

**PhD Opportunity: Detecting and quantifying methane emissions from a heterogeneous landscape using satellites and AI technologies**



The Research Institute for Environment and Livelihoods (RIEL) is seeking expressions of interest from outstanding candidates for a groundbreaking PhD project focused on methane monitoring using remote sensing and artificial intelligence (AI).

This exciting project offers a unique opportunity to work within a multidisciplinary team comprising researchers from across the University and government agencies. The successful candidate will utilise cutting-edge Earth observation technologies, including satellites, drones, and AI-based analytical methods, to detect methane emission sources and quantify emission rates in the Beetaloo region of the Northern Territory, Australia.

The research will contribute to the development of a robust methane monitoring framework to support environmental stewardship, evidence-based decision-making, and sustainable resource development. The project will provide valuable training and experience at the intersection of remote sensing, geospatial science, environmental monitoring, and machine learning.

**Scholarship and financial support:**

For Domestic Candidates:

- CDU RTP stipend (\$35,489 per annum from 2026, indexed annually and tax exempt), for up to three years from commencement, open to Australian citizens/residents or New Zealand citizens (domestic students).
- A stipend top-up of up to \$18,000 per annum may be available.
- RTP Fee Offset (full tuition fee waiver) for three years.

For International Candidates:

- CDU RTP stipend (\$35,489 per annum from 2026, indexed annually and tax exempt), for up to three years from commencement

- A stipend top-up of up to \$18,000 per annum may be available.
- RTP Fee Offset (full tuition fee waiver) for three years.
- We note that RTP scholarships for international candidates are limited and highly competitive. To meet the eligibility criteria for this stipend, only international candidates with outstanding academic performance are encouraged to apply.

### **About the project:**

Methane is the second-largest contributor to global warming, and anthropogenic sources are elevating atmospheric concentrations. Oil and gas development in the Beetaloo region of the Northern Territory of Australia will increase social and economic growth. However, it may also elevate methane levels, necessitating a robust monitoring program. This project will leverage satellite imagery and deep learning methods to detect methane plumes and quantify emission rates. The anticipated outcomes include the development of a methane monitoring tool that provides accurate detection rates and estimates at varied spatial and temporal scales. This project will feed into the Northern Territory Government-CDU regional monitoring program for the Beetaloo region, supporting the myriad stakeholders in the area.

### **About you:**

- You have a research background (Honours or Masters) in Remote Sensing, Environmental Science, Atmospheric Science, Computer Science, Data Science, Physics, or similar field, and bring a high level of academic merit consistent with RTP stipend scholarship requirements
- Hold an Australian driving license or the capacity and willingness to obtain one
- Would ideally be based or willing to relocate to Darwin
- Strong analytical and problem-solving skills
- Curious and innovative
- Ability to work independently with a high level of initiative as well as collaboratively
- Attention to detail
- Commitment to research excellence

### **Benefits to you:**

- Take advantage of professional development training programs available for PhD students
- Play an integral role in a highly collaborative multidisciplinary research team
- Contribute to research with real-world impact
- Access to Student Support Services and Wellbeing Support Program
- Work with a University committed to changing people's lives for the better through training, education, and research

### **Selection criteria:**

- First Class Honours, MSc or equivalent containing a substantial research component in a relevant field such as Remote Sensing, Environmental Science, Atmospheric Science, Computer Science, Data Science, Physics, or similar field
- Ability to undertake independent research
- Capacity to work collaboratively within an interdisciplinary research team
- Artificial Intelligence and Machine Learning capability
- Must meet the RTP domestic or international student requirements (as relevant)

**How to apply:**

Email an expression of interest to Dr Richard Crabbe ([richard.crabbe@cdu.edu.au](mailto:richard.crabbe@cdu.edu.au)), including:

- **Cover email:** Outlining your suitability (addressing the selection criteria) and why you're interested in this project.
- **Curriculum vitae:** Including qualifications, relevant experience and information about up to 4 of your best publications with their quality indicators.
- **Postgraduate transcripts:** Showing grading scheme, GPA, and all thesis/research units
- **Referees:** Names and contact details of two academic referees

**Application closing date:** 12 July 2026 (11:59PM, ACST)

**Commencement date:** Early 2027

**Supervisory and Advisory Team:** Richard Crabbe, Lindsay Hutley and Sami Azami

**Enquiries:** Dr Richard Crabbe, [richard.crabbe@cdu.edu.au](mailto:richard.crabbe@cdu.edu.au), (08) 8946 6745

**Diversity and Inclusion:** At CDU, we actively celebrate our diversity. We innovate, embrace new ideas, and act with courage and kindness. We're about what we can give to the world rather than what we take, and we believe in the transformative power of education. We work hard to make sure every member of our university community feels that they truly belong. Understanding that it is through our focus on our people and leveraging our differences that will make CDU the most connected university in Australia, we are striving to ensure that our culture and our community are inclusive of all our staff, students and visitors. We are committed to maintaining a culture where everyone feels respected, safe, encouraged to speak up and supported in achieving their professional goals. You make CDU. And we want you to be exactly who you are.