



## PhD Project

# Oceanographic drivers of tropical coastal marine ecosystems

We are seeking a highly-motivated Australian domestic PhD student for a joint research project between [UWA](#) and the [WA Dept. of Biodiversity, Conservation \(DBCA\)](#).

### Research project

Coastal ecosystems worldwide are increasingly threatened by a range of global environmental pressures (most notably climate change), requiring improved knowledge to better understand and predict future impacts and inform management actions. A new collaborative research project between UWA and DBCA has recently been established to investigate how physical oceanographic processes regulate environmental conditions and connectivity in coastal ecosystems in northwestern Australia. The overall goal is to improve knowledge and predictions of how regional ocean forcing conditions (e.g. waves, tides and atmospheric processes) govern water flows and temperature variability within shallow coastal habitats, and the implications for material transport (e.g. nutrients and larvae) at fine-scales. The project focuses on the Dampier Archipelago, a World Heritage Nominated chain of islands off Australia's NW coast with a rich diversity of coastal ecosystems (coral reefs, seagrass, meadows and mangrove forests). The broad aims of the research are:

1. To identify how tides and waves interact with a complex archipelago to drive fine-scale circulation and material transport within different coastal habitats
2. To improve predictions of the detailed spatial and temporal patterns of residence times across coastal habitats, and how this drives heterogeneity in water quality variability and extremes (e.g. temperature and nutrients)
3. To predict how climate change and variability will impact coastal ecosystems due to marine heatwaves, sea level variability, and changing wave climate, including identifying areas most resilient or sensitive to future extremes and change.

### Project supervisors and support

The project will be jointly supervised by Dr. Ryan Lowe (UWA) and Dr. Richard Evans (DBCA), with collaboration across a multidisciplinary team from UWA (Dr. Jeff Hansen, Dr. Michael Cuttler, Dr. Mick O'Leary), DBCA (Dr. Shaun Wilson) and the [Australian Institute of Marine Science](#) (Dr. Renee Gruber). The project will involve a large field component and application of coastal numerical wave and circulation models.

All field and project costs required for the PhD project are fully funded by DBCA. We are currently seeking an Australian domestic student for this project who is eligible to apply for a domestic UWA scholarship (Australian Government Research Training Program, RTP) to cover stipend and fees. The scholarship will provide an annual tax-free stipend of \$30,000 p.a.

### Requirements/Eligibility

Applications are invited from Australian domestic students who possess an Honours or Masters degree (or equivalent) in oceanography, marine science, environmental engineering or related fields. Applicants with experience or relevant skills in ocean modelling and/or ocean-based field work are desirable.

Please send your expressions of interest describing your research interests and experience, CV, academic transcripts to Prof Ryan Lowe ([Ryan.Lowe@uwa.edu.au](mailto:Ryan.Lowe@uwa.edu.au)).

The closing date for applications is **9<sup>th</sup> October 2020**.