Catherine A. Rychert – Curriculum Vitae

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Employment History

2022 – Associate Scientist with Tenure, Woods Hole Oceanographic Institution
2022– MIT/WHOI Joint Program Faculty
2021 – 2022 Visiting Investigator, Woods Hole Oceanographic Institution
2014 – Associate Professor of Geophysics, University of Southampton
2011 – 2013 Lecturer of Geophysics, University of Southampton
2012 – 2013 NERC Fellow, University of Southampton
2009 – 2012 NERC Fellow, University of Bristol, U.K.
2007 – 2009 Postdoctoral Researcher, Scripps Institution of Oceanography
2001 – 2007 Research Assistant, Brown University

Education

2004 – 2007 Ph.D. Brown University, Geological Sciences
2001 – 2004 M.S. Brown University, Geological Sciences
1997 – 2001 B.A. University Professors Program, Boston University, Studies in Physics and Geophysics, *magna cum laude*

Awards

2015 Fowler Prize, Royal Astronomical Society
2014 Bullerwell Award, British Geophysical Association
2002 Tectonophysics AGU Outstanding Student Paper Award

Funding

2024 – 2025 Co-Investigator, USGS: A New 3-D Seismic Velocity Model for Puerto Rico and the US Virgin Islands from Rayleigh Wave Tomography, $76,000
2024 – 2027 Principal Investigator, NSF-EAR, Collaborative Research: Geophysical and geochemical investigation of links between the deep and shallow volatile cycles of the Earth, $321,770
2023 – 2026 Co-Investigator, NSF-OCE: Collaborative Research: The influence of incoming plate structure and fluids on arc melt generation at the Lesser Antilles subduction system, $2,599,122
2022 – 2023 Co-Investigator, Xsede, EES220018 New: 3-D Seismic Full Waveform Imaging of the Oceanic Lithosphere-Asthenosphere System in the Equatorial Mid-Atlantic $13,082.4
2022 Principal Investigator, Xsede, EES220014 New: Converted and Reflected Seismic Wave Imaging Beneath Hotspots and Mid-Ocean Ridges, $240
2022 – 2025 Principal Investigator, NSF-EAR: Collaborative Research: Mantle Dynamics and Plate Tectonics Constrained by Converted and Reflected Seismic Wave Imaging Beneath Hotspots $599,275
2021– 2022 Principal Investigator, NERC Urgency: An OBS Survey in Response to the September 2021, Cumbre Vieja Volcano unrest and eruption, La Palma, Canary Islands £107,182 (cancelled owing to Covid complications)
2016 – 2023 Principal Investigator, ERC starter grant: Experiment to Unearth the Rheological Oceanic Lithosphere-Asthenosphere Boundary (EURO-LAB) €1,827,855

2015 Principal Investigator, Athena Swan: £10,000
2016 – 2019 Principal Investigator, NERC Standard Grant: Passive Imaging of the Lithosphere-Asthenosphere Boundary (PI-LAB) £839,294
2015 – 2016 Co-Investigator, NERC Urgency: How do subduction zones initiate, develop and end: Imaging the Reversal of Subduction in the Solomon Islands £64,987
2015 – 2016 Principal Investigator, Imaging Ontong Java Plateau, National Geographic €20,000
2014 Principal Investigator, WUN Research Mobility Programme: £5,000
2014 Principal Investigator, Athena Swan: £40,000
2015 – 2020 Principal Investigator, NERC Large Grant: Volatile Recycling at the Lesser Antilles Arc: Processes and Consequences £649,511 (Southampton) £4,000,000 (total)
2013 – 2016 Principal Investigator, NERC New Investigator: 2013 – 2016 Global Seismic Imaging of the Oceanic Plates £58,010
2009 – 2012 Principal Investigator, NERC Fellowship: Global Imaging of the Lithosphere-Asthenosphere Boundary using Scattered Waves £282,958

Teaching & Education

2013 – 2023 coordinator – Geophysics Reading Group, U. Southampton, UK
2016 – 2022 coordinator – Geophysical Field Techniques, U. Southampton, UK
2012 – 2022 coordinator – Geophysical Research Training, U. Southampton, UK
2011 – 2015 coordinator – Geophys. Field Training, U. Southampton, UK
2015 coordinator – Global Tectonics, U. Southampton, UK
2013 – 2014 coordinator – MSci Advanced Independent Research, U. Southampton, UK
2012 – 2022 coordinator – tutorial, U. Southampton, UK
2013 Post Graduate Certificate Course in Academic Practice, U. Southampton, UK
2005 – 2007 Science Outreach Teacher, Vartan Gregorian School, Providence, RI, USA
2005 – 2006 teaching assistant, Physical Processes of Geology, Brown University, USA
2004 – 2005 Sheridan Center for Teaching and Learning Certificate
2000 – 2001 camp counselor, Nature Program, Thayer Academy, Braintree, MA, USA
1997 – 1998 reading skills tutor, BUILD, Winship Elementary School, Brighton, MA, USA

Field Expeditions

2023 DAS shallow earth field experiment in Flagstaff, AZ for the GEODE Moon analogue NASA science experiment
2023 Deployment of A-0-A pressure gauges next to oceanographic moorings in the Bahamas
2021 DAS shallow earth field experiments to determine the utility of various coupling mechanisms, in collaboration with engineer Ali Masoudi
2016 – 2022 Geophysical Field Techniques field course
2016 – 2017 VoiLA experiment, deploy & recover 34 ocean bottom seismometers, the Lesser Antilles
2016 – 2017 PI-LAB experiment, deploy & recover 39 ocean bottom seismometers and 39 magnetotelluric Instruments on 0 – 40 My old Atlantic seafloor
2015 – 2016 deploy 8 seismometers in Papua New Guinea and the Solomon Islands to assess hazard and image the nearby Ontong Java Plateau
2012 – 2015 Brittany, Module Leader for Geophysical Field Methods, Uni. Southampton
2004 TUCAN experiment, install 50 seismometers, Costa Rica & Nicaragua
2001 GLIMPSE experiment, COOK16, RV Melville, install ocean bottom seismometer array, dredging, seafloor survey, collection of gravity and bathymetry data
2012 East African Rift Field Trip, Ethiopia
2008 – 2009 Anza Borrego field trip, California, USA
2003 – 2005 New England Geological Conference, MA, CT, NH, VT, MA, USA

2003 Grand Canyon Field Trip, Brown University, USA
2001 – 2006 Brown University Departmental Field Trip, New England, USA

Supervision

– BSc. students**:** Fraser Nisbet (2018), Lewis Dorling (2018)
– M.Res. students**:** Ben Chichester (2015 - 2016)
– M.Sci. students**:** Stephanie Parker (2015), Joe Cairns (2015), David Lanigan (2018), Libby Maxwell (2018), Callum Heaton (2017), Nathan Heath (2022), Alfred Wilson (2023)
– PhD general exam panels**:** Jae Deok Kiim, Liam Moser
– PhD students**:** Saikiran Tharimena (2012 – 2016), Aude Lavayssiere (2015 – 2019), Daniel Posse (2015 – 2019), Ben Chichester (2016 - 2022), Emma Chambers (2016 – 2020), Richard Palmer (2018 – 2019), William Buffett (2020 –), Yuhang Dai (2020 –), Xusong Yang (2017 - 2022)
– postdocs**:** Savas Ceylon (1/2014 -1/2015), Caroline Eakin (1/2015 – 7/2016), Matthew Agius (11/2015 – 3/2018), Saikiran Tharimena (2/2017 – 1/2018), Petros Bogiatzis (2/2017 – 9/2022), Steve Hicks (2/2017 – 2/2019), David Schlaphorst (4/2017 – 9/2019), Yujiang Xie (1/2019 – 2022), Utpal Saikia (2/2019 -2/21), Konstantinos Leptokaropoulos (11/2020 - 06/2022), Tianze Liu (2023 – present)

Service, Professional

–leadership of organizations

2022 – founder, WHOI Ambassadors, designed to increase diversity in the Earth Sciences by highlighting connections between core science subjects and the Earth Sciences in classrooms with underrepresented populations

2021 – founder, executive editor, handling editor, chair of equity, diversity, and inclusion, *Seismica*, a diamond open access journal designed to break down barriers to publishing in Science

2012 – 2022 founder of Women in Ocean and Earth Science group at U. Southampton, with the goal of inclusion, and support for all early career scientists and women in science through mentoring, networking, and discussion sessions

–editorial roles

2021 – present – founder, executive editor, chair of equity, diversity, and inclusion, *Seismica*
2017 – 2022 associate editor *J. Geophysical Research*

– conference organization

2023 Shaping the future with Researcher-run Journals, San Francisco CA
2021 Pacific Array Workshop, Tokyo (virtual)
2020 The lithosphere-asthenosphere boundary, Paris
2019 Voila workshop, Trinidad
2016 SEISMIX, Aviemore Scotland
2015 New Advances in Geophysics Meeting of the British Geophysical Association, The Lithosphere- Asthenosphere Boundary/Nature of the Tectonic Plate, United Kingdom

– conference session organization

2019 The mantle transition zone, European Geophysical Union (EGU), Vienna Austria
2018 The lithosphere-asthenosphere boundary, American Geophysical Union (AGU), San Francisco, CA
2018 The lithosphere & asthenosphere (JpGU), Tokyo
2018 Structure and evolution of the oceanic crust and upper mantle, European Geophysical Union (EGU), Vienna Austria

2017 Diverse Perspectives on the Lithosphere and the Asthenosphere, American Geophysical Union (AGU), San Francisco, CA
2015 Structure and evolution of the oceanic crust and upper mantle, European Geophysical Union (EGU), Vienna Austria
2014 Structure and evolution of the oceanic crust and upper mantle, European Geophysical Union (EGU), Vienna Austria
2014 Collaborative Studies on Mantle Melting, American Geophysical Union (AGU), San Francisco, CA
2014 Nature of upper mantle discontinuities, EGU, Vienna
2010 The lithosphere-asthenosphere boundary, American Geophysical Union (AGU), San Francisco, CA

–peer review panels
2013 – present NERC (National Environmental Research Council, UK) peer review college member and proposal review panel member

–peer review, funding
National Science Foundation, Earthscope, German Research Foundation, German Cruise Proposal Funding, French National Research Agency, European Research Council, Australia Research Council & Australian Office of National Intelligence, Natural Environment Research Council, UK, and National Science Center, Poland, Singapore Ministry of Education

–peer review, publications
Science Magazine, Nature Magazine, Nature Geoscience, Science Advances, Nature Communications, Geology, Proceedings of the National Academy of Sciences, Nature Scientific Reports, Journal of Geophysical Research, Geochemistry Geophysics Geosystems, Earth and Planetary Science Letters, Physics of the Earth and Planetary Interiors, Geophysical Research Letters, Geophysics Journal International, Solid Earth, Tectonophysics, Geological Society Special Publications, AGU Monographs, Earth Planets and Space

2010 – AGU Outstanding Student Paper Judge (seismology, tectonophysics, study of Earth's deep interior sections)

Service, University
–administration at U. Southampton
2023 – coordinator WHOI Star of the Week seminar series
2021 – 2022 co-Head of Graduate Student Admissions
2021 Consultation committee member for the appointment of the associate dean of research
2012 – 2016 Employability Representative (organize & run career day, give career lectures, locate internships and assist in placements, individual career counselling

Service, Community
–interviews for popular features
2023 Featured in Live Science article about tectonic plates
2021 Featured in Quanta podcast and article on plume trees
2021 Featured in Atlas Obscura article on subduction of seamounts beneath New Zealand
2021 Nature, News & Views, Fluid-rich extinct volcanoes cause small earthquakes beneath New Zealand
2021 Featured on BBC channel 5 special on earthquakes
2021 Featured in Daily Echo, Women in Science Day article
2021 Transition zone work featured in >50 news outlets in > 17 countries with radio & TV interviews & mentions in several print newspapers
2020 Romanche earthquake work featured by CNN, National Geographic, many other news outlets
2020 Featured in Interview with a Researcher, Horizon Magazine

2020 Quoted in an EOS article about super plumes
2020 Mid-Atlantic work highlighted in Royal Astronomical Society 200th anniversary celebration
2020 Quoted by National Geographic in article on super plumes
2019 Quoted by Science magazine article on seismic instrumentation in oceans
2015 Nature, News & Views, A slippery base of the tectonic plate
2013 Featured in Nature article on plumes
2011 Highlighted in Science magazine for *SS* precursor imaging of Pacific Plate
2010 Discover Magazine: 100 Top Science Stories of 2009
2006 Discover Magazine: 100 Top Science Stories of 2005
2002 – present greater than 90 invited talks, including several keynote and award lectures

–community outreach talks
2023 five outreach talks, Lawrence Middle School, Falmouth, UK
2021 outreach talks Portswood Primary School, Southampton, UK
2014 outreach talk to Southampton geology club, UK
2005 – 2007 Science Outreach Teacher, Vartan Gregorian Elementary, Providence, RI, USA

Membership
2012 – 2022 Women in Ocean and Earth Science group at U. Southampton
2002 – present, Member, American Geophysical Union (AGU)

Selected Invited Presentations
Feb. 2024, Ocean Sciences, New Orleans
Dec. 2023, AGU meeting X 2
Dec. 2023, Open access publishing & EDI
Dec. 2023, Sonardyne meeting, San Diego
Dec. 2023, San Diego State University
Oct. 2023, Cambridge
Oct. 2023, U. Buffalo
July 2023, CIDER, Berkeley, California
April 2023, SSA, Puerto Rico
April 2023 Pressure Seafloor Geodesy Workshop, U. Rhode Island
Feb. 2023 U. Rhode Island
Feb. 2023 Brown U.
Dec. 2022 AGU meeting X 2
Nov. 2022 Geologic Survey of Canada
April 2022 Scripps Institution Ocean.
March 2022 Nanyang Technological U.
Dec 2021 AGU meeting
Nov 2021 ORFEUS meeting
Oct 2021 Oregon State
Sept 2021 Michigan State University
May 2021 Pacific Array Workshop
March 2021 Marine Seismology Symp.
Jan. 2021 Wood Hole Ocean. Inst.
Nov. 2020 Rifts & Rifted Margins
March 2020 U. Washington
Feb. 2020 Lamont Doherty
Dec. 2019 AGU meeting X 2
Sept 2019 Voila, Trinidad
July 2019 Harvard University
July 2019 Woods Hole Ocean. Inst.
Feb. 2019 University of Delaware
Jan. 2019 Cambridge
Nov. 2018 BGA NAG, Edinburgh
Oct. 2018 Shenzhen Uni., China
July 2018 Don Forsyth Symp.
May 2018 SSA, Miami, FL
May 2018 JpGU Tokyo
April 2018 EGU, Vienna
Oct. 2017 Uni. College London
Sept. 2017 Royal Holloway
Sept. 2017 OBSIP, Portland ME
Aug. 2017 IASPEI, Kobe Japan
Aug. 2017 Crust to Core, Omishima, Japan
May 2017 JpGU X 2
Jan. 2017 University of Hawaii
Oct. 2015 Royal Astronom. Society London
Sept. 2015 Deep Volatiles, Oxford
July 2015 CIDER, Berkeley, California
April 2015 EGU, Vienna
March 2015 NoMan workshop, Tokyo
Sept. 2014 University of Bergen
Sept. 2014 Bullerwell Lecture, Liverpool
April 2014 Bullerwell Lecture, Vienna
Dec. 2013 AGU meeting
Nov. 2013 College of France
Feb. 2013 Boston U.
Dec. 2012 AGU meeting
Nov. 2012 University College London
Aug. 2012 IGC, Brisbane, AU

July 2012 Oxford
June 2012 IPGP, Paris
May 2012 Cambridge
April 2012 EGU, Vienna Dec. 2011 AGU
Oct. 2011 Ocean Mantle Dyn., Tokyo
Sept. 2011 EarthScope LAB, Portland
Aug. 2011 U. Washington
June 2011 U. Southampton
June 2011 Harvard, Dziewonski Symp.
March 2011 U. Maryland,
Nov. 2010 Columbia, LDEO
Nov. 2010 Carnegie, DTM
June 2010 Cambridge
Jan. 2010 U. Southampton
Dec. 2009 AGU, San Francisco
June 2009 DefLAB, Dublin
May 2009 U. Alaska Fairbanks
April 2009 NERC Panel, U.K.
April 2009 U. Liverpool
April 2009 U. Leeds
March 2009 U. Texas Austin
Feb. 2008 Berkeley
Nov. 2008 U. Oklahoma
Aug. 2008 IGC, Oslo, Norway
Feb. 2008 U. Southern California
Nov. 2007 U. Cal., Santa Cruz
July 2007 U. Cal., San Diego
Oct. 2006 Yale
Jan. 2006 Woods Hole Ocean. Inst.
Aug. 2005 Frejus, France

Submitted manuscripts

1. *Dai, Y., *S. Tharimena, C. A. Rychert, N. Harmon, A global SS precursor method for imaging discontinuities: the Moho and beyond (2023) *Geophys J Int, submitted.*
2. *Yang, X., **C. A. Rychert,** N. Harmon, S. Goes, A. Rietbrock, L. Lynch, Chemical anomalies from ancient tectonics drive plates deep into Earth (2023), *submitted*
3. Liu, T., K. Wang, *Y. Xie, B. He, T. Lei, N. Du, P. Tong, Y. Yang, C. A. Rychert, N. Harmon, G. Grasselli, Q. Liu (2023) Cube2sph: 2 A Toolkit Enabling Flexible and Accurate Continental-scale Seismic Wave Simulations using the SPECFEM3D Package, *Computers and Geosciences, submitted*
4. **Rychert, C. A., *Y. Dai, S. Ozaydin, E. Debayle, N. Harmon, E. J. Chin, C. P. Conrad, G. Hirth, S. Naif, K. Selway, I. Artemieva (2023), An interdisciplinary view of the lithosphere-asthenosphere boundary, *Nature Reviews Earth & Environment (invited), submitted*

Peer Reviewed Publications

1. *Hicks, S., L. Bie, **C. A. Rychert**, N. Harmon, S. Goes , A. Rietbrock, S. Wei, J. Collier, T. Henstock, L. Lynch, J. Prytulak, C. Macpherson, D. Schlaphorst, J. Wilkinson, J. Blundy, G. Cooper, J. M. Kendall, and the VoiLA working group (2023) Slab to back-arc to arc: fluid and melt pathways through the mantle wedge beneath the Lesser Antilles, *Science Advances,* doi:10.1126/sciadv.add2143
2. *Leptokaropoulos, K., **C. A. Rychert,** N. Harmon, *D. Schlaphorst, I. Grevemeyer, J. M. Kendall, S. C. Singh (2023) Broad fault zones enable deep fluid transport and limit earthquake magnitudes, *Nature Communications,* doi:10.1038/s41467-023-41403-6
3. *Dai, Y., **C. A. Rychert**, N. Harmon, Slow deep mantle upwelling coupled to upper mantle dynamics below Cascadia (2023) *J Geophys Res* doi:10.1029/2023JB026374
4. Kendall, J. M., D. *Schlaphorst, **C. A. Rychert,** N. Harmon, *S. Tharimena, *M. Agius (2023) Seismic anisotropy indicates organised melt beneath the Mid-Atlantic Ridge aids seafloor spreading, *Geology,* doi:10.1130/G51550.1
5. *Chambers, E. L., N. Harmon, **C. A. Rychert**, D. Keir (2023) Anisotropic Seismic Structure of the Northern East African Rift System and Red Sea from Surface Waves, *in Red Sea Volume, accepted*

6. *Xie, Y., **C. A. Rychert,** and N. Harmon, (2023) Elastic and anelastic adjoint tomography using Frechet and full Hessian kernels*, Geophys. J. Int.,* doi:10.1093gjiggad114
7. *Schlaphorst, D., **C. A. Rychert**, N. Harmon, J. M. Kendall, *S. Hicks, *P. Bogiatzis, and R. Abercrombie (2023) Local seismicity around the Chain Transform Fault at the Mid-Atlantic Ridge from OBS observations, *Geophs J Int,* doi:10.1093/gji/ggad124
8. *Leptokaropoulos, K., **C. A. Rychert,** N. Harmon, *D. Schlaphorst, J. M. Kendall (2023) Seismicity properties of the Chain Transform Fault inferred using data from the PI-LAB experiment *J Geophys Res,* doi:10.1029/2022JB024804
9. Lindner, M., A. Rietbrock, *S. Hicks, J. Collier, S. Goes, N. Harmon**, C. A. Rychert,** T. Henstock (2023) Bayesian regional moment tensor from ocean bottom seismograms recorded in the Lesser Antilles: Implications for regional stress field, *Geosphys. J. Int*., doi:10.1093/gji/ggac494
10. Rowe, C., *M. Agius, J. Convers, G. Funning, C. Galasso, *S. Hicks, T. Huynh, J. Lange, T. Lecocq, H. Mark, R. Okuwaki, T. Ragon, **C. A. Rychert**, S. Teplitzky, & M. van den Ende (2022). The launch of Seismica: a seismic shift in publishing. *Seismica*, 1(1), doi:10.26443/seismica.v1i1.255
11. *Bogiatzis, P., **C. A. Rychert**, N. Harmon, *Y. Xie (2022) Fast calculation of spatial sensitivity kernels for converted waves in arbitrary heterogeneous media using graph theory, *Geophys J Int,* doi:10.1093/gji/ggac078
12. Harmon, N., G. Laske, W. Crawford, and **C. A. Rychert** (2022) Tilt corrections for normal mode observations on ocean bottom seismic data, an example from the PI-LAB experiment, *Seismica,* doi:10.26443/seismica.v1i1.196
13. Harmon, N., A. Masoudi, A., **C. A. Rychert,** J. Davis, *W. Buffett, *B. Chichester, *Y. Dai, G. Brambilla, *P. Bogiatzis, J. Snook, L. van Putten (2022) Coupling methods for surface deployment of DAS systems, *Near Surface Geophysics,* doi:10.1002/nsg.12232
14. Harmon, N., **C. A. Rychert**, *Y. Xie, *P. Bogiatzis, (2022) 2-D analytic P-to-S and S-to-P finite frequency kernels, *Geochem, Geophys, Geosyst,* doi:10.1029/2021GC010290
15. *Chambers, E., N. Harmon, **C. A. Rychert**, R. J. Gallacher, D. Keir (2022) Imaging the seismic velocity structure of the crust and upper mantle in the northern East African Rift using Rayleigh wave tomography, *Geophys J Int,* doi:10.1093/gji/ggac156
16. Bie, L., S. *Hicks, A. Rietbrock, S. Goes, J. Collier, **C. A. Rychert,** N. Harmon, B. Maunder, & the VoiLA Team (2022) Imaging slab-transported fluids and their deep dehydration from seismic velocity tomography in the Lesser Antilles subduction zone, *Earth Planet Sci Lett*, doi:10.1016/j.epsl.2022.117535
17. **Rychert, C. A.**, *S. Tharimena, N. Harmon, J. M. Kendall, S. Constable, S. Wang, *P. Bogiatzis, *D. Schlaphorst, and *M. Agius (2021) A dynamic tectonic lithosphere-asthenosphere boundary at the equatorial Mid-Atlantic Ridge, *Earth Planet Sci Lett,* doi:10.1016/j.epsl.2021.116949
18. *Agius, M., **C. A. Rychert**, N. Harmon, *S. Tharimena, J. M. Kendall (2021) A thin mantle transition zone beneath the equatorial Mid-Atlantic Ridge*, Nature,* doi:10.1038/s41586-020-03139-x
19. *Saikia, U, **C. A. Rychert,** N. Harmon, and J. M. Kendall (2021) Seismic attenuation at the equatorial Mid-Atlantic Ridge constrained by local Rayleigh wave analysis from the PI-LAB experiment, *Geochem, Geophys, Geosyst,* doi:10.1029/2021GC010085.

20. *Leptokaropoulos, K., N. Harmon, *S. Hicks, **C. A. Rychert,** *D. Schlaphorst, J. M. Kendall (2021) Tidal Triggering of Microseismicity at the Equatorial Mid-Atlantic Ridge, Inferred from the PI-LAB Experiment, *J. Geophys Res,* doi:10.1029/2021JB022251
21. Harmon, N., S. Wang, **C. A. Rychert**, S. Constable, and J. M. Kendall (2021) Shear velocity inversion guided by resistivity structure from the PI-LAB experiment for integrated estimates of partial melt in the mantle, *J. Geophys Res,* 126, 8, doi:10.1029/2021JB022202
22. *Xie, Y., **C. A. Rychert**, N. Harmon, Q. Liu, and D. Gajewski, (2021), On-the-fly full hessian kernel calculations based upon seismic wave simulations, *Seism Res Lett,* doi:10.1785/0220200410.
23. Hier-Majumder, S., M. D. Ballmer, *M. Agius, **C. A. Rychert**, and N. Harmon (2021) Melt leakage from the Hawaiian Plume above the mantle transition zone, *Phys Earth & Plant Int,* doi:10.1016/j.pepi.2021.106813
24. *Chambers, E., N. Harmon, **C. A. Rychert**, and D. Keir (2021) Variations in melt emplacement beneath the northern East African Rift from radial anisotropy, *Earth Planet Sci Lett,* 573, 117150, doi:10.1016/j.epsl.2021.117150
25. *Bogiatzis, P. **C. A. Rychert,** N. Harmon (2021) Multiple Graph Realizations method: Improving the accuracy and the efficiency of the Shortest Path Method through random sampling*, Geophys J Int,* doi:10.1093/gji/ggab247
26. *Schlaphorst, D., N. Harmon, J. M. Kendall, **C. A. Rychert** et al., (2021) Variation in crustal and upper mantle structure in the Greater and Lesser Antilles from ambient noise tomography, *Geochem., Geophys., Geosyst,* doi:10.1029/2021GC009800
27. Harmon, N., **C. A. Rychert**, B. Maunder, S. Goes, et al., (2021) Widespread hydration of the back arc and the link to variable hydration of the incoming plate in the Lesser Antilles from Rayleigh Wave imaging, *Geochem., Geophys., Geosyst,* doi: 10.1029/2021GC009707
28. *Possee, D., **C. A. Rychert**, N. Harmon, and D. Keir (2021) Seismic Discontinuities across the North American Caribbean Plate Boundary from S-to P- Receiver Functions, *Geochem., Geophys., Geosyst.,* doi:10.1029/2021GC009723
29. Braszus, B., R. Allen, S. Goes, A. Rietbrock, J. Collier, N. Harmon, T. Henstock, *S. Hicks, **C. A. Rychert,** B. Maunder, J. van Hunen, L. Bie, J. Blundy, G. Cooper, R. Davy, J. M. Kendall, C. Macpherson, J. Wilkinson, Marjorie Wilson (2021) Subduction history of the Caribbean from upper mantle seismic imaging and plate reconstruction, *Nature Comm.,* 10.1038/s41467-021-24413-0
30. *Saikia, U., **C. A. Rychert,** N. Harmon, and J. M. Kendall (2021) Upper mantle anisotropic shear velocity structure at the equatorial Mid-Atlantic Ridge constrained by Rayleigh wave group velocity analysis from the PI-LAB experiment, *Geochem. Geophys., Geosyst.,* doi:10.1029/2020GC009495
31. *Hicks, S. P., R. Okuwaki, A. Steinberg, **C. A. Rychert,** N. Harmon, R. Abercrombie, P. Bogiatzis, *D. Schlaphorst, J. Zahradník, J. M. Kendall, Y. Y., Kousuke Shimizu, and H. Sudhaus (2020) Back-propagating super-shear rupture in the 2016 M7.1 Romanche transform fault earthquake *Nature Geo.,* doi.org/10.1038/s41561-020-0619-9
32. **Rychert, C. A.**, N. Harmon, S. Constable, S. Wang (2020) The nature of the lithosphere-asthenosphere boundary, *J. Geophys. Res. Grand Challenges Centennial Collection (invited)*, doi:10.1029/2018JB016463
33. Fischer, K. M., **C. A. Rychert,** C. Dalton, M. Miller, C. Beghein, D. Schutt (2020) A comparison of oceanic and continental mantle lithosphere, *Phys. Earth & Planet. Int., CIDER special ed.,* doi:10.1016/j.pepi.2020.106600

34. Wang, S., S. Constable, **C. A. Rychert**, N. Harmon (2020) A lithosphere-asthenosphere boundary and partial melt estimated using marine magnetotelluric data at the central Middle Atlantic Ridge, *Geochem., Geophys., Geosyst.,* doi:10.1029/2020GC009177

35. Harmon, N., **C. A. Rychert**, J. Michael Kendall, *M. Agius, *P. Bogiatzis *S. Tharimena (2020) Evolution of the oceanic lithosphere in the equatorial Atlantic from Rayleigh Wave tomography, evidence for small-scale convection from the PI-LAB experiment, *Geochem., Geophys., Geosyst.,* doi:10.1029/2020GC009174

36. *Chichester, B., **C. A. Rychert,** N. Harmon, A. Rietbrock, J. Collier, T. J. Henstock, S. Goes (2020) Sediment characterisation beneath the VOILA experiment in the Lesser Antilles from P-to-S conversions*, Geophys. J. Int.*, doi:10.1093/gji/ggaa360

37. Cooper, G., C. G. Macpherson, J. D. Blundy, B. Maunder, R. W. Allen, S. Goes, J. Collier, L. Bie, A. A. Iveson, N. Harmon, L. Bie, *S. P. Hicks, A. A. Iveson, J. Prytulak, A. Rietbrock, **C. A. Rychert**, J. P. Davidson, & the VoiLA team (2020) Variable water input controls evolution of the Lesser Antilles volcanic arc, *Nature,* doi:10.1038/s41586-020-2407-5

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