

Awareness, education and communication for compound natural hazards

Presenter:

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Natural hazard events are increasing in frequency and/or intensity under climate change

- Awareness, education and communication are crucial for preparedness, response and recovery
- There is no established best practice framework for communicating on *compound* natural hazards
- This project aimed to fill that gap by co-creating a tailored communication framework with communities and responders





Compound natural hazards are...two or more extreme disaster events occurring simultaneously or successively; combinations of extreme events with underlying conditions that amplify their impact; combinations of events that are not themselves extreme but which collectively lead to extreme impacts.



Seneviratne et al. (2012)

Changes in climate extremes and their impacts on the natural physical environment. In: *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation,* Field, C.B. et al. (eds.). A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change (IPCC). Cambridge University Press, Cambridge, pp. 109-230.





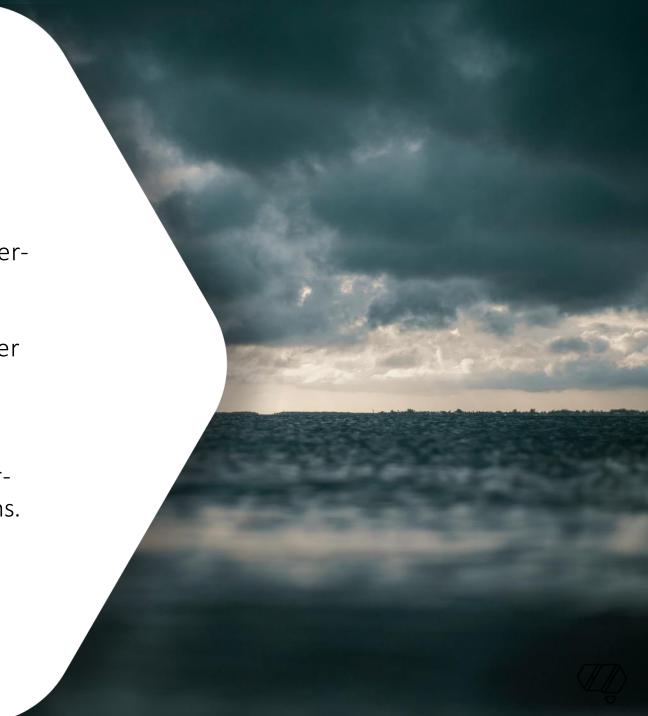
Methodology

• Systematic quantitative literature review of 45 peerreviewed papers

Semi-structured interviews with 34 natural disaster communicators

 "Town hall" style focus group discussions (Zuckerman-Parker and Shank 2008) with disastereffected communities in three case study locations.

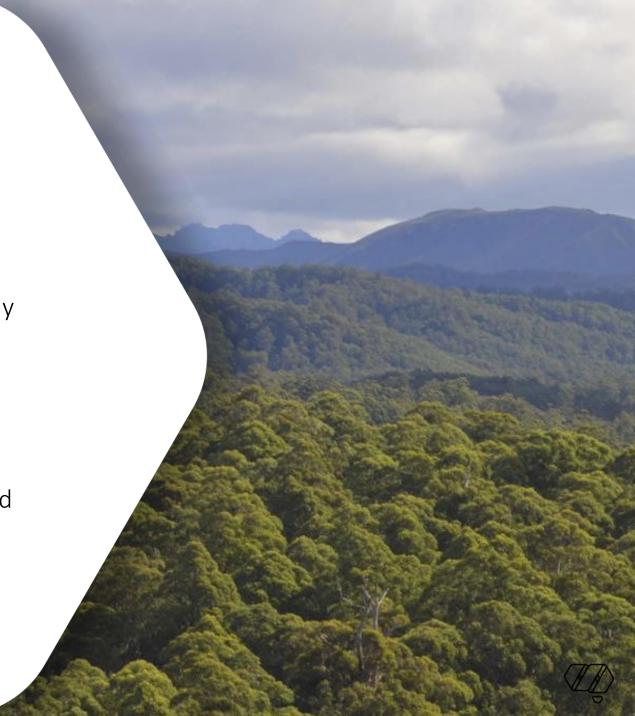
 Thematic analysis to provide a rich, detailed, and complex account of the data (Braun and Clarke 2006).





Literature review: highlights

- What constitutes 'compound hazards' is not clearly defined or agreed on in the literature
- With increasing risk of hazards co-occurring, awareness is needed to improve resilience
- There is no existing framework to guide compound hazard communication





Project case study locations

- Dandenong Ranges, VIC
- Ayr, QLD
- Tenterfield, NSW

Case study locations were selected against a set of criteria including: type of hazard, geographical spread, social diversity, local media presence and avoiding overresearched locations.



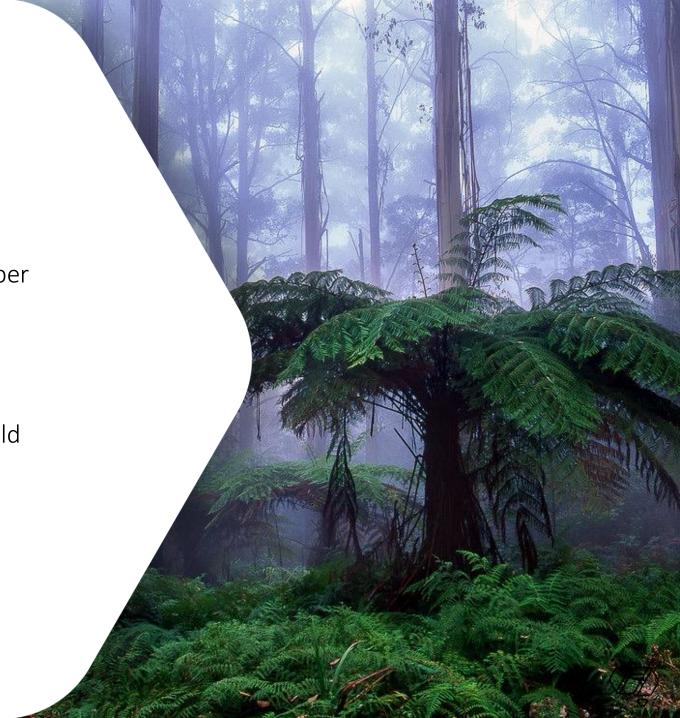


Dandenong Ranges, VIC

 Community forum held in Olinda on 11 November 2023

12 interviews conducted

 Worked with the Ranges Trader Star Mail to build awareness of the research and invite forum participants





The June 2021 storms brought down trees across the Dandenong Ranges and were strewn

Share your experiences

tance of good communication during difficul

Two years on from the devastating storms of June 2021, the Ranges Trader is support-ing an initiative to improve communication between emergency responders and locals in times of disaster.

This has led to the launch of Storm Talk, an innovative partnership between local media and natural hazards experts, which encourages Dandenong Ranges residents to share their experiences of communication during the storms and awareness about such natural

The project is funded by Natural Hazards Research Australia and delivered in partnership with a team of researchers at Deakin Uni-

*Our research team wants to know how community members received information before, during, and after the storm - and what could be improved," the project's lead re-searcher, Dr Gabi Mocatta said.

Over the next few weeks, the newspaper will run a series of articles presenting local perspectives on communication during the 2021 storms.

survey or consider attending an invited community forum to share insights and experiences about where they receive information about disasters and how that process could be

good communication might have saved lives and property, and where it helped bring people together." Dr Mocatta said.

"We also want to know where there are gaps about natural hazard events, like the 2021



The 2021 storms brought down 25,000 trees and damaged 173 properties, all in the middle aditions in the world

Many Hills residents were left without power for months. For some, the impact of the orms is still being felt, as damage to property is slowly repaired

Unfortunately, compound natural hazards disasters on top of disasters - are becoming increasingly common in Australia. Commu nication and awareness initiatives are key to aration for future disasters.

"We are hoping that community members will join in the discussion and help us undernatural hazards," Dr Mocatta said.

A storm like no other...

sound that woke him from sleep and the shock of finding a four-tonne tree in the middle of his family home during the torms in June 2021. Having made attempts to call for help

without any success, Gary says he sat wait-ing in his car from 3am until about 7am in the hopes emergency services would arrive.

"I basically stayed near the house in the car hoping that someone would come but it never eventuated," he says.

As a former MFB firefighter, Gary says services during major events but commu-nication in the immediate aftermath could have been improved. "It could have probably been better with

more people answering phones, to say, 'Well, look, I'm sorry, but this is what's happening and we're pretty well on demand or we've got no staff to get there'.

"That didn't happen but I'm just accepting of it. It is what it is and other people were worse off than me."

While there were warnings for major vinds, the storm was never expected to be as ferocious as it was. "The winds, I've never felt anything like

that. When you're sitting in a Hilux ute and it's actually rocking. Even with my training it was frightening," Gary says. "With the amount of wind, it was nitch

dark because no lights were on with the nower all off and it was just black. I'm sitting in the car out the front and I thought to myself. 'Oh, my God, this car is actually moving. It was horrendous. "I don't think they expected the winds

to be as big as they were and the warnings The thought of leaving never ever

crossed Gary's mind with the mentality of "it's not going to happen here". He said if it was to happen again with better warnings in place, he wouldn't make the same mis-

"In hindsight, if it came again and I still

"But at the time, no. It's the old scenario: it can't happen, it won't happen. You're not expecting a tree to fall on your house. It's not going to fall out of the ground and land





Star Mail

Learning better

communication

About the

What the Dandenong Ranges

experienced in 2021 - powerful storms

and flooding in the middle the COVID pandemic - is as an example of a

events are becoming more common,

but Australian communities aren't well

'compound natural hazard'. These

What can the Dandenong Ranges

compound hazards and natural

understanding of how disaster

prepare, survive and recover

communication, education and

awareness can help communities

storms tell us about communicating

This research aims to develop a better

To do this, we want to hear community members' 'storm talk' stories - and we would love to hear from you.

research

prepared.

disasters?

from natural disasters

The damage left a gaping hole in there roof causing damage to belongings.

"The way the weather has gone the chances are, we are going to get this again. Still fearful of wind storms despite having cleared many of the trees around them Gary says it is a sentiment many people in

The disaster was compounded by the Covid-19 pandemic which meant that peo ple were less able to move around, or leav the area, in the immediate aftermath. Pow er outages also added to people's informa tion and communication difficulties after

sessors for damage while losing all of their most treasured possessions to mould and rain, created "the biggest part of the stress

move back into their home but that nigh will stay with them forever.





This project is conducted by Deakin University &

How to

1.30pm to 4pm

participate

Share your thoughts

in a community forum.

Where | Local venue to be

specified on invitation

sZGD6 or emailing:

You can also

complete an

anonymous

survey

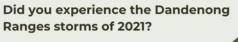
When | Saturday 11 November,

Express your interest by visiting

https://forms.office.com/r/G3BFf

gabi.mocatta@deakin.edu.au

Natural Hazards Research Australia, with support of the Ranges Trader Star Mail.



Do you have perspectives on how disaster communication happened, before, during and after the storms?

We want to hear your story.

DEAKIN UNIVERSITY



You can also complete an anonymous survey here:

Share your thoughts in a community forum.

When | Saturday 11 November, 1.30pm-4pm Where | Local venue, specified on invitation

Express your interest in joining the forum at https://forms.office.com/r/G3BFfsZGD6 or email: gabi.mocatta@deakin.edu.au

Examples of publicity / informational material

- Collaboration with the local newspaper includes 6 stories about the storms, the research, compound hazards and the need for better communication.
- 3 advertisements published
- Flyers and social media posts



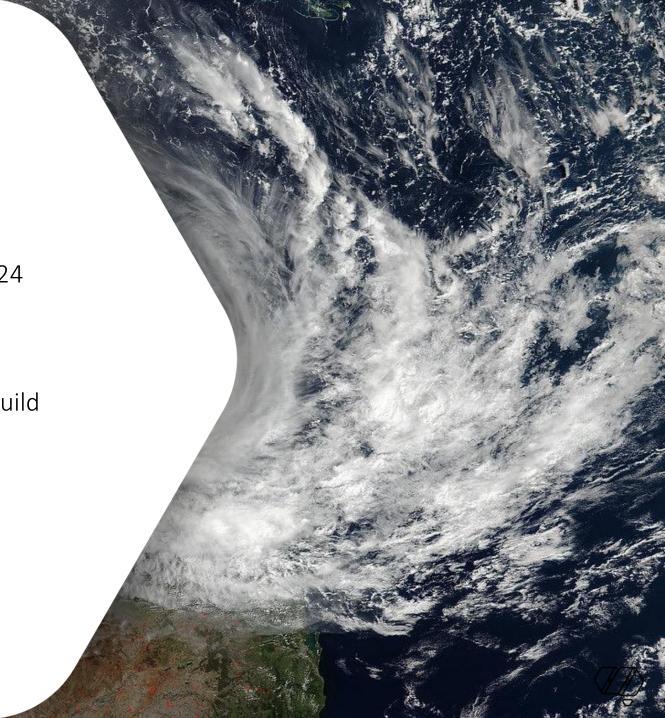


Ayr & Burdekin Shire, QLD

Community forum held in Ayr on 24 February 2024

• 12 interviews conducted

 Worked with local media including SweetFM to build awareness of the research and invite forum participants



yr resident June Pola knows a the messages that peothing or two about preparedness ple receive about how for natural disasters. Having lived to prepare for natural in the Burdekin Shire for 45 years, she's hazards, how to surexperienced many cyclones and floods. vive through them, and She's lost a roof - and kept her family safe. how to recover," says Dr. Like most people here, she's well aware of Gabi Mocatta from the the dangers and how to prepare. And she thinks that lived experience of natural hazards is important factor that pushes

"I follow all the things that they say you have to do," says June. "I moved everything that might blow away under the house be- The team is particularly cause I've seen what's happened with the

People just have no idea of the strength of those winds and the driving rain when you get a category 4 cyclone. Unless you've gone through it, you just cannot experience it any other way."

Insights like June's on what helps people prepare, stay resilient and recover from be more complex, and there's less time for natural hazards is the subject of research recovery. The team also wants to find out currently being conducted in the Burdekin how people prefer to receive hazards in-Shire. A team from Deakin University in formation. Melbourne is visiting Ayr this week, to ask locals about how disaster communication is done here. The research is being undertaken for Natural Hazards Research Australia, Australia's research centre for natural hazards resilience and disaster risk

"By 'disaster communication' we mean, all

emergency authorities, the Council, from me-

of information makes people prepared and resilient in the face of (when two or more hazards occur at the same time or in quick succes-

sion) meaning protective responses may

The Burdekin Shire is one of three case study locations across Australia. Each location has experienced different hazards storms, floods, fires, drought, flooding, cyclone - some in middle of COVID lockdowns. Communities have different levels



"Sometimes, there are several sources of information and messages can be confusing or contradictory," says Dr Mocatta.

Burdekin Shire does disaster awareness well. "It all comes through the Council they send out messages all the time," says June. "The Bureau of Meteorology, they send out the warnings. Then, in the paper the week before the cyclone was a list of things that people needed to pack and get. Birth certificates, insurance documents, some of your better photos, put them in plastic. Because when the roof goes all that

In the latest event, Cyclone Kirrily, June's house didn't have any structural damage. but her garden suffered. "It's nature's prun

The Deakin team invites all Burdekin com munity members to join the forum this Saturday 24th February to discuss disaster unication, Burdekin-style. The even will be held at PCYC Burdekin, 64 MacMil lan Street, Ayr. Afternoon tea will be served More information here: https://bit.ly/4bjn







Ayr & Burdekin Shire, QLD

- Worked with local media Burdekin News and Sweet FM community radio to make local community aware of the research and invite participation.
- 3 newspaper stories, 3 radio interviews.



The Ayr/Burdekin forum advertised on the Burdekin Shire Council's electronic signage









Tenterfield, NSW

 Community forum held in Tenterfield on 16 March 2024

• 12 interviews conducted

Worked with local media including TenFM and the Tenterfield Star to build awareness of the research and invite forum participants







Tenterfield media coverage

- Worked with Tenterfield Star for 2x media articles.
- 3 radio interviews with Ten FM community radio (the local emergency broadcaster).





Key finding: communication transforms in a compound hazard context

Confusion, information overload, and misinformation

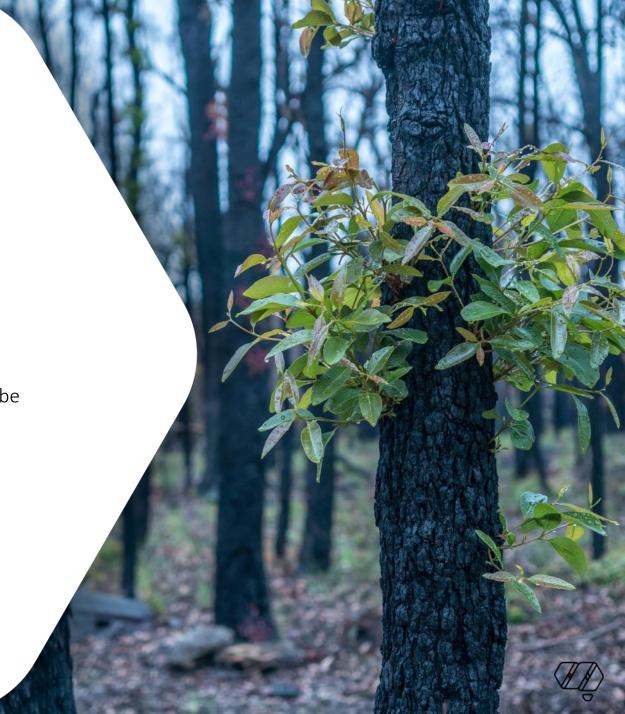
 Compounding factors (power outages, communication blackouts) interfere with the sharing of information

 Displacement – individuals may have moved into a new area and/or be cut off from support networks and sources of information

• More attention on communities in national news media coverage

• Communities who live through a compound natural hazard are potentially more experienced, mobilised and resourceful

Experiences of a compound natural hazard disaster can build social capital

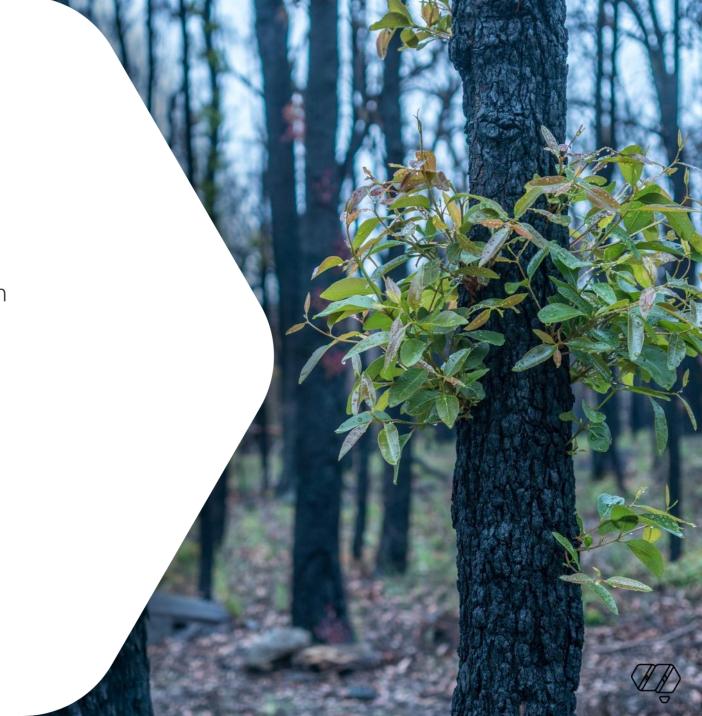




Thematic analysis: results

Five key themes:

- 1. Local knowledge and localised communication
- 2. Vulnerability, diversity, and inclusion
- 3. Reliability of information and infrastructure
- 4. Disaster definitions, language, and literacies
- 5. Fatigue and avoidance



Local knowledge and localized communication

Communication for compound hazards should be attuned to the needs and experiences of local communities

Local knowledge can be a resource as well as a complicating factor (e.g., messages are interpreted through the lens of local knowledge)

Community groups and 'champions' are key communicators and intermediaries

We also detected the presence of "emergent groups" and "spontaneous volunteers" (Twigg and Mosel 2017)

Communicators should not assume a fixed local audience and should recognise that the boundaries of local communities are porous.



Vulnerability, diversity, and inclusion

Just as there are compound hazards, so too are there compound vulnerabilities.

Disasters may be different (or experienced differently) for community members living with existing vulnerabilities such as disability, family violence, chronic illness, or mental health conditions.

Inclusive communication is a priority.

Social media is not a means of reaching "everyone" – digital exclusion is an existing vulnerability.



Reliability of information and infrastructure

Confusion stems from both the volume and the fragmented nature of compound hazard communication.

Importance of single sources of information and clear central points of communication.

Any form of communication that provided visual or auditory 'proof' of a disaster was seen as reliable by our participants – e.g., webcam footage.

Print media and local radio were identified as reliable.



Disaster definitions and literacies

The term "compound natural hazards" is not widely used or understood by stakeholders including (and especially) community members – it needs to become part of disaster discourse.

There is a need for clearer and more consistent labelling of some disasters, especially storms.

There is a need for improved **disaster communication literacies** where communities better understand, and are better equipped to participate in, the communication practices that enable preparedness, safety, recovery, and resilience.

Disaster communication literacies include competencies for detecting disaster-related misinformation.



Fatigue and avoidance

Compound natural hazards lead to "warning fatigue" and an unwillingness or inability to engage with new information.

Communities impacted by more than one disaster may also develop a sense of "learned helplessness" (Seligman 1975).

Creative hazard communication provides a solution: that is, unexpected, innovative, and novel ways to engage people.

More communication to assist recovery will combat fatigue in the future.





