

# 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

Woods Hole, MA, United States

GUEST INVESTIGATOR, CLIMATE VARIABILITY AND CHANGE LAB

Aug. 2024 - **present**

- Writing a National Science Foundation grant proposal as a chief investigator
- Continuing my work as a Postdoc at UNSW

### University of New South Wales

Sydney, NSW, Australia

POSTDOCTORAL RESEARCH ASSOCIATE, CENTRE FOR MARINE SCIENCE AND INNOVATION (CMSI) & AUSTRALIAN

Jun. 2023 - **present**

CENTRE FOR EXCELLENCE IN ANTARCTIC SCIENCE (ACEAS)

- Running sensitivity simulations in the 1/10° configuration of ACCESS-OM2
- Organising the annual Australian Centre for Excellence in Antarctic Science (ACEAS) workshop
- Organising the monthly ACEAS seminars

### University of New South Wales

Sydney, NSW, Australia

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

Jun. 2019 - May 2023

EXTREMES (CLEX)

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

### Commonwealth Scientific and Industrial Research Organisation

Hobart, TAS, Australia

PHYSICAL OCEANOGRAPHY VOYAGE PARTICIPANT

May 2021 - June 2021

- Recovering and re-deploying moorings at 27°S to measure property transports in the East Australian Current
- Operating, sampling and analysing Conductivity, Temperature and Depth (CTD) observations
- Deploying Argo, Biogeochemical Argo floats and XBT probes

### MeteoSwiss/Swiss Federal Institute of Technology Zurich

Zurich, ZH, Switzerland

RESEARCH ASSISTANT

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

Sydney, NSW, Australia

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

Sep. 2017 - Jul. 2018

CLIMATE EXTREMES (CLEX)

- 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 4x

## Education

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## University of New South Wales

PHD IN CLIMATE SCIENCE

- 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

*Sydney, NSW, Australia*

*Jun. 2019 - May 2023*

## Swiss Federal Institute of Technology Zurich

MSC ETH IN ATMOSPHERIC AND CLIMATE SCIENCE

- 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

*Zurich, ZH, Switzerland*

*Sep. 2016 - Jun. 2018*

## Swiss Federal Institute of Technology Zurich

BSC ETH IN EARTH SCIENCES

- 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

*Zurich, ZH, Switzerland*

*Sep. 2013 - Jun. 2016*

Additional scientific training

## Australian Research Council Centre for Excellence in Antarctic Science

WINTER SCHOOL ON SEA LEVEL CHANGE

*Triabunna, TAS, Australia*

*17 - 24 Jun. 2024*

## Australian Research Council Centre for Excellence in Antarctic Science

AUTUMN SCHOOL ON SEA ICE - BIOLOGY TO PHYSICS

*Kioloa, NSW, Australia*

*22 - 26 May 2023*

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

QUANTITATIVE MARINE SCIENCE PHYSICAL OCEANOGRAPHY COURSE

*Hobart, TAS, Australia*

*31 Jan. - 4 Feb. 2022*

## Australian Research Council Centre of Excellence for Climate Extremes

WINTER SCHOOL ON CLIMATE MODELLING

*Melbourne, VIC, Australia*

*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

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

Chicago, IL, United States

12-16. Dec. 2022

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

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

La Jolla, CA, United States

6. Dec. 2022

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

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

Oregon State University, online

17. Nov. 2020

## Ocean Sciences Meeting

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

San Diego, CA, United States

17. Nov. 2020

## Australian Meteorological and Oceanographic Society Annual Meeting

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

Darwin, NT, Australia

11.-14. Jun. 2019

## European Geophysical Union Annual Meeting

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

Vienna, Austria

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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### Polar Science Early Career Community Office (PSECCO) Conference Travel Grant

TOWARDS ATTENDING THE EUROPEAN GEOPHYSICAL UNION ANNUAL MEETING

Boulder, CO, United States

Oct. 2024

- USD 700

### Selected participant

PHYSICAL OCEANOGRAPHY DISSERTATION SYMPOSIUM (PODS) XIII

Lihue, HI, United States

Jul. 2024

- Boston - Lihue return flights and accommodation, meals & incidentals during the week-long workshop in Hawaii

### Best lightning presentation

ANNUAL COSIMA OCEAN MODELLING WORKSHOP

Canberra, ACT, Australia

Sep. 2023

- Choice of pottery

### Best PhD Student Paper published in the centre in 2022

ARC CENTRE OF EXCELLENCE FOR CLIMATE EXTREMES (CLEX)

Lorne, VIC, Australia

Nov. 2022

- AUD 500

### Best PhD Student Presentation

CLIMATE CHANGE RESEARCH CENTRE POSTGRADUATE REVIEWS

Sydney, NSW, Australia

May 2022

- AUD 100 gift voucher

### Scientia PhD Scholarship

UNIVERSITY OF NEW SOUTH WALES

Sydney, NSW, Australia

Nov. 2018

- AUD 120'000 living stipend + AUD 40'000 for career development activities

## 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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**Prof. Matthew H. England**

[m.england@unsw.edu.au](mailto:m.england@unsw.edu.au)

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)

**Dr. Ryan M. Holmes**

[Ryan.Holmes@bom.gov.au](mailto:Ryan.Holmes@bom.gov.au)

PHD SUPERVISOR, CLIMATE SCIENTIST AT THE AUSTRALIAN BUREAU OF METEOROLOGY

**Assoc. Prof. Paul Spence**

[paul.spence@utas.edu.au](mailto:paul.spence@utas.edu.au)

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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<b>Programming</b>	Linux, bash, emacs, git, github, python (4 years full-time experience), MATLAB (3 years), R (1 year), CDO, LaTeX
<b>Web</b>	Rmd, HTML
<b>Languages</b>	<ul style="list-style-type: none"><li>• Swiss German (native)</li><li>• German (native)</li><li>• English (full professional proficiency, IELTS C2)</li><li>• French &amp; Spanish (limited professional proficiency)</li></ul>