

# Miriam F. Sterl

PHD STUDENT · PHYSICAL OCEANOGRAPHY

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## 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 UNIVERSITY

Utrecht, the Netherlands

2025

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

### Daily supervisor

ROYAL NETHERLANDS INSTITUTE OF SEA RESEARCH (NIOZ)

't Horntje, the Netherlands

2023

- Daily supervisor of MSc student

### Teaching Assistant

UTRECHT UNIVERSITY

Utrecht, the Netherlands

2016 - 2021

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

## Presentations

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

## Awards

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- 2024 **Winner PhD writing competition**, Dutch Physics Magazine (NTvN)  
[Link to article \(in Dutch\)](#)
- 2024 **Poster award**, Dutch Earth Science Conference (NAC)  
[Link to poster](#)
- 2023 **Audience award for best presentation**, BBOS symposium
- 2017 **Teaching assistant award**, Utrecht University

## Courses

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

## 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	South Hadley, MA, United States
	<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>	Utrecht, the Netherlands
2023 - 2025	<b>PhD representative,</b> Department of Ocean Systems at NIOZ	't Horntje, the Netherlands
2021 - 2024	<b>General Board Member,</b> Dutch Physics Society (NNV)	Amsterdam, the Netherlands
2020 - 2021	<b>Student Ambassador,</b> MSc programme Climate Physics	Utrecht, the Netherlands
2018 - 2020	<b>Committee Member,</b> Study Association A-Eskwadraat	Utrecht, the Netherlands

## Cruises

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

## 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	
2025	Podcast of the Faculty of Science of Utrecht University for a wide audience 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