

Elizabeth Ellison

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Professional Experience

Postdoctoral Research Fellow *Australia National University* Nov 2023-Current
Position funded by the Australian Research Council Centre of Excellence for Climate Extremes
Research topic: The interaction of mesoscale dynamics with Southern Ocean Biogeochemistry

Education

PhD in Civil and Sustainable Engineering *Imperial College London* 2018-July 2023
Skills gained: Scientific research and writing, quantitative climate model analysis, project management
Thesis: Investigating the role of coupled physical-biochemical ocean processes in climate dynamics

M.Sc., Oceanography, Distinction *University of Southampton, National Oceanography Centre* 2017-2018
Skills gained: Data analysis, report writing, research communication, ecosystem modelling
Subject studied: Biological, chemical and physical oceanography
Thesis: The use of time resolved fluorescence plate spectroscopy to investigate controls of phytoplankton sinking rates

B.Sc. (Hons), Natural Sciences, 2.1 *Durham University* 2013-2016
Subjects studied: Biology, Chemistry, Geology, Geography

A/AS levels: Maths (A*) Further Maths (A) Chemistry (A*) Biology (A*) Geography (A) 2013

Awards and Scholarships

2024:	CLEX Postdoctoral Fellowship	AUD\$100,000
2023:	The Challenger Society Early Career Stepping Stones Bursary	£1000
	European Regional Development Fund: Better Futures Internship	£5000
2022:	NSF, ONR and NOAA PODS Bursary	£4000
	Gordons Research Seminar Early Career Bursary	£500
2019:	Jersey Clipper Bursary	£500
	Imperial College Grantham Institute Travel Bursary	£400
	States of Jersey Postgraduate Student Bursary	£4,000
2018:	Engineering Physical Science Research Council	£107,000
	- Awarded by Imperial College Civil and Sustainable Engineering CDT	
	University of Southampton John Raymont Memorial Prize	
	- Highest mark for the M.Sc. Oceanography course	
2016:	Team Durham Half Palatinate Colours	
	- Outstanding contribution and achievement within the university sailing club	
	Consolidated Minerals David Miller Scholarship	£4,500
	- To assist high potential students with further studies in Earth Sciences	

Publications

Ellison, E., Mashayek, A., & Mazloff, M. (2024). Enhanced Southern Ocean biomass with increased diapycnal mixing. *Journal of Geophysical Research: Oceans*.

Ellison, E., Mashayek, A., & Mazloff, M. (2023). The Sensitivity of Southern Ocean Air-Sea Carbon Fluxes to Background Turbulent Diapycnal Mixing Variability. *Journal of Geophysical Research: Oceans*, 128(9).

Ellison, E., Cimoli, L., & Mashayek, A. (2022). Multi-time scale control of Southern Ocean diapycnal mixing over Atlantic tracer budgets. *Climate Dynamics*, 60(9), 3039–3050.

N. Reynard, Mashayek, A, **E. Ellison**, A. Wilson, P. Williamson, J. O-Niles, E. Ransome, “The contribution of coastal blue carbon ecosystems to climate change mitigation and adaptation”, Grantham Institute Policy Paper, (2020), 34.

E. Ellison, L.Baker, A. Wilson "IPCC Special Report Meeting: Climate Change Around the Globe." (2020): 293-294.

In preparation

Ellison, E., Mashayek, A., & Mazloff, M. “Can Biogeochemical Tracer Observations Constrain Southern Ocean Diapycnal Mixing Rates?”, submitted to *Geophysical Research Letters*

Industry Experience

- Aug - Dec 2022: **Coastal Flooding Modeller, Climate X (London)**
- Researched and implemented a globally scalable method for modelling storm surge flooding under a range of climate change scenarios
 - Used AWS to run high resolution regional flood models
 - Collected data for scalable flood modelling
- Spring 2019: **Research Intern, Scripps Institute of Oceanography and The Carbon Institute (University of California San Diego)**
- Identified key areas for novel research into ocean carbon storage potential
 - Developed ideas with experts in climate policy and ocean dynamics
- 2016 – 2017: **Project Geologist, Royal Road Minerals (Jersey)**
- Researched potential mineral prospecting sites, analysed historic site records
 - Establish a new project, focusing on deep sea mineral resources, researched legalities of deep sea mining.
- Summer 2014: **Shadow Geologist, Consolidated Minerals (Perth, WA)**
- Assisted geologists within a large Manganese mine
 - Gained skills in sample logging, and using GIS

Teaching

- 2020-2022: **Graduate Teaching Assistant, *Fluid Mechanics*, Imperial College**
- Provided clear explanations to tutorial or general class problems
 - Marked student summative and formative assignments
- 2020-2022: **Graduate Teaching Assistant, *Computational Methods*, Imperial College**
- Assist students with MATLAB tutorials and general queries
 - Marked student summative and formative assignments

Service

- Ongoing: **Reviewer for high level scientific journals (4)**
- 2024: **Organising Committee, COSIMA Hackathon**
- 2019-2021 **Fluid Dynamics Section Student Representative**
- Communicate problems and suggestions between staff and students

- 2019: **Event Volunteer, International Student Energy Summit**
 - Organise and budget social events throughout the year
 - Coordinated and assisted over 600 delegates
 - Worked proactively to solve any problems
- 2019: **Organising Committee, Imperial College CDT Festival of Science**
 - Planned, budgeted and organised an engaging program of events
 - Identified, contacted and coordinated relevant speakers
- 2015-2016: **Yachting Captain, Durham University Sailing Club**
 - Organised and budgeted major events for over 100 people
 - Significantly improved on previous results through well planned training

Outreach

- 2020: **Co-author on Grantham Institute Briefing Paper**
 - Developed an informative and engaging article on the importance of blue carbon ecosystems for a generalist audience
- 2020: **1 Million Women in Stem profile**
- 2019: **The Grantham Institute COP 25 Delegate**
 - Presented research on blue carbon climate mitigation potential at a panel event to a generalist audience
 - Wrote social media posts communicating about COP 25 to followers
- 2019-2022: **Event Volunteer, The Royal Society London**
 - Demonstrate science experiments in an engaging and education way
 - Provide feedback on how future events can be improved
- 2016: **Weekend Volunteer, Durrell Wildlife Conservation Trust**
 - Worked within the education department to improve visitor's experiences
 - Developed the ability to engage with a wide variety of audiences

Presentations

- CLEX Ocean Extremes Workshop – IMAS Hobart;** *How does resolving mesoscale features in the Southern Ocean Impact biogeochemistry?*, 2024. Talk
- IMOS Ocean Modelling and Observations Workshop – Canberra;** *How does resolving mesoscale features in the Southern Ocean Impact biogeochemistry?*, 2024. Poster
- Climate Fluid Physics Seminar – ANU Canberra;** *How does resolving mesoscale features in the Southern Ocean Impact biogeochemistry?*, 2024. Talk
- AGU Ocean Sciences – New Orleans;** *Multi-time scale control of Southern Ocean diapycnal mixing over Atlantic tracer*, 2024. Talk
- CLEX Annual Meeting- Brisbane;** *The Sensitivity of Southern Ocean Carbon Fluxes to Diapycnal Mixing*, 2023. Poster
- Physical Oceanography Dissertation Symposium – Hawaii;** *The Impact of Diapycnal Mixing on Southern Ocean Biogeochemical Tracers*, 2022. **Invited Talk**
- The Royal Society Southern Ocean Meeting- London;** *The Sensitivity of Southern Ocean Carbon Fluxes to Diapycnal Mixing*, 2022. Poster
- European Geosciences Union General Assembly – Vienna;** *Enhanced Southern Ocean biomass with increased parameterized background diapycnal mixing* European, 2022. Talk

Ocean Biogeochemistry Gordons Research Conference - Barcelona; *The Sensitivity of Southern Ocean Carbon Fluxes to Diapycnal Mixing*, 2022. Poster

Ocean Biogeochemistry Gordons Research Seminar - Barcelona; *The Rapid Response of Southern Ocean Biological Productivity to Changes in Background Small Scale Turbulence*, 2022. **Invited talk**

Fluid Dynamics Section Seminar - Imperial College London; *Multi-time scale control of Southern Ocean diapycnal mixing over Atlantic tracer budgets*, 2021. Talk

SOCOM Annual Meeting; *The Sensitivity of Southern Ocean Carbon Fluxes to Diapycnal Mixing*, 2021. Talk (Online)

SOCOM Modelling Group Seminar; *The Sensitivity of Southern Ocean Carbon Fluxes to Diapycnal Mixing*, 2020. Talk (Online)

COP 25 - Madrid; *The blue carbon contribution to climate change mitigation*, 2019. Pannel discussion

Civil Engineering Seminar - Imperial College London; *On the inter-connected roles of deep ocean mixing and Southern Ocean dynamics in nutrient distribution and biogeochemical cycles*, 2019. Talk

Research Cruises

2024: **Deep Madagascar Basin/ East Madagascar Current Cruise;** Indian Ocean (6 weeks)
RV Roger Revelle
Deployed 88 CTD/ tracer/ LADCP, 5 sound source moorings, 22 RAFOS floats, 3 deep ARGO floats and 20 SVP drifters

2018: **Seafloor Surveying Module;** The Solent, UK (1 week)
RV Callista
Collected bathymetric swath data

2017: **M.Sc. Oceanography Boat week;** The Solent, UK (1 week)
RV Callista
Deployed CTD, ACPD, fluorometer

Schools and Workshops attended

2022: Max Plank Earth System Modelling, Hamburg, Germany

2021: NCAS Climate Modelling Summer School, Online

2020 (postponed): Ocean Physics Summer School, Bad Honnef, Germany

2019: GFDL Summer School - visiting student, Woods Hole, USA

2018: Imperial College Science Communication Retreat, London.