

Awareness, education and communication for compound natural hazards

Presenter:

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Project team:

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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 peer-reviewed papers
- Semi-structured interviews with 34 natural disaster communicators
- “Town hall” style focus group discussions (Zuckerman-Parker and Shank 2008) with disaster-affected 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 over-researched 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 across roads like Morbank Road Morbank. 20222. Picture: STEWART CHAMBERS

Share your experiences

Residents in the Dandenong Ranges have first-hand experience of living through a natural disaster. They also know all too well the importance of good communication during difficult times.

Two years on from the devastating storms of June 2021, the Ranges Trader is supporting 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 hazard events.

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

"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 researcher, 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.

Residents are also being asked to fill out a 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 improved.

"We want to find out, for example, where 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 in education, communication and awareness about natural hazard events, like the 2021 storms."

A storm like no other...

By Mikayla van Loon

Gary Lee recalls the terrifying cracking sound that woke him from sleep and the shock of finding a four-tonne tree in the middle of his family home during the storms in June 2021.

Having made attempts to call for help without any success, Gary says he sat waiting 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 he understands the demand on emergency services during major events but communication 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 winds, 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 pitch dark because no lights were on with the power 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 weren't there for that."

The thought of leaving never even 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 mistake.

"In hindsight, if it came again and I still had gum trees around my house, I probably would leave."

"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 on your house."

Although warnings at the time were issued for floods and high winds, the Dandenong Ranges experienced over 100km per hour winds and unlike floods or bushfires weren't given a 'watch and act' notice.

Worried about what could happen with the current weather patterns Victoria is seeing, Gary says it feels like it's only a matter of time before trees start falling again.

"We had a massive amount of rain last month so the ground at the moment is probably waterlogged and if we all of a sudden get 100 kilometre winds again, who knows what's going to fall over," he says.



A four tonne gum tree fell through the roof as Gary and Karen Lee were sleeping. Pictures: SUPPLIED



The damage left a gaping hole in their 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 Hills carry after the terrifying event.

The disaster was compounded by the Covid-19 pandemic which meant that people were less able to move around, or leave the area, in the immediate aftermath. Power outages also added to people's information and communication difficulties after the storms.

Gary says the need to coordinate assessments for damage while losing all of their most treasured possessions to mould and rain, created "the biggest part of the stress and anguish".

It took 10 months for Gary and Karen to move back into their home but that night will stay with them forever.

STORM TALK: Learning better communication from natural disasters

The project 'Awareness, education and communication for compound natural hazards' is conducted by Deakin University & Natural Hazards Research Australia, with support of the Ranges Trader Star Mail.



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STORM TALK: Learning better communication from natural disasters

About the research

What the Dandenong Ranges experienced in 2021 - powerful storms and flooding in the middle of the COVID pandemic - is an example of a 'compound natural hazard'. These events are becoming more common, but Australian communities aren't well prepared.

What can the Dandenong Ranges storms tell us about communicating compound hazards and natural disasters?

This research aims to develop a better understanding of how disaster communication, education and awareness can help communities prepare, survive and recover.

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

How to participate

Share your thoughts in a community forum.

When | Saturday 11 November, 1.30pm to 4pm

Where | Local venue to be specified on invitation

Express your interest by visiting: <https://forms.office.com/r/G3BFfsZGD6> or emailing: gabi.mocatta@deakin.edu.au

You can also complete an anonymous survey here:



Did you experience the Dandenong Ranges storms of 2021?

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

We want to hear your story.

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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

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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



Disaster Communication Burdekin-Style

Ayr resident June Pola knows a thing or two about preparedness for natural disasters. Having lived in the Burdekin Shire for 45 years, she's experienced many cyclones and floods. She's lost a roof – and kept her family safe. Like most people here, she's well aware of the dangers and how to prepare. And she thinks that lived experience of natural hazards is important factor that pushes people to prepare.

"I follow all the things that they say you have to do," says June. "I moved everything that might blow away under the house because I've seen what's happened with the winds."

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 natural hazards is the subject of research currently being conducted in the Burdekin Shire. A team from Deakin University in 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 reduction.

"By 'disaster communication' we mean, all

the messages that people receive about how to prepare for natural hazards, how to survive through them, and how to recover," says Dr Gabi Mocatta from the Deakin research team. "This might be from emergency authorities, the Council, from media – even from your neighbour."

The team is particularly interested in what type of information makes people prepared and resilient in the face of 'compound hazards' (when two or more hazards occur at the same time or in quick succession) meaning protective responses may be more complex, and there's less time for recovery. The team also wants to find out how people prefer to receive hazards information.

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 of preparedness.



Deakin University invites community members to discuss disaster communications at a forum this weekend

"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

gets wet!"

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

The Deakin team invites all Burdekin community members to join the forum this Saturday 24th February to discuss disaster communication, Burdekin-style. The event will be held at PCYC Burdekin, 64 MacMillan Street, Ayr. Afternoon tea will be served. More information here: <https://bit.ly/4b9-CIQ>

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Contribute to national disaster communication research:
How does the Burdekin Shire communicate about floods, storms & cyclones?

Tell us how your community promotes awareness & preparedness for natural hazards.

Help emergency managers and communities around Australia communicate better for disaster preparedness, resilience and recovery.

Complete an anonymous research survey by scanning the QR code.

Join a community forum Saturday 24 Feb 2.30pm-4.30pm at PCYC Burdekin to share your insights over afternoon tea. Sign up here:

97.1

Burdekin  beats

SWEET FM

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



Contribute to national disaster communication research:
**How does Tenterfield
communicate about natural hazards?**

Tell us how your
community promotes
**awareness & preparedness for
natural hazards.**

Help emergency managers and
communities around Australia
communicate better for
**disaster preparedness,
resilience & recovery.**

Complete
an anonymous
research **survey**
here:



Join a
community forum
Saturday 16 March
2.30pm-4.30pm
at the RSL Pavilion.

Share your insights over
afternoon tea. Sign up here:



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.



