



School of Geography, Earth and Atmospheric Sciences
University of Melbourne



Université de Strasbourg &
Centre national de la recherche scientifique (CNRS)

ADVERTISEMENT FOR PHD CANDIDATE (International CNRS – UoM joint PhD)

PhD Thesis Project: *DesertLakes-4D - Numerical modelling perspective on hydro-sedimentary dynamics in drylands lakes: what does it take for wind-driven hydro-sedimentary processes to shape the shorelines of Kati Thanda-Lake Eyre?* [[www](#)]

Summary: We are looking for a PhD student to work on a fully funded project on investigating climatic and hydro-dynamic controls on littoral landforms around dryland lakes through a combined numerical modelling and field-based approach is available. The project is part of a joint PhD project between University of Melbourne and CNRS. It will be primarily based at the University of Melbourne (Australia) with a minimum 12-month stay at the Université de Strasbourg (France).

Skills required: The successful candidate for this PhD project will have good skills in numerical modelling of lake or coastal processes (e.g. DELFT3D) and affinity to field work, ideally with a sedimentological and/or geomorphological focus in coastal environments. All candidates are expected to show interest in dryland landscapes and should be open to acquiring new methodological skills through their PhD. As study sites are located in Central Australia, a good level of experience and/or willingness to organize and conduct field work in remote areas will be of additional advantage.

Project description: The objective of this PhD project is to comprehensively investigate the interplay between climatic factors and hydro-sedimentary processes in shaping drylands lake environments. The project focus is on examining the role of wind-generated waves and currents in determining the morphological features of dryland lakes and their shorelines across the Lake Eyre Basin in Australia. This will provide an improved basis for the palaeoenvironmental interpretation of sedimentary landforms around dryland lakes in general and allows exploring the broader implications of changing climate and wind patterns for the hydro-sedimentary dynamics of ephemeral lake systems around the world.

The PhD project is designed to set up a numerical model (DELFT3D) to simulate wind-driven hydrodynamics and sediment redistribution along the shorelines of Kati Thanda-Lake Eyre and adjacent playa lake systems under various wind and lake level conditions. Model predictions will be compared and contrasted with empirical data from playa lake shorelines in Central Australia to identify patterns and key factors influencing lake sedimentation and erosion along the shoreline. This will also provide the basis for acquisition of new sedimentary and luminescence-based geochronological data targeting a range of littoral landforms around Kati Thanda-Lake Eyre and adjacent lake systems to test model accuracy and reliability.

Research Environment: The University of Melbourne is a research-intensive university and has an active program in key areas of Earth Surface Processes research. This spans from fluvial geomorphology, river management, and environmental reconstruction to palaeoclimatology, the development of dating techniques and neotectonics in the School of Geography, Earth and Atmospheric Sciences. You will join a lively and collegial team of post-graduate students working on related projects.

Supervision team: Principal Supervisor: Dr Jan-Hendrik May; Co-supervisor: Dr Amy Prendergast (both at University of Melbourne); Dr Mathieu Schuster (as Principal Supervisor at Université de Strasbourg) and Dr Joep Storms (as External Supervisor at TU Delft)

How to apply? To submit your interest or application, please email a copy of the following documents to Dr Jan-Hendrik May, janhendrikmay@unimelb.edu.au, for consideration:

- (i) Curriculum Vitae,
- (ii) transcripts,
- (iii) and a cover letter outlining your motivation,

Further details:

- The successful candidate will be based at University of Melbourne with a minimum twelve-month stay at the Université de Strasbourg.
- Applications close: **15 May 2024**
Please note that applications will close once a suitable candidate is identified. Interested applicants are encouraged to submit their application as early as possible.
- Anticipated start date: **1 December 2024**
- Contact Details: Dr Jan-Hendrik May, School of Geography, Earth and Atmospheric Sciences, University of Melbourne (<https://findanexpert.unimelb.edu.au/profile/795469-jan-hendrik-may>)