

RCET-NEW PhD Projects

Joint Centre for Disaster Research, Massey University (JCDR) & Earth Sciences New Zealand (ESNZ)



Earth Sciences
New Zealand

Exploring Hybrid Instrument Networks for Earthquake Early Warning in Aotearoa New Zealand

Supervisors: A.Prof. Raj Prasanna (Joint Centre for Disaster Research, Massey University) and Dr. Jen Andrews (Earth Sciences New Zealand)

Context and Aim

Earthquake early warning (EEW) systems aim to rapidly detect earthquakes, forecast ground shaking, and issue alerts to nearby communities before damaging ground shaking arrives. A few seconds to tens of seconds of warning time could be used for protective actions to mitigate the impact on people and infrastructure. While operational EEW systems have existed since the 1990s, recent technical advancements have led to an acceleration in new developments and implementations, exploring multiple data sources, infrastructures and algorithms. New Zealand currently has no national EEW system, despite having significant seismic hazard from onshore and offshore fault systems.

This PhD is part of a 5-year MBIE-funded Endeavour programme to increase Aotearoa's resilience to geohazards, through the development of next-generation and multi-data early warning approaches for earthquake and tsunami. This PhD will specifically aim to utilise hybrid observatory grade and low-cost seismic sensor networks to explore and evaluate novel methods for EEW, building on prior research that has developed a community-hosted, MEMS-based, decentralised network and studies using the national observatory-grade monitoring network. The project aims to:

- Explore different hybrid network topologies and their technical and scientific attributes
- Adapt and develop new system architectures and algorithms for EEW using hybrid networks
- Test systems and evaluate performance using synthetic and real historic earthquakes

We are seeking a candidate with a passion for science with societal impact and strong technical skills.

Duration: The PhD position is fully funded for 3 years

Scholarship: \$105000 (35000/year) plus Fees

Start date: November

Location: Joint Centre for Disaster Research (JCDR), Massey University, Wellington.

Application Submission Deadline: 31st July 2026

Selection Criteria and Expected Skill Profile:

- Honours Degree with First Class/ Second Class Upper, or Master's in one of the following fields: electronics, mechatronics, telecommunications and network engineering, computer engineering/science, geophysics

- Strong background in signal processing, edge computing, embedded systems, data communication, and computer networking,
- Proficiency in scientific coding and scripting languages,
- Experience in full-stack development, data analysis, and scientific interpretation will be an advantage.
- Requires the ability to work both independently and with a team of people from diverse backgrounds
- Evidence of strong oral and scientific English writing proficiency

Application Process:

To apply, please submit the following documents **on or before 31st July 2026** in a single PDF file:

- **Cover Letter:** stating your motivation and a brief "Skills Mapping" (explaining how your background meets the specific requirements listed above).
- **Detailed CV:** Including links to publications, your Thesis, or significant Honours projects.
- **Academic Transcripts**

Email Application to: R.Prasanna@massey.ac.nz

with Subject: **Application for RCET PhD Projects_Your Name**