Environmental sciences

From research into tropical cyclones, toxic dust and natural hazards to Antarctic contamination and invasive species, Macquarie’s environmental sciences researchers are uniquely positioned to help shape the complex issues that define the future of humanity.

Our researchers operate at the interdisciplinary interface between environmental and Earth sciences, ecology, and social and policy implications. We undertake cross-departmental and cross-institutional collaborative research with colleagues in the fields of biology, climate science, Earth system sciences and geochronology.

Our environmental scientists also enjoy an international reputation as leaders in their fields. Macquarie is the number one institution in Australia in environmental sciences and ecology research (ESI, 2014). This places the University alongside Woods Hole Oceanographic Institution and University of Chicago (USA) in terms of the international impact of our research.

Additionally, in the most recent Excellence in Research for Australia (ERA) evaluation, our environmental sciences research received a rating of 5 out of 5 – ‘outstanding performance well above world standard’, as did our research in the sub-disciplines of ecological applications, environmental geoscience, and environmental science and management.

As a higher degree research candidate at Macquarie, you will be encouraged to take an interdisciplinary approach to addressing contemporary environmental questions, many of which intersect with other fields. With such an approach, your research will help find the answers to questions yet to be asked, and solve the big problems that matter to business and society.

AREAS OF SPECIALISATION
- Climate change and impacts
- Earth surface process dynamics (hydrology, oceanography, geochemistry, Aeolian) in wetlands, soils, atmosphere, oceans and rivers
- Environmental chemistry (environmental quality and human health)
- Environmental economics
- Environmental health (environment–human interactions)
- Environmental management (rehabilitation, conservation, policy and law)
- Environmental technologies (remediation, clean energy technologies, and air and water pollution control)
- Geomorphology and landscape evolution (river, coastal, desert and polar environments)
- Natural hazards
- Quaternary environmental change (terrestrial, coastal and marine proxy records, and geochronology)
- Spatial information science (modelling and forecasting environmental change)

FACILITIES
- Climate science laboratory
- Drill rigs, field store
- Environmental quality laboratory
- Luminescence dating laboratory
- Sedimentology and soil analysis laboratory
- Thermal and environmental processing laboratory

RESEARCH HUBS
- ARIES: Australian Research Institute for Environment and Sustainability
- Climate Futures
- Genes to Geoscience
- Produced Water Research Centre
- Risk Frontiers
- We also partner in the National Climate Change Adaptation Research Facility and Sydney Institute of Marine Science
Highlights

• ARIES received two awards at the prestigious 2015 National Trust Heritage Awards – Conservation natural landscape; Heritage tours and multimedia: Government and corporations.

• Associate Professor Kirstie Fryirs was awarded the British Society for Geomorphology’s 2014 Gordon Warwick Award, which recognises excellence in research by someone within 15 years of PhD completion.

• Associate Professor Ian Goodwin, Stuart Browning and Atholl Anderson were published in the prestigious *Proceedings of the National Academy of Sciences* in 2014.

Support

You will be provided with individualised support, as well as a range of opportunities, at all stages of your research degree, including:

• higher degree research learning skills advisers who provide valuable training options such as workshops in research communication, presentation skills, academic writing skills, thesis planning and more
• inspirational supervision and mentoring
• a candidature management plan that closely supports progress, commencement programs, work-in-progress reviews, and presentations providing opportunities for feedback from a panel of academics
• real-world engagement with opportunities for cotutelle and joint degrees
• financial support for a range of research-related activities
• world-class facilities
• a transformative research experience that fosters cross-disciplinary collaboration.

RESEARCH LEADERS

Meet some of our internationally renowned researchers.

**Professor Peter Nelson** has more than 30 years of experience researching the assessment and control of air pollution; and is also an expert in environmental issues associated with energy use with emphasis on toxic organics from industrial and vehicular sources, trace elements and waste management. Much of this research is undertaken directly with industry – for example, ARC Linkage Projects with Rio Tinto, CRC program, Australian Coal Association Research Program, and NSW Power Generators – and with government – for example with the Australian Greenhouse Office, and the NSW Office of Environment and Heritage.

**Professor Damian Gore** is an environmental scientist who has undertaken research across the globe in geomorphology and environmental quality. His research has involved studies of geomorphology and geochemistry in Alaska, Antarctica, Canada and Iceland. He has also been involved with the rehabilitation of contaminated sites in Australia and Antarctica. His work is co-funded by industry and research grants funded by the ARC Discovery and ARC Linkage schemes. He also manages Macquarie’s analytical X-ray laboratory.