

Josef Bisits

School of Mathematics and Statistics,
University of New South Wales.

Phone number: +61 400 348 389
Email: jbisits@gmail.com
Website: jbisits.github.io/
LinkedIn: [josef-bisits-066253123](https://www.linkedin.com/in/josef-bisits-066253123)
GitHub: github.com/jbisits
ORCID: [0000-0002-6340-4470](https://orcid.org/0000-0002-6340-4470)

EDUCATION

- **Doctor of Philosophy** Sydney
The University of New South Wales 2022–2025
 - School of Mathematics and Statistics
 - Supervisors: Associate Professor Jan Zika, Professor Trevor McDougall and Dr Taimoor Sohail
 - Thesis: Non-linear controls on ocean circulation and mixing in the high-latitude oceans
- **Bachelor of Science (Honours)** Sydney
The University of New South Wales 2016–2021
 - School of Mathematics and Statistics
 - Major: Applied mathematics
 - Supervisors: Associate Professor Jan Zika and Dr Geoff Stanley
 - Thesis: Passive tracer mixing along isopycnal surfaces in turbulent flows
 - Honours grade: class 1
- **Bachelor of Music** Sydney
The University of Sydney 2007–2010
 - Conservatorium of Music
 - Major: double bass performance
 - Double bass instructor: Alex Henery

PUBLICATIONS

- Bisits, Josef I.**, Zika, Jan D., and Sohail, Taimoor. May 2025. “Cabbeling as a catalyst and driver of turbulent mixing”. In: *Journal of Fluid Mechanics* 1011, A17. DOI: [10.1017/jfm.2025.349](https://doi.org/10.1017/jfm.2025.349).
- Bisits, Josef I.**, Zika, Jan D., and Evans, Dafydd Gwyn. Dec. 2024. “Does Cabbeling Shape the Thermohaline Structure of High-Latitude Oceans?” In: *Journal of Physical Oceanography* 54 (12), pp. 2419–2430. DOI: [10.1175/JPO-D-24-0061.1](https://doi.org/10.1175/JPO-D-24-0061.1).
- Bisits, Josef I.**, Stanley, Geoffrey J., and Zika, Jan D. Feb. 2023. “Can We Accurately Quantify a Lateral Diffusivity from a Single Tracer Release?” In: *Journal of Physical Oceanography* 53 (2), pp. 647–659. DOI: [10.1175/JPO-D-22-0145.1](https://doi.org/10.1175/JPO-D-22-0145.1).

CONFERENCE PROCEEDINGS

- Bisits, Josef I.** June 2024. “Does cabbeling shape the thermohaline structure of high-latitude oceans?” In: *Gordon Research Seminar on Ocean Mixing*. Oral presentation.
- Bisits, Josef I.** Feb. 2024. “Does cabbeling shape the thermohaline structure of high-latitude oceans?” In: *Australian Meteorological and Oceanographic Society annual conference*. Oral presentation.
- Bisits, Josef I.** June 2024. “The effect of non-linear processes on mixing”. In: *Gordon Research Conference on Ocean Mixing*. Poster presentation.
- Bisits, Josef I.** Nov. 2024. “The effects of cabbeling on mixing and energetics in polar oceans”. In: *Australian Antarctic Research Conference*. Poster presentation.
- Bisits, Josef I.** July 2023. “Can we accurately quantify a lateral diffusivity from a single tracer release?” In: *XVIII General Assembly of the International Union of Geodesy and Geophysics (IUGG)*. Oral presentation.
- Bisits, Josef I.** July 2023. “Does cabbeling shape the thermohaline structure of high-latitude oceans?” In: *Physics of the Ocean Summer School*. Poster presentation.

- Bisits, Josef I.** Nov. 2022. “Can we accurately quantify a lateral diffusivity from a single tracer release?” In: *Australian Centre for Excellence in Antarctic Science workshop*. Poster presentation.
- Bisits, Josef I.** Nov. 2022. “Can we accurately quantify a lateral diffusivity from a single tracer release?” In: *Australian Meteorological and Oceanographic Society annual conference*. Oral presentation.


PROFESSIONAL ACTIVITIES

- **Peer Review** 2023-current
- Journal of Geophysical Research: Oceans.


RESEARCH EXPERIENCE

- **Research assistant, UNSW** Sydney 2022
- Numerical modeling and analysis of tracer release experiments in turbulent flows.
- **Research assistant, UNSW** Sydney 2022
- Historical water quality data processing and analysis to develop a predictive water quality model.

PROGRAMMING SKILLS

My programming language of choice is . Some packages I am involved with are:

- Author `StaircaseShenanigans.jl`, `TwoLayerDirectNumericalShenanigans.jl`, `OceanRasterConversions.jl`, `RasterHistograms.jl`;
- Developer `PassiveTracerFlows.jl`; and
- Contributor `FourierFlows.jl`, `GeophysicalFlows.jl`, `Oceananigans.jl` amongst others.

I am also fluent with , , , $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ and `git`. I have a wide experience using High Performance Computing systems to run ocean models on both CPU's and GPU's.

TEACHING

- Mathematics** UNSW
Tertiary mathematics tutoring: 2021–current
- Mathematics Drop in Centre;
 - Mathematics 1A (MATH1131/1141);
 - Mathematics 1B (MATH1231/1241);
 - Numerical Methods and Statistics (MATH2089);
 - Introduction to Atmosphere and Ocean Dynamics (MATH2241); and
 - Fluids, Oceans, and Climate (MATH3261-5285).

- Double bass**
Private and ensemble tuition in Sydney. 2017–2022

ORCHESTRAL EXPERIENCE

- **Sydney Symphony Orchestra** Sydney 2009–current
- Regular casual double bassist, full time contract musician in 2014, 2015 and September 2017–September 2018.
- **Australian Chamber Orchestra** Sydney 2013–current
- Regular casual double bassist.
- **Opera Australia Orchestra** Sydney 2016–current
- Regular casual double bassist.
- **Tasmanian Symphony Orchestra** Tasmania 2013–2018
- Casual double bassist.
- **Ulster Orchestra** Belfast Winter 2012
- Held a trial for double bass section leader.
- **Southbank Sinfonia** London 2011-2012
- Principal double bassist, twice appeared as a soloist.

ORCHESTRAL TRAINING

- Australian Chamber Orchestra 2013
Emerging Artist, mentor: Maxime Bibeau.
- Sydney Symphony Orchestra 2008–2010
Double bass section player with Sydney Sinfonia, double bass Fellow in 2010.
- Australian youth orchestra 2007–2008
Double bass section player.
- Sydney youth orchestra 2006–2008
Principal double bassist, appeared as double bass soloist in 2006.

SCHOLARSHIPS AND AWARDS

- Best applied mathematics talk at UNSW School of Mathematics and Statistics postgraduate conference. 2024
- Michael Tallis Research travel award. 2023
- Australian Government Research Training Program Scholarship. 2022–2025
- School of Mathematics and Statistics research scholarship top-up. 2022–2025
- Australian Centre for Excellence in Antarctic Research PhD student. 2022–2025
- Corina d'Hage string scholarship. 2008–2010
- Michael Bannigan scholarship for academic achievement. 2010
- Winner of Sydney Youth Orchestra concerto competition. 2006

OUTREACH

- **Helper for Girls do the Maths!**, *University of New South Wales.* 2022, 2023
- **Helper for Experience UNSW Science day**, *University of New South Wales.* 2022
- **Climate @ maths display for UNSW open day**, *University of New South Wales.* 2022, 2023, 2024
- **Helper for uDASH work experience workshop**, *University of New South Wales.* 2022

REFERENCES

- **Associate Professor Jan Zika**, *University of New South Wales, Sydney.* Email: j.zika@unsw.edu.au
- **Dr Taimoor Sohail**, *Research Fellow, University of Melbourne.* Email: taimoor.sohail@unimelb.edu.au
- **Emeritus Professor Trevor McDougall**, *University of New South Wales, Sydney.* Email: trevor.mcdougall@unsw.edu.au
- **Dr Geoff Stanley**, *Banting Postdoctoral Fellow, University of Victoria, Canada.* Email: gstanley@uvic.ca
- **Associate Lecturer Simon Lloyd**, *University of New South Wales, Sydney.* Email: s.lloyd@unsw.edu.au
- **Benjamin Ward**, *Tutti double bass, Sydney Symphony Orchestra.* Email: 2benward@gmail.com
- **Edmund Bastian**, *Tutti double bass, Opera Australia Orchestra.* Email: tanya.ed@bigpond.com