

EVELYN M. POWELL

Lamont-Doherty Earth Observatory of Columbia University
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RESEARCH INTERESTS

Geophysics and Geodesy | Earth Structure and Rheology | Glacial Isostatic Adjustment |
Ice Sheet Dynamics | Antarctic Tectonics and Subglacial Conditions | Sea-Level Modeling |
Archaeology: Paleoshorelines and Human Migration | Climate Change and Energy Policy

EDUCATION

Doctor of Philosophy | *Earth and Planetary Sciences* 2021
Harvard University

Bachelor of Sciences | *Physics* 2015
University of Texas at Austin, *Honors Program*

Bachelor of Arts | *Liberal Arts* 2015
University of Texas at Austin, *Honors Program*

WORK EXPERIENCE

Postdoctoral Research Scientist 2022 – Present
Columbia University, Lamont-Doherty Earth Observatory

Graduate Research Assistant 2015 – 2021
Harvard University, Department of Earth & Planetary Sciences

Research Assistant 2010 – 2015
University of Texas Institute for Geophysics

HONORS AND AWARDS

Certificate of Distinction in Teaching 2018, 2019
Harvard University

National Science Foundation Graduate Research Fellowship 2016
Harvard University

John F. Curry Endowed Presidential Scholarship 2014
University of Texas at Austin

National Science Foundation Antarctic Service Medal 2013
United States of America

PUBLICATIONS

In Progress

13. **Powell, E. M.**, A. Lloyd, J. Austermann, J. X. Mitrovica, D. Al-Attar (*in prep.*). Adjoint modeling of 3-D Earth sensitivity to modern Antarctic melt, *Geophys. J. Int.*
12. Borreggine, M., K. Latychev, S. Coulson, **E. M. Powell**, J. X. Mitrovica, R. Alley (*in prep.*). Holocene regional ice history of Southwest Greenland as a driver of Viking out-migration, *PNAS*
11. **Powell, E. M.**, K. Latychev, N. Gomez, J. X. Mitrovica (*in revision*). The robustness of geodetically-derived 1-D Antarctic viscosity models in the presence of complex 3-D viscoelastic Earth structure, *Geophys. J. Int.*

Published

10. Borreggine, M., **E. M. Powell**, T. Pico, J. X. Mitrovica, R. Meadow, C. Tryon (2022). Not a bathtub: A consideration of sea-level physics for archaeological models of human migration, *J. Archaeol. Sci.*, 137, 105507.
9. **Powell, E. M.**, L. Pan, M. J. Hoggard, K. Latychev, N. Gomez, J. Austermann, J. X. Mitrovica, (2021). The impact of 3-D earth structure on far-field sea level following interglacial West Antarctic ice sheet collapse, *Quat. Sci. Rev.*, 273, 107256.
8. Coulson, S., M. Lubeck, J. X. Mitrovica, **E. M. Powell**, J. Davis, M. Hoggard (2021). The Global Fingerprint of Modern Ice-Mass Loss on 3-D Crustal Motion, *Geophys. Res. Lett.*, 48, e2021GL095477.
7. Pan, L., **E. M. Powell**, K. Latychev, J. X. Mitrovica, J. R. Creveling, N. Gomez, M. J. Hoggard, P. U. Clark (2021). Reassessing the Contribution of West Antarctica to Last Interglacial Sea Level, *Science Advances*, eabf7787.
6. Tsuji, L. J. S., Z. General, S. R. J. Tsuji, **E. M. Powell**, K. Latychev, J. X. Mitrovica (2020). Akimiski Island, Nunavut, Canada: The Use of Cree Oral History and Sea-Level Retrodiction to Resolve Aboriginal Title, *Arctic*, 73, 421-432.
5. **Powell, E. M.**, N. Gomez, C. Hay, K. Latychev, J. X. Mitrovica (2020). Viscous Effects in the Solid Earth Response to Modern Antarctic Ice Mass Flux: Implications for Geodetic Studies of WAIS Stability in a Warming World, *J. Climate*, 33, 443-459.
4. Pico, T., A. Robel, **E. M. Powell**, A. C. Mix, J. X. Mitrovica (2019). Leveraging the Rapid Retreat of the Amundsen Gulf Ice Stream 13,000 Years Ago to Reveal Insight into North American Deglaciation, *Geophys. Res. Lett.*, 46, 12101-12107.
3. Coulson, S., T. Pico, J. Austermann, **E. M. Powell**, R. Moucha, J. X. Mitrovica (2019). The role of isostatic adjustment and gravitational effects on the dynamics of the Messinian salinity crisis, *Earth Planet. Sci. Lett.*, 525, 115760.
2. Hay, C. C., H. C. P. Lau, N. Gomez, J. Austermann, **E. M. Powell**, J. X. Mitrovica, K. Latychev, D. A. Wiens (2017). Sea level fingerprints in a region of complex Earth structure: The case of WAIS, *J. Climate*, 30, 1881-1892.
1. Goff, J. A., **E. M. Powell**, D. A. Young, D. D. Blankenship (2014). Conditional simulation of Thwaites Glacier bed topography for flow models: incorporating inhomogenous statistics and channelized morphology, *J. Glaciology*, 60, 635-646.

DATA PRODUCTS

2. D. A. Young, D. D. Blankenship, S. D. Kempf, E. Quartini, G. R. Muldoon, **E. M. Powell** (2017). *Ice thickness and related data over central Marie Byrd Land, West Antarctica (GIMBLE.GR2HI2)*. U.S. Antarctic Program (USAP) Data Center
1. D. A. Young, T. G. Richter, **E. M. Powell**, E. Quartini, D. D. Blankenship (2017). *Gravity disturbance data over central Marie Byrd Land, West Antarctica (GIMBLE.GGCMG2)*. U.S. Antarctic Program (USAP) Data Center.

FIELDWORK

Eleuthera, Bahamas	2019
Investigation of sea-level markers (1 week)	
Marie Byrd Land, West Antarctica	2013
Airborne and land-based geophysical survey (1 month)	

INVITED TALKS AND SEMINARS

Incorporating Complex Earth Structure Beneath Antarctica in Modeling of Glacial Isostatic Adjustment: Two Case Studies. Oregon State University CEOAS Quat Tea Seminar, Apr 8, 2021. Seminar.

Diving Deeper into Antarctic Ice-Mantle Interactions. University of Texas Institute for Geophysics, Feb 26, 2021. Colloquium Seminar.

Investigating the bias in GPS-derived 1-D viscosity models due to Antarctica's complex 3-D mantle structure. GIA Training Workshop, Ottawa, Sept 24-26, 2019. Oral presentation.

TEACHING EXPERIENCE

Teaching Certificate 2022
Derek Bok Center for Teaching and Learning, Harvard University

Graduate Teaching Fellow 2018 - 2020
Harvard University
A Brief History of the Earth | Undergraduate survey of Earth history Fall 2018, Spring 2020, Fall 2020
Sea Level Change | Graduate-level seminar in sea-level modeling Spring 2019
Global Geophysics: A Primer | Undergraduate introduction to geophysics Spring 2018

Undergraduate Learning Assistant 2012 - 2013
University of Texas at Austin
Electricity and Magnetism | Undergraduate course for non-physics majors Summer 2013
Mechanics | Undergraduate introductory mechanics for engineering majors Spring 2012

Kung Fu Instructor 2012 - 2015
Shaolin Do Kung Fu, Austin, TX
Kung Fu | Training for adults and children; class levels ranging from white to 2nd degree black belt

OUTREACH AND PUBLIC SERVICE

Session Convener 2021
European Geosciences Union

Reviewer 2020
Geophysical Journal International

Lobbyist, American Geophysical Union 2019, 2020
Geosciences Congressional Visit Day

PROFESSIONAL MEMBERSHIPS

European Geosciences Union 2019-2021

American Geophysical Union 2013-2021

CONFERENCES AND PRESENTATIONS

Powell, E. M., A. Lloyd, J. Austermann, D. Al-Attar, O. Crawford, J. X. Mitrovica (2021). Exploring the Resolving Power of Antarctic Geodetic Measurements Using Adjoint Modeling: Implications for Climate Research. American Geophysical Union Fall Meeting, Dec 13-17, 2021. Oral presentation: Abstract #973778.

Powell, E. M., A. Lloyd, J. Austermann, D. Al-Attar, O. Crawford, J. X. Mitrovica (2021). Exploring the Resolving Power of Antarctic Datasets Using the Adjoint Method: A Novel Route to Improving GIA Models. PALSEA Meeting, Sept 13-16, 2021. Oral presentation.

Powell, E. M., L. Pan, M. J. Hoggard, K. Latychev, N. Gomez, J. Austermann, J. X. Mitrovica (2021). The Impact of 3-D Earth Structure on Far-Field Sea Level Following Interglacial West Antarctic Ice Sheet Collapse. PALSEA Meeting, Sept 13-16, 2021. Poster presentation.

- Powell, E. M., A. Lloyd, J. Austermann, J. X. Mitrovica, D. Al-Attar (2020). The resolving power of Antarctic GNSS observations. American Geophysical Union Fall Meeting, Dec 1-17, 2020. E-Lightning presentation: Abstract #736511.
- Powell, E. M., K. Letychev, N. Gomez, M. Hoggard, J. X. Mitrovica (2019). Investigating the bias in GPS-derived 1-D viscosity models due to Antarctica's complex 3-D mantle structure. American Geophysical Union Fall Meeting, San Francisco, Dec 9-13, 2019. Oral presentation: Abstract #615130.
- Powell, E. M., N. Gomez, M. Hoggard, K. Letychev, H. Lau, J. X. Mitrovica (2019). What do GPS-derived 1-D viscosity models represent given Antarctica's complex 3-D structure? International Union of Geodesy and Geophysics General Assembly, Montreal, July 9-17, 2019. Oral presentation: Abstract #4895
- Powell, E. M., N. Gomez, M. Hoggard, K. Letychev, H. Lau, J. X. Mitrovica (2019). What do GPS-derived 1-D viscosity models represent given Antarctica's complex 3-D structure? European Geosciences Union Spring Meeting, Vienna, Apr 7-12, 2019. Oral presentation: Abstract #11028
- Powell, E. M., N. Gomez, M. Hoggard, K. Letychev, H. Lau, J. X. Mitrovica (2018). What do GPS-derived 1-D viscosity models represent given Antarctica's complex 3-D structure? American Geophysical Union Fall Meeting, Washington, D. C., Dec 10-14, 2018. Oral presentation: Abstract #448199.
- Powell, E. M., C. Hay, K. Letychev, N. Gomez, J. X. Mitrovica (2017). The impacts of 3-D Earth structure on GIA-induced crustal deformation and future sea-level change in the Antarctic. American Geophysical Union Fall Meeting, New Orleans, Dec 11-15, 2017. Oral presentation: Abstract #279315.
- Powell, E. M., Hay, C. C., H. C. P. Lau, N. Gomez, J. Austermann, J. X. Mitrovica, K. Letychev, D. Weins (2016). Sea-level fingerprints in a region of complex Earth structure: The case of WAIS. American Geophysical Union Fall Meeting, San Francisco, Dec 15-19, 2016. Poster: #C33C-0845
- Hay, C. C., H. C. P. Lau, N. Gomez, J. Austermann, E. M. Powell, J. X. Mitrovica, K. Letychev, D. Weins (2016). Sea-level fingerprints in a region of complex Earth structure: The case of WAIS. PALSEA 2016 Workshop, Mount Hood, Sept 19-21, 2016. Poster.
- Powell, E. M., D. A. Young, T. G. Richter, E. Quartini, J. Goff, D. D. Blankenship (2014). Airborne gravity analysis of hypothesized subglacial volcanic edifice in West Antarctica. American Geophysical Union Fall Meeting, San Francisco, Dec 15-19, 2014. Poster: #C53B-0316