

How to fight bushfires with data:

Aggregating, curating and harmonising data

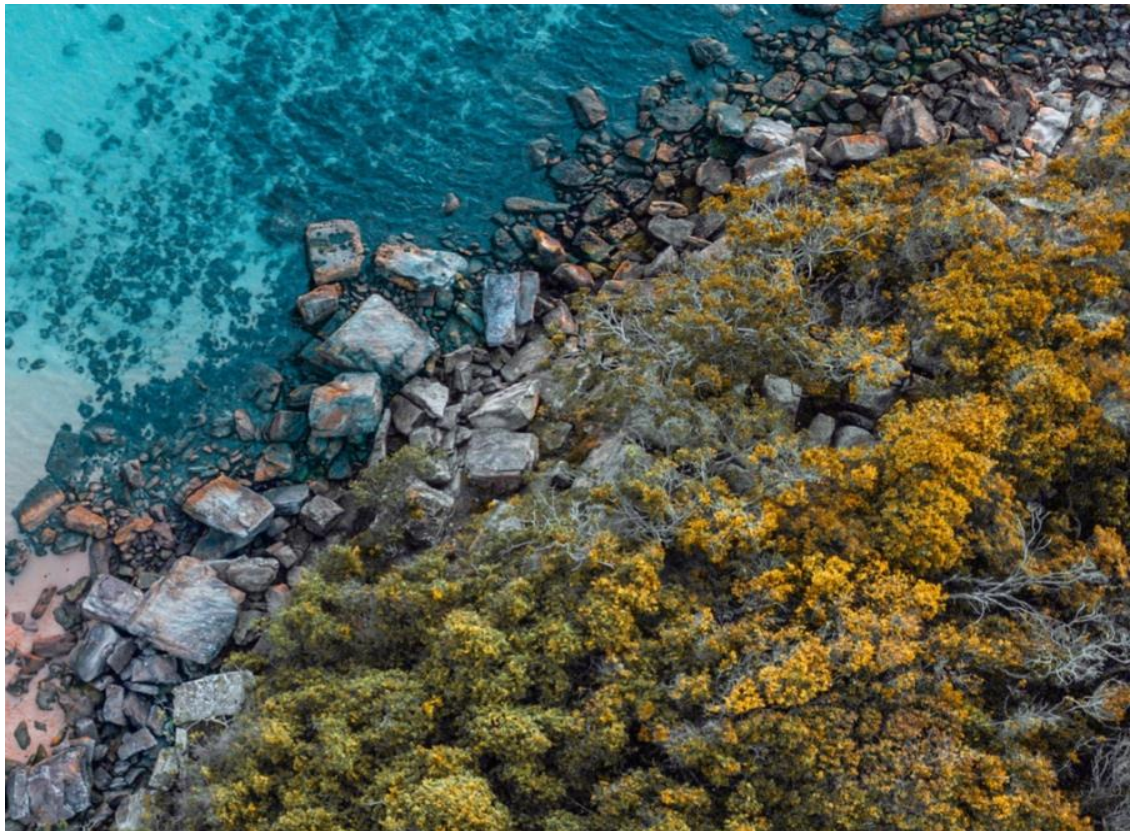


Image: BLMIdaho, Flickr, CC-BY 2.0

Kylie Black, Sheida Hadavi, Stefanie Kethers

ACKNOWLEDGEMENT OF COUNTRY

We acknowledge and celebrate the First Australians on whose traditional lands we meet, and we pay our respect to their elders past, present and emerging.





Australian Research Data Commons

Purpose

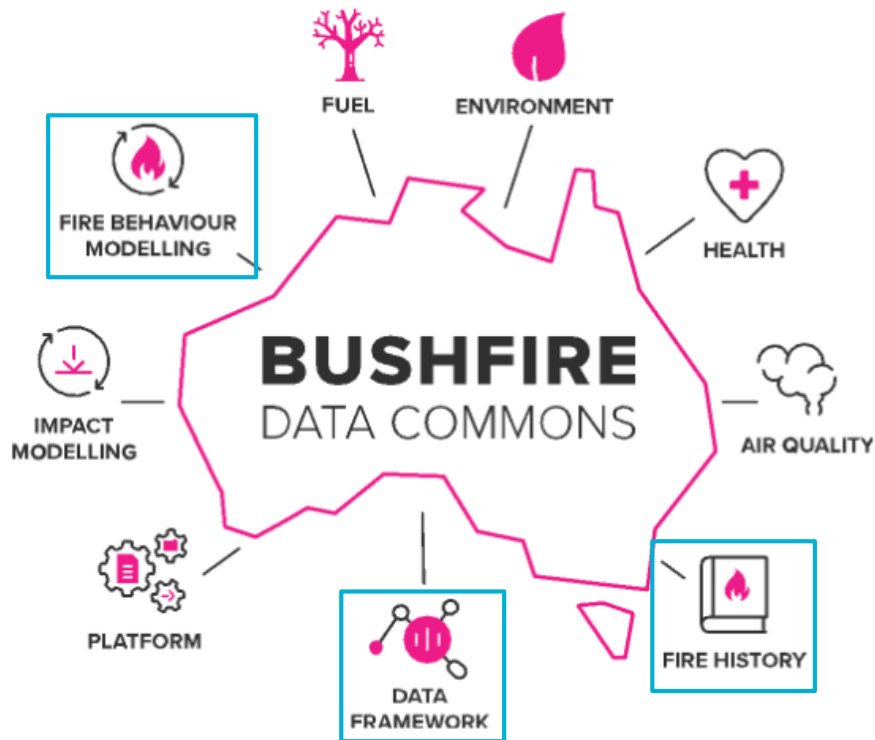
To provide Australian researchers with competitive advantage through data.

Mission

To accelerate research and innovation by driving excellence in the creation, analysis and retention of high-quality data assets.

BUSHFIRE DATA CHALLENGES





TRANSLATIONAL RESEARCH DATA CHALLENGES: BUSHFIRES

Understanding bushfire

- Behaviour
- Impact

Bushfire Data Challenges

Featured project outputs

- [Framework for sharing bushfire data \(AFAC\)](#)
- Nationally aggregated bushfire history dataset (GA and EMSINA)
- Spark wildfire modelling platform (Data61, CSIRO)

Framework for sharing bushfire data and tools between jurisdictional agencies

- [AFAC](#), Australasian Fire Authorities Council
- Framework not yet public, still being discussed with senior state data officers for sign off
- Linked to other Bushfire Data Challenges projects, including the National Fire History and Spark.

Why does AFAC need a Data Governance Framework?

- AFAC aggregates data from multiple organisations into national data sets, eg Spark, National Fire History
- National data sharing and hosting arrangements:
 - Support national projects: remove the need for each project to develop its own data sharing arrangements
 - Access to national research collections leading to better outcomes: rather than separately obtaining (sometimes inconsistent) jurisdictional data sets

Scope

- AFAC's data governance approach - datasets are managed legally, ethically and safely
- Applies to all data collected from AFAC members and other sources to develop national datasets
- Out of scope:
 - how agencies manage data within their own organisation
 - AFAC business data (eg HR or finance)

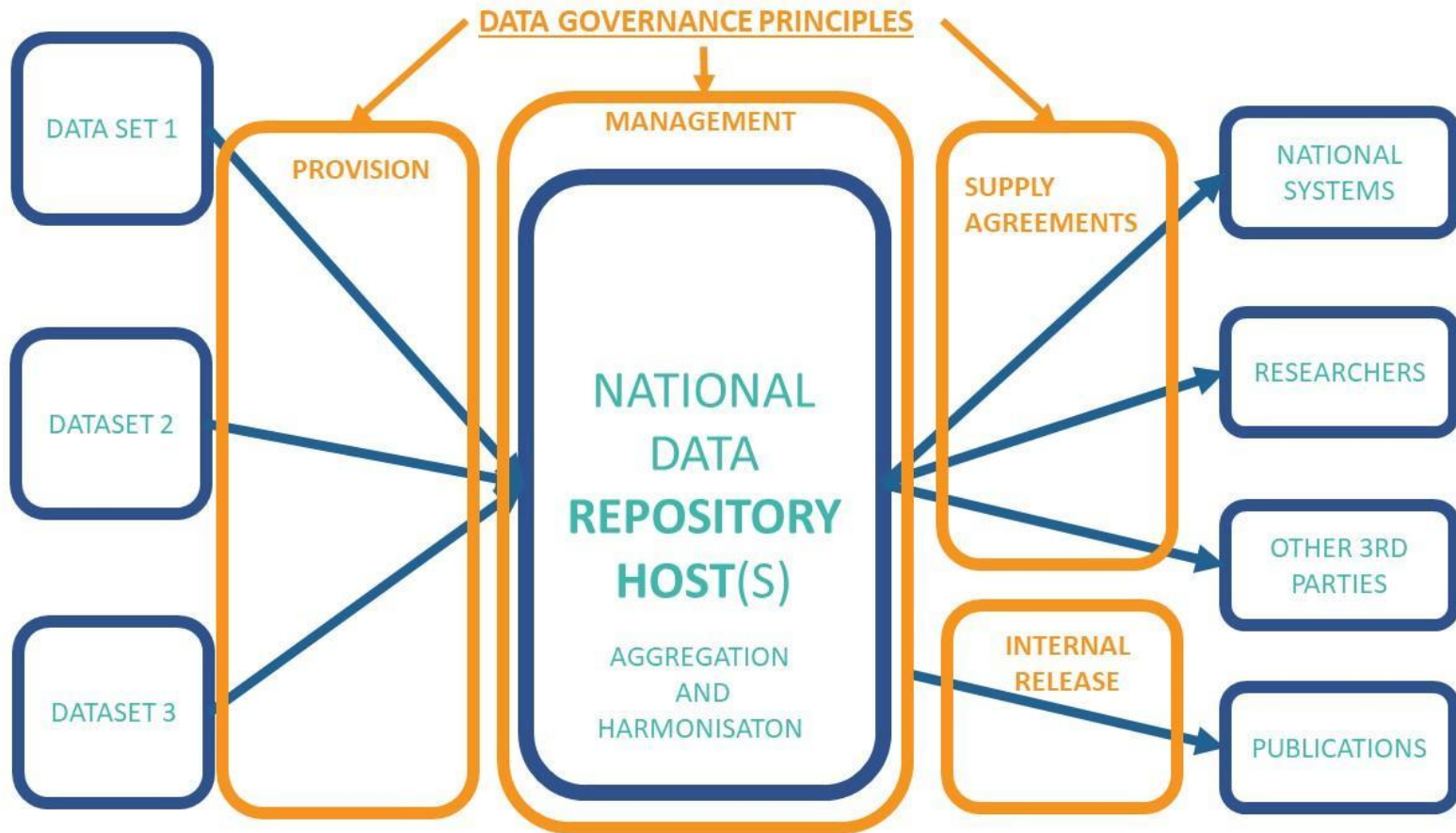


Diagram: AFAC, as presented at [Bushfire Data Challenges Forum, 17 May 2023](#)

Framework describes:

- Data Governance Principles
- Legal, Regulatory and Governance Environment
- AFAC Structures and Roles in Data Governance
- Systems and Tools to Support Data Governance
- AFAC Data Policies, Guidelines and Procedures
 - Creating a new National Collection
 - Provision of data by jurisdictions
 - Management of National Collections
 - Data security
 - Data sharing and release
 - Data archiving, return, collection retirement and destruction
- Compliance

Bushfire Data Challenges

Featured project outputs

- Framework for sharing bushfire data (AFAC)
- **Nationally aggregated bushfire history dataset (GA and EMSINA)**
- Spark wildfire modelling platform (Data61, CSIRO)

Nationally aggregated bushfire history dataset

- Geoscience Australia and Emergency Spatial Information Network Australia
- Dataset [freely available](#)
- Interactive data in [Digital Atlas of Australia](#)



An Australian Government Initiative

DIGITAL ATLAS OF AUSTRALIA

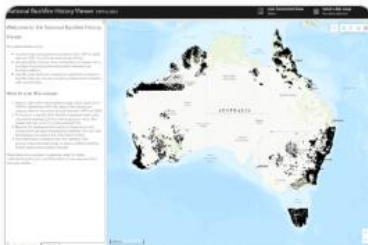
BETA

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BETA The Digital Atlas is currently in [Beta](#). Share your [feedback](#) to help shape the future of the Digital Atlas.

Interactive data



National bushfire history viewer

This viewer allows users to visualise historical bushfire boundaries from 1899 to 2022...



Historical bushfire statistics dashboard

This dashboard uses the Historical Bushfires Boundaries dataset to show a breakdown of..



About the Historical Bushfire Boundaries...

Discover Australia's historical bushfire boundaries, the when and the where.

About this dashboard

This viewer uses the following Digital Atlas of Australia feature layer:

- [Historical Bushfire Boundaries](#)

For data downloads and metadata records, visit the link above. Access the original, unaltered Historical Bushfire Boundaries data directly from the [Geoscience Australia data catalogue](#).

For more information about the bushfire boundaries dataset, including how this data was sourced and the partners involved, see our [Historical bushfire boundaries StoryMap](#).

Based on available records, this dataset includes boundaries from different types of fires including bushfires and prescribed burns.

How the historical bushfire boundaries dataset is used in this dashboard

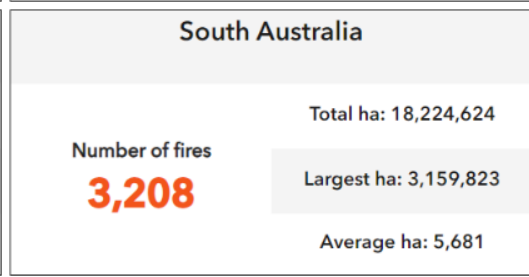
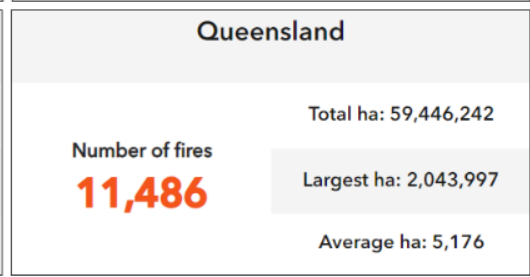
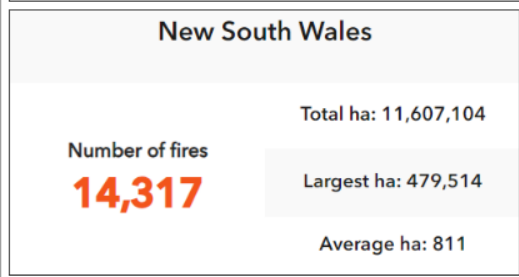
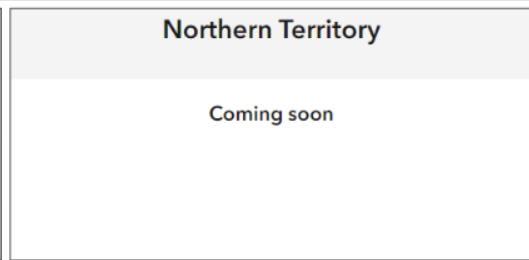
To optimise use and visibility necessary data cleaning and alterations has been performed on the historical bushfire boundary dataset used in this dashboard. This process involved refining, generalising and standardising the data to remove inconsistencies, spatial errors, and redundant information.

Disclaimer

Information in this application should not be relied upon as the sole source of information for commercial and operational decisions.

[How to use](#)

[About](#)



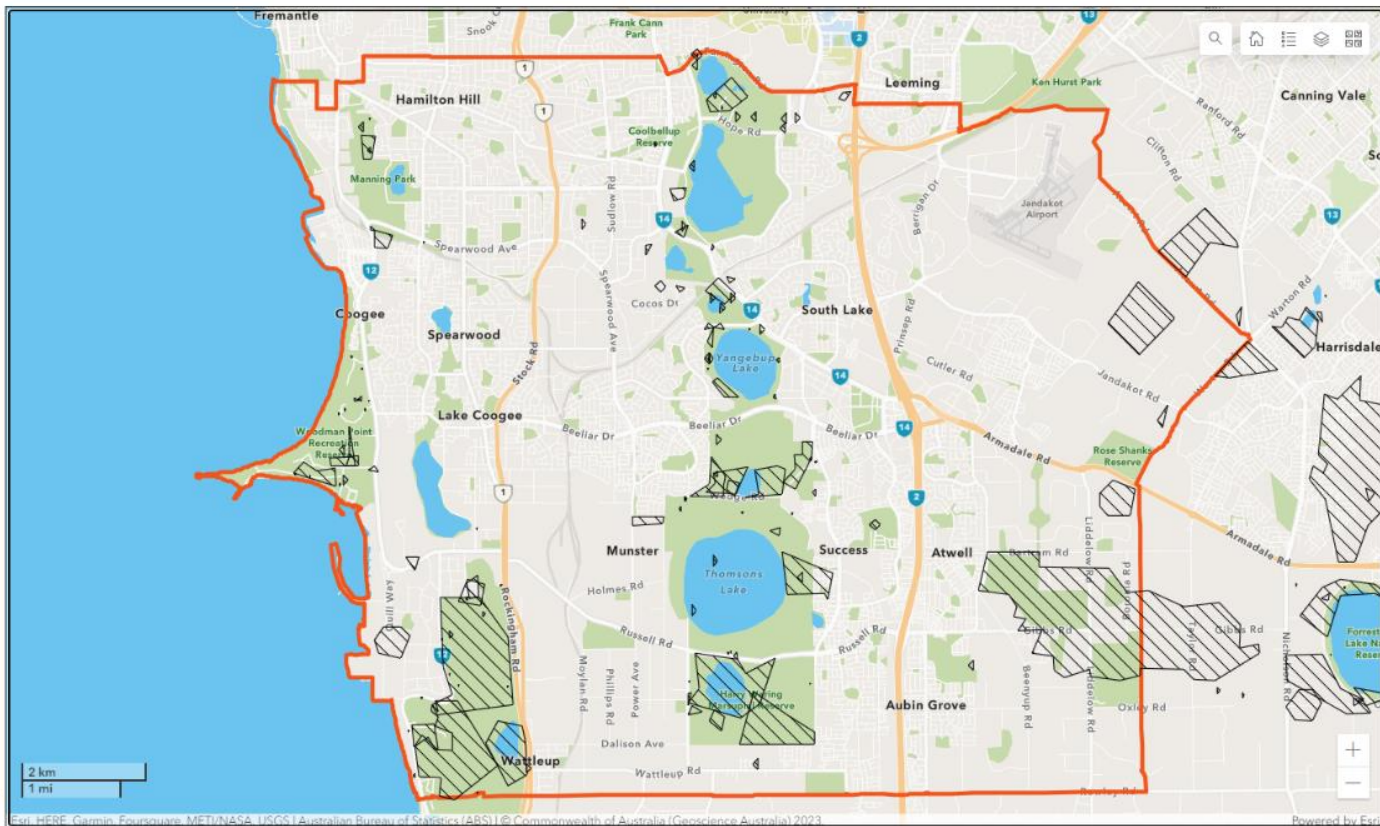
Welcome to the National Bushfire History Viewer

This viewer allows you to:

- visualise historical bushfire boundaries from 1899 to 2022 with the 2021 Local Government Areas (LGAs)
- see what LGAs may be more vulnerable or at higher risk to bushfires by studying the relationship between past bushfire patterns.

How to use this viewer

- Select a date within the available range. The dashboard displays data for the entire period, between 1899 and 2022, by default
- To focus on a specific LGA, use the dropdown menu to choose an LGA
- Explore the information visualised to see how the LGA has been impacted by bushfires. Click the polygons to view more detail
- Adjust the date range or select a different LGA to explore different areas or time period



Using this viewer About

Bushfire Data Challenges

Featured project outputs

- Framework for sharing bushfire data (AFAC)
- Nationally aggregated bushfire history dataset (GA and EMSINA)
- [Spark wildfire modelling platform \(Data61, CSIRO\)](#)

Spark

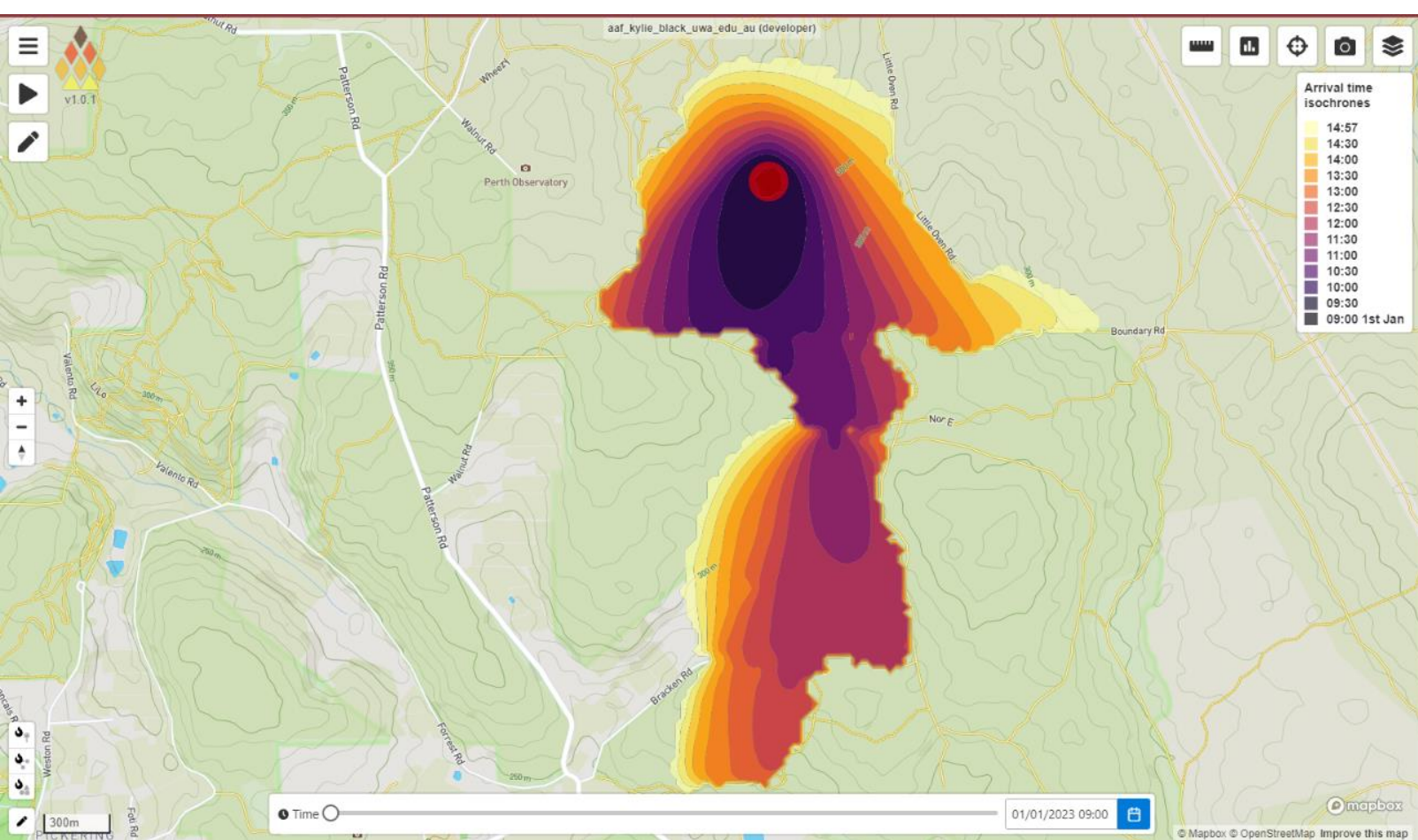
- Online toolkit for end-to-end processing, simulation and analysis of bushfires
- Use pre-set fire propagation models (eg vegetation, weather, wind) or create a custom model
- Incorporates the bushfire history dataset

Spark Research - testing ground for bushfire behaviour modelling

Spark Operational - for use by Australasian fire and emergency agencies

Spark2 - for commercial use

- Spark Research - [accessible](#) with an AAF login or by contacting the Spark team



Layers

Project Layers

- Fire sources
- > Disruptions
- > Fuel data
- > Fire perimeter
- > Output data
- > Firebrands
- > Web services
- Weather

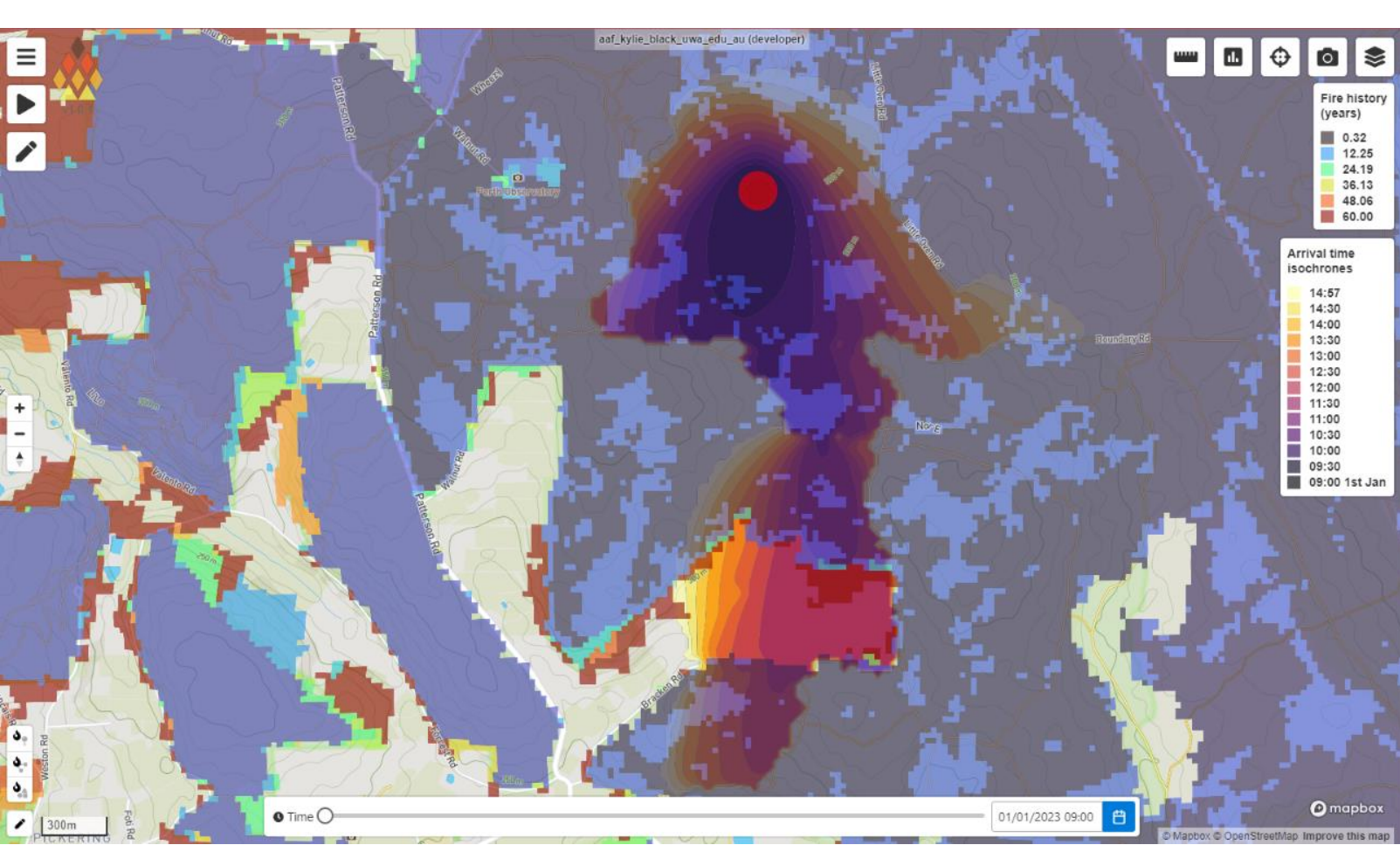
Selected Layer Options

Map Base Layer

- Outdoors
- Show Contours
- Lock Map View

Output Data

| | | |
|----------------|---------|----------|
| Fire intensity | maximum | 44237.87 |
| Flame height | maximum | 10.63 |



Layers

Project Layers

- Fire sources 🔗
- > Disruptions
- ✓ Fuel data
 - Wildfire spread model 🔗
 - Fire history 🔗
- > Fire perimeter
- > Output data
- > Firebrands
- > Web services
- Weather 🔗

Selected Layer Options

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Impacts and outcomes of Bushfire Data Challenges

| | |
|---------------|---|
| Economic | Reducing expenditure on recovery and response operations |
| Societal | Reducing the impact of bushfire on Australian people's health and lives |
| Environmental | Protecting environment, flora and fauna |

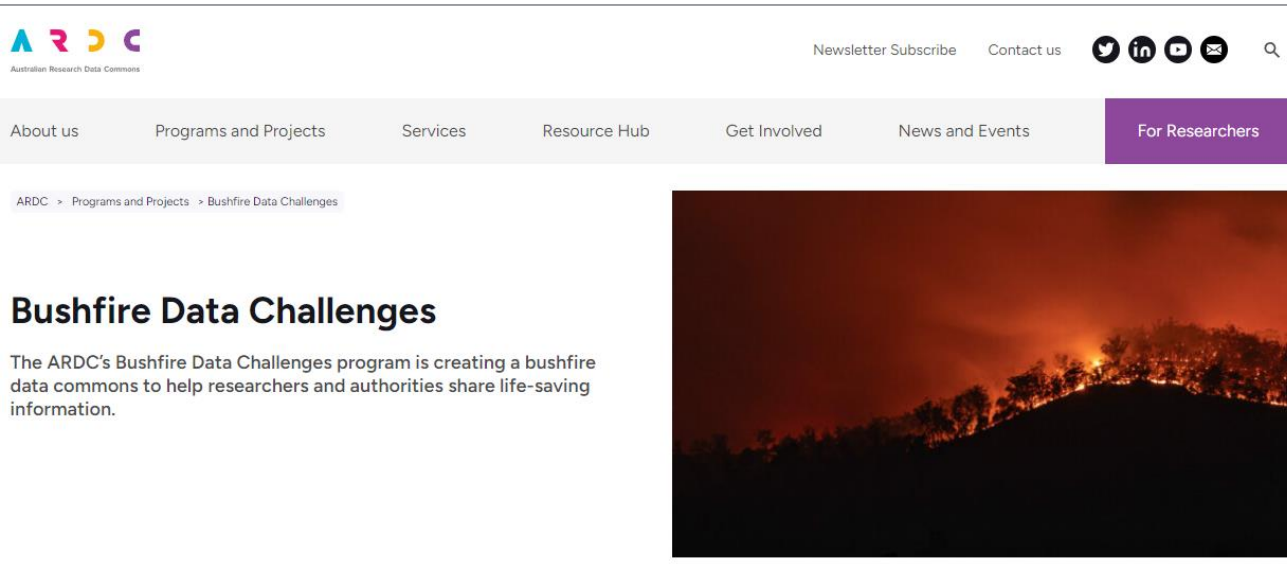
Outcomes: enabling research into

- building resilient communities, infrastructure, urban areas
- response to bushfires and understanding bushfire behaviour
- recovery from bushfires and understanding bushfire impact

Learn more

- Project outputs will be made available from the ARDC Bushfire Data Challenges website:


<https://ardc.edu.au/program/bushfire-data-challenges/>



ARDC > Programs and Projects > Bushfire Data Challenges

Bushfire Data Challenges

The ARDC's Bushfire Data Challenges program is creating a bushfire data commons to help researchers and authorities share life-saving information.





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