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INTERNATIONAL
WILDLAND FIRE
CONFERENCE

GOVERNANCE
PRINCIPLES:
Towards an
International
Framework

The Australian Fire Danger Rating System

History | Development | Implementation

What is Fire Danger and how is it determined?

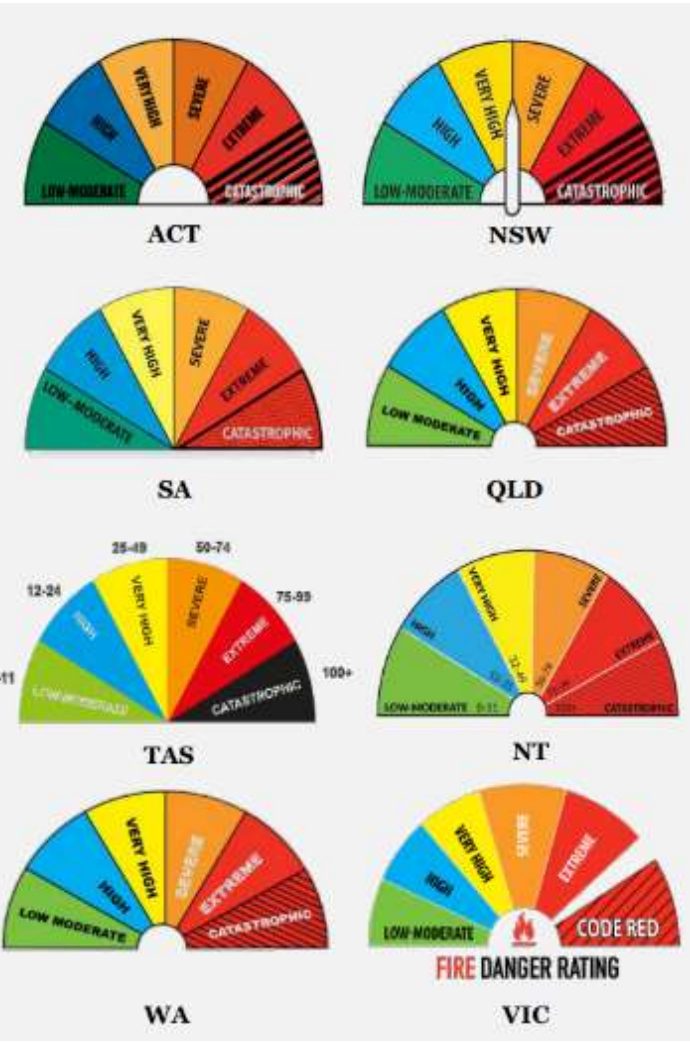
Fire danger indicates how dangerous a fire would be if one started, not how likely a fire is to occur.

- Calculated using weather data and fire behaviour models
- Used to communicate potential danger, restrict activities, set preparedness and support operational decision making
- Fire Danger ratings are declared by State and Territory fire management authorities



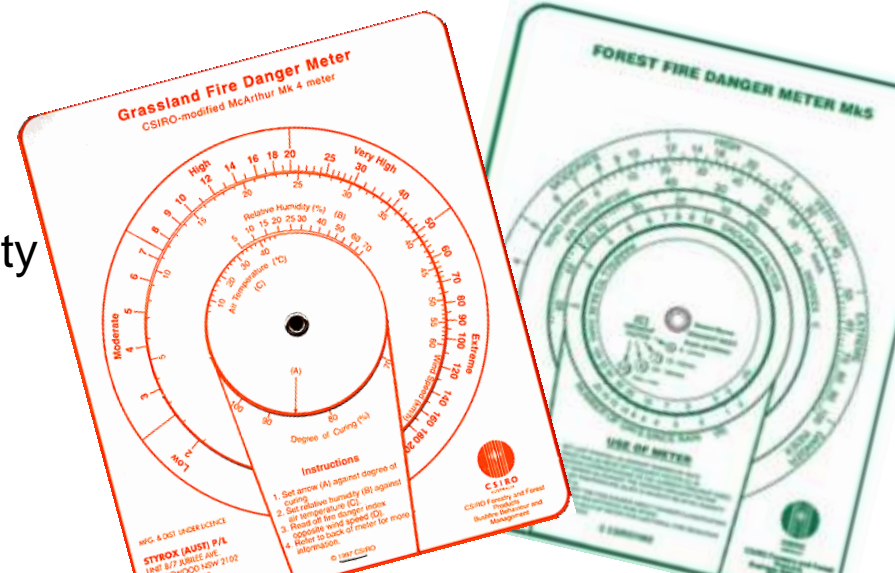
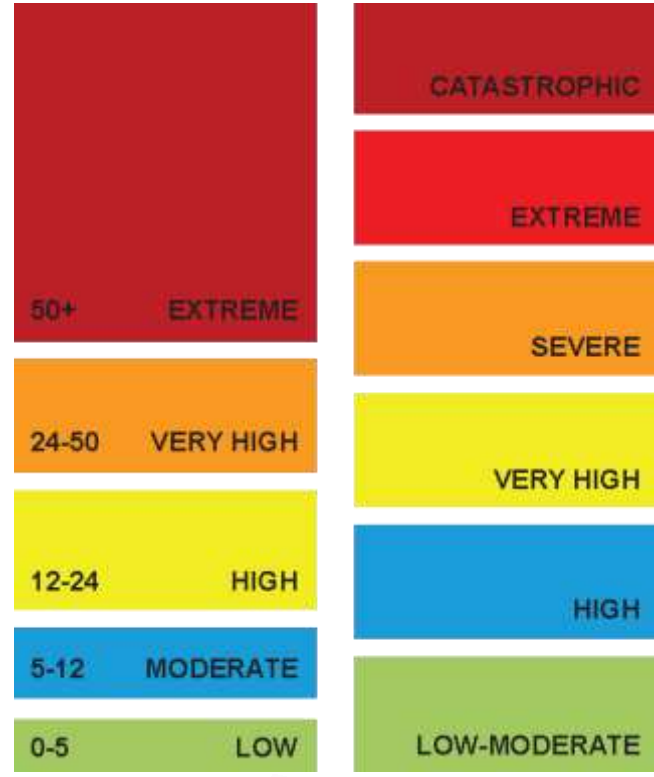
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Fire Danger in Australia



The need for change

- The system was over 60 years old and unable to be updated without a complete overhaul
- Limited fuel types
- Not nationally consistent
- Inaccurate at the higher end of the ratings scale
- Poorly understood by the community



Pathway to a new system



How was this realised?

The AFDRS is led by



NSW RURAL FIRE SERVICE



Australian Government
Bureau of Meteorology



Commonwealth agencies



Australian Government
National Recovery and Resilience Agency



Australian Government
Department of Home Affairs

Partner agencies



Department of Biodiversity,
Conservation and Attractions



Supporting agencies



Government of South Australia
South Australian Fire and
Emergency Services Commission



Government of South Australia
Department for Environment
and Water

Implementation challenges...

- So much needed to change
 - Legislation
 - Policy
 - Systems, IT, Web pages
 - Procedures
 - Infrastructure and signs
 - Training and new ways of thinking
- Six states and two territories
- Needed both commonwealth and state support
- The Black Summer fires of 2019-20 (most extensive in history)
- Subsequent inquiries and investigations
- Did someone say pandemic?



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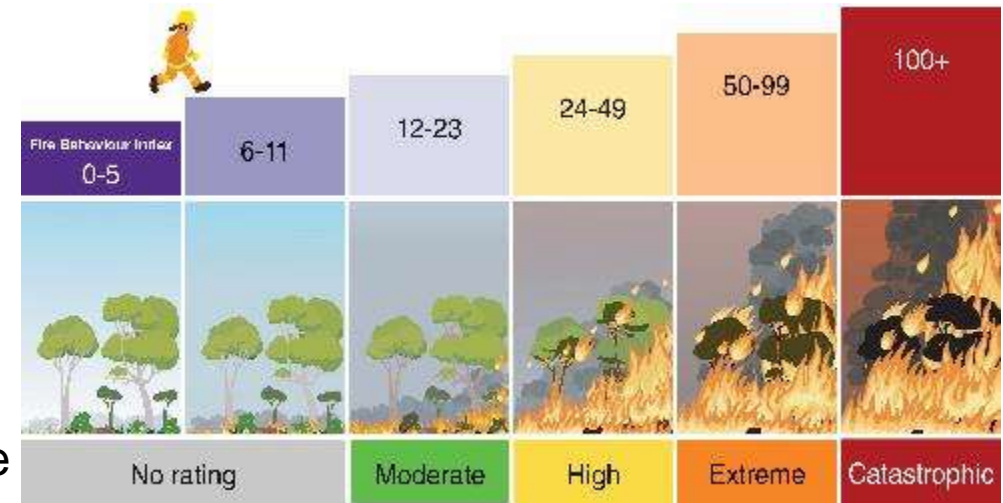
Fire Behaviour Index - FBI

- A fine-grained scale indicating potential fire behaviour that runs from 0 to 100 and beyond
- A step-up design to aid in operational decision making
- Transition between steps based on transitions in fire behaviour that have operational consequences for:

- **Prescribed burning**
- **Fire Suppression**
- **Fire Impact**

Supported by:

- FBI Quick Guides for each fuel type
- FBI Cards, management recommendations
- FBI Technical Guides



FOREST
UNDERSTANDING THE FIRE BEHAVIOUR INDEX

Fire Behaviour Index
6-11

- Typical prescribed burning conditions
- Fires generally easy to suppress and contain

INDICATIVE FIRE BEHAVIOUR AND FIRE WEATHER

How quickly fire spreads, how high it burns and how much fuel and structure it can and how long it takes to burn through the canopy.

- Fire Spread: Moderate
- Fire Height: Low
- Burning Potential: Moderate

IMPLICATIONS FOR PRESCRIBED BURNING

• Good conditions for prescribed burning.

• Good conditions for prescribed burning.

• Good conditions for prescribed burning.

FIRE SUPPRESSION AND CONTAINMENT

• Fire can be controlled with sufficient resources and good containment strategy.

• Fire can be controlled with sufficient resources and good containment strategy.

• Fire can be controlled with sufficient resources and good containment strategy.

POTENTIAL FOR IMPACT

• Community, local infrastructure, roads, power lines, and other infrastructure are at risk.

CONDITIONS TO CONSIDER

• fire.gov.au

CREDIBLE WORST CASE

• AHEA
• AHS, 2021
• FRINETTR
• Fire Risk

6

Supported by key products

FUEL STATE EDITOR

Field Observations (Grass)

Fuel Type Maps

Fuel Type Models

Time Since Fire Maps

FIRE DANGER CALCULATION ENGINE

Fuel Data

+ Weather and Climate Datasets

+ Fire Behaviour Models

= Calculations

FIRE DANGER VIEWER

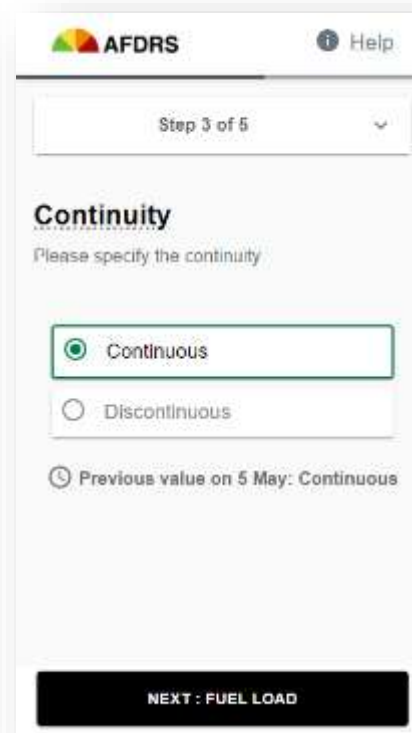
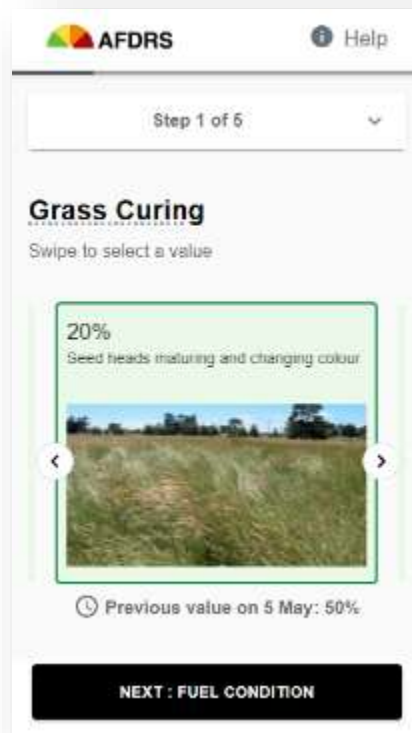
Fire Danger Ratings

Fuel Data

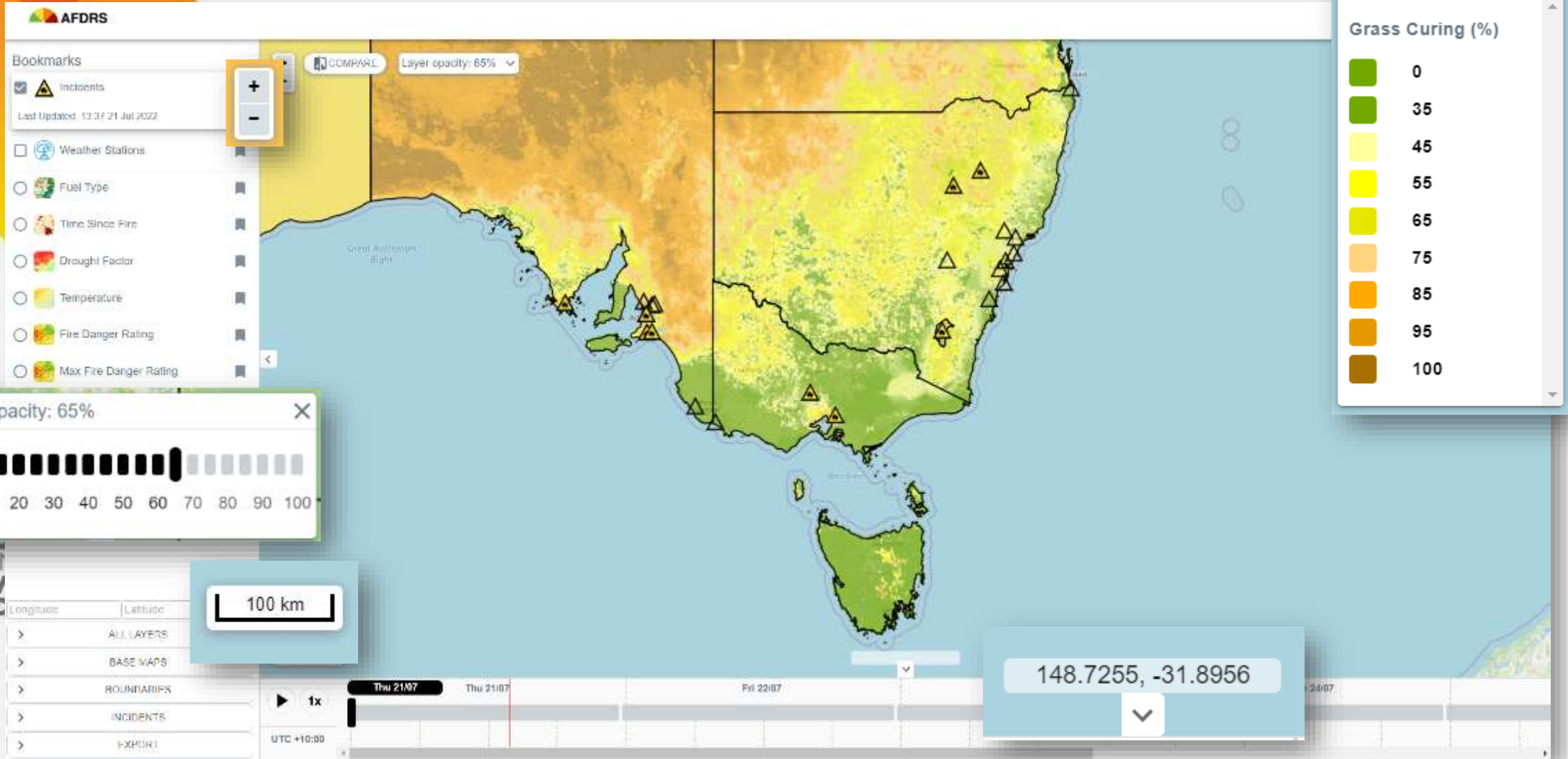
Weather Data

BOM PRODUCTS

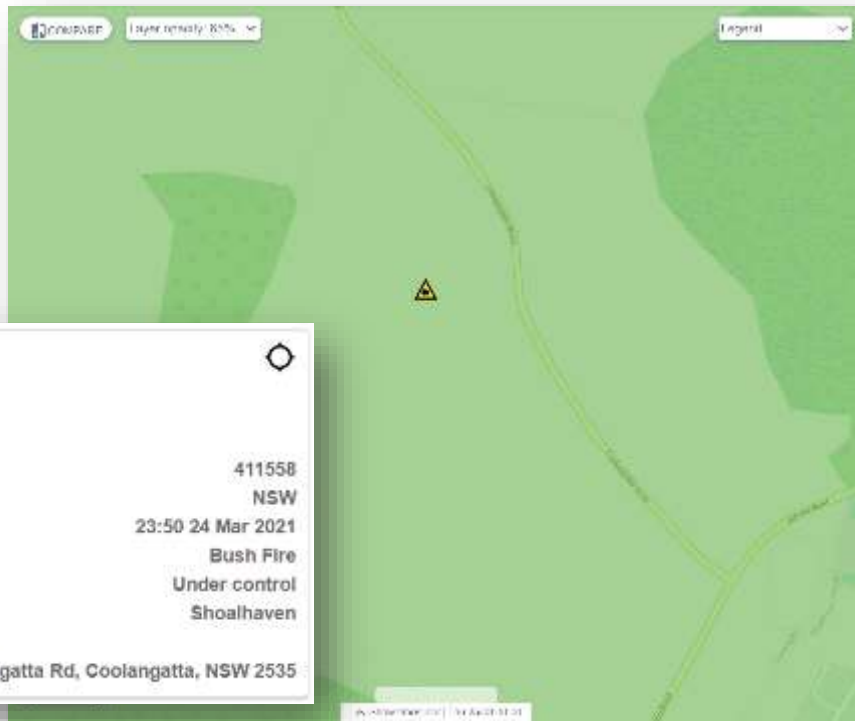
Fuel State Editor



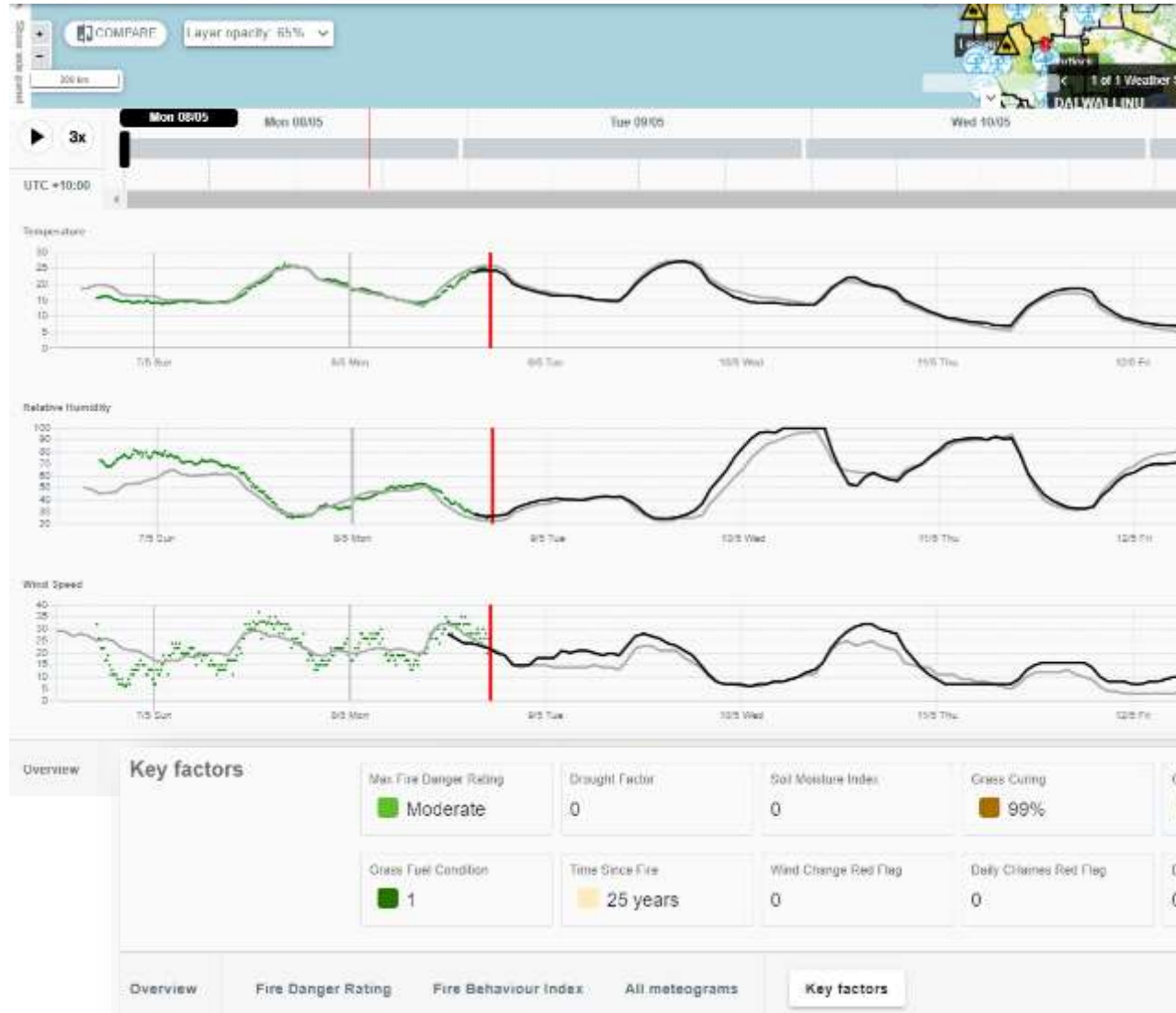
Fire Danger Viewer



Map View | Incidents



Map View | Interrogating a point



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Fire Danger Ratings | Tables

Fire danger rating / Northern Territory

Issued at 10:28 15 Jul 2022

Summary forecast Detailed forecast Weather forecast

15 Jul 16 Jul 17 Jul 18 Jul

| Region | Rating | Sub-area | Index | WCDI | CHaines |
|-------------------------------|--------|----------|-------|------|---------|
| Darwin and Adelaide River | H | 2 | 35 | 0 | 0 |
| Northern Fire Protection Zone | M | 1 | 17 | 0 | 0 |

Fire danger rating

No Rating

Moderate

High

Extreme

Catastrophic

Filter Regions

DOWNLOAD SUMMARY AS PDF

Fire danger rating

No Rating

Moderate

High

Extreme

Catastrophic

Filter Regions

DOWNLOAD SUMMARY AS PDF

| Region | Rating | Sub-area | Index | WCDI | CHaines | CHaines flag | Spotting (m) | Minor fuel flag |
|------------------------------|--------|----------|-------|------|---------|--------------|--------------|-----------------|
| Darwin and Adelaide River | H | 2 | 35 | 0 | 0 | 0 | 0 | False |
| LITCHFIELD | H | 2 | 35 | 0 | 0 | 0 | 0 | False |
| COOMALIE | H | 2 | 19 | 0 | 0 | 0 | 0 | False |
| UNINCORPORATED (MURUMBidgee) | H | 2 | 24 | 0 | 0 | 0 | 0 | False |
| PALMERSTON | H | 2 | 24 | 0 | 0 | 0 | 0 | False |
| DARWIN | H | 2 | 35 | 0 | 0 | 0 | 0 | False |
| NORTHERN TERRITORY RATES ACT | H | 2 | 35 | 0 | 0 | 0 | 0 | False |

Fire Danger Ratings | Table

South Australia Fire Behaviour Ratings

Issued at 4:05 pm CDT on Wednesday 18 March 2020.

| District | Thursday | Friday | Saturday | Sunday |
|------------------------|------------------|--------------|--------------|--------------|
| North West Pastoral | High 27 | Moderate 12 | Moderate 17 | Moderate 14 |
| North East Pastoral | High 30 | Moderate 12 | Moderate 12 | Moderate 13 |
| West Coast | High 35 | Moderate 14 | No Rating 10 | No Rating 7 |
| Eastern Eyre Peninsula | Extreme 55 | Moderate 17 | Moderate 13 | Moderate 14 |
| Lower Eyre Peninsula | Extreme 52 | Moderate 15 | No Rating 11 | Moderate 14 |
| Flinders | Extreme 67 | No Rating 11 | Moderate 13 | Moderate 12 |
| Mid North | Extreme 60 | No Rating 8 | No Rating 7 | No Rating 10 |
| Mount Lofty Ranges | Catastrophic 110 | Moderate 14 | No Rating 7 | Moderate 13 |
| Adelaide Metropolitan | Extreme 74 | Moderate 12 | No Rating 11 | No Rating 11 |



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Community facing products

- Simple categories representing levels of fire danger risk
- Four fire danger rating levels
- Simple fire danger rating names and intuitive colours
- Distinct action orientated messages for each fire danger rating level

Supported by:

- Community messaging framework
- Style guide for national consistency

| MODERATE | HIGH | EXTREME | CATASTROPHIC |
|--|--|--|--|
| <p>Plan and prepare.</p> <p>Most fires can be controlled.</p> | <p>Be ready to act.</p> <p>Fires can be dangerous.</p> | <p>Take action now to protect your life and property.</p> <p>Fires will spread quickly and be extremely dangerous.</p> | <p>For your survival, leave bushfire risk areas if a fire starts and takes hold. Homes are likely to be lost.</p> |
| <p>Stay up to date and be ready to act if there is a fire.</p> | <p>There's a heightened risk. Be alert for fires in your area.</p> <p>Decide what you will do if a fire starts.</p> <p>If a fire starts, your life and property may be at risk. The safest option is to avoid bushfire risk areas.</p> | <p>These are dangerous fire conditions.</p> <p>Check your bushfire plan and ensure that your property is fire ready.</p> <p>If a fire starts, take immediate action. If you and your property are not prepared to the highest level, go to a safer location well before the fire impacts.</p> <p>Reconsider travel through</p> | <p>These are the most dangerous conditions for a fire.</p> <p>Your life may depend on the decisions you make, even before there is a fire.</p> <p>Stay safe by going to a safer location early in the morning or the night before.</p> <p>Homes cannot withstand fires in these conditions. You may not be able to leave, and help may not be available.</p> |



Community Engagement and Messaging

- AFAC, AIDR, the BoM, and ABC partnered to create a 'Quick Guide' for young children to explain the new ratings.
- Attended Deaf Festival in Sydney to share recent changes.
- Information has been translated into multiple languages including Hindi, Chinese, German, Vietnamese, Spanish and many more.



LOS ÍNDICES DE PELIGRO DE INCENDIO HAN CAMBIADO

CONOCER EL ÍNDICE DE PELIGRO DE INCENDIO PODRÍA SALVARLE LA VIDA.

Los índices de peligro de incendio ahora son más simples y fáciles de entender. Al usar la ciencia y tecnología más actualizadas, ofrecen un índice más claro y exacto para salvar propiedades y vidas.

Los índices de peligro de incendio le indican cuáles serían las consecuencias de un incendio, en caso de que ocurriera uno.

Cuanto más alto sea el índice, más peligrosas serán las condiciones.

YOUR FIRE RISK TODAY IS

TAKE ACTION NOW
TOTAL FIRE BAN

LO QUE NECESITA SABER
Los índices de peligro de incendio tienen los siguientes cuatro niveles:

| MODERADO | ALTO |
|---|---|
| <p>Planifique y prepárese.</p> <p>La mayoría de los incendios pueden controlarse.</p> <ul style="list-style-type: none"> » manténgase actualizado/a y esté listo/a para actuar si hay un incendio. | <p>Esté listo/a para actuar.</p> <p>Los incendios pueden ser peligrosos.</p> <ul style="list-style-type: none"> » hay un riesgo mayor, esté alerta ante los incendios en su área. » Decida qué hará si se produce un incendio. » Si se produce un incendio, su vida y propiedad podrán estar en riesgo. La acción más segura es evitar zonas forestales en riesgo de incendio. |
| EXTREMO | CATASTRÓFICO |
| <p>Póngase en acción ahora para proteger su vida y propiedad.</p> <p>Los incendios pueden propagarse rápidamente y ser extremadamente peligrosos.</p> <ul style="list-style-type: none"> » Estas son condiciones de incendio peligrosas. » Como le su oíen para incendios forestales y asegúrese de que su propiedad esté preparada contra incendios. » Si se produce un incendio, póngase en acción de inmediato. Si usted y su propiedad no están preparados para el nivel más alto, díjale a una ubicación más segura mucho antes de que el fuego inicie. » Recuerde que si es necesario viajar a través de áreas forestales en riesgo de incendio. | <p>Para su supervivencia, abandone las áreas forestales en riesgo de incendio.</p> <p>Si se produce un incendio, es probable que se pierdan vidas.</p> <ul style="list-style-type: none"> » Estas son las condiciones más peligrosas ante un incendio. » Si es posible que su vida dependa de las decisiones que tome. Incluso desde antes de que haya un incendio. » manténgase a salvo yendo a una ubicación más segura temprano por la mañana o la noche anterior. » Los coches no pueden resistir estos condiciones, quizás no pueda irse y es posible que no haya ayuda disponible. |

SIN ÍNDICE: En aquellos días en los que el riesgo es mínimo, se usa la barra blanca que quiere decir "Sin Índice". Reporte cualquier incendio al DGC.

Australian Institute for Disaster Resilience afac Australian Government Bureau of Meteorology

Australian Fire Danger Rating System

The new fire danger rating system has four levels with action-oriented messages to encourage people to take action to protect themselves and others in the face of bushfire risks.

The Australian Institute for Disaster Resilience and the Bureau of Meteorology are helping children and families get ready for summer and understand the new fire rating system. In partnership with *Play Schools' Everyday Helpers* and ABC Kids Early Education, this quick reference guide is designed to help children, parents and carers to understand the new ratings.

COMING SOON: Look out for additional resources to help families prepare for bushfire.

MODERATE – plan and prepare

This is the time to start talking to your parents and caregivers about what you will do if there's a fire.

HIGH – be ready to act

You and your family need to be alert for bushfires in your area and prepared to act.

First Nations Collaboration

This artwork was created to highlight the importance of communication when planning, preparing for fire risk and ensuring we are working together to ensure families and Communities are kept safe.

- The section at the bottom of the artwork represents the connection to Country;
- The green section with the circles connecting with curved lines represents the **Moderate** rating;
- The next section is yellow to represent the **High** rating;
- The orange section represents the **Extreme** rating;
- The red sections represents the **Catastrophic** rating.



Artist: **Emma Bamblett** (Wemba Wemba, Gunditjmara, Ngadionji and Taungurung). <https://afdrs.com.au/#more>

The future is FISL...

AFDRS



Fire



Ignition Index

- Likelihood and ease of ignition from natural and human sources



Suppression Index

- Likelihood of initial attack suppression success



Impact Index

- Likelihood of impact on assets (houses and critical infrastructure).

FISI Program Key Benefits

- New indices underpinned by current science, to provide more nuance and robust predictions of risk resulting in a **reduction in loss of life, property, and human harm.**
- Nationally coordinated FISI Indices, will enhance **national preparedness for and response** to bushfire events.
- **Significant cost savings** are expected due to more targeted and timely actions.

Building new tools underpinned by the current science

Strengthen communication of bushfire risk to reduce the loss of life and property

Enable the repositioning of national firefighting resources

Reducing the costs associated with bushfire impacts



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Obrigado

