PhD Opportunities in coastal and marine science in Victoria, Australia.

The Victorian Coastal Monitoring Program

Along the shorelines of South-eastern Australia, there is concern that a lack of sediment supply, rising sea level and climate change will impact sediment circulation patterns, leading to the destabilization of nearshore-beach-dune systems through erosion, overwash, and backshore transgression. We aim to explore the fundamental interconnectedness that drives shoreline change in Victoria, Australia. Despite the acknowledgment of coastal sediment dynamics being critical to sustainable management knowledge of shoreline behaviour and sediment movement is limited. As a result the Victorian Government, through the Department of Environment, Land, Water & Planning has formed a partnership with Deakin University and The University of Melbourne to develop the Victorian Coastal Monitoring Program. The aim of this program is to develop predictive models of future shoreline behaviour through understanding sediment dynamics derived from the latest innovative technologies from multibeam and subbottom sonar mapping, citizen-science UAV/Drones and disciplines including remote sensing, marine sedimentology and habitat mapping. As part of this initiative 2 full PhD-scholarships are available.

The successful candidate should hold an honours 1 (or equivalent) Masters or Bachelor with Honours Degree. Both projects will be jointly supervised by Associate Professors David Kennedy (UoM) and Daniel Ierodiaconou (Deakin).

PhD Student #1 (Based at Deakin University, Warrnambool)
Coastal sediment dynamics and the role of benthic habitats and geomorphic characteristics on transport processes

This project will develop novel approaches to habitat characterisation in the marine and coastal zone using the latest advances in habitat mapping including unmanned aerial vehicles and multibeam echosounders. This project will generate a better understanding of the role of benthic flora and fauna in stabilising sediment surfaces. The project will fill important knowledge gaps regarding sediment source and sinks in forecasting shoreline change. The PhD student will also input into the development and quality assurance of the citizen-science data collection including simplification of methodological advances that enable greater data interrogation by the general public.

It will aim to:

- Determine the utility of novel technologies for the fine scale characterisation of geomorphological complexity and community structure in the littoral and sublittoral zone.
- Quantify the role of benthic flora and fauna in stabilising sediment surfaces
- Quality assurance and field testing of the use of Citizen UAV Data for monitoring shoreline change
PhD Student #2 (Based at The University of Melbourne, Melbourne)

Littoral and shallow marine sedimentology of a temperate high-energy shelf

It is broadly known that the Victorian coast, Australia is partitioned into a siliceous eastern zone and carbonaceous western zone in the intertidal zone. Less is however known of the composition of sediment offshore and whether the littoral zone is connected to an active sediment supply or is primarily relict. For example the shelf environment of western Victoria is a productive temperate region, but the connection between this carbonate factory and the shore is poorly understood. This PhD project will focus on the sedimentology of the Victorian coast.

It will aim to:

- Quantify the compositional and textural characteristics of the Victorian marine zone, from beyond wave base to the coastal dunes
- Identify the connection between sediment source and depositional areas.
- Assess the current rates of sediment supply to the coast.

Qualifications: Knowledge of physical geography/geomorphology and/or marine geology. Experience with the temperate marine systems would be an advantage.

Project partners: Deakin University, The University of Melbourne, Department of Environment Land Water and Planning, DHI.

Value: c. AUD$30,000 (UoM) and $27,082 (Deakin) per annum tax exempt for 3yrs, project support (incl. computer, travel) plus other benefits including:

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<td>Deakin</td>
<td>A relocation allowance from $500 to $1,500 awarded to students who are moving from interstate or overseas in order to study at Deakin. $2500 per annum towards project costs. $3000 travel grant during the lifetime of your candidature to attend research meets. For international students only: overseas health coverage for the duration of the tuition fees offset.</td>
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<td>Melbourne (School of Geography)</td>
<td>$3000 grant during the lifetime of your candidature</td>
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Research environment:

Deakin University: Deakin ranks in the top 3% of universities globally and is Australia’s eighth largest university. The project will be hosted by Deakin Universities Centre for Integrative Ecology (CIE, www.cie-deakin.com/) the School of Life and Environmental Sciences, and supported by a multi-disciplinary team including government agencies, private industry, and community groups. The goal of CIE’s research is to foster new conceptual understanding that advances fundamental science, while also making innovative contributions to applied conservation and natural resource management, particularly through protection of biodiversity and areas of high conservation value.

University of Melbourne: The University of Melbourne is a leading international university with a tradition of excellence in teaching and research. The project will be hosted in the School of Geography (http://geography.unimelb.edu.au/). With outstanding performance in international rankings, Melbourne is at the forefront of higher education in the Asia-Pacific region and the world. The University of Melbourne is consistently ranked among the world’s top universities. With independent world rankings place us as number 1 in Australia and among the leading universities internationally – number 32 (THE) and number 39 (ARWU). In Australia, our research expenditure is second only to that of CSIRO. With over 100 research centres and institutes, we bring together expertise from across the University and connect with thought leaders around the world to tackle society’s complex problems in innovative ways. QS World University Rankings place us in the top 20 internationally in 14 subject areas.
Supervisory team: The projects are jointly supervised by academics from Deakin University (A/Prof. Daniel Ierodiaconou) and The University of Melbourne (A/Prof David Kennedy)

Closing date: 22nd April 2018

Citizenship: The positions are open to domestic and international applicants.

Selection criteria:

- An Honours or Masters degree in Ecology, Physical Geography, Marine Science, Geosciences, Environmental Science or Engineering, or similarly relevant degree subjects (e.g. Remote Sensing).
- Demonstrable strong quantitative skills, and experience with spatial and statistical analysis. Experience in marine remote sensing data manipulation is also desired.
- Applicants with demonstrable experience in collecting field data (coastal and seabed mapping) and the capacity to undertake independent fieldwork are also desired.
- Ability to implement research in collaboration with a range of stakeholders (government agencies, private landholders, conservation groups etc.).
- Strong English written communication skills including the capacity to write research results into scientific papers.
- A proven track record of academic excellence. Applicants with first-authored publications in quality journals will score highly.

To apply:

PhD Student #1 (Deakin University):


PhD Student #2 (University of Melbourne):

Email the following information Associate Professor David Kennedy davidmk@unimelb.edu.au

(1) A letter (2 pages max)
   - Addressing each of the selection criteria
   - A summary of your research experience
   - Your reasons for wanting to do a PhD (also a PhD in this research area, and at Deakin/ Uni of Melbourne)
   - Information on how your skills will be relevant to the project

(2) A copy of your academic transcript.

(3) An example of your written work as lead author (e.g. paper, manuscript, thesis).

Further Information

For further information regarding these PhD opportunities contact either Associate Professor Daniel Ierodiaconou daniel.ierodiaconou@deakin.edu.au or Associate Professor David Kennedy davidmk@unimelb.edu.au