

# Miriam F. Sterl

PHD STUDENT · PHYSICAL OCEANOGRAPHY

[✉ miriam.sterl@nioz.nl](mailto:miriam.sterl@nioz.nl) | [🏡 www.miriamsterl.com](http://www.miriamsterl.com) | [/github.com/MiriamSterl](https://github.com/MiriamSterl) | [/in/miriamsterl](https://linkedin.com/in/miriamsterl)

## Education

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### **MSc Climate Physics (average grade 9.0/10)**

UTRECHT UNIVERSITY

Utrecht, the Netherlands

2019 - 2021

- Courses on meteorology, oceanography, coastal processes and the climate system
- MSc advisor: Dr. Femke de Jong. Thesis grade: 8.8/10

### **BSc Physics and Astronomy & BSc Mathematics (cum laude, average grade 9.3/10)**

UTRECHT UNIVERSITY

Utrecht, the Netherlands

2015 - 2019

- Focus on (geophysical) fluid dynamics, numerical modelling and differential equations
- Minor in Computer Science
- BSc advisor: Dr. Erik van Sebille. Thesis grade: 9.1/10

## Professional Experience

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### **PhD Physical Oceanography**

ROYAL NETHERLANDS INSTITUTE FOR SEA RESEARCH (NIOZ) &

INSTITUTE FOR MARINE AND ATMOSPHERIC RESEARCH UTRECHT (IMAU)

't Horntje, the Netherlands

November 2021 - present

- Supervisors: Dr. Sjoerd Groeskamp (NIOZ) and Dr. Michiel Baatsen (IMAU)
- Promotors: Prof. Dr. Gert-Jan Reichart (NIOZ) and Prof. Dr. Henk Dijkstra (IMAU)
- Research focus: mesoscale stirring over topography; parameterising eddy diffusivity

### **Visiting researcher**

UNIVERSITY OF OSLO (UIO)

Oslo, Norway

several periods in 2022 - 2025

- Collaborators: Prof. Dr. Joe LaCasce, Dr. André Palóczy, Prof. Dr. Pål Erik Isachsen

### **Research Assistant**

INSTITUTE FOR MARINE AND ATMOSPHERIC RESEARCH UTRECHT (IMAU)

Utrecht, the Netherlands

2020 - 2021

- Developing a routine for producing ENSO predictions using deep learning techniques
- Supervisor: Prof. Dr. Henk Dijkstra

### **Summer School Assistant**

CENTRE FOR COMPLEX SYSTEMS STUDIES (CCSS)

Utrecht, the Netherlands

2019

- Assisting in organisational tasks of the summer school "Introduction to Complex Systems" for 40 international students

### **Student Member Selection Committee**

MATHEMATICAL INSTITUTE

Utrecht, the Netherlands

2019

- Selecting candidates for a position of Assistant Professor in Applied Mathematics

## Publications

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### PUBLISHED

- Sterl, M.F.**, Palóczy, A., Groeskamp, S., Baatsen, M.L.J., LaCasce, J.H., & Isachsen, P.E. (2025). The joint effects of planetary  $\beta$ , topography and friction on baroclinic instability in a two-layer quasi-geostrophic model. *Journal of Fluid Mechanics*, 1012:A1. <https://doi.org/10.1017/jfm.2025.10172>
- Sterl, M.F.**, LaCasce, J.H., Groeskamp, S., Nummelin, A., Isachsen, P.E., & Baatsen, M.L.J. (2024). Suppression of mesoscale eddy mixing by topographic PV gradients. *Journal of Physical Oceanography*, 54(5):1089–1103. <https://doi.org/10.1175/JPO-D-23-0142.1>
- Sterl, M.F.**, & de Jong, M.F. (2022). Restratification structure and processes in the Irminger Sea. *Journal of Geophysical Research: Oceans*, 127, e2022JC019126. <https://doi.org/10.1029/2022JC019126>
- Sterl, M.F.**, Delandmeter, P., & van Sebille, E. (2020). Influence of barotropic tidal currents on transport and accumulation of floating microplastics in the global open ocean. *Journal of Geophysical Research: Oceans*, 125, e2019JC015583. <https://doi.org/10.1029/2019JC015583>

### IN REVIEW

- Sterl, M.F.**, Palóczy, A., LaCasce, J.H., Baatsen, M.L.J., & Groeskamp, S. Asymmetric effects of topographic slopes on Lagrangian and Eulerian eddy diffusivities in two-layer QG flow. Submitted to *Journal of Geophysical Research: Oceans*. <https://doi.org/10.22541/essoar.176365858.87644610/v1>
- Sterl, M.F.**, Mans, C.J., Naveira Garabato, A.C., & Groeskamp, S. Estimating cross-stream isopycnal eddy diffusivity from mooring observations in the Southern Ocean. Submitted to *Journal of Geophysical Research: Oceans*. <https://doi.org/10.22541/essoar.176279367.76125226/v1>

## Teaching and Supervision

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### Guest lecturer

Utrecht, the Netherlands

2025

UTRECHT UNIVERSITY

- Two guest lectures in the MSc course Dynamical Oceanography
- Topics: quasi-geostrophic dynamics, barotropic and baroclinic instability

### Daily supervisor

't Horntje, the Netherlands

2023

ROYAL NETHERLANDS INSTITUTE OF SEA RESEARCH (NIOZ)

- Daily supervisor of MSc student

### Teaching Assistant

Utrecht, the Netherlands

2016 - 2021

UTRECHT UNIVERSITY

- For 8 courses in the BSc programmes Physics and Astronomy and Mathematics
- Supervising tutorial sessions and grading assignments

## [Presentations](#)

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	<b>Warnemünde Turbulence Days</b> , <i>talk</i>	
2025	The effects of topographic slopes on the vertical structure of Lagrangian and Eulerian eddy diffusivities	Vilm, Germany
2025	<b>European Geosciences Union (EGU) General Assembly</b> , <i>talk</i> The influence of oceanic bottom slopes on eddy mixing in a two-layer model	Vienna, Austria
2024	<b>Gordon Research Seminar (GRS) Ocean Mixing</b> , <i>poster</i> Suppression of eddy diffusivities over a sloping seafloor in a two-layer model	South Hadley, MA, United States
2024	<b>Dutch Earth Science Conference (NAC)</b> , <i>poster</i> Suppression of eddy diffusivities over a sloping seafloor in a two-layer model	Utrecht, the Netherlands
2023	<b>Buy's Ballot Research School (BBOS) symposium</b> , <i>talk</i> Suppression of mesoscale eddy mixing by topographic PV gradients	't Horntje, the Netherlands
2023	<b>International Union of Geophysics and Geodesy (IUGG)</b> , <i>talk</i> Suppression of mesoscale eddy mixing by topographic PV gradients	Berlin, Germany
2022	<b>International Conference for Young Marine Researchers (ICYMARE)</b> , <i>talk</i> How ocean bottom topography impacts eddy mixing	Bremerhaven, Germany
2022	<b>Dutch Earth Science Conference (NAC)</b> , <i>talk</i> How ocean bottom topography impacts eddy mixing	Utrecht, the Netherlands
2022	<b>Gordon Research Seminar (GRS) Ocean Mixing</b> , <i>talk and poster</i> Beyond mean flow suppression: PV suppression of eddy mixing	South Hadley, MA, United States
2021	<b>Dutch Earth Science Conference (NAC)</b> , <i>talk</i> Influence of tidal currents on transport and accumulation of floating microplastic in the ocean	online
2020	<b>Dutch Earth Science Conference (NAC)</b> , <i>poster</i> Do the tides influence the plastic soup?	Utrecht, the Netherlands

## [Awards](#)

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2024	<b>Winner PhD writing competition</b> , Dutch Physics Magazine (NTvN) <a href="#">Link to article (in Dutch)</a>
2024	<b>Poster award</b> , Dutch Earth Science Conference (NAC) <a href="#">Link to poster</a>
2023	<b>Audience award for best presentation</b> , BBOS symposium
2017	<b>Teaching assistant award</b> , Utrecht University

## [Courses](#)

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2023 - 2024	<b>Visualize your Science</b> , 10 weeks (part-time)	online
2022	<b>Air-Ice-Sea Interaction II</b> , 6 weeks The University Centre in Svalbard (UNIS)	Longyearbyen, Norway
2019	<b>Marine Masters Summer Course</b> , 2 weeks Royal Netherlands Institute for Sea Research (NIOZ)	't Horntje, the Netherlands
2019	<b>Winter School on Analysis of Climate Variability</b> , 1 week Leibniz Institute for Baltic Sea Research (IOW)	Warnemünde, Germany

## Service

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	<b>Reviewer,</b>	
2025	Journal of Physical Oceanography; Journal of Advances in Modeling Earth Systems	
	<b>Chair,</b> Gordon Research Seminar on Ocean Mixing	
2022 - 2024	Seminar for early career researchers, preceding the Gordon Research Conference	<i>South Hadley, MA, United States</i>
	<b>Organiser,</b> WomenNetPhysics conference	
2023 - 2024	Conference and networking event on women in physics in the Netherlands <a href="#">Link to article and interview</a>	<i>Utrecht, the Netherlands</i>
2023 - 2025	<b>PhD representative,</b> Department of Ocean Systems at NIOZ	<i>'t Horntje, the Netherlands</i>
2021 - 2024	<b>General Board Member,</b> Dutch Physics Society (NNV)	<i>Amsterdam, the Netherlands</i>
2020 - 2021	<b>Student Ambassador,</b> MSc programme Climate Physics	<i>Utrecht, the Netherlands</i>
2018 - 2020	<b>Committee Member,</b> Study Association A-Eskwadraat	<i>Utrecht, the Netherlands</i>

## Cruises

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2023	<b>Mixation-II,</b> August 22 - 27 Mooring recovery	<i>Bermuda - Bermuda</i>
2022	<b>UNIS cruise,</b> October 31 - November 5 CTD measurements in Isfjorden	<i>Longyearbyen - Longyearbyen</i>
2022	<b>Mixation-I,</b> April 21 - May 1 Deployment of 4 moorings; deployment of Argo floats; CTD measurements	<i>Curaçao - Bermuda</i>

## Outreach

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	<b>Guest lectures for high school students,</b> various schools/events
2023-2025	For various age ranges between 12–18 years Topics: physical oceanography, ocean and climate, working as a scientist
	<b>Talk at symposium on Climate Physics,</b> Study Association Marie Curie
2025	For university students in Physics Topic: physical oceanography, ocean and climate
	<b>Podcast Atomen Enzo,</b> Utrecht University Podcast of the Faculty of Science of Utrecht University for a wide audience
2025	Topics: observational oceanography, ocean eddies, eddy parameterisations <a href="#">Link to podcast episode</a>
	<b>Even Over Morgen,</b> Utrecht University & Utrecht public libraries
2023	Outreach event facilitating conversations between scientists and the public Topics: oceanography, the role of climate scientists in society
	<b>Kindercolleges,</b> Utrecht University
2019	For children aged 8–12 years Topic: plastic soup

## Languages

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**German**, native

**Dutch**, native

**English**, proficient (C2)

**French**, intermediate (B2)

**Norwegian**, beginner (A2)

## Programming languages

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**Python**, proficient

**MATLAB**, intermediate

**C#**, intermediate

**Julia**, intermediate