

## Call for Scholarship applications

3-year Doctoral Scholarship

Joint Centre for Disaster Research,  
Massey University  
New Zealand



### **PhD Research Scholarship: Evaluating effectiveness of uncertainty typologies for technical communications before, during, and after disasters**

The Joint Centre for Disaster Research (JCDR) is awarding a three-year PhD Scholarship from mid 2020 – 2023 as part of the Resilience in Practice Model (RPM), Resilience to Nature's Challenges (RNC) research programme, Kia manawaroa – Ngā Ākina o Te Ao Tūroa. The scholarship is available to students of all nationalities. The starting date is any time from mid-2020.

**Closing Date for Applications:** 30th April 2020

#### **Subject area:**

Communicating uncertainty in a disaster is a significant challenge. Leading evidence is divided as to whether communicating it helps, or hinders, decision making by emergency managers and individuals, and building effective relationships across agencies. There is an urgent need to identify effective processes for communicating technical uncertainty, to prevent misconceptions and delayed or inappropriate decisions in a disaster.

Risk assessments, recovery models, and simulations of hazardous phenomena, are a particular challenge when communicating uncertainty, because the uncertainties inherent to the assessment or model are often poorly identified and categorised. These uncertainties can include those often recognised in models, such as those associated with parameters, input conditions, and model assumptions. However, they also include more qualitative and less well understood uncertainties such as the value judgments involved in choosing and designing the model. This results in compounding, interdependent and related uncertainties, resulting in even deeper uncertainties.

Strategic and robust approaches to identifying, quantifying, calculating, prioritising and communicating uncertainties is thus vital, and can help ensure enough uncertainty information is available for decision making while not overwhelming decision makers. This is important at all phases of disaster management, prior to, during, and after an event. One way to facilitate the communication of this mass of technical uncertainties involves applying typology schemes to help

identify, classify, and prioritise uncertainties. They should give due consideration to framings, interpretations, understandings, and value judgements of uncertainty and risk assessments and models (see Doyle et al., 2019).

This PhD will critically assess the effectiveness of these typology schemes to identify and communicate uncertainties related to natural hazard impact forecasting tools. It will determine whether such schemes improve communication effectiveness and promote uncertainty literacy. It will also identify any alternative approaches to this challenge. Two case studies will be developed using multi-hazard risk (e.g. RiskScape) and socio-economic (e.g. MERIT) modelling. Lessons and recommendations will subsequently inform a framework that can be applied across the full range of NZ hazard models and provide a baseline for future assessments of risk communication, and propagation of uncertainties through multi-model and cascading hazard assessments.

The subject area of this PhD can be adjusted according to the student's qualifications and area of research interest.

#### **About the Joint Centre for Disaster Research:**

The JCDR is located within the School of Psychology and is based at the Wellington Campus of Massey University in New Zealand. The Centre undertakes multi-disciplinary applied teaching and research aimed at understanding the impacts of disasters on communities, improving risk management and enhancing community preparedness, response and recovery from various hazard events. You can find out more here <http://disasters.massey.ac.nz/>

#### **About Resilience to Nature's Challenges:**

Resilience to Nature's Challenges is a national research programme that is building new knowledge and tools to contribute to greater resilience in our unique rural, urban, coastal and Māori communities to natural hazards including earthquakes/tsunamis, volcanoes, weather and coastal hazards. We work with stakeholders to generate co-created research that communities, organisations and agencies can use to improve New Zealand's natural hazard resilience. You can find out more about us here <https://resiliencechallenge.nz/>. This project sits within the Resilience in Practice Model, the goal of which is to advance scientific understanding of resilience in New Zealand, identify solutions and deliver resilience outcomes for the nation. It is also linked to the Multihazard Risk Model which is focused on delivering world-leading multi-hazard, risk and impact modelling that contributes to key strategic, planning and decision-making processes.

<https://resiliencechallenge.nz/scienceprogrammes/resilience-in-practice/>

<https://resiliencechallenge.nz/scienceprogrammes/multihazard-risk-model/>

#### **The scholarship**

This PhD scholarship is available to a suitable student who is accepted into a PhD program at Massey University. The successful scholarship holder will receive NZ\$32,000 per year for up to 3 years. This amount includes the student stipend and the domestic PhD and other enrolment fees:

<https://www.massey.ac.nz/massey/admission/fees/quick-guide/2020-quick-guide.cfm#domestic-postgraduate-fees> – *(international students that reside within NZ for the duration of their Doctoral candidature, and meet the University's eligibility criteria, pay domestic fees).*

## Eligibility

The scholarship is available for pursuing a PhD programme. The student is expected to have an Honours or Masters (with a research thesis component) qualification in a relevant discipline (interdisciplinarity is encouraged), such as: geography, social science, communications, earth science, sociology, or engineering.

The successful candidate will be enrolled fulltime at Massey University and reside in New Zealand, for the tenure of the project. Candidates must meet the **PhD eligibility criteria** for enrolling at Massey University (<http://www.massey.ac.nz/massey/research/higher-research-degrees/how-to-apply-for-the-phd/how-to-apply-for-the-phd.cfm>).

## Timetable

- Applications close: 30<sup>th</sup> April 2020
- Selection of candidate by 15<sup>th</sup> June (offer must be accepted within 3 weeks)
- Ideal PhD Studies commencement date: 1 September 2020, however start date can be flexible for the appropriate candidate.

## Enquiries and Applications:

Applicants should submit an email to **Heather Gunn (H.M.Gunn@massey.ac.nz)**, with the subject heading of 'Uncertainty Communication PhD application'. Please include:

- A curriculum vitae (max. 2 pages)
- Academic transcript
- List of publications (if any)
- Contact details
- One A4 page cover letter outlining your interest in the topic, and why you would like to be considered for this scholarship.

## Enquiries about the topic can be directed to:

Emma Hudson-Doyle ([e.e.hudson-doyle@massey.ac.nz](mailto:e.e.hudson-doyle@massey.ac.nz)).