Elizabeth Hillary Case

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CV updated on: 13 April 2022

Research Experience

Graduate Student at Columbia University (Polar Geophysics) 2017 – present

- I measure and model firn processes using phase-sensitive radar observations to help constrain mass change estimates across ice sheets and glaciers
- Co-leading phase-sensitive radar deployment on the GHOST team of the International Thwaites Glacier Consortium (ITGC)

The Erickson Lab at Cornell University (UAVs and Neural Networks) 2015 – 2017

- **Lead researcher** on project using UAVs and convolutional neural networks to monitor mosquito habitat

Publications

1. Kingslake J, Skarbek R, **Case E**, McCarthy C. **(2022)**. *Grain-size evolution controls the accumulation dependence of modeled firn thickness.* The Cryosphere Discussions. Preprint. https://doi.org/10.5194/tc-2022-13.
2. Hoffman A, Christianson K, Holschuh N, **Case E**, Kingslake J, Arthern R. **(2022)**. The impact of basal roughness on inland Thwaites Glacier sliding. Geophysical Resarch Letters. Under Review.
3. **Case E** & Kingslake J. **(2021)**. *Phase-sensitive radar as a tool for measuring firn compaction.* Journal of Glaciology, 1-14. doi:10.1017/jog.2021.8
4. Velan V, Woods-Robinson R, **Case E**, Warner I, Poppiti A. **(2021)** *The Federal Science Project: A scientist in every classroom.* Journal of Science Policy and Governance. https://doi.org/10.38126/JSPG180308
5. **Case E**, Shragai T, Ren Y, Harrington L, Morreale S, Erickson D. **(2020)** *Evaluation of unmanned aerial vehicles and neural networks for integrated mosquito management of Aedes albopictus (Diptera: Culicidae).* Journal of Medical Entomology. https://doi.org/10.1093/jme/tjaa078

Presentations

**Oral Presentation †Invited ‡delayed by COVID-19*

‡***Case E** "Scientists in Parks: Glaciers in the Tetons" Lamont-Doherty Earth Observatory Marine Geophysics and Geology seminar (postponed until September 2022). 2021

†***Case E**, Kingslake, J. "A story of firn and ice: Measuring firn densification with a phase sensitive radar." NASA GISS Sea Level Rise Seminar. 2020

†***Case, E.**, Kingslake, J. "Firn compaction and meltwater percolation: ApRES, Antarctica, and JIRP." *Dartmouth Ice+Climate.* 2020

Boucher, A., Rand, C.F., Bellamy, K., Che, Y., Hoien, J., Johansen, N., Reahl, J.N. **Case, E.** and Dennis, D. "Outcrop-scale Estimates of Fracture Density Using Structure from Motion on the Juneau Icefield." *American Geophysical Union.* 2019

Case, E., Kingslake J. "Firn Compaction: Models and Measurements.**"** *International Glaciology Society: Radioglaciology.* 2019

***Case, E.,** Kingslake J. "Phase-sensitive radar for measuring firn compaction." *American Geophysical Union.* 2018

Case, E., Kingslake, J. "Phase-sensitive radar: a new tool for measuring firn compaction." *International Glaciology Society*. 2018

Case, E., Shragai, T., Ren, Y., Harrington, L., Morreale, S., Erickson, D. "MosquitoNet: Investigating the use of UAVs and Neural Networks in Integrated Mosquito Management." *American Geophysical Union.* 2017

Woods-Robinson, R., **Case, E**. "Cycle for Science: Adventure-based science education." *American Geophysical Union.* 2017

*__Case, E.__ and Luna, E. "Sol-Cycle 2.0: teaching science with recyclables." *Science Teachers Association of New York State Conf.* 2016

*__Case, E.__ and Woods-Robinson, R. "Adventures in Crowdfunded Science Outreach." *Materials Research Society.* 2016

Professional Experience

Cycle for Science co-founder 2014 – present

- Co-founded an award-winning program that ties science outreach with outdoor adventures
- Reached 2000+ students in creative, hands-on lessons during 3-month and 1-week bicycling trips across the United States (2015) and upstate New York (2019)
- Ran two crowdfunding campaigns that raise > $13000

Science, Environment and Agriculture Journalist **2014 – 2015**

- Data-driven reporter at the cross-section of environment and agriculture in drought-torn Yolo County

Education

Columbia University **2017 – present**
Earth and Environmental Science, PhD candidate
Adviser: Jonathan Kingslake

Cornell University **2015 – 2017**
Mechanical Engineering, Masters (GPA: 3.8)

University of California, Los Angeles **2009 - 2014**
Physics, B.S. (GPA: 3.6)

Awards, Fellowships, and Professional Licenses

Science and Society Seed Grant (2022) $2000 grant to facilitate and publish 16 zines on climate change in NYC
Scientists-in-Parks Fellowship (2021) in Grand Teton National Park
NSF Graduate Research Fellowship (2016-2021)
AGU Centennial Grant (2019) $4900 grant for Cycle for Science
Chevron Student Initiative Fund (2019) $1500 for research on the Juneau Icefield
Creative Climate Awards (2019) selected to show artwork at the Taipei Economic & Cultural Institute in NYC
AGU Outstanding Student Presentation Award (2019)
Columbia Graduate School of Arts and Sciences Conference Award (2018) ß
IGS Travel Fellowship (2018)
AGU Student Travel Fellowship (2017)
Dean's Fellowship, Columbia University (2017)
SHIFT Emerging Leaders Program (2016) inaugural selection of under-35 conservation leaders
First place in Enterprise News Series (2016) for 4-part series "Putah Creek Legacy"
First place in Agricultural Reporting (2015) for story on olive industry in Yolo County
AAAS Mass Media Science and Engineering Fellow (2013) at The Oregonian
National Science Foundation Research Experience for Undergraduates (2012) at SRI International in Menlo Park

Teaching Experience

Teaching Assistantship

- Earth: Origins, Evolution, Processes, Futures (UN 1011). Columbia University. *Spring 2020*
- Earth's Environmental Systems: the Climate System (UN 2100). Columbia University. *Spring 2019*
- Mechanics of Engineering Materials (MAE 3270). Cornell University. *Fall 2016*

Teaching as Research Fellow *2017*

- Investigated stress triggers and reductions for new graduate teaching assistants

Graduate Teaching Specialist *2016-2017*

- Design and teach curriculum to train 150+ new engineering teaching assistants

Outreach and Volunteer Work

Selected work 2020-2022

- International Glaciology Society Diversity & Inclusion Committee *2022*
- Co-organizer of Polar Radar Science and Technology Conference *Apr 2022*
- Planned and led workshop on Autonomous Phase-Sensitive Radar for early career sceintists *Mar 2022*
- Co-designed curriculum for seminar on Race, Environmental Justice, and Climate Change *2020-21*
- Leading early career IDEA efforts on the International Thwaites Glacier Consortium Project *2020-21*
- JIRP x Upward Bound: three hands-on lessons about glaciology *2020-21*
- Mentor for the Graduate Student Mentorship Initiative with Ciéntifico Latino *2020-21*

Community at Lamont-Doherty Earth Observatory

- Professional Conduct Committee 2019-2021
- Graduate Student Committee President *2018-2020*
- Chevron Student Initiative Fund Committee *2019-2020*
- Organized and led IPCC Reading Seminar *2019*

Writing and Art

- Generation Green New Deal Podcast copyeditor, eps 1-3 2020
- Case, E. and Mirsky, S. "Warming on Thin Ice" *Scientific American.* *2019*
- Creative Climate Awards - presented at the Taipei Economic and Cultural Institute *2019*

Professional Societies & Memberships

Association of Polar Early Career Scientists
American Geophysical Union
American Alpine Club
International Glaciological Society

Workshops

Karthaus (September 2018)
IDDO Shallow Core Training (June 2018)

Field Experience

Grand Teton National Park June-Sept 2021

- Photo, temperature, & GPS surveys of 7 out of 11 Teton glaciers; water quality monitoring

Juneau Icefield, Alaska July-August 2019

- Geophysics faculty member teaching ground-penetrating radar and ice dynamics at the Juneau Icefield Research Program

Juneau Icefield, Alaska July-August 2018

- Used phase-sensitive radar to measure firn compaction on 91-point, 9 km^2 grid, flow and bed topography at the icefield divide
- Drilled 80m of shallow firn cores + density measurements

Denali National Park, Alaska August 2016

- GPS survey of East Fork Toklat Glacier

Skills and Hobbies

Languages	Programming	Music	Outdoors
Spanish (conversational)	Matlab (proficient)	Banjo (intermediate)	Climbing (led > 10 trips in 2019)
German (beginner)	Python (proficient)	Fiddle (beginner)	Cycling