

Elle Weeks

Department of Applied Mathematics, Harvard University
elleweeks@g.harvard.edu | (919) 428-7351 | [personal website](#)

EDUCATION

Harvard University

PhD Applied Mathematics

Advisor: Dr. Eli Tziperman

Cambridge, MA

Expected May 2026

Macalester College

BA Applied Mathematics and Statistics

magna cum laude, Phi Beta Kappa

Saint Paul, MN

May 2017

TEACHING EXPERIENCE

Harvard University, Department of Mathematics

Cambridge, MA

Teaching Fellow (Primary Lecturer), Multivariable Calculus

Fall 2025

- Designed and delivered thrice-weekly lectures engaging students with active learning strategies.
- Developed exam materials.
- Supervised and mentored two undergraduate course assistants.

Harvard University, Department of Applied Mathematics

Head Teaching Fellow, Nonlinear Dynamical Systems

Spring 2025

- Updated homework assignments and final project topics to include new applied examples.
- Guided 20 students through collaborative in-class activities in flipped classroom setting.
- Advised students on final research projects investigating applications of course material.

Teaching Fellow, Mathematical Modeling

Fall 2024

- Designed and led a weekly section guiding 8 students through coding applications.
- Advised students on developing and refining semester-long modeling projects.

Teaching Fellow, Introduction to Scientific Computing

Fall 2023

- Designed and taught a weekly coding laboratory section.
- Guided 10 students through collaborative in-class activities in flipped classroom setting.
- Advised students on final research projects investigating applications of course material.

Head Teaching Fellow, Applied Linear Algebra and Big Data

Spring 2022, 2023

- Presented 4 invited lectures to classes of over 100 students.
- Managed 11 undergraduate course assistants.

Harvard University, Department of Earth and Planetary Sciences

Head Teaching Fellow, Introduction to Physical Oceanography

Spring 2024

- Presented 2 invited lectures to a class of 23 students.
- Designed and led weekly section facilitating additional practice with course concepts.

Macalester College, Department of Mathematics, Statistics, and Computer Science

Saint Paul, MN

Teaching Assistant, Differential Equations

Spring 2017

- Coached students through collaborative in-class activities in flipped classroom setting.

Teaching Assistant, Applied Multivariable Calculus I & III

Spring 2015 & 2016, Fall 2016

- Led office hours to students of diverse backgrounds and across many different majors.

Macalester College, Department of Chemistry

Supplementary Instruction Leader, General Chemistry II

Spring 2016

- Designed and facilitated practice-based learning sections.

FELLOWSHIPS AND AWARDS

EPS Graduate Teaching Award, Harvard University	2024
Certificate of Distinction in Teaching, Harvard University	2022
Peirce Fellowship, Harvard University	2020-2023
Konhauser Award for Mathematical Achievement, Macalester College	2017
Undergraduate Statistics Research Project Competition Winner	2017
DeWitt Wallace Distinguished Scholarship, Macalester College	2013-2017

RESEARCH EXPERIENCE

Harvard University Cambridge, MA
Doctoral Researcher 2020-present

Project: Influences on the length and depth scales of coastal upwelling

- Designed realistic and idealized numerical modeling experiments of coastal upwelling using the MIT general circulation model.
- Proposed and tested scaling laws for the width of the coastal upwelling zone and for the depth from which upwelled water originates.
- Advised undergraduate research assistant on analyzing and choosing wind data products to investigate in simulations.

Project: Models of the El Niño Southern Oscillation

- Discovered biases in existing fitting methods for the Recharge Oscillator model of ENSO.
- Investigated methods for fitting the recharge oscillator model to control for structured noise.

Broad Institute of MIT and Harvard Cambridge, MA
Associate Computational Biologist II 2017-2020

- Developed method for casual gene prioritization integrating genetic data about disease with molecular data about cell types and biological processes.
- Collaborated with multiple teams of researchers to apply method to specific disease studies and to extend method to leverage signals from multiple traits simultaneously.

Macalester College Saint Paul, MN
Summer Undergraduate Research Assistant Summer 2015, 2016

Project: Dryland banded vegetation pattern formation

- Developed methods for combining satellite imagery and remotely sensed elevation data to investigate relationships between vegetation patterning characteristics and regional topography.

Project: Graph signal processing

- Investigated methods for generating a multiresolution of graphs.

EDUCATIONAL DEVELOPMENT

Harvard University, Derek Bok Center for Teaching and Learning Cambridge, MA
Fall Teaching Week Fall 2025

- Workshop series exploring key topics in teaching and learning including inclusive teaching, active learning in STEM, and the uneven classroom.

Harvard University, School of Engineering and Applied Sciences (SEAS)
STEM Pedagogy Hour Fall 2024

- Weekly reading group discussing *The ABC's of How We Learn* by Schwartz, Tsang, & Blair.

SEAS Teaching Practicum Spring 2023

- Semester-long workshop developing skills in planning and presenting lectures, incorporating active-learning techniques, and designing and giving feedback on assignments.

LEADERSHIP AND SERVICE

Harvard University, Department of Earth and Planetary Sciences Cambridge, MA
Co-Leader, Graduate Student Field Trip 2024

- Planned and led a group of 25 graduate students on an international trip to Nova Scotia collaboratively with three co-leaders.
- Developed a week-long curriculum structured around visits to local sites of geoscientific significance to support experiential learning for students with diverse science backgrounds.
- Facilitated community building exercises among new and returning graduate students.

Organizer, Graduate Student Seminar Series 2023-2024

- Coordinated the graduate student seminar series with the goal of creating a supportive environment for discussing research and building community.

Macalester College Saint Paul, MN
Founder, Committee for Women in Mathematics, Statistics, and Computer Science 2015-2017

- Facilitated community building among gender minorities in the MSCS department.
- Organized panels, discussions, and social events encouraging critical thinking and conversations about gender dynamics in the MSCS department and allied fields.

PUBLICATIONS

E. M. Weeks, *S. Packman, and E. Tziperman. The effects of a spatially and temporally variable wind stress on the upwelling source depth in the California upwelling system. *In preparation*.

M. Borreggine, ... **E. M. Weeks**, et al. Combining paleocurrents and sea level in a least-cost pathway model of human dispersal from Sunda to Sahul, 65-45,000 years ago. *Under review*.

E. M. Weeks and E. Tziperman. Looking for scaling laws for the width and source depth of coastal upwelling zones. *Journal of Physical Oceanography*, *In press*.

E. M. Weeks and E. Tziperman. Challenges in determining if ENSO is a damped or a self-sustained oscillation. *Geophysical Research Letters*, 2025.

E. M. Weeks, M. Losch, and E. Tziperman. The upwelling source depth distribution and its response to wind stress and stratification. *Journal of Physical Oceanography*, 2024.

E. M. Weeks, J. C. Ulirsch, et al. Leveraging polygenic enrichments of gene features to predict genes underlying complex traits and diseases. *Nature Genetics*, 2023.

K. G. Aragam, ... **E. M. Weeks**, et al. Discovery and systematic characterization of risk variants and genes for coronary artery disease in over a million participants. *Nature Genetics*, 2022.

J. Nasser, D. T. Bergman, C. P. Fulco, P. Guckelberger, B. R. Doughty, ... **E.M. Weeks**, et al. Genome-wide enhancer maps link risk variants to disease genes. *Nature*, 2021.

* Undergraduate student co-author

PRESENTATIONS

Oral Presentations

E. M. Weeks and E. Tziperman, 2025. Is ENSO a damped or a self-sustained oscillation? Presented at the European Geosciences Union General Assembly, Vienna, Austria.

E. M. Weeks, M. Losch, and E. Tziperman, 2023. The upwelling source depth distribution and its response to wind stress and stratification. Presented at the American Geophysical Union Annual Meeting, San Francisco, CA.

E. M. Weeks, et al., 2019. Computational GWAS gene prioritization using local and polygenic signals. Invited talk at the Medical and Population Genetics Program Meeting, Broad Institute, Cambridge, MA.

E. M. Weeks, et al., 2019. Computational prioritization of genes with genome-wide enrichments. Invited talk at the Variant to Function Initiative Program Meeting, Broad Institute, Cambridge, MA.

E. M. Weeks, J. C. Ulirsch, et al., 2018. Genome-wide priors for gene prioritization. Invited talk at the Stanley Center Program Meeting, Broad Institute, Cambridge, MA.

Poster Presentations

E. M. Weeks and E. Tziperman, 2024. Characterizing the width of the coastal upwelling zone. Presented at the Conference on Atmospheric and Oceanic Fluid Dynamics, Burlington, VT.

E. M. Weeks, M. Losch, and E. Tziperman, 2023. The effect of upwelling source depth on sea surface temperature in present and warmer climates. Presented at the Conference on Atmospheric and Oceanic Fluid Dynamics, Breckenridge, CO.

E. M. Weeks, J. C. Ulirsch, et al., 2019. Computational GWAS gene prioritization using local and polygenic signals. Presented at the American Society of Human Genetics Annual Meeting, Houston, TX.

E. M. Weeks, J. C. Ulirsch, et al., 2018. Genome-wide priors for gene prioritization. Presented at the American Society of Human Genetics Annual Meeting, San Diego, CA.

E. M. Weeks, J. Haack, J. Ramthun, D. Schmidt, et al., 2017. Nonlocal topography influences vegetation pattern wavelength in the Horn of Africa. Presented at the Joint Mathematics Meetings, Atlanta, GA.

E. M. Weeks, A. Archer, S. Faridani, Y. Jin, et al., 2016. Graph reduction methods for multiscale dictionary design. Presented at the Joint Mathematics Meetings, Seattle, WA.