

Emily Newsom

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2183 Kenilworth Ave.
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EDUCATION

PhD, Geophysics November, 2016
University of Washington, Seattle, WA, USA.
Dissertation: Thermodynamics Controls on the Global
Ocean Overturning Circulation. *Advisor:* Prof. Cecilia Bitz.

BA, Astrophysics May, 2006
University of California, Berkeley, Berkeley, CA

PROFESSIONAL EXPERIENCE

Research Scientist 2021-2024
New York University, Courant Institute of Mathematical Sciences

Postdoctoral Fellow 2019-2021
University of Oxford, Atmospheric, Oceanic and
Planetary Physics. *Advisor:* Prof. Laure Zanna.

Postdoctoral Fellow 2017-2019
NOAA Climate and Global Change Postdoctoral Fellow
California Institute of Technology, Environmental
Science and Engineering. *Mentor:* Prof. Andrew Thompson.

Research Assistant, University of Washington,
Dept. of Atmospheric Sciences. *Advisor:* Prof. Cecilia Bitz. 2012-2016
Dept. of Earth and Space Sciences. *Advisor:* Prof. Ed Waddington. 2010-2011

Teaching Assistant, University of Washington, Dept. of Earth
and Space Sciences. Course: Earth System and Climate. 2015

Research Assistant, University of Hawaii, Manoa, School of Ocean
and Earth Sciences and Technology. *Advisor:* Prof. Mark Merrifield. 2009-2010

Research Assistant, Columbia University, Dept. of Astronomy. 2008-2009
Advisor: Prof. Marcel Agueros.

Research Assistant, UC Berkeley Space Sciences Lab 2005
Advisor: Dr. Brian Welch

FELLOWSHIPS AND AWARDS

Junior Research Fellow, Kellogg College, University of Oxford 2019-2022
International postdoctoral fellowship awarded in open competition.

NOAA Climate and Global Change Postdoctoral Fellow, 2016-2018
International postdoctoral fellowship awarded in open competition.

Philanthropic Educational Organization Award, 2014-2016
National graduate fellowship awarded in open competition.

Outstanding Student Paper Award, American Geophysical Union, 2015
*For my paper entitled, "Abyssal Overturning and Heat Uptake in a
High-Resolution Climate Model."*

NCAR Visiting Scientist 2015

NSF IGERT Fellow, Program on Ocean Change, <i>National graduate fellowship awarded in open competition.</i>	2011-2013
University of Washington Climate Change Fellow, <i>Graduate fellowship awarded in open competition.</i>	2010-2011
UC Berkeley Dean's List	2002- 2003
California Governor's Scholars Award	2002-2006

PUBLICATIONS

IN PRESS OR PUBLISHED

Nayak, M.S, Bonan, D.B., **Newsom, E.R.**, and Thompson, A.F. Controls on the strength and structure of the Atlantic meridional overturning circulation in climate models (2024). *accepted to Geophysical Research Letters*

Gregory, J.M, Bloch-Johnson, J., Couldrey, M.P. and Exarchou, E., and Griffies, S.M., Kuhlbrodt, T., **Newsom, E.R.**, Saenko, O.A., Suzuki, T. and Wu, Q., Urakawa, S. and Zanna, L. A new conceptual model of global ocean heat uptake. (2023) *Climate Dynamics*. <https://doi.org/10.1007/s00382-023-06989-z>

Newsom, E.R., Zanna, L., and Gregory, J.M. Background pycnocline constrains future global ocean heat uptake efficiency. (2023) *Geophysical Research Letters*. <https://doi.org/10.1029/2023GL105673>

Cheng., L., von Schuckmann, K., Abraham, J., Trenberth, K. , Mann, M., Zanna, L., England, M.H., Zika, J.D., Fasullo, J., Yu, Y., Pan, Y., Zhu, J., **Newsom, E.R.**, Bronselaer, B., Lin, X. Past and future ocean warming. (2022) *Nature Reviews Earth and Environment*. <https://doi.org/10.1038/s43017-022-00345-1>

Bonan, D. B., Thompson A. F. , **Newsom, E.R.**, Sun, S., and Rugenstein, M. Transient and equilibrium responses of the Atlantic overturning circulation to warming in coupled climate models: the role of temperature and salinity. (2022) *Journal of Climate*. <https://doi.org/10.1175/JCLI-D-21-0912.1>

Newsom, E.R., Zanna, L., and Khatiwala, S. Relating patterns of added and redistributed ocean warming. (2022) *Journal of Climate*. <https://doi.org/10.1175/JCLI-D-21-0827.1>

Newsom, E.R., Thompson, A.F., Adkins, J., and Galbraith, E.,T. A hemispheric asymmetry in poleward ocean heat transport across climates: Implications for overturning and polar warming. (2021) *Earth and Planetary Science Letters*. <https://doi.org/10.1016/j.epsl.2021.117033>.

Newsom, E.R., Zanna, L., Khatiwala, S., and Gregory, J.M., The Influence of Warming Patterns on Passive Ocean Heat Uptake. (2020) *Geophysical Research Letters*. doi.org/10.1029/2020GL088429.

Holmes, R.M., Zika, J.D., Ferrari, R., Thompson, A.F., **Newsom, E.R.**, England, M.H., Atlantic ocean heat transport enabled by Indo-Pacific heat uptake and mixing. (2019) *Geophysical Research Letters*. doi.org/10.1029/2019GL085160.

Groeskamp, S., de Lavergne, C., Holmes, R., Tasmitt, V., Chapman., C., **Newsom, E.R.**, and Stanely, G., Climate recorded in seawater: A workshop on water-mass transformation analysis for ocean and climate studies. (2019) *Bulletin of the American Meteorological Society*. [doi:0.1175/BAMS-D-19-0153.1](https://doi.org/10.1175/BAMS-D-19-0153.1).

Newsom, E.R. and Thompson, A.F. Reassessing the role of the Indo-Pacific in the ocean's Global Overturning Circulation. (2018) *Geophysical Research Letters*. [doi:10.1029/2018GL080350](https://doi.org/10.1029/2018GL080350).

Newsom, E.R., Fassbender A.J., Maloney A.E., Bushinsky S.M.. Increasing the usability of climate science in political decision-making. (2016) *Elementa Science of the Anthropocene*. [doi:](https://doi.org/10.1029/2016EL003000)

<http://doi.org/10.12952/journal.elementa.000127>.

Abernathey, R.P., Cerovecki, I., Holland, P.R., **Newsom, E.R.**, Mazloff, M., Talley, L.D., Water-mass transformation by sea ice in the upper branch of the Southern Ocean overturning. (2016). *Nature Geoscience*. doi:10.1038/ngeo2749.

Armour, K.C., Marshall, J., Scott, J.R., Donohoe, A., **Newsom, E.R.** Southern Ocean warming delayed by circumpolar upwelling and equatorward transport. (2016). *Nature Geoscience*. doi:10.1038/ngeo2731.

Newsom, E.R., Bitz, C.M., Bryan, F.O., Abernathey, R., Gent, P.R. Southern Ocean Deep Circulation and heat uptake in a high-resolution climate model.(2016) *Journal of Climate*. doi.org/10.1175/JCLI-D-15-0513.1.

Agueros, M.A., Posselt, B., Anderson, S.F., Rosenfield, P., Homer, L., Haberl, F., **Newsom, E.R.**, Margon, B. No confirmed new isolated neutron stars in the SDSS data release 4. (2011) *Astrophysical Journal*, 6.10.1088/0004-6256/141/6/176.

Agueros, M.A., Anderson, S.F., Hawley, S.L., **Newsom, E.R.**, Silvestri, N.M., Szkody, P., Covey, K.R., Voges, W. (2009). X-ray-emitting stars identified from the ROSAT all-sky survey and the SDSS. *Astrophysical Journal*, 10.1088/0067-0049/181/2/444.

NON-PEER REVIEWED CONTRIBUTIONS

Interactive teaching module for the "Earth System and Climate" graduate course (available upon request).

Publicly available data products regarding trends and distributions of Pacific Storms for the NOAA Decision Support Tools, available at: <http://www.pacificstormsclimatology.org> (2009-2010).

SELECT ORAL PRESENTATIONS

2023

American Geophysical Union (AGU) Annual Meeting, San Francisco, California: Background pycnocline depth constrains future Ocean Heat Uptake Efficiency (**Invited**).

2020

Woods Hole Oceanographic Institution Climate and Paleoclimate Seminar, virtual: Understanding patterns of ocean warming (**Invited**).

Equilibrium Climate Sensitivity (ECS) and Cloud Feedbacks Symposium, virtual: The influence of geostrophic adjustment on ocean warming patterns (**Invited**).

Ocean Sciences Meeting (OSM), San Diego California: Closing the Loop: Indo-Pacific Control on Ocean Overturning Across Climates.

2019

American Geophysical Union (AGU) Annual Meeting, San Francisco, California: Closing the Loop: Re-configuring the ocean's global overturning circulation across climate states.

Department Colloquium, Lamont Doherty Earth Observatory, Palisades, New York: The Global Overturning circulation and Ocean Heat Uptake (**Invited**).

Atmosphere-Ocean Science Colloquium, New York University, New York City, New York: Constraining the Regional and Global Efficiency of Ocean Heat Uptake (**Invited**).

Conference on Atmospheric and Oceanic Fluid Dynamics, Portland, Maine: Controls on Ocean Heat

Uptake: A Transient Green's Function Approach.

Water-Mass Transformation Workshop, UNSW, Sydney, Australia: Indo-Pacific Water Mass Transformation sustains Global Ocean Overturning.

2018

Earth Sciences Seminar, California Institute of Technology, Pasadena, California: Low-latitude Energetic Constraints on the Ocean State (**Invited**).

Department Colloquium, Scripps Institute of Oceanography, San Diego, California: Indo-Pacific Controls on the Ocean Circulation across Climates (**Invited**).

AMOC/UK RAPID International Meeting, Coconut Grove, Florida: The Thermodynamics of the AMOC: A Historical and Global Context (**Invited**).

Ocean Sciences Meeting, Portland, Oregon: The Importance of Zonal Structure in Southern Ocean Surface Forcing (**Invited**).

Ocean Sciences Meeting, Portland, Oregon: Thermodynamic Constraints on the Global Overturning Circulation.

2017

Department of the Geophysical Sciences Friday Seminar, University of Chicago, Chicago, Illinois: Inferring the Global Ocean's Overturning Circulation from Ocean Thermodynamics (**Invited**).

Conference on Atmospheric and Oceanic Fluid Dynamics, Portland, Oregon: A Thermodynamic Model of the Global Ocean Overturning Circulation.

IAMAS-IAPSO-IAGA Joint Conference, Capetown, South Africa: Thermodynamic Constraints on the Global Overturning Circulation.

Southern Ocean Workshop, National Center for Atmospheric Research, Boulder, Colorado: The Thermodynamic Role of the Southern Ocean in the Global Overturning Circulation.

2016

Ocean Sciences Meeting, New Orleans, Louisiana: The Role of Antarctic Sea Ice in Abyssal Ocean Heat Uptake.

2015

American Geophysical Union (AGU) annual meeting, San Francisco, California: Abyssal Overturning and Heat Uptake in a High-Resolution Climate Model (winner of the Outstanding Student Presentation Award).

Interdisciplinary Polar Science in Svalbard (IPSiS) Meeting, Longyearbyen, Svalbard: The role of the MOC in the asymmetric warming of the Polar Regions.

Dynamics Colloquium, Department of Atmospheric Sciences, University of Washington, Seattle, Washington: Deep Southern Ocean Heat Uptake and Climate Change.

2014

Scientific Committee on Antarctic Research (SCAR), Auckland, New Zealand: The Sensitivity of Modeled Abyssal Ocean Heat Uptake to Ocean and Sea Ice Resolution.

Atlantic Meridional Overturning Circulation US Team Meeting, Seattle, Washington: The Resolution-dependent Role of the AMOC in Southern Ocean Heat Uptake.

2013

Graduate Climate Conference (GCC), Eatonville, Washington: Antarctic Sea Ice and Pathways into the Abyssal Ocean.

PROFESSIONAL AND COMMUNITY SERVICE

Conveyor for the session: Water-mass Analyses and Transformation for Ocean Physics, Biogeochemistry and Climate Studies, Ocean Sciences Meeting, San Diego, California accepted for 2020

Conveyor for the session: The Ocean as a Mediator of Climate and Climate Change, Ocean Sciences Meeting, Portland, Oregon 2018

Organizer and participant, “Ask a Climate Scientist” Pop-Up Series 2017-present

Postdoctoral liaison for the Caltech Women in Geosciences (WinGs) program 2017-2019

Committee member, American Meteorological Society Committee on Polar Meteorology and Oceanography 2015-present

Climate science advisor to Washington State Senator Kevin Ranker 2012-2015

Volunteer Community Educator, Pacific Science Center 2010-2016

Organizer, Energetic perspectives on the climate system graduate seminar, University of Washington 2014-2015

Organizing committee member, Graduate Climate Conference (GCC), Eatonville, WA 2013

Organizer, Ice-ocean-atmospheric interactions graduate seminar University of Washington 2012-2013

Member, American Geophysical Union, American Meteorological Society, Society for Women in Marine Sciences, Oxford Women in Physics Society.

Reviewer, Geophysical Research Letters, Nature, Journal of Climate, Climate Dynamics, Earth and Planetary Science Letters, Ocean Modelling, Elementa.