krutzky, C., Lindell, M.K., Brand, B., 2022, Residents' Information Seeking Behavior and Protective Action for Earthquake Hazards in the Portland Oregon Metropolitan Area. Risk Analysis. April 2022. <https://doi.org/10.1111/risa.13916>.

MacPherson-Krutzky C., Brand, B.D., Lindell, M.K., 2022, From information to public preparedness in the Cascadia Subduction Zone: Examining risk communication outcomes in Metropolitan Portland, OR. Earthquake Spectra. January 2022. doi:10.1177/87552930211057582

MacPherson-Krutzky, C., 2021, Translating risk information into protective action: examining household response to information about earthquake hazards and risk, Ph.D. Dissertation, Boise State University, Boise, ID, 179p. (Available via ProQuest)

MacPherson-Krutzky, C., 2020, Three Questions to ask yourself the next time you see a graph, chart, or map, The Conversation US, theconversation.com/3-questions-to-ask-yourself-next-time-you-see-a-graph-chart-or-map-141348, 24, June.

MacPherson-Krutzky, C., Brand, B. D., & Lindell, M. K., 2020, Does updating natural hazard maps to reflect best practices increase viewer comprehension of risk? International Journal of Disaster Risk Reduction, 46. <https://doi.org/10.1016/j.ijdr.2020.101487>

Langenheim, V.E., Brocher, T.M., McPhee, D.K., Earney, T.E., **MacPherson-Krutsky, C.**, Morgan, K.S., Matson, G., and McFaul, R.S., 2018, Digitized sonic velocity log data of the Sacramento Delta region, California: U.S. Geological Survey data release, <https://doi.org/10.5066/P9PYUF17>

MacPherson-Krutsky, C., 2016, HazardReady - A geographically based natural hazard education & preparedness web application, M.S. Thesis, University of Montana, Missoula, MT, 73p. <https://scholarworks.umt.edu/etd/10796/>

Talks (Asterisk indicates invited talk):*

***MacPherson-Krutsky, C.**, (2024) Translating Risk Information Into Effective Formats. USGS Social Science Working Group, Monthly Meeting, Virtual, April 18, 2024.

***MacPherson-Krutsky, C.**, Villarreal, M., and Peek, L. (2024) Inclusive Emergency Alerts: Recommendations for Language and Disability Access. Language and Accessibility in Alert and Warning Workgroup, Monthly Meeting, Virtual, March 14, 2024.

***MacPherson-Krutsky, C.**, Painter, M.A., Villarreal, M., and Peek, L. (2024) Inclusive Emergency Alerts: Recommendations for Language and Disability Access. Making Mitigation Work Monthly Webinar, Natural Hazards Center, CU Boulder, Virtual, March 12, 2024.

***MacPherson-Krutsky, C.**, Painter, M.A., Villarreal, M., and Peek, L. (2024) HB23-1237 – Inclusive Language in Emergency Situations. Colorado State Legislature, Denver, CO, Study presentation, February 27, 2024.

MacPherson-Krutsky, C., Brand, B., Lindell, M.K. (2023) Using Communication Best Practices to Develop Cascadia Earthquake Preparedness Workshops for Spanish Speakers Concurrent Session 5-3. Presented at the Natural Hazards Center Researchers Meeting, Broomfield, CO, 13 July.

***MacPherson-Krutsky, C.** (2022) Building Resilient Communities in Rural Idaho, Presented at the Association of Idaho Cities Annual Conference, Boise, ID, June 22, 2022.

***MacPherson-Krutsky, C.** (2022) Translating Risk Information into Protective Action: Examining Household Response to Information About Earthquake Hazards and Risk, Presented at the Institute for Behavioral Science Speaker Series at the University of Colorado, Boulder, held virtually, April 11, 2022.

***MacPherson-Krutsky, C.** (2022) Risk Communication and Social Vulnerability: Resources and Worksheets, presented at the U.S. Army Corps of Engineers, Coaching Call: Tools and Resources for Including Environmental Justice and Social Vulnerability Considerations in Your Work, held virtually, March 21, 2022.

***MacPherson-Krutsky, C.** (2022) Translating Hazard Risk Information for Specific Audiences: Examples of Existing Efforts and Lessons Learned, presented at the Northern California Earthquake Hazards Workshop, Session: Disparate Hazards & Risk, held virtually, January 25, 2022.

MacPherson-Krutsky, C., Brand, B., Lindell, M.K. (2021) Examining the Influence Information Seeking Behavior has on Household Preparedness, Concurrent Session 2-5. Presented at the Natural Hazards Center Researchers Meeting, held virtually, 14-15 July.

***MacPherson-Krutsky, C.** (2021) Communicating flood and other hazard risks; using best practices and making it personal, Quarterly Blaine County Local Emergency Planning Committee (LEPC) Meeting, held virtually, 10 June.

***MacPherson-Krutsky, C.**, 2020, Graphs, Charts, Oh My! Interpreting graphics in the age of information overload. City of Boise Rotary Club Meeting, held virtually, 6 October.

***MacPherson-Krutsky, C.**, 2020, Coming together to tackle grand challenges related to public health, climate change and beyond: Presented at Idaho Conservation Wild Idaho! Web Series – Part Three: Climate and Public Health, held virtually, 16 July.

Brand, B. and **MacPherson-Krutsky, C.**, 2019, People learn by doing: how to use active-learning to communicate about natural hazard risks: Workshop presented at the Northwest Regional Floodplain Management Association (NORFMA) Annual Conference, Boise, ID, 24-27 September.

***MacPherson-Krutsky, C.**, Brand, B., Lindell, M.K., 2018, Using active-learning and goal-setting strategies to promote hazard awareness and preparedness: Abstract: 317780 Presented at Geological Society of America Meeting, Indianapolis, ID, 4-7 November.

MacPherson-Krutsky, C., 2016, MissoulaReady – A geographically based natural hazard education & preparedness web application, Quarterly Missoula County Local Emergency Planning Committee Meeting, Missoula, Montana, 12 January.

Kittross, S., Rowan, L., **MacPherson-Krutsky, C.**, Morris, A., Bartel, B., 2015, Geodesy Brings the Geoscience Community Together as Geophysicists: Abstract PA23C-05 presented at Fall Meeting, AGU, San Francisco, California, 13-15 December.

Posters:

MacPherson-Krutsky, C., Brand, B., Lindell, M.K., 2020, Planning for the day after tomorrow – investigating factors that motivate households to prepare for disasters: Abstract 751285: Presented at Fall Meeting, AGU, virtual due to COVID-19, 1-17 December.

MacPherson-Krutsky, C. and Brand, B., 2020, Leveraging university capabilities to facilitate regional resilience: Poster presentation: The Disaster and Resilience Summit, Montréal, Québec, Canada, 16-18 June [*Event cancelled due to COVID-19*].

MacPherson-Krutsky, C., Brand, B., Lindell, M.K., 2018, Does updating natural hazard maps to reflect best practices increase viewer comprehension of risk? Poster Presentation, #130. Presented at the Natural Hazards Workshop, Broomfield, CO, 8-12 July.

MacPherson-Krutsky, C., Bendick, R., 2015, Synthesizing, summarizing, and sharing natural hazard information for non-scientists: Abstract PA21B-2161 Presented at Fall Meeting, AGU, San Francisco, California, 13-15 December.

Denton, K.M., Ponce, D.A., Miller, D.M., **MacPherson-Krutsky, C.**, 2013, Carbonatite: a geophysical investigation of rare earth element terrane, eastern Mojave Desert, California: Abstract GP51C-1092 presented at Fall Meeting, AGU, San Francisco, California, 9-13 December.

Peacock, J., McPhee, D.K., Ponce, D.A, Mangan, M.T., **MacPherson-Krutsky, C.**, Matson, G., 2013, 3-D visualization of Mono Basin, California from geophysical studies: Abstract V11D-04 presented at Fall Meeting, AGU, San Francisco, California, 9-13 December.