

# Ethan Chen Campbell

312 Ocean Sciences (OCN) Building  
School of Oceanography, University of Washington  
Box 357940, 1501 NE Boat Street, Seattle, WA 98195

*last updated August 1, 2021*

[ethan-campbell.github.io](https://ethan-campbell.github.io)  
[ethancc@uw.edu](mailto:ethancc@uw.edu)  
(224) 388-0301

## EDUCATION

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deg. exp. 2023 JANUARY 2019	<b>University of Washington</b> , Seattle, WA Ph.D. candidate in Physical Oceanography M.S. in Physical Oceanography
MAY 2016	<b>Princeton University</b> , Princeton, NJ A.B. in Geosciences, <i>magna cum laude</i>

## RESEARCH

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AUGUST 2016 – present	<b>Graduate research fellow</b> , School of Oceanography, Univ. of Washington <i>Advisor</i> : Stephen C. Riser Studying the role of the ice-covered Southern Ocean in climate using biogeochemical Argo floats and remote sensing, with a focus on sea ice processes and offshore polynyas.
SEPTEMBER 2015 – MAY 2016	<b>Senior thesis</b> , Department of Geosciences, Princeton University <i>Advisor</i> : Daniel M. Sigman Analyzed isotopic imprints of nitrate assimilation, denitrification, and N <sub>2</sub> fixation in South Atlantic water masses through analysis of samples collected on R/V S.A. Agulhas II in 2015.
JUNE 2015 – AUGUST 2015	<b>R/V S.A. Agulhas II</b> (SOSCEX III, SAMOC-SA, GEOTRACES), Southern Ocean <i>Advisor</i> : Sarah E. Fawcett (University of Cape Town) Research cruise to Antarctic winter ice edge. Organized collection of over 500 samples for nitrate isotope analysis. Assisted with trace-metal-clean sampling for dFe and pFe analysis.

## PUBLICATIONS

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von Berg, L., Prend, C.J., **Campbell, E.C.**, Mazloff, M.R., Talley, L.D., Gille, S.T. (2020). Weddell Sea phytoplankton blooms modulated by sea ice variability and polynya formation. *Geophysical Research Letters*, **47**(11), e2020GL087954. doi:[10.1029/2020GL087954](https://doi.org/10.1029/2020GL087954).

→ Press release: [Princeton University](#)

**Campbell, E.C.**, Wilson, E.A., Moore, G.W.K., Riser, S.C., Brayton, C.E., Mazloff, M.R., Talley, L.D. (2019). Antarctic offshore polynyas linked to Southern Hemisphere climate anomalies. *Nature*, **570**(7761), 319-325. doi:[10.1038/s41586-019-1294-0](https://doi.org/10.1038/s41586-019-1294-0).

→ Press releases: [University of Washington](#), [Scripps Institution of Oceanography](#)

Wilson, E.A., Riser, S.C., **Campbell, E.C.**, Wong, A.P.S. (2019). Winter upper-ocean stability and ice-ocean feedbacks in the sea ice-covered Southern Ocean. *Journal of Physical Oceanography*, **49**(4), 1099-1117. doi:[10.1175/JPO-D-18-0184.1](https://doi.org/10.1175/JPO-D-18-0184.1).

Swart, S., **Campbell, E.C.**, Heuzé, C.H., Johnson, K., Lieser, J.L., Massom, R., Mazloff, M.R., Meredith, M., Reid, P.A., Sallée, J.-B., Stammerjohn, S. (2018). Return of the Maud Rise polynya: Climate litmus or sea ice anomaly? [in “State of the climate in 2017”]. *Bulletin of the American Meteorological Society*, **99**(8), S188-S189. doi:[10.1175/2018BAMSStateoftheClimate.1](https://doi.org/10.1175/2018BAMSStateoftheClimate.1).

Marconi, D., Sigman, D.M., Casciotti K.L., **Campbell, E.C.**, Weigand, M.A., Fawcett, S.E., Knapp, A.N., Rafter, P.A., Ward, B.B., Haug, G.H. (2017). Tropical dominance of N<sub>2</sub> fixation in the North Atlantic Ocean. *Global Biogeochemical Cycles*, **31**(10), 1608-1623. doi:[10.1002/2016GB005613](https://doi.org/10.1002/2016GB005613).

**Campbell, E.C.** (2016). Where three oceans meet: Nitrate isotope measurements from the South Atlantic along 34.5°S. Senior thesis, Department of Geosciences, Princeton University. Available upon request, or at [arks.princeton.edu/ark:/88435/dsp01j3860941p](https://arks.princeton.edu/ark:/88435/dsp01j3860941p).

## FELLOWSHIPS, AWARDS, AND ACTIVITIES

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MAY 2020 (postponed due to COVID)	Visiting collaborator   <i>NASA Goddard Space Flight Center</i> Invited for 3-week visit to Cryospheric Sciences Laboratory, with funding from Earth System Science Center (ESSIC), University of Maryland.
2017–2021	National Defense Science and Engineering Graduate (NDSEG) Fellowship Sponsored by Office of Naval Research. 4 years of tuition support plus \$153,600 in stipend payments. Approximately 200 fellowships awarded out of over 3,500 applicants.
2017	National Science Foundation (NSF) Graduate Research Fellowship Declined in favor of NDSEG. \$138,000 for 3 years of graduate support.
2016–2019	Achievement Rewards for College Scientists (ARCS) Foundation Fellowship \$17,500 of additional graduate support over 3 years.
2016–2017	Program on Climate Change (PCC) Graduate Fellowship   <i>University of Washington</i> Research assistantship and tuition support for 9 months. Sole awardee from departmental cohort.
2016	Chairman’s Award   <i>Department of Geosciences, Princeton University</i> Awarded to recognize ‘special curricular and scientific achievement over an undergraduate career.’
2016	Elected to membership in the Society of Sigma Xi
2015–2016	Edmund Hayes Sr. ‘18 grant for senior thesis research   <i>Princeton Environmental Institute</i>

## PRESENTATIONS AS FIRST AUTHOR

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**Campbell, E.C., Riser, S.C.** Antarctic sea ice formation and melt rates estimated from under-ice float observations. Southern Ocean Carbon and Climate Observations and Modeling (SOCCOM) Virtual Annual Meeting, June 2021. *Oral*.

**Campbell, E.C., Christensen, K., Nuwer, M.** [Cracking the code: A flipped, virtual approach to teaching Python](#). UW Symposium on Teaching and Learning, Seattle, WA, April 2021. *Virtual*.

**Campbell, E.C., Riser, S.C.** [Antarctic sea ice formation and melt rates estimated from under-ice ocean observations](#). AGU/ASLO/TOS Ocean Sciences Meeting, San Diego, CA, February 2020. *Oral*.

**Campbell, E.C.** [New perspectives on Southern Ocean offshore polynyas and deep convection](#). AOS Colloquium, NYU Courant Institute of Mathematical Sciences, New York, NY, September 2019. *Invited*.

**Campbell, E.C., Wilson, E.A., Moore, G.W.K., Riser, S.C., Brayton, C.E., Mazloff, M.R., Talley, L.D.** [Reappearance of Weddell Sea offshore polynyas driven by Southern Hemisphere climate anomalies](#). IGS Sea Ice Symposium, Winnipeg, Canada, August 2019. *Oral*.

**Campbell, E.C., Wilson, E.A., Moore, G.W.K., Riser, S.C., Brayton, C.E., Mazloff, M.R., Talley, L.D.** [Deep convection in the 2016 and 2017 Weddell Sea polynyas](#). 6th Argo Science Workshop, Tokyo, Japan, October 2018. *Oral*.

**Campbell, E.C., Wilson, E.A., Moore, G.W.K., Riser, S.C., Brayton, C.E., Mazloff, M.R., Talley, L.D.** Reappearance of Weddell Sea polynyas in 2016 and 2017. Southern Ocean Carbon and Climate Observations and Modeling (SOCCOM) Annual Meeting, Princeton University, Princeton, NJ, June 2018. *Oral*.

**Campbell, E.C.**, Wilson, E.A., Moore, G.W.K., Brayton, C.E., Riser, S.C., Mazloff, M.R., Talley, L.D. [Deep convection in the 2016 Weddell Sea polynya](#). AGU/ASLO/TOS Ocean Sciences Meeting, Portland, OR, February 2018. *Oral*.

**Campbell, E.C.**, Wilson, E.A., Riser, S.C., Moore, G.W.K. Deep convection in the 2016 Weddell Sea polynya. Southern Ocean Carbon and Climate Observations and Modeling (SOCCOM) Annual Meeting, Princeton University, Princeton, NJ, May 2017. *Oral*.

#### SELECTED PRESENTATIONS AS COAUTHOR

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Horowitz, H.M., Gergel, D.R., **Campbell, E.C.**, McCullough, L., Beckerman, L.G., Ismael, A., Cuomo, D., Scherrer, R. [Polar Planetarium Show: a new program connecting local scientists, science center educators, and the public to the poles](#). AGU Fall Meeting, Washington, DC, December 2018. *Oral*.

#### TEACHING AND MENTORSHIP

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SEPTEMBER 2020 – DECEMBER 2020 Co-lead instructor, OCEAN 215 (Methods of oceanographic data analysis) *University of Washington*  
→ [See our poster on redesigning the course using a flipped, virtual teaching model](#).

MARCH 2018 – NOVEMBER 2019 Mentor for Connor Izumi (undergraduate research assistant, Quay Lab) *University of Washington*

JULY 2019 Guest lecture on Antarctic sea ice, ATM S 211 (Climate and climate change) *University of Washington*

SEPTEMBER 2017 – DECEMBER 2017 Teaching assistant, OCEAN 215 (Methods of oceanographic data analysis) *University of Washington*  
→ [Read highlights from students' evaluations of my teaching performance](#).

JUNE 2017 – AUGUST 2017 Mentor for Casey Brayton (University of South Carolina) *SURF REU, Scripps Institution of Oceanography*

#### LEADERSHIP AND SERVICE

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REVIEWER FOR: *Journal of Climate, Ocean Science, Journal of Geophysical Research–Oceans, The Cryosphere*

APRIL 2021 – present Chair, Culture Survey Report Committee *School of Oceanography, University of Washington*

JANUARY 2021 – present Association of Polar Early Career Scientists (APECS) representative, [Weddell Sea–Dronning Maud Land Regional Working Group](#) *Southern Ocean Observing System (SOOS)*

JUNE 2021 Float data tutorial leader, Global Ocean Biogeochemistry (GO-BGC) Array Virtual [Science Workshop](#) *Ocean Carbon and Biogeochemistry (OCB) and US Climate Variability and Predictability (CLIVAR) Programs*  
→ [Our workshop tutorial can be viewed on YouTube](#).

MARCH 2021 Invited panelist, Teaching Assistant Workshop *College of the Environment, University of Washington*

JUNE – DECEMBER 2020	Contributed to departmental efforts towards structural change <i>School of Oceanography, University of Washington</i> → (1) <i>Diversity, Equity, and Inclusion (DEI) Call to Action letter</i> → (2) <i>Curriculum update proposal</i> → (3) <i>Recommendations to mitigate the potential for abuse and harm</i> → (4) <i>Proposed a department-wide screening of ‘Picture a Scientist’ documentary</i>
MAY 2020	Invited panelist, STEM Graduate Fellowships Student Panel <i>Graduate School, University of Washington</i>
SEPTEMBER 2017 – SEPTEMBER 2019	Committee member, <a href="#">Graduate Student Steering Committee</a> <i>Program on Climate Change (PCC), University of Washington</i> → <i>Read an EOS article on how our graduate student leadership has shaped the PCC.</i>
APRIL 2019, MAY 2018	Lead organizer (2019) and organizer (2018), PCC Spring Symposium <i>University of Washington</i> → <i>Read a PCC blog post that I wrote about the 2019 Spring Symposium.</i>
NOVEMBER 2018	Organizer, <a href="#">12th Annual UW/MIT Graduate Climate Conference</a> (Co-chair, Abstract Committee; Chair, A/V Committee) <i>Pack Forest Conference Center, Eatonville, WA</i> → <i>Read a PCC blog post that I co-wrote summarizing the conference.</i>
SEPTEMBER 2018	Invited panelist, New Student Orientation <i>College of the Environment, University of Washington</i>
NOVEMBER 2016 – JULY 2017	Group member, Graduate Recruitment, Retention and Diversity Group (GRRAD) <i>College of the Environment, University of Washington</i>
FEBRUARY 2017	Application reviewer, 2017 Doris Duke Conservation Scholars Program <i>University of Washington</i>

## PUBLIC ENGAGEMENT

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RESEARCH FEATURED BY:	<i>Scientific American (2019), Earther (2019), Climate Scientists [podcast] (2019), Popular Science (2019), The Naked Scientists [radio show] (2019), Atlas Obscura (2019), CNET (2019), Mashable (2019), CNN (2019), InsideScience (2019), LiveScience (2019), OceanBites (2020)</i>
PROVIDED COMMENT FOR:	<i>Mashable (2019), Hakai Magazine (2021)</i>
FEBRUARY 2018 – FEBRUARY 2020	Creator and presenter of live planetarium show (“Earth: Pole to Pole”) as Science Communication Fellow (see <a href="#">NSF OPP-1712588</a> ) <i>Willard Smith Planetarium, Pacific Science Center</i>
JANUARY 2019	Invited speaker, 3rd Shift Dance/Pacific Science Center <i>Cornish Playhouse Arts Incubator</i> → <i>Read about the dance performance inspired by our discussion on climate change.</i>
NOVEMBER 2017	Volunteer, Discover Science Weekend <i>Seattle Aquarium</i>

## SELECTED WORKSHOPS ATTENDED

\* DENOTES BY APPLICATION \*\* DENOTES COMPETITIVE TRAVEL FUNDING AWARDED

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- FEBRUARY 2020 \* \*\* [CICE/Icepack Community Tutorial](#)  
*National Center for Atmospheric Research (NCAR), Boulder, CO. Two-day practical training on using the CICE and Icepack sea ice models.*
- JUNE 2019 \* [Cryospheric Science with ICESat-2 Hackweek](#)  
*University of Washington, Seattle, WA. Five-day training and project-based workshop focused on ICESat-2 laser altimetry data.*
- MAY 2019 \* [ECCO Summer School](#)  
*Friday Harbor Laboratories, Friday Harbor, WA. 12-day lecture- and tutorial-based summer school on global state/parameter estimation and ocean modeling using MITgcm.*
- OCTOBER 2017 \* Scientific Committee on Antarctic Research (SCAR) [Great Antarctic Climate Hack](#)  
*Scripps Institution of Oceanography, La Jolla, CA. Four-day interactive workshop on CMIP6 model evaluation using Southern Ocean observations.*
- AUGUST 2017 \* [Polar High-Performance Computing Workshop and Hackathon](#)  
*Institute for Advanced Computational Science, Stony Brook, NY. Four-day training and project exploration using HPDC environments. Project title: "Open-ocean polynyas around Antarctica: Towards a robust record from 1973 to present."*
- JULY 2017 [PyData Seattle](#)  
*Redmond, WA. Tutorials on application of Python techniques for data science.*