

Awareness, education and communication for compound natural hazards

Project team:

Dr Gabi Mocatta, Dr Erin Hawley, Prof. Kristy Hess
A/Prof. Joshua Newton, Dr. Tim Neale





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 aims 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.



This presentation will cover:

1. Literature review results
2. Fieldwork update
3. Emerging themes
4. Next steps

Literature review: highlights

- Systematic quantitative literature review of 45 peer-reviewed papers
- 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 key framework to guide compound hazard communication





Figure 4. Author described keywords across all included studies. One paper had 27 keywords, six studies did not include any keywords.



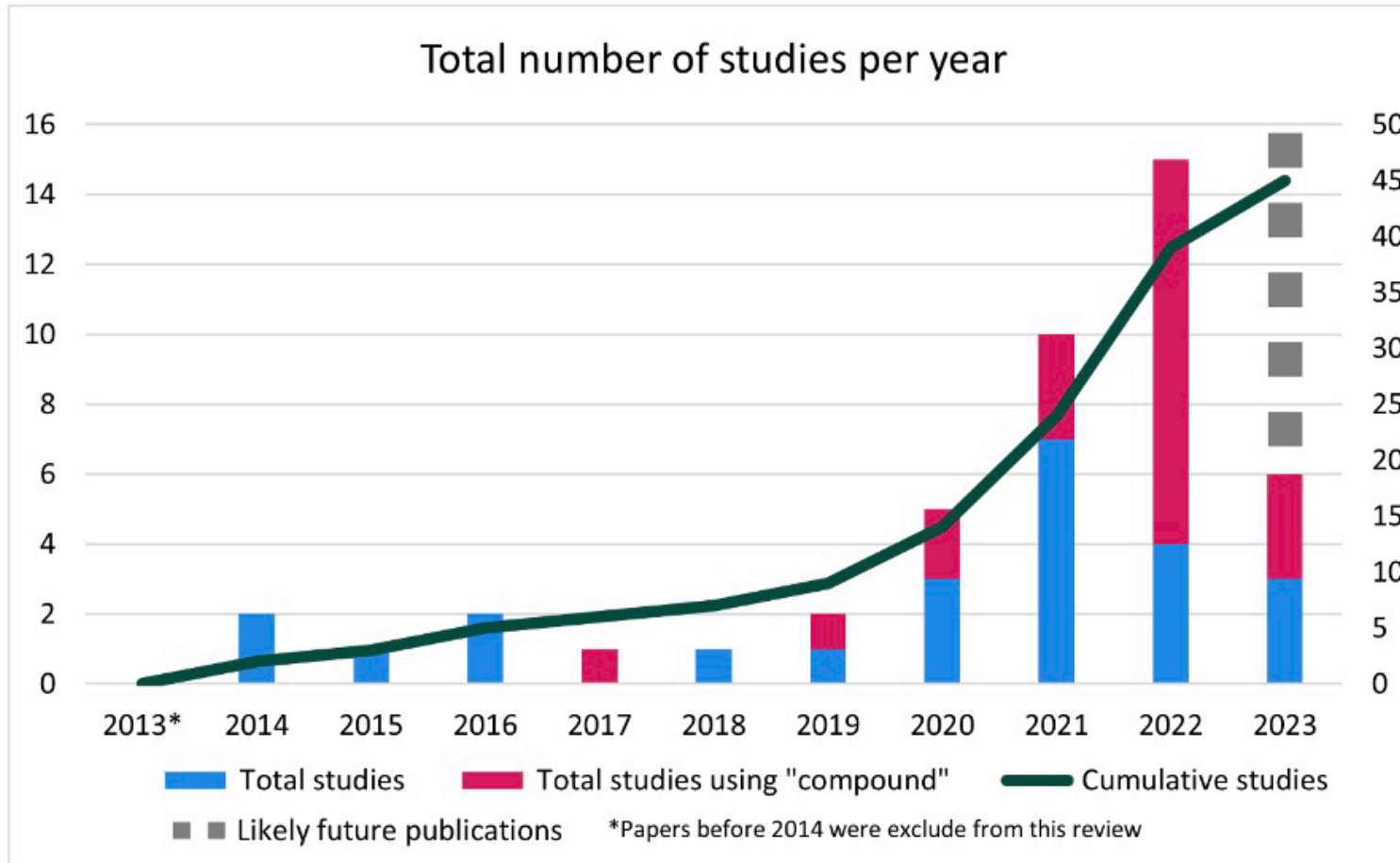


Figure 5. Number of studies published by year with emphasis on studies using the term "compound".



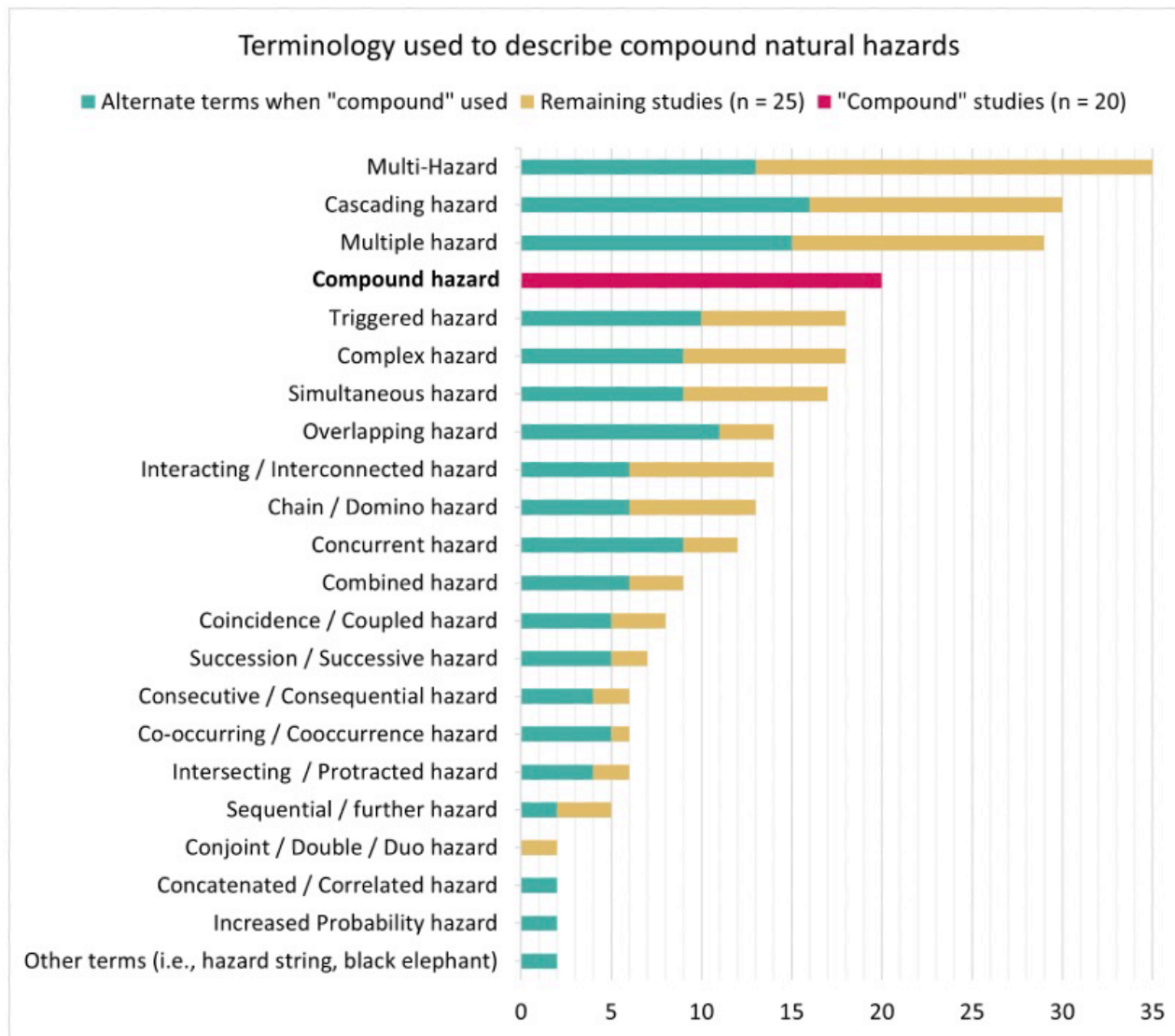


Figure 7. Frequency of compound hazard terminology.



Project case study locations

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

Case study locations have been 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
- Over 100 survey responses
- 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, 240529. Picture: STEWART CHAMBERS

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.

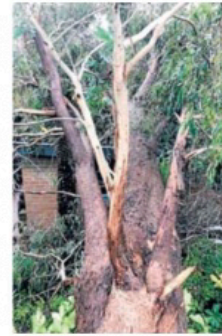
"In hindsight, if it came again and I still had gum trees around my house, I probably would leave."

"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 assessors 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.

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.

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

You can also complete an anonymous survey here:



This project is conducted by Deakin University & Natural Hazards Research Australia, with support of the Ranges Trader Star Mail.

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 the COVID pandemic - is as 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:



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 storms - 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."



The 2021 storms brought down 25,000 trees and damaged 173 properties, all in the middle of some of the strictest Covid-19 lockdown conditions in the world.

Many Hills residents were left without power for months. For some, the impact of the storms 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. Communication and awareness initiatives are key to preparation for future disasters.

"We are hoping that community members will join in the discussion and help us understand what worked well and what really needs to change about the way we communicate natural hazards," Dr Mocatta said.

Star Mail editor Mikayla van Loon agrees.

"Our newspaper wants to use its leadership and passion for the community to help bring people together for these important conversations," she said.

The community forum will be held on Saturday 11 November.

If you would like to participate, please express your interest by contacting Gabi Mocatta on gabi.mocatta@deakin.edu.au or completing the form <https://forms.office.com/r/G3BFfsZGD6>.

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.

Did you experience the Dandenong Ranges storms of 2021?

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

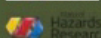
We want to hear your story.

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

You can also complete an anonymous survey here:



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, QLD

- Community forum held in Ayr on 24 February 2024
- 12 interviews conducted
- Survey in progress
- Worked with local media including SweetFM to build awareness of the research and invite forum participants

How should natural disasters
be communicated?

Tell us!

We are conducting a **study in Ayr** to learn from your experience of the **floods in 2022**.

Tell us your story to **help emergency management understand** how best to **communicate** to help them communities **prepare, survive and recover**.

Complete an anonymous **survey** by scanning the QR code.



Share your story in a **community forum**:
Saturday 24 February,
2.30-4.30pm
Afternoon tea will be served.

Sign up here - [link](#) - or by emailing gabi.mocatta@deakin.edu.au.



Burdekin Participates In Disaster Research Project

A team of researchers at Deakin University recently partnered with local media and natural hazards experts to deliver the Burdekin Aware and Prepared Community Forum.

The forum, held on Saturday, February 24 at Burdekin PCYC, saw community members come together to share their experiences of living through natural disasters and how information was communicated by different organisations.



Tenterfield, NSW

- Community forum held in Tenterfield on 16 March 2024
- 12 interviews conducted
- Survey in progress
- 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 fires, floods & other 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:



How should fires, floods and droughts be communicated?



TELL US, TENTERFIELD!

We are conducting a study to learn from your lived experiences of natural hazards. Tell us your story to help emergency management understand how best to communicate with communities to help them prepare, survive and recover.

Join our **community forum** and share your story over afternoon tea. 16 March, 2:30pm-4:30pm, RSL Pavilion.

More info and register →



Complete our short, anonymous survey →



Suffering 'compound natural hazards'

TENTERFIELD is one of a growing list of places in Australia experiencing disasters, but also one of the few places that has experienced what is known as 'compound natural hazards'. "We usually think of natural disasters as separate, one off events," said natural hazard researcher Dr Erin Hawley from Deakin University. "But there's a growing realisation that many places in Australia are experiencing one or more hazards at the same time, or closely following each other. In our changing climate we are see-

ing compound natural hazards become more frequent in Australia and around the world. Because the overlapping impacts of compound hazards can be so much more severe than when hazards happen separately, lots of research is now going into how to better understand compound hazards and how to prepare for them." "Compound hazards look different everywhere - with 'cascading impacts' that can be both natural and man-made. Overseas, the 2011 earthquake in Japan led to a tsunami, then nuclear disas-

What are 'compound natural hazards'?

- || Natural hazards or disasters that occur at the same time in one place
- || Hazards that follow each other in quick succession
- || Impacts may overlap and interact - so that hazards are worse when experienced together or in quick succession

ter. In Australia, the Burkedin Shire in Queensland experienced cyclones and flooding, while Victoria's Dandenong

Ranges suffered storms and flooding during the COVID pandemic. "Compound hazards are different from the single disasters we might have experienced in the past," said Deakin researcher Dr Gabi Mocatta. "And that means we need to find new ways to boost awareness, preparation, emergency response and recovery. We can learn a lot from places like Tenterfield that have recently experienced compound hazards about how as communities, and as a nation, we can better prepare for these events in the future."



Bushfires blazing near Tenterfield where two firefronts converged in October 2023. Picture by Sam Newsam.



Emerging themes...

- Activating local knowledge
- Awareness of vulnerability, diversity, and inclusion
- Reliability of information and infrastructure
- Disaster definitions, language and literacies
- Combatting apathy and avoidance



Next steps

- Framework development
- Seek feedback from selected participants
- Final report
- Additional project outputs

