

# Maurice F. Huguenin

POSTDOCTORAL RESEARCH ASSOCIATE · BIOGEOCHEMICAL MODELLING RESEARCH UNIT

GEOMAR Helmholtz Centre for Ocean Research, 24148 Kiel, Germany

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## Professional experience

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### GEOMAR Helmholtz Centre for Ocean Research Kiel

POSTDOCTORAL RESEARCH ASSOCIATE, BIOGEOCHEMICAL MODELLING RESEARCH UNIT

Kiel, SH, Germany

Oct. 2025 - present · 1 mos

- Investigating how mesoscale ocean eddies affect ocean heat and carbon uptake under future climate scenarios
- Setting up, preparing, compiling, running and analysing output from the Earth System Model FOCI-MOPS in 1/2° horizontal resolution

### Swiss Federal Institute of Technology Zurich

VISITING SCIENTIST, ENVIRONMENTAL PHYSICS GROUP

Zurich, ZH, Switzerland

Jun. 2025 - Aug. 2025 · 3 mos

- Continuing my postdoctoral work at the University of New South Wales and ongoing collaborations at the Woods Hole Oceanographic Institution:
  - Understanding the link between shifts in the Interdecadal Pacific Oscillation and Antarctic margin dense shelf water formation
  - Investigating the variability of Patagonian shelf conditions and their impacts on albatross breeding success
- Lecture assistant for the UNSW course CLIM1001 Introduction to Climate Change (20% workload)

### Woods Hole Oceanographic Institution

Woods Hole, MA, United States

VISITING SCIENTIST, CLIMATE VARIABILITY AND CHANGE LAB

Aug. 2024 - Jun. 2025 · 11 mos

- Continuing my postdoctoral work at the University of New South Wales with collaborations at the Woods Hole Oceanographic Institution
- Writing a National Science Foundation grant proposal as a co-principal investigator

### University of New South Wales

Sydney, NSW, Australia

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

Jun. 2023 - Aug. 2025 · 2 yrs 3 mos

CENTRE FOR EXCELLENCE IN ANTARCTIC SCIENCE (ACEAS)

- Investigating the impact of interannual to decadal natural climate variability on Antarctic dense shelf water formation
- Running sensitivity simulations in the 1/10° configuration of ACCESS-OM2 (which combines the MOM5.1 ocean model with the CICE5.1.2 sea ice model)

### 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 · 4 yrs

EXTREMES (CLEX)

- Setting up, preparing, running and analysing output from ACCESS-OM2 in all three horizontal configurations (1°, 1/4° and 1/10°)
- Publishing PhD thesis chapters in high-impact scientific journals
- Presenting research outcomes at national and international workshops, seminars and conferences
- Contributing to proposals for computational time and storage on the Gadi supercomputer through the annual Australian National Computational Merit Allocation Scheme (2018 - present)

### Commonwealth Scientific and Industrial Research Organisation

Hobart, TAS, Australia

PHYSICAL OCEANOGRAPHY VOYAGE PARTICIPANT ON RV *Investigator*

May 2021 - June 2021 · 4 wks

- 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) measurements
- Deploying Argo, Biogeochemical Argo floats and XBT probes

### MeteoSwiss/Swiss Federal Institute of Technology Zurich

Zurich, ZH, Switzerland

RESEARCH ASSISTANT

Sep. 2018 - Apr. 2019 · 8 mos

- Organising, running and planning meetings as the research project lead
- Analysing coupled climate simulation output from the single large ensemble CESM12-LE and CMIP5 models
- Scientific manuscript writing
- Publication #2 (see below) resulted from this work

### University of New South Wales

Sydney, NSW, Australia

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

Sep. 2017 - Jul. 2018 · 11 mos

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 L<sup>A</sup>T<sub>E</sub>X

## **Education**

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### **University of New South Wales**

PHD IN CLIMATE SCIENCE

- Thesis title: Processes and Dynamics of Global to Regional Ocean Heat Uptake and Variability
- Web link to my thesis: <https://doi.org/10.26190/unswworks/25224>
- [Two-page summary on github](#)
- Supervisors: Dr. Ryan M. Holmes & Prof. Matthew H. England

Sydney, NSW, Australia

Jun. 2019 - May 2023

### **Swiss Federal Institute of Technology Zurich**

Msc ETH IN ATMOSPHERIC AND CLIMATE SCIENCE

- Thesis title: Mechanisms Driving Ocean Heat Uptake and Warm Water Volume Variability During Idealized ENSO Events
- [PDF on github](#)
- Supervisors: Dr. Ryan M. Holmes, Prof. Matthew H. England, Dr. Iselin Medhaug & Prof. 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 title: Ocean Heat Storage and Implications on Sea Level Rise Using CCSM4 Model Output for 1993-2016
- [PDF on github](#)
- Supervisors: Dr. Iselin Medhaug & Prof. 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

## **Engagement, Impact and Leadership**

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### **Grant Reviewer**

FOR POLAR SCIENCE EARLY CAREER COMMUNITY OFFICE (PSECCO) CONFERENCE TRAVEL GRANT APPLICATIONS

Woods Hole, MA, United States

Jun. 2025

### **Session Co-convener**

ORGANISING THE EUROPEAN GEOPHYSICAL UNION 2025 SESSION OS1.6 - THE SOUTHERN OCEAN IN A CHANGING CLIMATE: PHYSICAL, BIOGEOCHEMICAL, AND ECOSYSTEM PROCESSES

Vienna, Austria

Nov. 2024 - May 2025

### **ECR Participant**

GIVING INPUT FOR THE AUSTRALIAN ANTARCTIC SCIENCE DECADAL PLAN (2023 - 2033) IN WORKSHOPS, SEMINARS AND SURVEYS

Sydney, NSW, Australia

Jun. 2023 - Jun. 2024

### **Workshop Organising Committee Member**

PLANNING THE ANNUAL AUSTRALIAN CENTRE FOR EXCELLENCE IN ANTARCTIC SCIENCE (ACEAS) WORKSHOP

Hobart, TAS, Australia

Oct. - Nov. 2023

### **Seminar Committee Member**

RUNNING THE MONTHLY ACEAS AND CCRC RESEARCH CENTRE SEMINARS

Sydney, NSW, Australia

2022 - 2023

### **Reviewer**

GEOPHYSICAL RESEARCH LETTERS

Sydney, NSW, Australia

Jul. - Aug. 2022

## PhD Student Representative

CLIMATE CHANGE RESEARCH CENTRE

Sydney, NSW, Australia

May 2020 - Apr. 2021

- Finding buddies for new PhD students
- Organising practise talks for centre-wide formal PhD reviews
- Forwarding administrative information
- Organising student meetings

## Publications

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I have a profile on [Google Scholar](#).

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.*

Peer-reviewed and published:

6. England, M. H., Li, Z., *Huguenin, M. F.*, Kiss, A. E., Sen Gupta, A., Holmes, R. M., & Rahmstorf, S. (2024) Drivers of the largest ever recorded marine heat wave in the North Atlantic. **Nature**. <https://doi.org/10.1038/s41586-025-08903-5>.
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 12 international conferences and various domestic/international workshops and seminars. A full list of my presentations can be seen on my [homepage](#).

### Rhode Island Physical Oceanography Seminar Series

INVITED SPEAKER

Kingston, RI, USA

28 Feb. 2025

### Physical Oceanography Dissertations Symposium - PODS XIII

INVITED PARTICIPANT

Lihu'e, HI, United States

21 Oct. 2024

### Woods Hole Oceanographic Institution Physical Oceanography Seminar

INVITED SPEAKER

Woods Hole, MA, United States

1 Oct. 2024

### Ocean Circulation and Climate Dynamics Colloquium

INVITED SPEAKER

GEOMAR Kiel, online

26 Jun. 2023

### Scripps Institution of Oceanography Climate, Atmospheric Sciences, and Physical Oceanography Seminar

INVITED SPEAKER

La Jolla, CA, United States

6 Dec. 2022

### College of Oceanic and Atmospheric Sciences Seminar

INVITED SPEAKER

Oregon State University, online

17 Nov. 2020

### Australian Meteorological and Oceanographic Society Annual Meeting

POSTER & ORAL PRESENTATION

Darwin, NT, Australia

11 - 14 Jun. 2019

### European Geophysical Union Annual Meeting

POSTER PRESENTATION

Vienna, Austria

9 - 12 Apr. 2019

## Research proposals

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### NSF Office of Polar Programs

SVENJA RYAN, MAURICE F. HUGUENIN & CAROLINE C. UMMENHOFER

United States

12 Dec. 2024

- Title: Variability and Trends in Southern Hemisphere Subpolar Gyres in High-Resolution Ocean and Climate Models: Implications for Dense Water Formation and Major Antarctic Ice Shelves
- Amount of request: USD 312,862
- Project not funded.

### National Computational Merit Allocation Scheme

MATTHEW H. ENGLAND ET AL.

Australia

2019 – 2024

- Title: Past, present and future climate variability and change in the Southern Ocean
- Annual call to submit proposals for computational walltime and storage on Australia's Gadi National Computational Infrastructure
- Amount of request: typically 15 Million Service Units & 60 TB storage, varying with group size

## Teaching experience

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### Lecture assistant

CLIM1001-GENS0401 COURSE INTRODUCTION TO CLIMATE CHANGE

Sydney, NSW, Australia

Jun. - Aug. 2025

- Moderation of online forum discussions for 70 students for the full course period
- Marking of summary reports
- 20% workload

### A Fun Introduction to LaTeX

CLIMATE CHANGE RESEARCH CENTRE FUN SEMINAR SERIES

Sydney, NSW, Australia

25 Mar. 2024

- Lecture material available at [https://github.com/mauricehuguenin/introduction\\_latex](https://github.com/mauricehuguenin/introduction_latex)

### Graduate teaching assistant

CLIM1001-GENS0401 COURSE INTRODUCTION TO CLIMATE CHANGE

Sydney, NSW, Australia

2019 & 2023

- Moderation of online forum discussions for week 7: Global circulation and climate variability
- Marking of individual student and group reports

# Memberships and communities

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APECS	<b>Association of Polar Early Career Scientists</b> , Community member	2022 – <b>present</b>
AGU	<b>American Geophysical Union</b> , Full member	2019 – <b>present</b>
EGU	<b>European Geophysical Union</b> , Full member	2018 – <b>present</b>
ACEAS	<b>Australian Research Council Australian Centre for Excellence in Antarctic Science</b> , PhD student and Postdoctoral research associate	2022 – 2025
CLEX	<b>Australian Research Council Centre of Excellence for Climate Extremes</b> , PhD student and Associate investigator	2018 – 2024
AMOS	<b>Australian Meteorological and Oceanographic Society</b> , Full member	2017 – 2022

# Honours & Awards

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## Selected participant

GLACIER 3000 EXCURSION BY APECS SWITZERLAND AND THE SWISS POLAR INSTITUTE Scex Rouge, VD, Switzerland

- Event to explore one of Switzerland's iconic Alpine sites while connecting with fellow early-career polar and alpine researchers

## Early Career Scientist's Travel Support

TOWARDS ATTENDING THE EUROPEAN GEOPHYSICAL UNION ANNUAL MEETING IN 2025 Vienna, Austria

- EUR 575 conference registration fee waiver + refund of abstract processing charge

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

TOWARDS ATTENDING THE EUROPEAN GEOPHYSICAL UNION ANNUAL MEETING IN 2025 Boulder, CO, United States

- USD 700

## Selected participant

PHYSICAL OCEANOGRAPHY DISSERTATION SYMPOSIUM (PODS) XIII Lihue, HI, United States

- Boston - Lihue return flights and accommodation, meals & incidentals during the week-long workshop in Hawai'i
- [Article](#) in Kaua'i Now, the local news website

## Best lightning presentation

ANNUAL COSIMA OCEAN MODELLING WORKSHOP Canberra, ACT, Australia

- Choice of pottery

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

ARC CENTRE OF EXCELLENCE FOR CLIMATE EXTREMES (CLEX) Lorne, VIC, Australia

- AUD 500

## Best PhD Student Presentation

CLIMATE CHANGE RESEARCH CENTRE POSTGRADUATE REVIEWS Sydney, NSW, Australia

- AUD 100 gift voucher

## Scientia PhD Scholarship

UNIVERSITY OF NEW SOUTH WALES Sydney, NSW, Australia

- Awarded to PhD candidates who have shown exceptional research quality, and is valued at over AUD 200,000 across four years

# Media and outreach

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

- WHOI PO News: [Experiencing an International Geophysics Conference as a Postdoc](#).
- The Conversation: [Heat from El Niño can warm oceans off West Antarctica – and melt floating ice shelves from below](#). This article reached over 18,000 readers worldwide.
- The Academic Minute Podcast: [Southern Ocean Takes on the Heat of Climate Change](#).
- ABC Radio Illawarra. I was live on the 8th of Sep. 2022 to talk about my heat uptake project and its implications
- 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](#).

## Skills

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<b>Operating Systems</b>	Unix-based high-performance computing at the National Computational Infrastructure, Canberra, AU
<b>Numerical modelling</b>	<ul style="list-style-type: none"><li>MOM-SIS and ACCESS-OM2: setting up the model via github, performing spin-up, creating input, running sensitivity experiments and analysing model output</li><li>CESM12-LE and CMIP5: analysing coupled large ensemble and multi-model output</li></ul>
<b>Programming languages</b>	Python, MATLAB, R, $\text{\LaTeX}$ , bash
<b>Tools and software</b>	Jupyter kernels, emacs, vim, version control systems like git, github, Climate Data Operators (CDO)
<b>Web</b>	Rmd, HTML <ul style="list-style-type: none"><li>German: native</li><li>English: full professional proficiency, IELTS 8.5 <math>\Leftrightarrow</math> CEFR Level C2</li><li>French: limited professional proficiency</li><li>Spanish: limited professional proficiency</li></ul>
<b>Languages</b>	