

# Maurice F. Huguenin

POSTDOCTORAL RESEARCH ASSOCIATE · PHYSICAL OCEANOGRAPHY

Woods Hole Oceanographic Institution, Woods Hole, Massachusetts, USA

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## Research interests

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- Large-scale physical oceanography from the tropics to the Antarctic margin
- Ocean-sea ice and coupled climate modelling
- Internal climate variability and its atmospheric teleconnections
- Ocean heat content
- Central European atmospheric circulation
- Southern Ocean and polar field work

## Work experience

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### Woods Hole Oceanographic Institution

GUEST INVESTIGATOR, CLIMATE VARIABILITY AND CHANGE LAB

Woods Hole, MA, United States

Aug. 2024 - **present**

### University of New South Wales

POSTDOCTORAL RESEARCH ASSOCIATE, CENTRE FOR MARINE SCIENCE AND INNOVATION (CMSI) & AUSTRALIAN CENTRE FOR EXCELLENCE IN ANTARCTIC SCIENCE (ACEAS)

Sydney, NSW, Australia

Jun. 2023 - **present**

### University of New South Wales

PHD CANDIDATE, CLIMATE CHANGE RESEARCH CENTRE (CCRC) & AUSTRALIAN CENTRE OF EXCELLENCE IN CLIMATE EXTREMES (CLEX)

Sydney, NSW, Australia

Jun. 2019 - May 2023

- Setting up, preparing, running and analysing output from ACCESS-OM2, a global ocean-sea ice model in three different horizontal resolutions ( $1^\circ$ ,  $1/4^\circ$  and  $1/10^\circ$ )
- Publishing manuscripts in high-impact scientific journals
- Presenting research at national and international workshops, seminars and conferences
- Outreach activities to translate research findings for the broader public

### Commonwealth Scientific and Industrial Research Organisation

PHYSICAL OCEANOGRAPHY VOYAGE PARTICIPANT

Hobart, TAS, Australia

May 2021 - June 2021

- Recovering and re-deployment of moorings at  $27^\circ\text{S}$  to measure property transports in the East Australian Current
- Operating, sampling and analysing Conductivity, Temperature and Depth (CTD) observations
- Deployment of Argo, Biogeochemical Argo floats and XBT probes

### MeteoSwiss/Swiss Federal Institute of Technology Zurich

RESEARCH ASSISTANT

Zurich, ZH, Switzerland

Sep. 2018 - Apr. 2019

- Organising, running and planning meetings as the research project lead
- Analysing CESM12-LE and CMIP5 coupled climate model output
- Scientific manuscript writing

### University of New South Wales

RESEARCH INTERN, CLIMATE CHANGE RESEARCH CENTRE (CCRC) & AUSTRALIAN CENTRE OF EXCELLENCE IN CLIMATE EXTREMES (CLEX)

Sydney, NSW, Australia

Sep. 2017 - Jul. 2018

- Self-organising and self-funding a research stay in Sydney to complete my Master's thesis abroad
- Designing, running and analysing sensitivity simulations in the global ocean-sea ice model MOM-SIS-025
- Giving seminar and workshop presentations
- Thesis writing in  $\text{\LaTeX}$

## Education

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### University of New South Wales

PHD IN CLIMATE SCIENCE

Sydney, NSW, Australia

Jun. 2019 - May 2023

- Thesis: Processes and Dynamics of Global to Regional Ocean Heat Uptake and Variability
- Link: <https://doi.org/10.26190/unsworks/25224>
- Supervisors: : Ryan M. Holmes & Matthew H. England

## Swiss Federal Institute of Technology Zurich

Zurich, ZH, Switzerland

MSC ETH IN ATMOSPHERIC AND CLIMATE SCIENCE

Sep. 2016 - Jun. 2018

- Thesis: Mechanisms Driving Ocean Heat Uptake and Warm Water Volume Variability During Idealized ENSO Events
- [PDF on github](#)
- Supervisors: : Ryan M. Holmes, Matthew H. England, Iselin Medhaug & Reto Knutti
- Grade: 6. Grading scale: 6 is the highest, 1 is the lowest grade; pass mark is 4

## Swiss Federal Institute of Technology Zurich

Zurich, ZH, Switzerland

BSc ETH IN EARTH SCIENCES

Sep. 2013 - Jun. 2016

- Thesis: Ocean Heat Storage and Implications on Sea Level Rise Using CCSM4 Model Output for 1993-2016
- [PDF on github](#)
- Supervisors: Iselin Medhaug & Reto Knutti
- Grade: 5.5

### Additional scientific training

## Australian Research Council Centre for Excellence in Antarctic Science

Triabunna, TAS, Australia

WINTER SCHOOL ON SEA LEVEL CHANGE

17 - 24 Jun. 2024

## Australian Research Council Centre for Excellence in Antarctic Science

Kioloa, NSW, Australia

WINTER SCHOOL ON SEA LEVEL CHANGE

22 - 26 May 2023

## University of Tasmania, Institute for Marine and Antarctic Studies

Hobart, TAS, Australia

QUANTITATIVE MARINE SCIENCE PHYSICAL OCEANOGRAPHY COURSE

31 Jan. - 4 Feb. 2022

## Australian Research Council Centre of Excellence for Climate Extremes

Melbourne, VIC, Australia

WINTER SCHOOL ON CLIMATE MODELLING

24 - 28 Jun. 2019

## Publications

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I have a profile on [Google Scholar](#). My scientific publications include **four** as first-author and **one** as a co-author.

In progress:

- 7 **Huguenin, M. F.**, Ryan, S., Ummenhofer, C. C. & England, M. H. (2024) Linking the recent decrease in Weddell Sea dense shelf water formation to shifts in the Interdecadal Pacific Oscillation. *In preparation*.
- 6 England, M. H., Li, Z., **Huguenin, M. F.**, Kiss, A. E., Sen Gupta, A. & Rahmstorf, S. (2024) Drivers of the largest ever recorded marine heat wave in the North Atlantic. *In preparation*.

Peer-reviewed and published:

- 5 **Huguenin, M. F.**, Holmes, R. M., Spence, P. & England, M. H. (2024). Subsurface warming of the West Antarctic continental shelf linked to El Niño-Southern Oscillation. *Geophysical Research Letters*, 51, e2023GL104518. <https://doi.org/10.1029/2023GL104518>.
- 4 **Huguenin, M. F.**, Holmes, R. M., & England, M. H. (2022). Drivers and distribution of global ocean heat uptake over the last half century. *Nature Communications*. 13, 4921. <https://doi.org/10.1038/s41467-022-32540-5>.
- 3 **Huguenin, M. F.**, Holmes, R. M., & England, M. H. (2020). Key Role of Diabatic Processes in Regulating Warm Water Volume Variability Over ENSO Events. *Journal of Climate*. 33, 9945–9964. <https://doi.org/10.1175/JCLI-D-20-0198.1>.
- 2 **Huguenin, M. F.**, Fischer, E. M., Kotlarski, S., Scherrer, S. C., Schwierz, C., & Knutti, R. (2020). Lack of Change in the Projected Frequency and Persistence of Atmospheric Circulation Types Over Central Europe. *Geophysical Research Letters*, 47. <https://doi.org/10.1029/2019GL086132>.
- 1 Santoso, et al. (2019). Dynamics and Predictability of El Niño-Southern Oscillation: An Australian Perspective on Progress and Challenges. *Bulletin of the American Meteorological Society*, 100, 403-420. <https://doi.org/10.1175/BAMS-D-18-0057.1>.

## Data sets and analysis code

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- 6 **Huguenin, M. F.**, Holmes, R. H., Spence, P. & England, M. H. (2024). ENSO-Antarctica\_data (Version 20240118) [Data set]. *Zenodo*. <https://doi.org/10.5281/zenodo.10526062>.
- 5 **Huguenin, M. F.**, Holmes, R. H., Spence, P. & England, M. H. (2024). ENSO-Antarctica\_scripts (20240126\_v2) [Analysis code]. *Zenodo*. <https://doi.org/10.5281/zenodo.10570459>.
- 4 **Huguenin, M. F.**, Holmes, R. H. & England, M. H. (2023). ACCESS-OM2 1° resolution global repeat decade full forcing interannual simulation data for 1972-2018 (1.0) [Data set]. *Zenodo*. <https://doi.org/10.5281/zenodo.8343648>.
- 3 **Huguenin, M. F.**, Holmes, R. H. & England, M. H. (2023). ACCESS-OM2 1° resolution global repeat decade forcing control simulation data for 1972-2018 (1.0) [Data set]. *Zenodo*. <https://doi.org/10.5281/zenodo.8339578>.
- 2 **Huguenin, M. F.**, Holmes, R. H. & England, M. H. (2022). Data and analysis scripts for Huguenin et al. (2022), Nature Communications (20220721\_v2) [Analysis code]. *Zenodo*. <https://doi.org/10.5281/zenodo.6873094>.
- 1 **Huguenin, M. F.**, Fischer, E. M., Kotlarski, S., Scherrer, S. C., Schwierz, C., & Knutti, R. (2020) maurice-huguenin/europe\_circulation\_types: Analysis Scripts and Data (20240628\_v2) [Analysis scripts and data]. *Zenodo*. <https://doi.org/10.5281/zenodo.12578019>.

## Selected conference presentations and seminars

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I have presented my research at more than 10 international conferences and various national/international workshops. A full list of my presentations can be seen on my [homepage](#).

### Physical Oceanography Department seminar series

*Woods Hole, MA, United States*

PROCESSES AND DYNAMICS OF GLOBAL TO REGIONAL OCEAN HEAT UPTAKE AND VARIABILITY

1. Oct. 2024

### USCGC Polar Star Public Tour

*Sydney, NSW, Australia*

SCIENCE IN ANTARCTICA, PRESENTATION WITH PHD CANDIDATE HANNAH DAWSON

11. Dec. 2023

### Ocean Circulation and Climate Dynamics Colloquium

*GEOMAR Kiel, online*

DRIVERS AND DISTRIBUTION OF GLOBAL OCEAN HEAT UPTAKE OVER THE LAST HALF CENTURY

26. Jun. 2023

### AGU Fall Meeting

*Chicago, IL, United States*

SUBSURFACE WARMING OF WEST ANTARCTICA DURING EL NIÑO (POSTER PRESENTATION)

12-16. Dec. 2022

### Invited speaker for the Climate, Atmospheric Sciences, and Physical Oceanography Seminar

*La Jolla, CA, United States*

UNDERSTANDING THE DRIVERS OF INTERANNUAL TO MULTI-DECADAL GLOBAL AND REGIONAL OCEAN TEMPERATURE CHANGE

6. Dec. 2022

### Invited speaker for the College of Oceanic and Atmospheric Sciences Seminar

*Oregon State University, online*

KEY ROLE OF DIABATIC PROCESSES IN CHANGING WARM WATER VOLUME VARIABILITY DURING ENSO EVENTS

17. Nov. 2020

### Ocean Sciences Meeting

*San Diego, CA, United States*

DIABATIC CONTRIBUTION TO OCEAN HEAT VARIABILITY DURING ENSO EVENTS, OCEAN SCIENCES MEETING (POSTER PRESENTATION)

17. Nov. 2020

### Australian Meteorological and Oceanographic Society Annual Meeting

*Darwin, NT, Australia*

DIABATIC CONTRIBUTION TO OCEAN HEAT VARIABILITY DURING ENSO EVENTS, OCEAN SCIENCES MEETING (POSTER & ORAL PRESENTATION)

11-14. Jun. 2019

### European Geophysical Union Annual Meeting

*Vienna, Austria*

CHANGES IN THE FREQUENCY AND PERSISTENCE OF CENTRAL EUROPEAN CIRCULATION TYPES (POSTER PRESENTATION)

9-12. Apr. 2019

## Memberships and communities

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|-------|--|----------------|
| APECS | <b>Association of Polar Early Career Scientists</b> , Community member   | 2022 – present |
| AGU   | <b>American Geophysical Union</b> , Full member                          | 2019 – present |
| EGU   | <b>European Geophysical Union</b> , Full member                          | 2018 – present |
| AMOS  | <b>Australian Meteorological and Oceanographic Society</b> , Full member | 2017 – 2022    |

## Honours & Awards

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|---|-----------------------------------|
| <b>Polar Science Early Career Community Office (PSECCO) Conference Travel Grant</b>   | <i>Boulder, CO, United States</i> |
| TOWARDS ATTENDING THE EUROPEAN GEOPHYSICAL UNION ANNUAL MEETING   | <i>Oct. 2024</i>                  |
| <ul style="list-style-type: none"><li>USD 700</li></ul>   |                                   |
| <b>Selected participant</b>   | <i>Lihue, HI, United States</i>   |
| PHYSICAL OCEANOGRAPHY DISSERTATION SYMPOSIUM (PODS) XIII  | <i>Jul. 2024</i>                  |
| <ul style="list-style-type: none"><li>USD 1'400.40 BOS-LIH return flight, lodging + USD ??? per diem reimbursements</li></ul> |                                   |
| <b>Best lightning presentation</b>  | <i>Canberra, ACT, Australia</i>   |
| ANNUAL COSIMA OCEAN MODELLING WORKSHOP  | <i>Sep. 2023</i>                  |
| <ul style="list-style-type: none"><li>Choice of pottery</li></ul>   |                                   |
| <b>Best PhD Student Paper published in the centre in 2022</b>   | <i>Lorne, VIC, Australia</i>      |
| ARC CENTRE OF EXCELLENCE FOR CLIMATE EXTREMES (CLEX)  | <i>Nov. 2022</i>                  |
| <ul style="list-style-type: none"><li>AUD 500</li></ul>   |                                   |
| <b>Best PhD Student Presentation</b>  | <i>Sydney, NSW, Australia</i>     |
| CLIMATE CHANGE RESEARCH CENTRE POSTGRADUATE REVIEWS   | <i>May 2022</i>                   |
| <ul style="list-style-type: none"><li>AUD 100 gift voucher</li></ul>  |                                   |
| <b>Scientia PhD Scholarship</b>   | <i>Sydney, NSW, Australia</i>     |
| UNIVERSITY OF NEW SOUTH WALES   | <i>Nov. 2018</i>                  |
| <ul style="list-style-type: none"><li>AUD 120'000 living stipend + AUD 40'000 for career development activities</li></ul>     |                                   |

## Selected media and outreach

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A full list of my outreach activities can be found on my [homepage](#) .

- The Conversation: [Heat from El Niño can warm oceans off West Antarctica – and melt floating ice shelves from below](#). This article reached over 17,300 readers worldwide.
- The Academic Minute Podcast: [Southern Ocean Takes on the Heat of Climate Change](#).
- UNSW Newsroom: [Southern Ocean takes on the heat of climate change](#).
- The Conversation: [The Southern Ocean absorbs more heat than any other ocean on Earth, and the impacts will be felt for generations](#). This article reached over 46,000 readers worldwide, and was featured in [The Guardian](#) and [Science Alert](#).
- CLEX Newsletter: [Towards an increased understanding of the East Australian Current – My voyage aboard RV Investigator](#) .
- CLEX research brief: [Current climate models do not project a more persistent Central European weather](#).

## Professional references

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| <b>Prof. Matthew H. England</b>  | <a href="mailto:m.England@unsw.edu.au">m.England@unsw.edu.au</a>     |
| PHD SUPERVISOR AND POSTDOC ADVISOR, SCIENTIA PROFESSOR AT UNSW, AND CO-DIRECTOR OF THE AUSTRALIAN RESEARCH COUNCIL AUSTRALIAN CENTRE FOR EXCELLENCE IN ANTARCTIC SCIENCE (ACEAS) |  |
| <b>Dr. Ryan M. Holmes</b>  | <a href="mailto:Ryan.Holmes@bom.gov.au">Ryan.Holmes@bom.gov.au</a>   |
| PHD SUPERVISOR, CLIMATE SCIENTIST AT THE AUSTRALIAN BUREAU OF METEOROLOGY  |  |
| <b>Assoc. Prof. Paul Spence</b>  | <a href="mailto:paul.spence@utas.edu.au">paul.spence@utas.edu.au</a> |
| COLLABORATOR ON HUGUENIN ET AL. (2024, GRL) AND ASSOCIATE PROFESSOR AT THE UNIVERSITY OF TASMANIA  |  |

**Dr. Caroline C. Ummenhofer**

[cummenhofer@whoi.edu](mailto:cummenhofer@whoi.edu)

POSTDOC ADVISOR AND SENIOR SCIENTIST AT WOODS HOLE OCEANOGRAPHIC INSTITUTION

**Dr. Svenja Ryan**

[sryan@whoi.edu](mailto:sryan@whoi.edu)

POSTDOC ADVISOR AND SENIOR SCIENTIST AT WOODS HOLE OCEANOGRAPHIC INSTITUTION

## Skills

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- Programming** Linux, bash, emacs, git, github, python (4 years full-time experience), MATLAB (3 years), R (1 year), CDO, LaTeX
- Web** Rmd, HTML
- Languages**
- German (native)
  - English (full professional proficiency, IELTS C2)
  - French & Spanish (limited professional proficiency)