

Maurice F. Huguenin

POSTDOCTORAL RESEARCH ASSOCIATE · BIOGEOCHEMICAL MODELLING RESEARCH UNIT

GEOMAR Helmholtz Centre for Ocean Research, 24148 Kiel, Germany

[✉ mhuguenin-virchaux@geomar.de](mailto:mhuguenin-virchaux@geomar.de) | [💻 mauricehuguenin.github.io](https://mauricehuguenin.github.io) | [🔗 mauricehuguenin](https://www.linkedin.com/in/mauricehuguenin/) | [🔗 maurice-huguenin](https://github.com/maurice-huguenin)

Professional experience

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**)

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 \LaTeX

Education

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/unsworks/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

Sea-going experience

RV Alkor · Biogeochemical Oceanographer

GEOMAR HELMHOLTZ CENTRE FOR OCEAN RESEARCH KIEL

- One-day voyage to the western Baltic Sea
- CTD sampling, including alkalinity, nutrients and ammonia

Kiel, SH, Germany

11 Nov. 2025 · 1 day

RV Investigator · Physical Oceanographer

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION

Hobart, TAS, Australia

May 2021 - June 2021 · 28 days

- [IN2021_V03](#) to the Tasman Sea
- 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

Engagement, Impact and Leadership

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

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

Sydney, NSW, Australia

May 2020 - Apr. 2021

Publications

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

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., Scherer, 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

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

Lihue, 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

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

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 student's online performance over the duration of the course
- 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

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

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

Honours & Awards

Selected participant

GLACIER 3000 EXCURSION BY APECS SWITZERLAND AND THE SWISS POLAR INSTITUTE

Scex Rouge, VD, Switzerland

19 Jul. 2024

- 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

10 Jan. 2025

- 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

2 Oct. 2024

- USD 700

Selected participant

PHYSICAL OCEANOGRAPHY DISSERTATION SYMPOSIUM (PODS) XIII

Lihue, HI, United States

19 Jul. 2024

- 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

- Choice of pottery

Canberra, ACT, Australia

8 Sep. 2023

Best PhD Student Paper published in the centre in 2022

ARC CENTRE OF EXCELLENCE FOR CLIMATE EXTREMES (CLEX)

- AUD 500

Lorne, VIC, Australia

17 Nov. 2022

Best PhD Student Presentation

CLIMATE CHANGE RESEARCH CENTRE POSTGRADUATE REVIEWS

- AUD 100 gift voucher

Sydney, NSW, Australia

13 May 2022

Scientia PhD Scholarship

UNIVERSITY OF NEW SOUTH WALES

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

Sydney, NSW, Australia

29 Nov. 2018

Media and outreach

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

Operating Systems

Unix-based high-performance computing at the National Computational Infrastructure, Canberra, AU

- [MOM-SIS](#) and [ACCESS-OM2](#): setting up the model via github, performing spin-up, creating input, running sensitivity experiments and analysing model output

Numerical modelling

- CESM12-LE and CMIP5: analysing coupled large ensemble and multi-model output

Programming languages

Python, MATLAB, R, \LaTeX , bash

Tools and software

Jupyter kernels, emacs, vim, version control systems like git, github, Climate Data Operators (CDO)

Web

Rmd, HTML

- German: native
- English: full professional proficiency, IELTS 8.5 \Leftrightarrow CEFR Level C2
- French: limited professional proficiency
- Spanish: limited professional proficiency

Languages