

\$34M+ RESEARCH INVESTMENT

98 CORE RESEARCH PROJECTS

30 COMPLETED RESEARCH PROJECTS

87 POSTGRAD STUDENTS SUPPORTED

57 RESEARCH PROVIDERS

32 PARTICIPANTS INVOLVED

Natural Hazards Research Australia's mission is clear: to build the knowledge base that helps create safer, more resilient and sustainable communities in the face of natural hazards.

What sets us apart is our end-user approach – research driven by those who will ultimately use it, ensuring outputs are practical, relevant and ready to inform policy and practice.

Together with the Australian Government and a broad network of end-users, we deliver a strategic research agenda that supports informed decision-making at every level.

As Australia's natural hazards research capability, we are committed to producing outcomes that benefit our partners and the communities they serve.

Our work supports emergency service agencies, governments, nonprofits and local communities as they prepare for, respond to and recover from the impacts of natural hazards.

Through strong, ongoing collaboration with key stakeholders our network continues to expand – strengthening our collective ability to face an increasingly complex risk landscape.

To explore our research and the people behind it, visit www.naturalhazards.com.au to discover how we are helping shape a more resilient future.

We acknowledge the Traditional Custodians across all the lands on which we live and work, and we pay our respects to Elders 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 messaging – timing and frequency	Managing smoke impacts on firefighter eye surface health
Best practice for tracking and responding to potentially traumatic event exposure	Connecting Indigenous people and the emergency management sector – effective partnerships	Schools in Fire Country
Colonial load and cultural conflict	Emergency management volunteering: more than just words	SES fit for task
Community risk assessment	Foundations in Indigenous disaster resilience	Strengthening and supporting disaster recovery workers: Evidence-based tools for recovery workforce sustainability
Community-led recovery: evidence, dimensions and supports for Community Recovery Committees	Managing first responders' heat stress risk	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 and 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	Maintenance of the Australian Flammability Monitoring System Extension	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

Evolution of community fire units

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

Roads, bushfire and landslides: how to mitigate potential compounding natural hazards

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

Testing AS3959 construction and exposure assumptions

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

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

Systemic risk and systems thinking

Understanding conflagration fires

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

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Australian Government