

# Josef Bisits

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

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

## EDUCATION

---

- University of New South Wales** Sydney  
PhD candidate, supervisor Associate Professor Jan Zika, in the School of Mathematics and Statistics. 2022–current
- University of New South Wales** Sydney  
Bachelor of Science (Advanced Mathematics) (Honours) Class 1, major in applied mathematics. 2016–2021
- University of Sydney** Sydney  
Bachelor of Music (Performance), major in double bass performance. 2007–2010

## 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.

## RESEARCH EXPERIENCE

---

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

## PROGRAMMING SKILLS

---

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

- `StaircaseShenanigans.jl`,  
`TwoLayerDirectNumericalShenanigans.jl`,  
`OceanRasterConversions.jl`,  
`RasterHistograms.jl` (author);
- `PassiveTracerFlows.jl` (developer); and
- `FourierFlows.jl`, `GeophysicalFlows.jl`,  
`Oceananigans.jl` (contributor) amongst others.

I am also fluent with , , ,  $\text{\LaTeX}$  and `git`.

## TEACHING

---

### Mathematics

Tertiary mathematics tutoring:

UNSW  
2021–current

- Mathematics Drop in Centre;
- Mathematics 1A (MATH1131/1141);
- Mathematics 1B (MATH1231/1241);
- Numerical Methods and Statistics (MATH2089); and
- Fluids, Oceans, and Climate (MATH3261-5285).

### Double bass

Private and ensemble tuition in Sydney.

2017–2022

## PROFESSIONAL ACTIVITIES

---

### Peer Review

- Journal of Geophysical Research: Oceans.

2023–current

## ORCHESTRAL EXPERIENCE

---

### Sydney Symphony Orchestra

- Regular casual double bassist, full time contract musician in 2015 and September 2017–September 2018.

Sydney  
2009–current

### Australian Chamber Orchestra

- Regular casual double bassist, emerging artist in 2013.

Sydney  
2013–current

### Opera Australia Orchestra

- Regular casual double bassist.

Sydney  
2016–current

### Tasmanian Symphony Orchestra

- Casual double bassist.

Tasmania  
2013–2018

### Ulster Orchestra

- Held a trial for double bass section leader.

Belfast  
Winter 2012

### Southbank Sinfonia

- Principal double bassist, twice appeared as a soloist.

London  
2011–2012

## 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

- **Helper for uDASH work experience workshop**, *University of New South Wales*.

2022

## 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

## REFERENCES

---

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