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266 Woods Hole Road MS#24, Woods Hole, MA, 02543

Education

- 2019 **PhD in Marine Geophysics**, MIT-WHOI Joint Program
2014 **BA Physics, BS Geophysical Sciences**, University of Chicago

Professional Appointments

- 2021 – on **Postdoctoral Investigator**, Woods Hole Oceanographic Institution
2019 – 2021 **Fossett Postdoctoral Fellow**, Washington University in St Louis
2013 **Summer Student Fellow**, Woods Hole Oceanographic Institution
2011 – 2014 **Undergraduate Research Assistant**, University of Chicago

Publications

- 2023 **Mark, HF**, Lizarralde, D, Wiens, DA. Constraints on bend-faulting and mantle hydration at the Marianas Trench from seismic anisotropy. *Geophysical Research Letters*. doi:[10.1029/2023GL103331](https://doi.org/10.1029/2023GL103331)
Open data: [scripts for anisotropy calculations](#)
- 2022 Russell, JB, Gaherty, JB, **Mark, HF**, Hirth, G, Hansen, LN, Lizarralde, D, Collins, JA, Evans, RL. Seismological evidence for girdled olivine lattice-preferred orientation in oceanic lithosphere and implications for mantle deformation processes during seafloor spreading. *Geochemistry, Geophysics, Geosystems*. doi:[10.1029/2022GC010542](https://doi.org/10.1029/2022GC010542)
- 2022 Ben Mansour, W, Wiens, DA, **Mark, HF**, Russo, RM, Richter, A, Marderwald, E, Barrientos, S. Mantle flow pattern associated with the Patagonian slab window determined from azimuthal anisotropy. *Geophysical Research Letters*. doi:[10.1029/2022GL099871](https://doi.org/10.1029/2022GL099871)
- 2022 **Mark, HF**, Wiens, DA, Ivins, ER, Richter, A, Ben Mansour, W, Magnani, MB, Marderwald, E, Adaros, R, Barrientos, S. Lithospheric erosion in the Patagonian slab window, and implications for glacial isostasy. *Geophysical Research Letters*. doi:[10.1029/2021GL096863](https://doi.org/10.1029/2021GL096863)
Open data: [velocity and viscosity models](#), and some [cross-correlations](#)
- 2021 **Mark, HF**, Collins, JA, Lizarralde, D, Hirth, G, Gaherty, JB, Evans, RL, Behn, MD. Constraints on the depth, thickness, and strength of the G discontinuity in the central Pacific from S receiver functions. *Journal of Geophysical Research: Solid Earth*. doi:[10.1029/2019JB019256](https://doi.org/10.1029/2019JB019256)

- 2019 Shinevar, WJ, **Mark, HF**, Clerc, F, Codillo, EA, Gong, J, Olive, JA, Brown, SM, Smalls, PT, Liao, Y, Le Roux, V, Behn, MD. Causes of oceanic crustal thickness oscillations along a 74-Myr Mid-Atlantic Ridge flow line. *Geochemistry, Geophysics, Geosystems*. doi:[10.1029/2019GC008711](https://doi.org/10.1029/2019GC008711)
- 2019 **Mark, HF**, Lizarralde, D, Collins, JA, Miller, NC, Hirth, G, Gaherty, JB, Evans, RL. Azimuthal seismic anisotropy of 70 Ma Pacific-plate upper mantle. *Journal of Geophysical Research: Solid Earth*. doi:[10.1029/2018JB016451](https://doi.org/10.1029/2018JB016451)
- 2018 **Mark, HF**, Behn, MD, Olive, JA, Liu, Y. Azimuthal seismic anisotropy of 70 Ma Pacific-plate upper mantle. *Journal of Geophysical Research: Solid Earth*. doi:[10.1029/2018JB016451](https://doi.org/10.1029/2018JB016451)

White papers

- 2022 Rowe, C, Agius, M, Convers, J, Funning, G, Galasso, C, Hicks, S, Huynh, T, Lange, J, Lecocq, T, **Mark, HF**, Okuwaki, R, Ragon, T, Rychert, C, Teplitzky, S, van den Ende, M. The launch of Seismica: a seismic shift in publishing. *Seismica*. doi:[10.26443/seismica.v1i1.255](https://doi.org/10.26443/seismica.v1i1.255)

Funding

- 2023 – 2024 NSF-OCE: “An assessment of low-temperature, ductile lithospheric deformation using existing broadband seismic data from around South Island, New Zealand”. Award ID: [2316757](https://www.nsf.gov/awardsearch/showAward?AWD_ID=2316757). PI: **Mark, HF**. \$84k to HF Mark
- 2023 – 2025 NSF-OCE: “Collaborative Research: Resolving the Origin of the Jurassic Quiet Zone”. Award ID: [2221814](https://www.nsf.gov/awardsearch/showAward?AWD_ID=2221814). PI: Tominaga, M, co-PIs: **Mark, HF**; Sager, W. \$827k to WHOI including \$192k to HF Mark

Awards

- 2019 **Fossett Postdoctoral Fellowship**, Washington University in St Louis
- 2019 **AGU Outstanding Student Paper Award (OSPA)**, Tectonophysics
- 2016 **AGU OSPA**, Tectonophysics
- 2016 **GeoPrisms OSPA**, honorable mention
- 2015 **National Science Foundation Graduate Research Fellowship**
- 2014 **Rosenblith Presidential Fellowship**, Massachusetts Institute of Technology
- 2014 **Phi Beta Kappa**, Beta of Illinois
- 2013 **John Crerar Science Writing Prize**, University of Chicago

Teaching Experience

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| 2023 | WHOI Software Carpentries Python workshop , Classroom assistant |
| 2018 | Kaufman Teaching Certificate , MIT Teaching and Learning Lab |
| 2018 | WHOI Software Carpentries workshop , Classroom assistant |
| 2017 | WHOI Summer Math Review , Lecturer |
| 2017 | MS-3221: Oceanography , Massachusetts Maritime Academy, Co-Instructor |
| 2016 | 12.710: Elements of Modern Oceanography , MIT-WHOI Joint Program, TA |
| 2016 | WHOI Summer Math Review , Lecturer |

Academic Service

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| | Peer reviewer for: JGR Solid Earth, Nature Geoscience, Geophysical Research Letters, Science Advances, Nature Communications, Journal of Open Source Software, Geoscience Letters, Earth and Planetary Science Letters |
| 2022 – on | Seismica journal management committee, Co-chair, Standards and Copy Editing |
| 2022 – on | WHOI Postdoc Association , Department representative |
| 2022 – on | WHOI Workplace Climate Committee , Department representative |
| 2022 – on | WHOI G&G Proposal Club , Co-organizer |
| 2022 | SSA Annual meeting , session co-convener Marine Seismology |
| 2021 | WUSTL EPS Department URGE pod , Pod leader |
| 2021 | AGU Fall Meeting , session co-convener EP15: Coupling of the Cryosphere, Solid Earth, Surface, and Climate in Shaping Late Cenozoic Topography |
| 2018 – 2019 | 500 Women Scientists of Cape Cod , Steering Committee member |
| 2015 – 2019 | MIT-WHOI Joint Program Farrington Collection , Librarian |
| 2014 – 2016 | WHOI Summer Math Review , Coordinator |

Invited Seminars

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| 2023 | McGill University , EPS Department seminar University of Arizona , Geosciences Colloquium |
| 2022 | University of Washington School of Oceanography University of Wisconsin Madison , Weeks Seminar Syracuse University , EES Department Colloquium |
| 2021 | University of Hawai'i Manoa , Earth Sciences Department seminar |
| 2019 | University of Illinois Urbana-Champaign , Brown bag seminar |
| 2018 | Lamont-Doherty Earth Observatory , MGG/SGT seminar WHOI , Interdisciplinary Biology Seminar Series on Acoustics |

Field Experience

- 2020 R/V *Marcus G. Langseth*, MGL2003.
Active-source reflection and refraction survey in the Central Aleutians
- 2017 R/V *Neil Armstrong*, AR23-02.
Collecting underway data along a ridge flowline in the Atlantic
- 2016 R/V *Neil Armstrong*, AR05.
Scientific validation cruise
- 2015 ENAM land seismic experiment, North Carolina.
RT-125 deployment and recovery for active-source seismic lines on the Eastern North American Margin
- 2014 PRIDE SeisORZ seismic experiment, Botswana.
RT-125 deployment and recovery for an active-source seismic line across the Okavango Delta

Selected Communication and Outreach

- 2020 – 2022 Contributing writer and peer editor at [geobites.org](https://www.geobites.org)
Blogging, general audience summaries of new research
- 2018 [How is the seafloor made?](#)
Magazine article, *Oceanus* Vol 53. No. 2
- 2017 (Way) under the sea: Imaging the rocks beneath the deep ocean
Public talk, Science Made Public lecture series, Woods Hole, MA
The lithosphere-asthenosphere boundary: What it is, where it is, and why you should care
Public talk, Woods Hole Public Library, Woods Hole, MA
- 2016 Under-under the sea: Imaging the rocks beneath the deep ocean
Public talk, Woods Hole Public Library, Woods Hole, MA

Conference Abstracts (*=invited)

- 2022 ***Mark, HF**, Collins, JA, Lizarralde, D, Gaherty, JB, Hirth, G, Evans, RL, Behn, MD. *Where is the G discontinuity, what does it represent, and how can we tell? A case study from the NoMelt experiment.* AGU Fall Meeting, Chicago, IL.
Mark, HF, Wiens, DA, Lizarralde, D. *Insights into bend-faulting and mantle hydration at the Marianas trench from seismic anisotropy.* SSA Annual Meeting, Bellevue, WA (poster).
- 2021 **Mark, HF**, Wiens, DA, Ben Mansour, W, Ivins, ER, Richter, A, Magnani, MB, Marderwald, E, Adaros, R, Barrientos, S. *Thermal erosion of the lithosphere in the Patagonian slab window and implications for glacial isostatic adjustment.* AGU Fall Meeting, New Orleans, LA.

- Mark, HF**, Lizarralde, D, Shillington, D, Cortes Rivas, V, Estep, JD. *Crustal structure along-strike in the Andreanof segment of the Aleutian Arc from wide-angle seismic refraction data*. AGU Fall Meeting, virtual (poster).
- Wiens, DA, Ben Mansour, W, **Mark, HF**, Shore, P, Richter, A, Barrientos, S. *Geodynamics of the Patagonian Slab Window Constrained by Shear Wave Splitting and Seismic Imaging*. AGU Fall Meeting, New Orleans, LA.
- Mark, HF**, Wiens, DA, Lizarralde, D. *Estimating bend-faulting and mantle hydration at the Marianas trench from seismic anisotropy*. EGU General Assembly, virtual.
- *Mark, HF**. *Anisotropy in slightly more than one dimension*. Marine Seismology Symposium, virtual.
- Mark, HF**, Wiens, DA, Lizarralde, D. *Estimating bend-faulting and mantle hydration at the Marianas trench from seismic anisotropy*. Marine Seismology Symposium, virtual (poster).
- 2020 **Mark, HF**, Wiens, DA, Pourpoint, M, Magnani, MB, Ivins, ER, Richter, A, Barrientos, S. *Seismic structure and the extent of the slab window beneath the Northern and Southern Patagonian Icefields*. AGU Fall Meeting, virtual (poster).
- 2019 **Mark, HF**, Collins, JA, Lizarralde, D, Hirth, G, Gaherty, JB, Evans, RL. *The depth, sharpness, and strength of the G discontinuity from S-to-p receiver functions at the NoMelt site in the central Pacific*. AGU Fall Meeting, San Francisco, CA.
- 2018 **Mark, HF**, Collins, JA, Lizarralde, D, Hirth, G, Gaherty, JB, Evans, RL. *S-to-p receiver functions for the central Pacific from NoMelt*. AGU Fall Meeting, Washington, D. C.
- Shinevar, WJ, **Mark, HF**, Clerc, F, Codillo, EA, Olive, JA, Gong, J, Brown, SM, Smalls, PT, Liao, Y, Le Roux, V, Behn, MD. *Temporal variability of seafloor spreading processes documented along an 80-Myr geophysical transect across the Mid-Atlantic Ridge*. AGU Fall Meeting, Washington, D.C.
- Gaherty, JB, Russell, JB, **Mark, HF**, Lin, PP, Sarafian, EK, Ma, Z, Lizarralde, D, Collins, JA, Hirth, G, Evans, RL, Dalton, CA. *A comprehensive portrait of the central Pacific lithosphere-asthenosphere system from NoMelt seafloor geophysical observations*. AGU Fall Meeting, Washington, D.C.
- 2017 ***Mark, HF**, Behn, MD, Liu, Y, Olive, JA. *Geometric and thermal controls on normal fault seismicity*. AGU Fall Meeting, New Orleans, LA.
- Mark, HF**, Lizarralde, D, Collins, JA, Miller, NC, Hirth, G, Gaherty, JB, Evans, RL. *Seismic anisotropy of 70 Ma Pacific-plate upper mantle*. AGU Fall Meeting, New Orleans, LA.
- *Mark, HF**, Behn, MD, Liu, Y, Olive, JA. *Seismic coupling at divergent plate boundaries from rate-and-state friction*. GeoPrisms TEI on Rift Initiation and Evolution, Albuquerque, NM.
- 2016 **Mark, HF**, Behn, MD, Liu, Y, Olive, JA. *Seismic coupling at divergent plate boundaries from rate-and-state friction*. AGU Fall Meeting, San Francisco, CA.
- Mark, HF**, Behn, MD, Liu, Y, Olive, JA. *Rate-and-state friction models of seismic cycles on oceanic normal faults*. GRC on Rock Deformation, Andover, NH (poster).

Mark, HF, Lizarralde, D, Gaherty, JB, Collins, JA, Hirth, G, Evans, RL, Lin, PP. *Seismic anisotropy in the Pacific upper mantle*. Seismology Student Workshop, Lamont Doherty Earth Observatory.

2014 **Mark, HF**, Lizarralde, D, Gaherty, JB, Collins, JA, Hirth, G, Evans, RL. *Pacific upper mantle seismic anisotropy from the active-source component of the NoMelt experiment*. AGU Fall Meeting, San Francisco, CA (poster).

2012 Heinz, DL, **Mark, HF**. *The Effect of Wavelength-Dependent Emissivity on the Melting Temperature of Iron from Shock Wave Measurements*. AGU Fall Meeting, San Francisco, CA (poster).