Natural Hazards Research Australia

Research snapshot

$30 MILLION
FUNDING ALLOCATED

89 PROJECTS
RESEARCH PROJECTS IN TOTAL

73 STUDENTS
POSTGRADUATE STUDENTS SUPPORTED

48 PROVIDERS

32 PARTICIPANTS
TOTAL 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 discover research designed to keep our communities safer and more resilient in the face of natural hazards.

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
- 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

27 MILLION AUSTRALIANS BENEFIT FROM OUR RESEARCH

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

Best practice for tracking and responding to potentially traumatic event exposure

Colonial load and cultural conflict

Community risk assessment

Community-led recovery: evidence, dimensions and supports for Community Recovery Committees

Community messaging – timing and frequency

Connecting Indigenous people and the emergency management sector – effective partnerships

Emergency management volunteering: more than just words

Foundations in Indigenous disaster resilience

Managing first responders' heat stress risk

Managing smoke impacts on firefighter eye surface health

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

Evaluating the Resilient Homes Fund

Fire coalescence and mass spotfire dynamics

Heatwave resilience and impacts

Insights into temporary and emergency accommodation

Integrated solutions for bushfire-adaptive homes

Modelling impacts of natural hazards on interconnected infrastructure networks

Multi-hazard resilient buildings

Natural hazards and resilience in complex urban systems

Safety of alternative and renewable energy technologies

Strengthening energy networks to withstand severe wind and storms

Understanding the resilience of lifelines for regional and remote communities

THEME 3 — SUSTAINABLE, SAFE AND HEALTHY NATURAL LANDSCAPES

Conserving and reconnecting floodplains to mitigate flood risk

Cultural land management research and governance in south-east Australia

Fire mosaics in landscape fire planning

First Nations women, cultural fire knowledge, wellbeing and memory

Healing Country through Wolgalu/Wiradjuri-led land management

Operationalising Aboriginal land and sea management

Quantifying and predicting bushfire risk following large-scale drought-induced vegetation die-off

THEME 4 — OPERATIONAL RESPONSE AND INNOVATION

Developing an integrated predictive capability for extreme rainfall and inundation

Evaluating and monitoring for impact: developing a framework for risk prevention programs

Fire plumes in the atmospheric boundary layer

Hazard workshops for evacuation modelling

Long-range flood outlook for strategic preparedness

Maintainance of the Australian Flammabilty System

Measuring success for fire and rescue services

National SES Fitness for Role assessment review – phase 1

Predicting prescribed burn and low intensity forest fire behaviour

Why fly? How do we know that aerial firefighting operations are effective and efficient?

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