

## **ANU Institute for Climate, Energy and Disaster Solutions (ICEDS)**

### **Working with ANU Scientists to Find New Solutions to Preventing Flood Damage**

**Internships available for Semester 2, 2022**

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Climate, energy and disasters are crucial and growing issues for Australia. The [Institute for Climate, Energy and Disaster Solutions](#) (ICEDS) initiates and supports the innovative cross-disciplinary research across ANU with the aim of ensuring broad societal impact as well as leading outreach, policy engagement, facilitation and coordination roles.



A helicopter came to rescue the residents atop the hotel in Lismore. (Nine)

Current approaches to flood resilience are not keeping up with climate change. They cannot be relied upon. We need to think and act differently from in the past. We must find new solutions.

Australian floods of biblical proportions as we are seeing in NSW and QLD are not just 1 in 100 or 1 in 1000 year events. We can expect them much more often.

Australia is suffering greater impacts of climate change than any other advanced economy, and will face cascading, compounding and aggregate impacts on cities, settlements, infrastructure, supply-chains and services from floods (<https://bit.ly/3pq0iTx> IPCC Report).

Traditional solutions for flood prevention will not work on their own.

This is why the ANU Institute for Climate, Energy and Disaster Solutions (ICEDS) is embarking upon a new initiative to partner with regional communities to develop a

framework and process to evaluate options for minimising the impacts of floods on communities.

Nature based solutions (NBS) and their ability to address flood risk is a solution that is receiving increasing attention globally. The project also includes a review of these global developments, and assessment of how they can be applied in Australian conditions.

We invite interns to join our team in our quest for finding new solutions to prevent flood damage.

## **Project: Working with ANU Scientists to Find New Solutions to Preventing Flood Damage**

### **Internship Details:**

- Internship Availability: Semester 2, 2022
- Internship Disciplines:
  - Environmental science
  - Mathematical modelling
  - Hydrology
  - Environmental economics
- Internship Level: Undergraduate 2<sup>nd</sup> or 3<sup>rd</sup> year, or Postgraduate Coursework
- Available to International Students: Yes
- Preferred Project Skills: There is a number of projects; each requires different skills, including:
  - Excellent written communication
  - Experience in mathematical modelling
  - Understanding of climate change and flood mitigation
  - Creativity and initiative when problem solving
- Clearances Required: No
- Host Supervisor: Dr Roslyn Prinsley, Head of Disaster Solutions, ICEDS (E: [roslyn.prinsley@anu.edu.au](mailto:roslyn.prinsley@anu.edu.au); Ph: 6125 6412)
- Location
  - Coombs Building
  - ANU
- If necessary, does this internship offer an online only option: Yes
- Project opportunities/benefits for the intern:
  - This is an opportunity to work with a multidisciplinary team of ANU researchers to identify innovative approaches to reducing the risk of floods to regional communities.
  - You will gain research experience in environmental science, hydrodynamic modelling, or engagement with local government stakeholders.
  - You will improve your ability to review and analyse complex environmental science concepts and practices.
  - Or you might prefer to put into practice your topographical mapping skills or your mathematical/hydrodynamical modelling skills.

## Summary:



Lismore McDonald's before and during the floods. Composite: Jason O'Brien/Google Maps/AAP (<https://www.theguardian.com/australia-news/2022/feb/28/lismore-flooding-before-and-after-pictures-show-the-full-scale-of-disaster>).

An opportunity exists for high-achieving undergraduates or master's students from ANU to undertake an internship at the Institute for Climate, Energy and Disaster Solutions under the guidance of the ANU National Floods Initiative Team.

## Background:

The Institute for Climate, Energy and Disaster Solutions (ICEDS) has assembled an experienced team of researchers across water science, ecology, economics, social science, engineering, policy and modelling. We are partnering with rural, regional and peri-urban communities in a range of locations across New South Wales, Queensland and Victoria to assess and quantify options for increasing community resilience to coastal and inland river flooding.

## Projects:

We are seeking an intern for each of the following projects:

1. Nature-based solutions - Summarise the best practices in nature-based solutions from international guidelines.
2. The benefits and co-benefits of nature-based solutions for flood management (rivers) and how this might be relevant for specified areas in Australia - *Literature review and analysis*.
3. Hydrodynamic modelling floods in flat terrain with meandering streams - modelling flows under these conditions, and solutions that have been tried (and proven?) - *Literature review and analysis*.
4. What is the potential for diverting water into paleochannels to reduce flood risk? - *Topographical study and/or literature review and analysis*.

5. Comparing models which simulate river flows during floods - *Hydrological/mathematical modelling*.
6. Engagement with Councils to source flood risk maps and hydrological studies, community consultations and local reports to explore:
  - the risks and needs identified in each location
  - mitigation methods that have been explored
  - an evaluation of how effective these might be?

**Criteria:**

The internships would be best suited for interns who have an interest in using their skills in review, analysis and/or mathematical modelling and/or economics to contribute to the team's research with local communities in regional Australia to increase resilience to flood risk. The interns would need to have strong written communication ability, strong analytical skills, the ability to undertake independent research, creativity and initiative.

**Deadlines:**

Please note that Expressions of Interest are due **5pm, 20 June**. After you receive confirmation of your eligibility from the Science Internships Office, complete your application by uploading your resume and one-page Statement of Interest and Suitability for each preference by **5pm, 27 June**, using the link which will be sent to you.