

Natural Hazards Research Forum: where the present meets the future

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The Natural Hazards Research Forum held in October 2022 in Brisbane (Yuggera and Turrbal Country), challenged our thinking on the management of natural hazards.

The goal of the forum was to bring people together to contribute to the future of natural hazards research, including what is being done and what the solutions are for the future. In attendance were almost 300 delegates from 124 different organisations – an impressive reunion of partners, researchers, government representatives and others invested in driving change through research.

Across 3 days and 65 speakers, themes to emerge were resilient communities and built environments, Aboriginal and Torres Strait Islander science, evidence-informed policy and strategy, learning from disasters, sustainable landscapes and situational and operational capability.

The forum encouraged attendees to:

- define and build community resilience in the face of climate change
- acknowledge our connection to Country and listen to perspectives of Aboriginal and Torres Strait Islander peoples
- evaluate the impact of human activity and the hidden (and not so hidden) effects on the land and on us
- plan for a future of extreme, compounding and cascading events, including how best to harness community skills and resources.

Emergency management has traditionally used ‘command-and-control’, response-oriented systems and structures to deal with emergencies, disasters or threats. However, in a changing world, ‘systemic’ failures have been experienced in areas of response and community resilience.

There are several factors that underpin such failures¹:

- Dynamic characteristics of the disaster/ threat, including timing, amplitude, magnitude and containment. Disaster events vary in their characteristics even by type (i.e. what

is a ‘normal’ bushfire, flood, cyclone or earthquake?).

- Dynamic stakeholder characteristics, which can often be complex with each affected organisation, group or person having their own culture, structure and ways of doing things.
- Geographic spread of disasters and their monitoring rely on prediction modelling, geospatially related information and situational awareness.
- Information and communication complexity means information on local conditions and individual requirements and needs can be difficult to obtain and are often centrally managed.

Professor Mary O’Kane presented ‘Insights for Research in Disaster Risk Reduction and Resilience’. She noted the imperative to extend imagination to encompass how a future might look for high-risk hazards and their effects. She stressed the need for a research agenda that includes the use of a common language by practitioners and researchers for problem-solving, the creation and use of methods and means to understanding the impact of research on practice and the opportunities and challenges that technology presents. She spoke of the need to include communities, including Aboriginal and Torres Strait Islander peoples and their representatives, in the development and deployment of research solutions. This was particularly so in areas of public warnings, risk management, education and training, dealing with trauma, land management and housing solutions.

There were other excellent speakers on topics of the consequences of the new era of disasters, climate change, evidence-informed policy and strategy, systems interoperability, co-existence with hazards, land management, Aboriginal and Torres Strait Islander women’s role in protection



Andrew Gissing led the forum, which attracted attendance from 300 delegates.

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of Country, cultural burning practices, learning from disasters, the value of royal commissions and inquiries, workforces and communities of the future, as well as connection to Country and the impact of natural hazards on Aboriginal and Torres Strait Islander peoples, young people and those at risk.

The forum highlighted some tensions that exist between current critical responses and a vision for the future. These must be resolved if we are to develop future-oriented, innovative, useful and used research solutions. Areas for resolution include:

- a future focus on developing complex systemic approaches that build hazard resilience, rather than the current use of many resources to produce specialised research and solutions that are generally agency specific
- development of future-oriented solutions that reflect and incorporate Aboriginal and Torres Strait Islander custodianship and accumulated knowledge of Country, rather than being dependent on research approaches built on Western research methodologies
- use of larger-scale, inter- and multi-disciplinary research approaches to problem solve across organisations, jurisdictions and communities, rather than reliance on smaller, fast research and solution development cycles that come under resource and time pressures
- development of a common understanding of problems and the language to describe them as well as the application of co-developed research to produce integrated, transformational adaption and risk reduction, rather than piecing together domain and jurisdictionally specific research outcomes for integrated solutions.

These tensions are aggravated by:

- the difficulty in applying lessons learnt (i.e. minimal knowledge transfer occurs beyond specific events and participants resulting in extensive and expensive shelf-ware
- playing a blame game rather than seeking solutions to problems
- not identifying, codifying or applying patterns of response across all hazards to address risk
- the overlapping of links between phases of prevention, preparation, responding and recovery that can occur concurrently and can cloud the identification and understanding of critical issues
- the lack of effort and resources applied to developing trans-disciplinary research to hazards management and community resilience, which are required to mitigate the impacts of natural hazards on social, environmental and financial situations.

Practical and effective ways emerged where the present can meet the future through embracing Aboriginal and Torres Strait Islander knowledge, being open to change and moving on from describing research problems to developing effective and translatable research solutions. Specifically:

- identifying and addressing dynamics in hazard management from a systemic viewpoint
- analysing the effects of these dynamics on systems governance, from response agency and community perspectives (data sourcing and use, organisational and management processes as well as technology use and risk management)
- understanding patterns of failure to better manage, build and operate future information technologies and systems of systems
- creating new systems that help us act in future disaster events when the known range of management command-and-control activities are ineffective.

So, what is the way forward? The forum highlighted the need to focus on effective understandings of complex systems; responsive, flexible, collaborative and contextualised community-based approaches; and theories and approaches to trans-disciplinary, translational and transformative solutions.

If the present is to meet the future, it is critical that we develop agile institutional responses and solutions to complex crisis management, community resilience building and disaster risk reduction. This forum gathered broad input and support for developing a national research agenda for high-risk hazards.

Endnote

1. Bunker D, Levine L & Woody C 2015, *Repertoires of collaboration for common operating pictures of disasters and extreme events. Information Systems Frontiers, vol. 17, pp.51–65. doi:10.1007/s10796-014-9515-4*