

**92 PROJECTS**  
RESEARCH PROJECTS IN TOTAL

**29 COMPLETED**  
RESEARCH PROJECTS

**83 POSTGRAD**  
STUDENTS SUPPORTED

**57 RESEARCH**  
PROVIDERS

**32 PARTICIPANTS**  
INVOLVED

Natural Hazards Research Australia is dedicated to building the evidence for safer, more resilient and sustainable communities in the face of natural hazards.

Our model is unique with research led by those who will ultimately use the research outcomes to inform policy and practice.

Together with the Australian Government and end-users we deliver a strategic research agenda that informs decision making.

As a national centre, we seek to deliver high-value and meaningful outcomes for our partners and the communities they represent.

We support emergency service agencies and communities mitigate the impacts of, respond to, and recover from disasters caused by natural hazards.

Our network continues to grow as we foster collaborative relationships with key partners and stakeholders around the country and abroad.

Visit our website to learn more about our research and associated impact at:

[naturalhazards.com.au/research](https://naturalhazards.com.au/research)

We acknowledge the traditional custodians across all the lands on which we live and work, and we pay our respects to Elders both past, present and emerging. We recognise that these lands and waters have always been places of teaching, research and learning.

COMMUNITY  
ENGAGEMENT AND  
BEHAVIOUR CHANGE



AUSTRALIAN  
WARNING SYSTEM



NATURAL HAZARDS  
RISK MODELLING



RESILIENCE IN  
INDIGENOUS  
COMMUNITIES



AUSTRALIAN FIRE  
DANGER RATING  
SYSTEM



SCHOOL EDUCATION



TOOLS FOR  
DISASTER  
RECOVERY



PUBLIC  
UNDERSTANDING OF  
NATURAL HAZARDS



**27 MILLION  
AUSTRALIANS  
BENEFIT FROM  
OUR RESEARCH**

ENHANCING  
EMERGENCY  
MANAGEMENT  
DECISION MAKING



HOUSEHOLD  
TROPICAL CYCLONE  
RISK MITIGATION



BUILDING  
WORKFORCE  
CAPABILITY



SAFETY OF FIRST  
RESPONDERS



DISASTER  
MITIGATION  
PRIORITISATION



BETTER  
UNDERSTANDING  
THE TRUE COSTS OF  
NATURAL HAZARDS



LAND USE  
PLANNING POLICY



SAFETY OF PETS  
AND ANIMALS



# Our projects

A selection of core research projects is listed below, organised under eight topic themes. While each project sits under a primary theme, most address multiple.

## THEME 1 COMMUNITIES AND WORKFORCES OF THE FUTURE

A national framework and toolkit for multicultural inclusion in emergency management	Community-led recovery: evidence, dimensions and supports for Community Recovery Committees	Foundations in Indigenous disaster resilience
Best practice for tracking and responding to potentially traumatic event exposure	Community messaging – timing and frequency	Managing first responders' heat stress risk
Colonial load and cultural conflict	Connecting Indigenous people and the emergency management sector – effective partnerships	Managing smoke impacts on firefighter eye surface health
Community risk assessment	Emergency management volunteering: more than just words	Schools in Fire Country
		SES fit for task
		Utilisation of transformative scenarios in a climate-challenged world

## THEME 2 RESILIENT BUILT ENVIRONMENT

Communicating flood risk	Integrated solutions for bushfire-adaptive homes	Safety of alternative and renewable energy technologies
Evaluating the Resilient Homes Fund	Modelling impacts of natural hazards on interconnected infrastructure networks	Strengthening energy networks to withstand severe wind and storms
Fire coalescence and mass spotfire dynamics	Multi-hazard resilient buildings	Understanding the resilience of lifelines for regional and remote communities
Heatwave resilience and impacts	Natural hazards and resilience in complex urban systems	
Insights into temporary and emergency accommodation		

## THEME 3 SUSTAINABLE, SAFE AND HEALTHY NATURAL LANDSCAPES

Conserving and reconnecting floodplains to mitigate flood risk	First Nations women, cultural fire knowledge, wellbeing and memory	Operationalising Aboriginal land and sea management
Cultural land management research and governance in south-east Australia	Healing Country through Wolgalu/ Wiradjuri-led land management	Quantifying and predicting bushfire risk following large-scale drought-induced vegetation die-off
Fire mosaics in landscape fire planning		

## THEME 4 OPERATIONAL RESPONSE AND INNOVATION

Developing an integrated predictive capability for extreme rainfall and inundation	Hazard workshops for evacuation modelling	National SES Fitness for Role assessment review – phase 1
Evaluating and monitoring for impact: developing a framework for risk prevention programs	Long-range flood outlook for strategic preparedness	Predicting prescribed burn and low intensity forest fire behaviour
Fire plumes in the atmospheric boundary layer	Maintainance of the Australian Flammability System	Why fly? How do we know that aerial firefighting operations are effective and efficient?
	Measuring success for fire and rescue services	

**THEME 5 RESILIENT COMMUNITIES**

Awareness, education and communication for compound natural hazards

Bushfire risk at the rural–urban interface

Effectiveness of land-use planning flood controls on buildings

Increasing disaster resilience – creating the next version of the Australian Disaster Resilience Index

Predictions in public: understanding the design, communication and dissemination of predictive maps to the public

Support integration of Recovery Capitals in service plans for communities with different levels of social disruption

The role of AI in translating emergency warnings for culturally and linguistically diverse communities

Understanding intangible flood costs and impacts

Understanding the effectiveness of current communication mediums and messaging used to communicate information on planning, preparing/responding and recovering from an emergency event to remote First Nations communities

**THEME 6 SITUATIONAL AWARENESS**

Capturing uncertainty in bushfire spread prediction

Detecting fire plumes with mobile radar

Effect of cultural burning on soil health

Enhancing decision making in emergency management

Fire case studies

Fire ember transport

Flash flooding case studies to improve predictions and the communication of uncertainty

Identifying and defining landscape dryness thresholds for fires

Identifying water sources for aerial firefighting

Managing earthquake risk: unreinforced masonry building database

Multi-hazard public information and warning platforms for the future

Remote sensing of grass condition

Sector partner engagement to enhance severe weather impact predictions

Streamlining SWIRLnet data acquisition, analysis, storage and dissemination procedures

Translation of observed and modelled extreme bushfire behaviours to improve fire prediction and fireground safety

Understanding tsunami risk to Australia from volcanic sources

What makes a good fire simulator?

**THEME 7 EVIDENCE-INFORMED POLICY, STRATEGY AND FORESIGHT**

Analysis of inquiry recommendations on natural hazards and disaster risk reduction

Assisted relocations after flood

Australian emergency law blog

Be Ahead of Ready

Bushfire information database – scoping study

Improving the accuracy of the fire behaviour metric ‘fireline intensity’ for Australian fuels

Nature positive disaster ready solutions

Research data management

State of natural hazards research in Australia

Storing and sharing qualitative social data

Unlocking risk: Enhancing hazard risk assessment through historical archival reanalysis

**THEME 8 LEARNING FROM DISASTERS**

Community experiences of the 2022 Australian floods – Queensland and New South Wales

Community experiences of the 2022 Australian floods – South Australia, Victoria and south-western New South Wales

Community experiences of the 2022 Australian floods – Tasmania

Floodwater contaminants and effective mitigation techniques

Flood contamination sampling and analysis – regional Victoria

Understanding community risk perception and evacuation behaviours

Social media in community experiences of Tropical Cyclone Alfred

Structural and inundation impacts of tropical cyclones

**Natural Hazards Research Australia is the national centre for natural hazard resilience and disaster risk reduction. The Centre is funded by the Australian Government and its Participants.**

[www.naturalhazards.com.au](http://www.naturalhazards.com.au)

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**Australian Government**