

## UTAS Postdoctoral Research Associate – Ice sheet/ ice shelf modeller

<b>College/Division</b>	College of Sciences and Engineering
<b>School/Section</b>	Institute for Marine and Antarctic Studies – Oceans and Cryosphere
<b>Location</b>	Hobart – Salamanca
<b>Classification</b>	Academic Level A/B
<b>Reporting line</b>	Reports to the Director, ARC Australian Centre for Excellence in Antarctic Science (ACEAS)

### Position Summary

The University of Tasmania (UTAS) is building a vision of a place-based University with a mission to enhance the intellectual, economic, social and cultural future of Tasmania, and from Tasmania, contribute to the world in areas of distinctive advantage. The University recognises that achieving this vision is dependent on the people we employ as well as creating a people-centred University that is values-based, relational, diverse, and development-focused.

The Postdoctoral Research Associate will focus on modelling the physics of ice sheets and/or ice shelves. This position is part of the ARC Australian Centre for Excellence in Antarctic Science (ACEAS), a national-scale, University-led, international centre focused on helping the world community prepare for climate risks emerging from East Antarctica and the Southern Ocean by integrating knowledge of the ocean, atmosphere, cryosphere and ecosystems, and their interplay. ACEAS will grow to support the activities of around 150 researchers, administrative staff, and students, with exciting opportunities to collaborate across disciplinary and institutional boundaries. Further information on ACEAS is available at <http://antarctic.org.au/>.

This 3-year position will commence ideally in January 2023. The position will contribute primarily to ACEAS Program 3, more specifically to topics in Program 3.2a “Use a coupled model to explore ice retreat processes in the region and examine the sensitivity to climate”, and program 3.2b “Use coupled models to determine when/if ice retreat is likely to cross a tipping point, and how this region compares to other areas in East Antarctica generally”. The position will also focus on understanding processes and feedbacks that are responsible for ongoing ice sheet retreat and/or its past future stability, with the broad goal to improve regional- and continental-scale projections of future ice sheet mass loss. Key science questions relevant to the stability of ice sheet margins that could be explored by the candidate include (but are not limited to) (i) understanding the role of subglacial processes (sliding, uplift, geothermal heat, subglacial hydrology) in controlling grounding line stability, (ii) unravelling the role of ice sheet thermal physics in controlling fast ice stream flow and ice sheet mass loss, (iii) developing conceptual and quantitative understanding of how natural variability in atmospheric/oceanic forcings affect ice sheet dynamics. Depending on the skills and preferences of the incumbent, the work will involve a combination of applications of high-resolution ice sheet/ice flow models and development of ad-hoc process models, with potential for an additional focus on the assimilation of new and archive geophysical observations in continental ice flow models.

**We are an inclusive workplace committed to ‘working from the strength that diversity brings’ reflected in our Statement of Values. We are dedicated to attracting, retaining and developing our people and are committed to inclusive principles. We celebrate the range of diverse assets that gender identity, ethnicity, sexual orientation, disability, age and life course bring. Applications are encouraged from all sectors of the community. Tell us how we can make this job work for you.**

### What You'll Do

We will work together to identify problems of mutual interest that lie within the scope of ACEAS. While the specifics of the project will depend on your background and interests, you can expect it to entail a combination of:

- Building first-principle, PDE-based, mathematical models of key components of the cryosphere (subglacial environment, ice sheet thermal physics, etc) with varying degrees of complexity.
- Applying state-of-the-art computational tools and/or developing and apply new numerical/ applied mathematics (e.g., from dynamical systems/ asymptotic analysis) approaches to gain physical understanding of glaciological.
- Developing original implementations of new physics in local-to-continental-scale ice sheet simulation codes (e.g., Elmer/Ice) and assessing their role in trends of mass loss for realistic future scenarios.
- Maintain a strong focus on communicating research findings by publishing in highly ranked journals and presenting to peers at local, national and international conferences.
- Take on leadership opportunities that arise and contribute to the collegiate life of ACEAS and IMAS, such as contributing to PhD supervision, committee membership, leading workshops and/or working groups.
- Undertake other duties as assigned by the supervisor.

### What We're Looking For (success criteria)

- A PhD and/or postdoctoral expertise in computational/applied maths, physics, engineering, quantitative geophysics/ glaciology, fluid dynamics.
- Demonstrated experience in applied and computational mathematics (e.g., dynamical systems, asymptotic analysis ) and/or numerical modelling (e.g., numerical methods for PDEs, earth system modelling, high performance computing), as demonstrated by a record of quality publications.
- A demonstrated scientific interest in ice sheet dynamics.
- Proven ability for problem solving and independent research.
- Demonstrated ability to work efficiently in a team with minimal supervision, with a capacity to set and prioritize strategic research directions.
- Demonstrated ability to work collaboratively in a research team covering multiple disciplines and achieve collective as well as individual outcomes.

### Other desirable criteria

- Experience in Glaciology research with an emphasis on ice sheet modelling with clear evidence of the desire and ability to achieve research excellence .
- Familiarity with Elmer/Ice and/or equivalent full-Stokes solvers, with high-level skills in programming (e.g. Fortran, Python, Matlab) and High Performance Computing.
- Capacity for research leadership (e.g., mentoring of postgraduate research students and junior peers) in the field of expertise.

### University of Tasmania

The University of Tasmania is an institution with an enduring commitment to our state and community, and a strong global outlook. We are committed to enhancing the intellectual, economic, social and cultural future of Tasmania. Our [Strategic Direction](#) strongly reflects the University community's voice that our University must be place based but globally connected as well as regionally networked and designed to deliver quality access to higher education for the whole State.

We believe that from our unique position here in Tasmania we can impact the world through the contributions of our staff, students and graduates. We recognise that achieving this vision is dependent on the people we employ, as well as creating a university that is values-based, relational, diverse, and development-focused.

Check out more here: <https://www.utas.edu.au/jobs>

*The intention of this position description is to highlight the most important aspects, rather than to limit the scope or accountabilities of this role. Duties above may be altered in accordance with the changing requirements of the position.*