Elizabeth Hillary Case

New York, NY 10027
Phone: 408 718-3658 • E-Mail: ehc2150@columbia.edu
Pronouns: she/her

Research Experience

Graduate Student at Columbia University (Polar Geophysics)   **2017 – present**
- I measure and model firn compaction 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

Papers

1. **Case, E.,** Kingslake J., "Phase-sensitive radar as a tool for measuring firn densification."   *Submitted Dec. 2020*

2. Das, I., MacGregor, J., Schelgel, N., Larour, E., Poinar, K., Noel, B., Alexander, P., **Case, E.,** "Evolving Centennial-Scale Snow Accumulation Rates Across Greenland from Operation IceBridge Accumulation Radar."   *In Prep*

3. **Case, E.,** Shragai, T., Ren, Y., Harrington, L., Morreale, S., Erickson, D., "Evaluation of unmanned aerial vehicles and neural networks for integrated mosquito management of Aedes albopictus (Diptera: Culicidae)." *Journal of Medical Entomology*.   *May 2020*

Presentations and Invited Talks

*Oral Presentation **Invited

** **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*	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 Conf.	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 trips bicycling across the United States (2015) and upstate New York (2019)
- Ran two crowdfunding campaigns that raise > $13000

Science, Environment and Agriculture Journalist   **2014 – 2015**
- Award-winning reporter at the cross-section of environment and agriculture in drought-torn Yolo County

Education

Columbia University   **2017 – 2022**
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

NSF Graduate Research Fellowship (2016-2021)

Addressing Racism: A Call to Action for Higher Education Seed Grant Opportunity (2020) co-author on $6000 grant to develop a seminar on race and climate justice

AGU Centennial Grant (2019) $4900 grant for Cycle for Science

Chevron Student Initiative Fund (2019) $1500 for research on the Juneau Icefield

AGU Outstanding Student Presentation Award (2019)

Columbia Graduate School of Arts and Sciences Conference Award (2018)

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   *Spring 2017*
- Investigated stress triggers and reductions for new graduate teaching assistants

Graduate Teaching Specialist   *2016-2017*
- Designed and taught curriculum to train 150+ new engineering teaching assistants

Outreach and Volunteer Work

Selected outreach 2017-2020
- Co-designed Seminar on Race, Environmental Justice, and Climate Change   *2020-2021*
- Leading ECR JEDI efforts on the International Thwaites Glacier Consortium Project *2020*
- Mentor for the Graduate Student Mentorship Initiative with Ciéntifico Latino   *2020*
- Cycle for Science: Glaciers – one-week, 120-mile bicycle ride up the Hudson Valley, *2019* New York to teach 200+ students about glaciation and how it shapes the land.

- Glaciers and glaciation in the Hudson Valley for the Lyceé Français de New York *2019, 2020*
- Lamont Doherty Open House *2017, 2018, 2019*

Community at Lamont-Doherty Earth Observatory
- Professional Conduct Committee *2018-2020*
- Graduate Student Committee *2018-2020*
- Organized and led IPCC Reading Seminar *2019*

Writing and Art
- **Generation Green New Deal Podcast** volunteer copyeditor Summer and Fall 2020
- **Case, E**. and Mirsky, S. "Warming on Thin Ice" Podcast. *Scientific American*. *2019*
- **Creative Climate Awards -** art 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

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 km² grid, flow and bed topography at the icefield divide
> Took shallow firn cores (total of 80m) and photos / videos with UAV for photogrammetry

Denali National Park, Alaska August 2016
> Measured GPS at takes embedded in the ice, part of a larger ice monitoring project

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)	Cycle touring