

UTAS Postdoctoral Research Associate – Ice sheet modelling and data science

College/Division	College of Sciences and Engineering
School/Section	Institute for Marine and Antarctic Studies – Oceans and Cryosphere
Location	Hobart – Salamanca
Classification	Academic Level A/B
Reporting line	Reports to Professor in Glaciology

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.

We are seeking to appoint a Postdoctoral Research Associate under the University of Tasmania led ARC Australian Centre for Excellence in Antarctic Science (ACEAS). The position will be based at the [Institute for Marine and Antarctic Studies](#) (IMAS) which is part of the College of Sciences and Engineering.

The Postdoctoral Research Associate will focus on modelling the present and future Antarctic Ice Sheet and its contribution to sea level. 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/>.

In this post we are looking for a person to lead a quantitative, data-driven assessment of the East Antarctic Ice Sheet as a whole in ACEAS Program 1 which addresses the overarching question “How can shifts in carbon, heat and moisture transport in the Antarctic and Southern Ocean system be better constrained to improve projections of future climate and sea level changes?”. The work will be broad in scope and expansive, with emphasis on ice-sheet-scale numerical simulations or quantitative large-scale data analysis. The work will integrate field observations, incl. the ACEAS terrestrial campaign at Denman Glacier and Shackleton Ice Shelf, as well as wide-ranging dataset collected previously in the Australian sector of East Antarctica. In terms of expertise, we are looking for a person who can help simplify or upscale ice flow simulations that are currently carried out in UTAS and IMAS on the catchment scale. The approach can be based on hybrid numerical ice sheet modelling or an instructed model that use convolutional neural networks to emulate ice shelves and interior glaciers on a large spatial scale. The successful candidate will therefore have a background in numerical ice sheet modelling (e.g. hybrid shallow ice / shallow shelf approximation) or quantitative data science (e.g. deep learning). The research will produce a comprehensive, state-of-the-art assessment of the East Antarctic Ice Sheet, informing its stability and dynamic state as well as its contribution to sea level rise in the 21st Century and beyond.

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

You will work on the following broad areas of research with the exact focus to be discussed with the successful candidate:

- Simulate or emulate the East Antarctic Ice Sheet using numerical modelling or deep learning
- Develop quantitative, well-constrained projections of the East Antarctic Ice Sheet and its contribution to sea level rise
- Quantify ice sheet stability and rank catchments across East Antarctica according to their susceptibility for rapid retreat
- Identify climate-related vulnerability and tipping points

Regardless of the specifics of your project, you'll be expected to:

- 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, and leading workshops and/or working groups.
- Undertake other duties as assigned by the supervisor.

What We're Looking For (success criteria)

- A PhD in computer science, applied maths, physics, engineering, geophysics, glaciology or a related field
- Expertise in numerical ice flow modelling or quantitative data science, as demonstrated through a record of publications in scientific journals of international standard
- Strong scientific interest in ice sheet dynamics
- Ability to solve scientific problems with technical solutions
- Ability to work independently as well as efficiently in a team that pursues shared goals
- Desire to work collaboratively in a large research programme that covers multiple disciplines
- Excellent written and communication skills

Other desirable criteria

- Familiarity with ice sheet modelling on a large scale (e.g. hybrid shallow ice / shallow shelf approximations) or machine learning in polar science (e.g. convolutional neural networks)
- Quantitative programming skills (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.
- Experience in Glaciology research.

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.