

Josef Bisits

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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
• Historical water quality data processing and analysis to develop a predictive water quality model. 2022
- Collaboration with Water Research Centre, UNSW** Sydney
• Provided initial and ongoing advice regarding spatial and temporal analysis of water quality and meteorological data. 2020

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 , , , \LaTeX and `git`.

TEACHING

Mathematics

Tertiary mathematics tutoring:

UNSW
2021–current

- Mathematics Drop in Centre;
- Mathematics 1A (MATH1131/1241);
- 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.

Ongoing

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
- **Associate Lecturer Simon Lloyd**, *University of New South Wales, Sydney*. Email: s.lloyd@unsw.edu.au
- **Dr Geoff Stanley**, *Banting Postdoctoral Fellow, University of Victoria, Canada*. Email: gstanley@uvic.ca