

Research Data Management Framework

Natural Hazards Research Australia

Valuing research data

Natural Hazards Research Australia (the Centre) is implementing a program to support the effective collection, use, curation and sharing (where feasible) of research data.

All of our research projects will be required to comply with the Australian Code for the Responsible Conduct of Research, 2018¹ and relevant privacy provisions, to ensure the protection of personal information.

The objective is to ensure that to the extent possible, the Centre can support and contribute to accessible national data and knowledge collections. Ultimately, all funded or affiliated research projects will be expected to contribute to accessible, sustainable national research or operational data collections with ongoing agreed access, visibility to others, custodianship, governance and standardised data dictionaries.

These visible and accessible data and knowledge collections will support current and future research initiatives, minimise duplication of research and minimise the loss of valuable contemporary and historic data.

This work will be conducted in collaboration with relevant partners and infrastructure owners and will link where possible with other domestic and national initiatives.

¹ <https://www.nhmrc.gov.au/about-us/publications/australian-code-responsible-conduct-research-2018>

Research data management

Research data management is an important element of the Centre's management of its research activities. Traditionally, most research data is retained by the researchers that develop it, and is not subject to effective stewardship², curation³, clarity of ownership and accessibility to other researchers.

Managing the Centre's research data

As the Centre is not a perpetual organisation that is funded to curate data, it does not intend to operate, or act as, a repository for research data. It is intended that these functions will be supported by the organisations developing the data, or through agreed third parties.

- Data security and compliance with national data sovereignty requirements will be the responsibility of the entity acting as the data repository.

The Centre will maintain a searchable data catalogue on its website, allowing users to discover available datasets, their content, limitations and how to access the data.

Adhering to data principles

The Centre expects all research providers and researchers undertaking work funded by the Centre to comply with the following data principles:

- FAIR^{4,5} data principles (Findable, Accessible, Interoperable and Recoverable).
- CARE⁶ data principles for Indigenous data management (Collective benefit, Authority to control, Responsibility, Ethics) and that research is conducted using the AIATSIS Code of Ethics for Aboriginal and Torres Strait Islander Research⁷.
- Research data is effectively managed and incorporated into the Centre's research data catalogue.
- Security of data is effectively managed and that all storage facilities are compliant with all relevant national and international cybersecurity and national interest obligations.

What data the Centre's research will develop

Centre data is likely to fall into at least five broad categories, each with unique features:

- Social science information (typically governed through formal research ethics arrangements)
- Spatial information
- Physical modelling and observation
- Descriptive biology
- Indigenous knowledge

The Centre will develop specific guidance for each of these categories of data, learning from existing data management practices where they exist.

Linking to national data collections

Linkages between the Centre's research data and other national datasets and data collections will be established where they make sense. This will include incorporation of research data into these national datasets and collections where that is practical.

2 Data Stewardship is a vital part of Data Governance. It represents the allocation of specific roles and responsibilities within and organisation in order to oversee the initiatives of an Executive Steering Committee. These are usually quantified in a set of best practices and new policies, with the job of the data steward being to put them into effect and keep individuals within the organisation accountable.

3 Data curation is the organisation and integration of data collected from various sources. It involves annotation, publication and presentation of the data such that the value of the data is maintained over time, and the data remains available for reuse and preservation.

4 <https://ardc.edu.au/collaborations/fair-principles/>

5 <https://www.go-fair.org/fair-principles/>

6 <https://www.gida-global.org/care>

7 <https://aiatsis.gov.au/sites/default/files/2020-10/aiatsis-code-ethics.pdf>

Obligations and expectations of research partners

Research partners whose research is funded by the Centre are expected to:

- comply with the requirements of this Framework
- commit to managing the collection and curation of the data according to the principles outlined in this Framework
- ensure compliance with all relevant national and international obligations for data security, including cybersecurity and data infrastructure protection
- link to or include relevant data in national collections that the Centre supports.

Educating and supporting researchers

This active management of the Centre's research data will provide a challenge to some of our researchers, who have for many years protected the data that they generate as a personal asset of their research team. Whilst the previous Bushfire and Natural Hazards Cooperative Research Centre and Bushfire Cooperative Research Centre owned the data generated in research that they funded, the research teams have rarely been asked to provide access to the underlying data generated in their funded projects.

In delivering this Framework, the Centre's research team will be working actively with our researchers and their organisations to move to an actively managed data environment. This new environment will involve researchers understanding that research teams (in funded projects) collect data on behalf of the Centre and that this Framework will then apply.

Open access to data

The Centre's default position is that all datasets generated with funding from the Centre will be accessible through an open access arrangement from the time that they are generated and that these datasets will be supported by an appropriate metadata package.

The Centre will consider requests from researchers for a short period of exclusivity following the commencement of data collection, to allow the research team to be the first to publish using the information in the dataset.

All requests for a period of data exclusivity are expected to be supported by a compelling case that describes the need for exclusivity and justification for the period required.



A research data management initiative

Implementing the Centre's data management plan commenced with the establishment of the Centre on 1 July 2021.

The following progress has already been made:

- All research contracts include clear inclusion of data within the IP owned by the Centre, and an expectation that all research must comply with the FAIR data principles.
- Privacy obligations are included in all contracts.
- We are working to educate our researchers, research providers and end-users, working towards achieving the Centre's data principles. This includes a need to change local practices that inadvertently work against the FAIR data principles, with some researchers historically seeking exclusivity to data they generate, to enable exclusivity for their future research and publications.
- The Centre was successful in a proposal to the Australian Research Data Commons (ARDC) to undertake a jointly funded project focused specifically on developing an effective framework for managing bushfire research data. This project, commencing in 2022, will be extended to apply the outcomes to other hazards beyond bushfire.
- We are beginning our planning for the development of an online Data Catalogue to capture and make visible the data developed by the Centre and its researchers.

The Centre is also planning to implement several initiatives over the next two years to enhance and strengthen the Centre's research data management, and to provide leadership and establish and share good practice for natural hazard research data management.

We will collaborate with our research partners to:

- work with past and current research projects to develop a research data catalogue that will be accessible from the Centre's website, which includes information on how to access the included data, including metadata to describe the type, and limitation of the data
- assist in the development of a framework and guidelines for researchers undertaking social science research, including research in impacted communities in the aftermath of a significant shock or disaster – to provide guidance to researchers, ethics committees and institutions that enable efficient data collection, protection of privacy and ongoing access to important historical data collections, including in written and oral form. This will include ensuring that the dataset comply with the requirements of the Australian Privacy Principles

- understand the challenges, and develop the partnerships required for the safe, secure and accessible long-term storage of research data
- identify data generated through the Bushfire CRC and Bushfire and Natural Hazards CRC that has not yet, but can with modest input from the Centre be brought into the Centre's research data catalogue
- develop appropriate protocols and practices for ensuring that Indigenous and Traditional Custodian knowledge and data is respected
- evaluate the need to engage specific resources within the centre or through project funding to manage the process and provide specific expertise
- ensure that the data management needs are sufficiently resourced as part of the research management process.

Framework review

This Framework will be reviewed as part of the Annual Biennial Research Plans and associated review process.

Find supporting research documents and the portfolio of projects on our website www.naturalhazards.com.au

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.

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