

## **PhD Scholarship at UNSW (Oceanography/Applied Mathematics)**

A prestigious Scientia PhD scholarship is available on a competitive basis to a high-achieving talented student for the following research project at the University of New South Wales, Sydney, Australia:

### **Changes in Ocean Ventilation: Deconvolutions of Hydrographies and High-Resolution Modelling**

The student will perform cutting-edge research to quantify changes in ocean ventilation, which is the exchange of water between the surface and interior of the ocean. Ocean ventilation is a key factor in the carbon and energy balance of the climate system. How the ventilation of the ocean is changing in response to changes in atmospheric forcing is one of the most important questions in climate science.

This PhD project aims to unlock the information that changes in ocean ventilation imprint on observed tracers such as dissolved gases, nutrients, radiocarbon, temperature, and salinity. By applying novel inversion techniques to new hydrographic data collected under the international GO-SHIP initiative and to historical data from the 1990s and 2000s, decadal changes in ventilation and their effect on heat and carbon uptake will be quantified. To understand the dynamics driving the changes that the data inversions will reveal, the student will also conduct and analyse numerical experiments with state-of-the-art ocean models.

The supervisory team consists of Mark Holzer, Darryn Waugh, and Matthew England. The successful applicant will have the opportunity to interact with researchers in the School of Mathematics and in the Climate Change Research Centre at UNSW, as well as internationally. Applicants should have a strong background in mathematics and physics. Those with research experience will be given priority; a high GPA is also required.

Interested applicants must apply online at <https://research.unsw.edu.au/unsw-scientia-phd-scholarship-scheme> as soon as possible and no later than July 21, 2017. In addition, applicants should contact the supervisors ([mholzer@unsw.edu.au](mailto:mholzer@unsw.edu.au)) with an email containing a CV, a brief statement of research interests, and a copy of their academic transcript. Up to two suitable applicants for this project will then complete a formal Scientia PhD application together with the supervisory team for submission to the Scientia selection process. The scholarship pays \$40k per year for 4 years, with additional support for travel and career development of up to \$10k per year.