Macquarie’s environmental scientists enjoy an international reputation as leaders in their fields. 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, and environmental science and management.

Additionally, 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.

Our researchers operate at the interdisciplinary interface between environmental and Earth sciences, ecology, and social and policy implications. Our research strengths are concentrated in five key, interrelated areas:

- climate change and impacts
- Earth surface process dynamics (hydrology, oceanography, geochemistry, aeolian)
- geomorphology and landscape evolution (river, coastal, desert and polar environments)
- human impacts on the environment and rehabilitation/management responses
- quaternary environmental change.

As an HDR candidate you will be encouraged to take an interdisciplinary approach to addressing contemporary environmental challenges, 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

- Biophysical environment (rivers, wetlands, soils, atmosphere, oceans and cryosphere)
- Climate science
- Environmental chemistry (environmental quality and human health)
- Environmental health (environment–human interactions)
- Environmental management (rehabilitation, conservation, policy and law)
- Environmental measurement and analysis
- Environmental technologies (remediation, clean energy technologies, air and water pollution control)
- Geomorphology, environmental change and landscape evolution
- Spatial information science (modelling and forecasting environmental change)

### Facilities

- Climate science laboratory
- Drill rigs, field store
- Environmental Earth science laboratory
- Environmental quality laboratory
- Luminescence dating laboratory
- Thermal and environmental processing laboratory

### Research Hubs

- ARC Centre of Excellence for Core to Crust Fluid Systems
- Climate Futures
- Concentration of Research Excellence in Climate Risk
- Concentration of Research Excellence in Ecology and Evolution
- Genes to Geoscience
- Produced Water Research Centre
Highlights

• Macquarie hosts the ARC Centre of Excellence for Core to Crust Fluid Systems, Australian Research Institute for Environment and Sustainability, and Risk Frontiers. We are also a partner in the Environmental Biotechnology Cooperative Research Centre, National Climate Change Adaptation Research Facility and Sydney Institute of Marine Sciences; and lead the Australian Animal Tagging and Monitoring System

• We undertake cross-departmental and cross-institutional collaborative research with colleagues in the fields of biology, climate science, Earth system science, and geochronology

Support

We give HDR candidates strong academic and administrative support. This includes:

• commencement and completion programs
• discipline-specific research training units, including workshops in research communication, presentation skills, academic writing skills, thesis planning and poster preparation
• experienced supervisors and department-based higher degree research directors
• financial support for research project costs, including top-up scholarships from industry
• regular progress reports and interviews, and/or work-in-progress presentations in which research candidates receive feedback on their work from a panel of academics in their field.

Research leaders

Macquarie is home to many internationally renowned researchers, including:

Professor Peter Nelson has more than 30 years’ experience researching the assessment and control of air pollution; and on 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 RioTinto, CRC program, Australian Coal Association Research Program, and NSW Power Generators; and government, for example with the Australian Greenhouse Office, and the NSW Department of Environment, Climate Change and Water.

Associate 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.