Josef Bisits

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Education

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

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.

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.

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.

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

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 R, , , LaTeX and git.

Teaching

Mathematics UNSW
Tertiary mathematics tutoring: 2021–current

- Mathematics Drop in Centre;
- Mathematics 1A (MATH1131);
- 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** Sydney
  Regular casual double bassist, full time contract musician in 2015 and September 2017–September 2018. 2009–current
- **Australian Chamber Orchestra** Sydney
  Regular casual double bassist, emerging artist in 2013. 2013–current
- **Opera Australia Orchestra** Sydney
  Regular casual double bassist. 2016–current
- **Tasmanian Symphony Orchestra** Tasmania
  Casual double bassist. 2013–2018
- **Ulster Orchestra** Belfast
  Held a trial for double bass section leader. Winter 2012
- **Southbank Sinfonia** London
  Principal double bassist, twice appeared as a soloist. 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