

## Education

May 2017 - Ph.D. | Columbia University | NY | USA  
Physical Oceanography, Advisor: Prof. Arnold L. Gordon

Feb 2015 - M.Phil. | Columbia University | NY | USA  
Physical Oceanography, Advisor: Prof. Arnold L. Gordon

May 2012 - M.A. | Columbia University | NY | USA  
Physical Oceanography, Advisor: Prof. Arnold L. Gordon

Aug 2010 - B.Sc. | Christians-Albrechts University/GEOMAR | Kiel | GER  
Physics of the earth system: Oceanography-Meteorology-Geophysics, Advisor: Prof. Arne Biastoch

## Appointments

2020- | University of Hawaii | NY  
Associate Research Scientist, Supervisor: Prof. Ryan Abernathey

2020- | Columbia University, Lamont-Doherty Earth Observatory | NY  
Associate Research Scientist, Supervisor: Prof. Ryan Abernathey

2017- 2020 | Princeton University, Department of Geosciences | NJ  
Postdoctoral Research Associate, Advisor: Prof. Laure Resplandy

2010-2017 | Columbia University, Dept. of Earth & Environmental Sciences | NY  
Graduate Research Associate, Advisor: Prof. Arnold L. Gordon

2009-2010 | GEOMAR, Department of theory and modeling | Kiel | GER  
Research assistant: Climate model data visualization, Advisor: Prof. Arne Biastoch

## Publications

Submitted/Under Review

**Busecke J. J. M.**, L. Resplandy, S. Ditzkovsky, and J. G. John (under review): Diverging fates of the Pacific Ocean oxygen minimum zone and its core in a warming world, **AGU Advances**

Published/In Press

Loose, N., R. Abernathey, I. Grooms, **J. Busecke**, A. Guillaumin, E. Yankovsky, G. Marques, J. Steinberg, A.S. Ross, S. Bachmann, L. Zanna, P. Martin (2022). GCM-Filters: A Python Package for Diffusion-based Spatial Filtering of Gridded Data. **Journal of Open Source Software**

Nummelin, A., J. J. M. **Busecke**, T. W. N. Haine and R. P. Abernathey (2020): Diagnosing the Scale- and Space-Dependent Horizontal Eddy Diffusivity at the Global Surface Ocean, **Journal of Physical Oceanography**

**Busecke**, J. J. M., and R. P. Abernathey (2020): CMIP6 without the interpolation: Grid-native analysis with Pangeo in the cloud, **2020 EarthCube Annual Meeting**, doi: 10.1002/essoar.10504241.1

Bingham, F. M., J. J. M. **Busecke**, and A. L. Gordon (2019): Variability of the South Pacific Subtropical Surface Salinity Maximum, **JGR: Oceans**, doi: 10.1029/2018JC014598

**Busecke, J. J. M., L. Resplandy, and J. P. Dunne (2019):** The Equatorial Undercurrent and the Oxygen Minimum Zone in the Pacific. **Geophysical Research Letters**, doi:10.1029/2019GL082692.

**Busecke, J. J. M., and R. P. Abernathey (2019):** Ocean mesoscale mixing linked to climate variability. **Science Advances**, doi:10.1126/sciadv.aav5014.

Swart, N., **Busecke, J.**, Langendijk, G., et al. (2018), Reflections on the CLIVAR Early Career Scientists Symposium 2016, **npj Climate and Atmospheric Science**, doi:10.1038/s41612-018-0015-y

**Busecke, J., R. P. Abernathey, A. L. Gordon (2017),** Lateral Eddy Mixing in the subtropical salinity maxima of the global ocean, **JPO**, doi: 10.1175/JPO-D-16-0215.1

Gordon, A. L., C. F. Giulivi, J. **Busecke**, and F. M. Bingham (2015), Differences among subtropical surface salinity patterns, **Oceanography**, doi:10.5670/oceanog.2015.02.

Gordon, A. L., B. A. Huber, and J. **Busecke** (2015), Bottom water export from the western Ross Sea, 2007 through 2010, **GRL**, doi:10.1002/2015GL064457.

Bingham, F. M., J. **Busecke**, A. L. Gordon, C. F. Giulivi, and Z. Li (2014), The North Atlantic subtropical surface salinity maximum as observed by Aquarius, **JGR: Oceans**, doi:10.1002/2014JC009825.

**Busecke, J., A. L. Gordon, Z. Li, F. M. Bingham, and J. Font (2014),** Subtropical surface layer salinity budget and the role of mesoscale turbulence, **JGR: Oceans** , doi:10.1002/2013JC009715.

#### Software

**xgcm** - A python package for the analysis of finite-volume ocean general circulation model output.

**xmovie** - Visualization library for easy creation of rich movies from xarray objects.

**cmip6\_preprocessing** - Enables easier computation across CMIP6 models in the cloud.

**cookiecutter-science-project** - A modular project template as guidance for beginner workflows.

**xarrayutils** - Collection of xarray based tools for working with geospatial data.

#### Awards

2016 - Outstanding Student Paper Award - AGU Fall Meeting, San Francisco

2016 - Invitation to the CLIVAR Early Career Science Symposium - Qingdao, China

2014 - NASA Earth and Space Science Fellowship

2014 - Outstanding Student Presentation Award - Ocean Science Meeting, Honolulu

2012 - United States Antarctic Service Medal

2010 - German meteorological society award for top 5 graduates of "Physics of the earth system"

#### Teaching/Workshops

Ocean Hack Week (2021) **Introduction to xarray and cmip6\_preprocessing** Invited Tutorial

Columbia University (2019) **Research Computing in Earth Science: Working with output from general circulation models using xesmf and xgcm** - Interactive Guest Lecture

Princeton University (2019) **Junior Colloquium: Plotting maps in python** - Interactive Guest Lecture

Hun School, Princeton (2018) Invited Guest Lecture

Princeton University (2018) **Earth System Modelling, assessing mitigation strategies: Limits and strengths - A quick look at more complex models** - Guest Lecture and Lab

Columbia University (2013) **Earth Systems** - Teaching Assistant

Columbia University (2012) **Intro to Physical Oceanography** - Teaching Assistant

Columbia University (2012) **Earth Oceans and Atmospheres** - Teaching Assistant

#### Selected Presentations

**AMS Annual Meeting 22 (invited)** | Virtual | "CMIP6 in the cloud - Open, fast, and accessible climate science with Pangeo" (oral)

**OCB Science Meeting 2021 (invited together with V. Tamsitt)** | Virtual | "Ocean CDR storage permanence" (oral)

**OCB Science Meeting 2021 (invited together with V. Tamsitt)** | Virtual | "Ocean CDR storage permanence" (oral)

**Dask Distributed Summit 2021 (invited)** | Virtual | "Dask and the ocean death zones" - Lessons from a real life earth science workflow with a 'fullish' pangeo stack (oral)

**MLSE Conference Columbia 2020 (invited)** | Virtual | Open Source Tools for Big Data (Climate) Science (oral)

**EarthCube Annual Meeting 2020** | Virtual | CMIP6 without the interpolation: Grid-native analysis with Pangeo in the cloud (oral)

**GEO/AOS/PEI Climate Seminar 2020 (invited)** | Princeton, NJ | When details matter to the earth system - From ocean eddies to the Equatorial Undercurrent (oral)

**Ocean Sciences Meeting 2020** | San Diego, CA | How important is the Equatorial Undercurrent for biogeochemistry and global climate predictions? (oral)

**GFDL Lab Review 2019 (invited)** | Princeton, NJ | The Equatorial Undercurrent and the Oxygen Minimum Zone in the Pacific (poster)

**OCB Summer Workshop 2019** | Woods Hole, MA | The equatorial undercurrent and the Oxygen Minimum Zone in the Pacific (poster)

**WHOI PO Seminar 2019 (invited)** | Woods Hole | A fourth dimension to ocean mixing: Mesoscale mixing related to large scale climate variability (oral)

**AGU Fall Meeting 2018** | Washington DC | The importance of the equatorial current system for variability in the oxygen minimum zones (oral)

**OCB Summer Workshop 2018** | Woods Hole | How important are forced changes in the equatorial current system for the extent of tropical oxygen minimum zones? (poster)

**Ocean Deoxygenation Conference 2018** | Kiel, Germany | *How important is the equatorial current system for the extent of the tropical oxygen minimum zones?* (poster)

**Ocean Sciences Meeting** | Portland, OR | 2018 | *Interannual Variability of Ocean Mesoscale Mixing Correlated with ENSO* (oral)

**AGU Fall Meeting** | San Francisco | 2016 | *Time variable eddy mixing in the global Sea Surface Salinity maxima* (received OSPA award)

**CLIVAR Open Science Conference** | Qingdao, China | 2016 | *Time variable eddy mixing in the surface salinity maxima of the global ocean* (poster)

**Ocean Science Meeting** | Honolulu | 2014 | *Evidence for the origin of the subsurface salinity maximum in the subtropical North Atlantic* (received OSPA award)

#### Mentoring

**Dianne Deauna** | 2022 - | PhD committee at the University of Hawaii | PhD committee member

**Dianne Deauna** | 2021 | SParCS Summer Internship | Co-Project Mentor

**Keeley Walsh** | 2018 | Princeton University | Informal mentor for Senior Thesis

**Abigale Wyatt** | 2018 - 2020 | Princeton University | Technical and Scientific Advice for Ph.D. thesis

**Grace Kortum** | 2019 | Princeton University | Informal mentor Junior Thesis

**Anwar Hossein** | 2017- | Brooklyn Boulders Foundation | Mentor for students of underserved communities in NYC

#### Service

2020 - **Session Organizer/ Co-convenor:** OSM20 PS011 - Vertical Transport: Pathways from the Surface to the Interior

2018 - **Session Organizer/ Co-convenor:** AGU18 OS51B: Temporal Variability in Oceanic Mesoscale Activity, from Seasonal to Multidecadal Records I/II

**Journal Reviewer:** Nature, Geophysical Research Letters, Deep-Sea Research Part II, Global Biogeochemical Cycles, Journal of Oceanography, Journal of Geophysical Research: Oceans

**Proposal Reviewer:** National Science Foundation

**Panelist:** NASA ROSES Proposal Review (2016, 2018, 2019)

#### Fieldwork

**Research cruise** - B/O SARMIENTO DE GAMBOA - Mar/Apr 2013 Subtropical North Atlantic  
Assistance with sampling strategy | Underway sampling | Data viz/management

**Research cruise** - R/V KNORR - Sep/Oct 2012 Subtropical North Atlantic  
CTD/LADCP | Underway sampling | Data viz/management

**Research cruise** - R/V NATHANIEL B. PALMER - Jan/Feb 2011 Ross Sea, Antarctica  
CTD/LADCP

**Research cruise** - R/V METEOR - Jan/Feb 2009 Eastern subtropical North Atlantic  
CTD

