

**UNIVERSITY OF OTAGO  
ŌTĀKOU WHAKAIHU WAKA**

**INFORMATION FOR CANDIDATES**

for appointment as

**Postdoctoral Fellow in Mathematics and Statistics**  
(Fixed-term – Two years and nine months)

**DEPARTMENT OF MATHEMATICS AND STATISTICS**

**PRIME FUNCTION:**

To perform original research contributing to the Marsden funded project “The proof is in the pancake: connecting fundamental physics to data-driven detection of the emergent state of sea ice in the changing polar oceans”. The Postdoctoral Fellow will work closely with Dr Fabien Montiel and team members Dr. Alberto Alberello (University of East Anglia, UK), A/P. Stuart Hawkins (Macquarie University, Australia) and Dr Joey Voermans (University of Melbourne, Australia).

**KEY TASKS:**

- Lead design and implementation of the Bayesian inverse model for pancake-ice detection (in collaboration with project investigators).
- Process and analyse ICESat-2–derived wave attenuation (damping) data (2018–present) to support algorithm development and evaluation.
- Integrating machine learning where appropriate (e.g., surrogate modelling to accelerate inference; complementary classification approaches) and conducting rigorous validation.
- Delivering core outputs of the project: a validated detection algorithm and a pan-polar pancake-ice climatology for the Southern and Arctic Oceans.
- Publish results in high-quality journals and contribute to team manuscripts and project reporting.
- Assist in the development of graduate student skills and assist in supervising research students.
- Maintain effective collaborative working relationships with other members of the research team involved in the Marsden project.

**RELATIONSHIPS:**

Ultimately responsible to: Head of Department.

Supervision by: Dr Fabien Montiel.

Functional relationships: Collaborate with other team members of the Marsden project, as well as staff and students in the Maths and Stats Department.  
Maintain working relationships with general and technical staff in the Maths and Stats Department.

**BUDGETARY RESPONSIBILITY:**

Over an agreed limit, purchases are to be authorised by supervisor.

**EXPECTED OUTCOMES:**

- Regular collaborative contributions as part of a diverse research team.
- Regular and comprehensive liaison with supervisor.
- Reports on research results written clearly, comprehensively, and on time.
- Administration and record keeping completed accurately and efficiently.

**MĀORI STRATEGIC FRAMEWORK:**

Act in a manner consistent with the principles and implications, as well as the University's commitment to the Treaty as articulated in the Māori Strategic Framework.

**PACIFIC STRATEGIC FRAMEWORK:**

Act in a manner consistent with the strategies and goals contained in the University's Pacific Strategic Framework, role-modelling and promoting Pacific values, equity and diversity principles and cultural safety practices.

**HEALTH & SAFETY:**

Act and work in a manner compliant with current health and safety at work legislation and University procedures, frameworks and guidelines. Role model safe behaviour and practices, share the responsibility to prevent harm and contribute to a safe campus and work environment, including raising workplace health and safety concerns for self, students, visitors and other staff.

**SUSTAINABILITY:**

Act in a manner consistent with the University's sustainability commitments; role-modelling sustainable practices, with a particular emphasis on minimising the environmental impact of day-to-day activities.