

# THE BUREAU FIRE DANGER PRODUCTS PDF SELF-LEARNING GUIDE

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## What are The Bureau Products?

The Bureau produces products as part of the AFDRS suite of services that provide nation-wide standard information about fire danger in simple formats for a variety of uses:

- To provide **public warnings**
- To publish fire danger information for **quick reference**
- To support fire management **decision making**
- To support longer term **planning and preparedness**.

Most of these products were also part of the McArthur system of fire danger; however, all products have undergone changes to align with the AFDRS, and some **new products** have been added.

The Bureau products can be broken down into two categories:

1. The **Fire Weather Products** (associated with short to medium term forecasting)
2. The **Fire Danger Outlooks** (associated with modelling of seasonal conditions out to three months).

## How do I access The Bureau products?

This section will discuss how to access the products via The Bureau website. Be aware that the products may also be reflected on state or territory emergency services websites, sometimes with additional important information such as total fire bans and current incidents.

The Bureau issues fire weather warnings when forecast weather conditions are likely to be dangerous. See The Bureau landing page for weather warnings: [www.bom.gov.au](http://www.bom.gov.au).

The public Fire Danger Rating (**FDR**) tables can be accessed on the public The Bureau website. Search for Fire Danger Rating Tables to find your state or territory table.

The agency only products are provided via The Bureau's registered users area of the website. Registered users can access them at <http://reg.bom.gov.au/reguser>. Registered access is usually granted to organisations that require it for their work. Please discuss access with your supervisor.

## What are the Weather Products?

### Public Products

#### *Fire Weather Warnings*

When required, **Fire Weather Warnings** are issued for Fire Weather Districts and are normally issued in the afternoon for the following day. This is so they are available for evening television and radio news broadcasts. Warnings are renewed at regular intervals and may be issued or amended and reissued as required. Keep up to date with the fire weather warnings by checking The Bureau website and/or weather app.

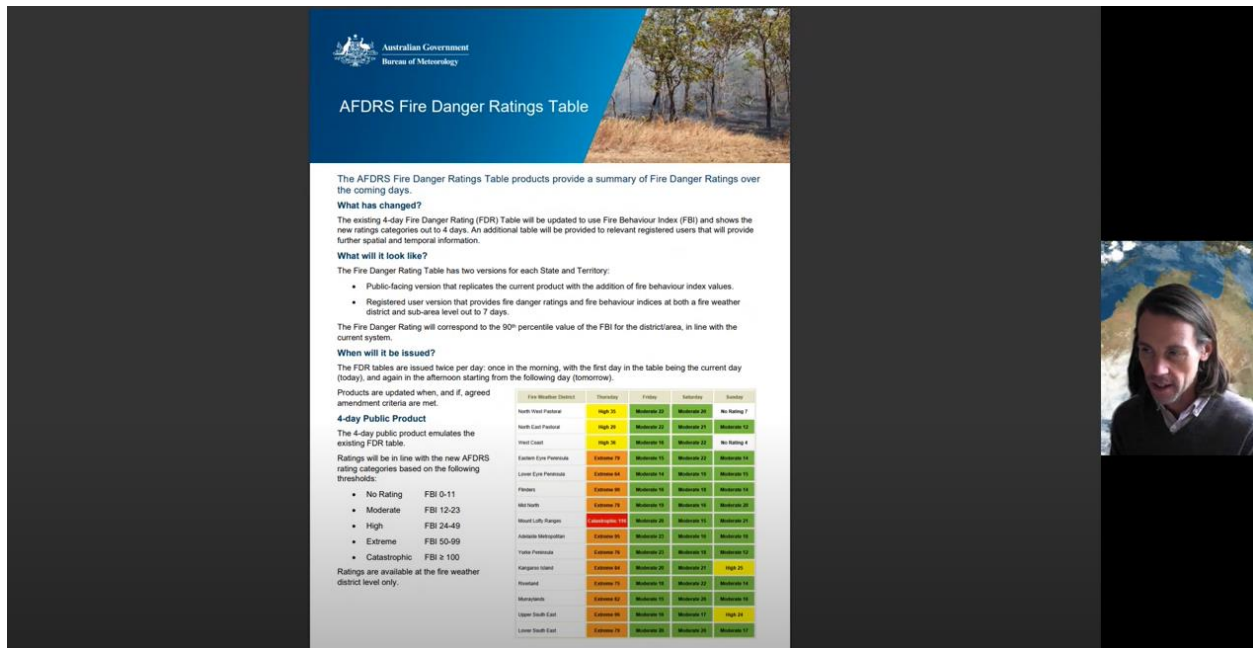
Also monitor agency and emergency services websites and social media and tune into emergency broadcasters.

## Fire Danger Ratings

This product provides four days of forecast Fire Danger Ratings in a simple format for public awareness.

These are issued per state or territory and show the new **AFDRS Fire Danger Ratings** categories out to four days for each Fire Weather District. **Figure 1** shows an example. These tables also show the forecast Fire Behaviour Index (FBI) as a numeral next to the Fire Danger Rating, for those requiring that extra level of detail.

Steve McGibbony from the Bureau of Meteorology guides users about using both the public and agency **Fire Danger Rating tables** in the video below. Click on the image or the link below the image to view it.



The AFDRS Fire Danger Ratings Table products provide a summary of Fire Danger Ratings over the coming days.

**What has changed?**

The existing 4-day Fire Danger Rating (FDR) Table will be updated to use Fire Behaviour Index (FBI) and shows the new ratings categories out to 4 days. An additional table will be provided to relevant registered users that will provide further spatial and temporal information.

**What will it look like?**

The Fire Danger Rating Table has two versions for each State and Territory:

- Public facing version that replicates the current product with the addition of fire behaviour index values.
- Registered user version that provides fire danger ratings and fire behaviour indices at both a fire weather district and sub-area level out to 7 days.

The Fire Danger Rating will correspond to the 90<sup>th</sup> percentile value of the FBI for the district/area, in line with the current system.

**When will it be issued?**

The FDR tables are issued twice per day: once in the morning, with the first day in the table being the current day (today), and again in the afternoon starting from the following day (tomorrow).

Products are updated when, and if, agreed amendment criteria are met.

**4-day Public Product**

The 4-day public product emulates the existing FDR table.

Ratings will be in line with the new AFDRS rating categories based on the following thresholds:

- No Rating FBI 0-11
- Moderate FBI 12-23
- High FBI 24-49
- Extreme FBI 50-99
- Catastrophic FBI ≥ 100

Ratings are available at the fire weather district level only.

Fire Weather District	Thursday	Friday	Saturday	Sunday
North West Pastoral	High 35	Moderate 22	Moderate 20	No Rating 7
North East Pastoral	High 29	Moderate 22	Moderate 21	Moderate 12
West Coast	High 36	Moderate 16	Moderate 22	No Rating 4
Eastern Eyre Peninsula	Extreme 79	Moderate 15	Moderate 22	Moderate 14
Lower Eyre Peninsula	Extreme 64	Moderate 14	Moderate 19	Moderate 15
Flinders	Extreme 90	Moderate 16	Moderate 18	Moderate 14
Mid North	Extreme 78	Moderate 19	Moderate 16	Moderate 20
Mount Lofty Ranges	Catastrophic 116	Moderate 20	Moderate 15	Moderate 21

YouTube link: [https://youtu.be/zYn8E\\_I6R1A](https://youtu.be/zYn8E_I6R1A)

The Bureau Product Guide contains further information: [Here](#).

Fire Weather District	Thursday	Friday	Saturday	Sunday
North West Pastoral	High 35	Moderate 22	Moderate 20	No Rating 7
North East Pastoral	High 29	Moderate 22	Moderate 21	Moderate 12
West Coast	High 36	Moderate 16	Moderate 22	No Rating 4
Eastern Eyre Peninsula	Extreme 79	Moderate 15	Moderate 22	Moderate 14
Lower Eyre Peninsula	Extreme 64	Moderate 14	Moderate 19	Moderate 15
Flinders	Extreme 90	Moderate 16	Moderate 18	Moderate 14
Mid North	Extreme 78	Moderate 19	Moderate 16	Moderate 20
Mount Lofty Ranges	Catastrophic 116	Moderate 20	Moderate 15	Moderate 21

Figure 1: Example of a public fire danger rating table

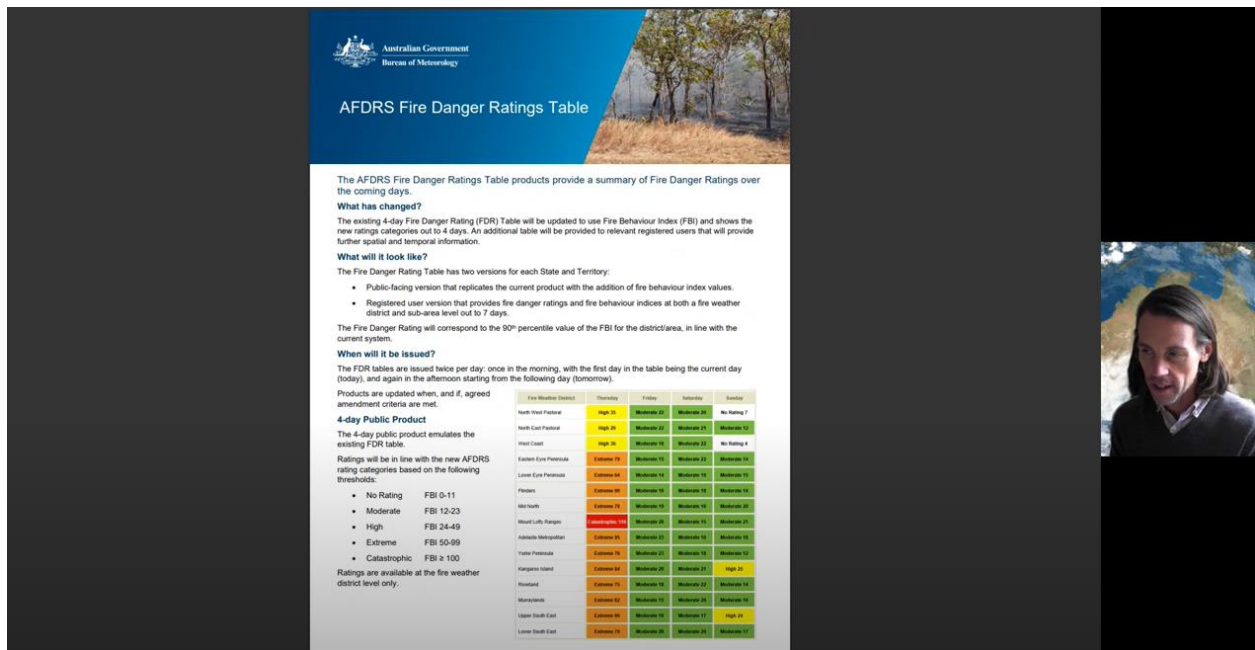
## Agency products

### Detailed Fire Danger Ratings

This new product provides detailed forecasts of fire danger information **out to seven days** to aid in agency level decision-making processes.

The information is provided per jurisdiction for Fire Weather Districts, but users can drill down to Sub-Areas as shown in **Figure 2**.

Steve McGibbony from the Bureau of Meteorology guides users about using both the public and **agency Fire Danger Rating tables** in the video below. Click on the image or the link below the image to view it.



The screenshot shows a video player with a slide titled "AFDRS Fire Danger Ratings Table". The slide content includes:

- Australian Government Bureau of Meteorology**
- AFDRS Fire Danger Ratings Table**
- The AFDRS Fire Danger Ratings Table products provide a summary of Fire Danger Ratings over the coming days.
- What has changed?**
  - The existing 4-day Fire Danger Rating (FDR) Table will be updated to use Fire Behaviour Index (FBI) and shows the new ratings categories out to 4 days. An additional table will be provided to relevant registered users that will provide further spatial and temporal information.
- What will it look like?**
  - The Fire Danger Rating Table has two versions for each State and Territory:
    - Public-facing version that replicates the current product with the addition of fire behaviour index values.
    - Registered user version that provides fire danger ratings and fire behaviour indices at both a fire weather district and sub-area level out to 7 days.
  - The Fire Danger Rating will correspond to the 90<sup>th</sup> percentile value of the FBI for the district/area, in line with the current system.
- When will it be issued?**
  - The FDR tables are issued twice per day; once in the morning, with the first day in the table being the current day (today), and again in the afternoon starting from the following day (tomorrow).
  - Products are updated when, and if, agreed amendment criteria are met.
- 4-day Public Product**
  - The 4-day public product emulates the existing FDR table.
  - Ratings will be in line with the new AFDRS rating categories based on the following thresholds:
    - No Rating FBI 0-11
    - Moderate FBI 12-23
    - High FBI 24-49
    - Extreme FBI 50-99
    - Catastrophic FBI ≥ 100
  - Ratings are available at the fire weather district level only.

The slide also features a table with columns for Fire Weather District, Thursday, Friday, Saturday, Sunday, Monday, Tuesday, and Wednesday, showing various fire danger ratings like HI 27, MOD 12, NoR 11, etc.

YouTube link: [https://youtu.be/zYn8E\\_I6R1A](https://youtu.be/zYn8E_I6R1A)

The BoM Product Guide contains further information: [Here](#).

Fire Weather District	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday
North West Pastoral	HI 27	MOD 12	MOD 17	MOD 14	NoR 11	MOD 15	MOD 17
North East Pastoral	HI 30	MOD 12	MOD 12	MOD 13	NoR 11	MOD 14	MOD 14
West Coast	HI 35	MOD 14	NoR 10	NoR 7	NoR 7	MOD 17	MOD 17
Ceduna	HI 31	NoR 10	MOD 15	MOD 12	MOD 13	MOD 16	MOD 16
Elliston	MOD 16	NoR 11	NoR 11	NoR 10	NoR 7	MOD 17	HI 25
Streaky Bay	HI 28	NoR 11	NoR 8	MOD 13	NoR 7	HI 25	HI 25
Wudinna	MOD 14	NoR 9	MOD 14	NoR 11	NoR 11	MOD 13	HI 25
Eastern Eyre Peninsula	EXT 55	MOD 17	MOD 13	MOD 14	MOD 14	MOD 16	MOD 16
Lower Eyre Peninsula	EXT 52	MOD 15	NoR 11	MOD 14	MOD 14	HI 25	HI 25
Flinders	EXT 67	NoR 11	MOD 13	MOD 12	MOD 12	HI 25	HI 25
Mid North	EXT 60	NoR 8	NoR 7	NoR 10	NoR 7	HI 19	HI 19
Mount Lofty Ranges	CAT 105	MOD 14	NoR 7	MOD 13	MOD 14	HI 25	MOD 14

Figure 2: Example of an agency fire danger rating table



## Fire Weather Forecast

The AFDRS Fire Weather Forecast is used by fire and emergency management personnel for fire preparedness. It provides insight into forecast fire danger risk and the underpinning weather parameters.

The Fire Weather Forecast is provided in three sections:

- **Summary Forecast**
- **Detailed Forecast**
- **Weather Forecast**

Steve McGibbony from the Bureau of Meteorology guides users about using the **Fire Weather Forecast** product in the video below. Click on the image or the link below the image to view it.

**Summary section**

1	2	4	5	6	7	8	9
Fire Weather District	District Rating	Maximum Sub-Area Rating	District FB	chimes	Wind Change Danger Index	TAL	Minor Fuel Type Rating >= Extreme
Western	Extreme	Extreme	56	8	21	2	Y
Upper Darling Valley	High	High	32	7	25	1	
East Coast	Moderate	Moderate	17	5	33	1	
South East	Moderate	High	15	4	24	1	
Kingo borough		Moderate	11	3	27	1	
Tasman		High	28	2	25	1	
Glenorchy City		High	21	4	22	0	
Hobart City		Moderate	10	6	25	0	
Clarence City		Moderate	8	5	24	0	
North East	High	High	38	6	36	1	

**Tuesday**  
Morning fog patches, otherwise dry apart from isolated light morning showers over the eastern parts and near the coast. Generally mild and partly cloudy over the south, but warmer and sunnier over the north. Light winds and afternoon coastal onshore breezes.

- Fire Weather District**  
Information is displayed at the Fire Weather District level as per existing Fire Weather Forecasts. In html displays, this can be expanded to show sub-area information, as shown in the example above.
- District Rating**  
Like the current Fire Weather Forecast, the District Rating displays the highest fire danger rating making up 10% or more of the area.
- Sub-areas or LGA**  
Fire danger information is displayed at a sub-area level when the table is expanded. Sub-areas are defined by agencies but in many cases are Local Government Areas (LGA). Note that sub-areas may straddle more than one Fire Weather District. In this case they will be listed under the district that the greatest proportion of the sub-area sits within.
- Maximum LGA Rating**  
For each Fire Weather District, the maximum fire danger rating at the sub-area level is displayed. When the table is expanded to show sub-areas, this column shows the rating for each of these individual sub-areas. As for the fire weather districts, the rating for the sub-area is the highest rating that makes up 10% or more of the area. It is possible for a sub-area fire danger rating to be higher than the overall District rating.
- District Area Fire Behaviour Index**  
This is the 90<sup>th</sup> percentile fire behaviour index for that district/area.
- chimes**  
The 90<sup>th</sup> percentile continuous chimes index is displayed for the district/area. This is a number between 0 and 15 and will be highlighted when the value exceeds the 95<sup>th</sup> percentile climatological value.
- Wind Change Danger Index**  
The 90<sup>th</sup> percentile wind change danger index (WCIDI) is displayed for the area. The value will be highlighted when it reaches or exceeds 40.
- TAL**  
Thunderstorm Activity Level (TAL) is a value between 0 (no thunderstorm activity) and 3 (widespread thunderstorm activity). The 90<sup>th</sup> percentile TAL value for the area is displayed.
- Minor Fuel Type Rating >= Extreme**  
This highlights when a fuel type that makes up less than 10% of a Fire Weather District (a minority fuel type) returns a rating at or above Extreme. Any individual minority fuel type is not able to trigger a district rating at this level on its own. Where a minor fuel type is rated at Extreme and the overall district rating is below Extreme the cell will be highlighted.

YouTube link: <https://youtu.be/IJCRTLXMckk>

The Bureau Product Guide contains further information: [Here](#).

### Incident Weather Forecasts

Incident Weather Forecasts provide critical localised and specific weather and FBI short term forecast information for an incident. This is to assist incident managers in operational decisions.

Requesting officers will be able to choose the fuel type from the eight standard fuel models used in the AFDRS.


Steve McGibbony from the Bureau of Meteorology guides users about using the Incident Weather Forecast product in the video below. Click on the image or the link below the image to view it.

**Example**

24 Hour Forecast commencing 1900 hours Monday 4 April 2022

Time	IC1	IC2	IC3	Dir	Speed	Contd	Dir	Speed	FBI	Mix	Chimney	TAL
Local Time	IC1	IC2	IC3	Dir	Speed (km/h)	Contd	Dir	Speed (km/h)	Index	Height (m)	Class	Height (m)
1000	20	5	37	NNW	15	25	NNW	30	25	1400	5	0
1100	23	5	31	NNW	15	25	NNW	30	25	1800	5	0
1200	25	5	28	NNW	20	30	NNW	20	27	2200	5	0
1300	26	3	26	NNW	20	35	NNW	40	29	2600	7	0
1400	28	3	23	NNW	25	35	NNW	40	33	2800	9	0
1500	29	2	18	NNW	25	40	NNW	40	36	3200	10	1
1600	29	2	18	NNW	25	40	N	40	35	3200	10	1
1700	28	3	23	NNW	25	35	N	40	35	3200	10	1
1800	27	3	25	NNW	20	30	N	40	32	3000	11	1
1900	26	3	26	NNW	20	35	N	40	30	2200	9	0
2000	24	4	27	NNW	25	35	NNW	50	25	1800	8	0
2100	22	3	29	NNW	25	30	NNW	50	26	1500	7	0
2200	21	5	35	N	25	40	NNW	50	18	1400	7	0
0100	20	5	37	N	25	40	NNW	50	16	1400	7	0
0400	18	5	42	N	20	30	NNW	55	12	1400	7	0
0700	15	8	63	WSW	30	50	WSW	45	10	1400	7	0
1000	18	8	45	W	30	50	WSW	30	15	1800	3	0

- FBI Type**  
This indicates the main fuel type to which the displayed FBI corresponds. The fuel type will be selected by the requesting officer when submitting the IWF request. If unsure the requesting officer may select 'Unknown'. In this instance the fuel type used will be based on the gridded fuel type layer supplied from the Fuel State Editor. The requesting officer may also select 'not required' (e.g., for a Hazmat incident). In this case no FBI value will be displayed.
- Fuel information**  
This indicates the fuel state information used to compute the FBI. The parameters shown here will differ depending upon the fuel type. The requesting officer may provide the relevant fuel state information when submitting the request. If not supplied with the request, gridded fuel information will be used. The fuel state information will be shown in bold text when a supplied value is used.
- Local Time**  
When the IWF duration is more than 12 hours, the requesting officer can choose for which period (first 12 hours, middle 12 hours or last 12 hours) hourly forecast timestamps are provided. Outside of this window the timestamps will be 3-hourly.
- FBI**  
The FBI cell will be shaded to match the Fire Danger Rating to which the index value corresponds to.
- C-Haines**  
The Continues Haines cell will be highlighted when the value exceeds the 95<sup>th</sup> percentile climatological value for that location.



YouTube link: <https://youtu.be/t5PTS6xqWy0>

The Bureau Product Guide contains further information: [Here](#).

## Observation Bulletin

The Fire Weather Observation Bulletin calculates and/or displays (see **Figure 3**):

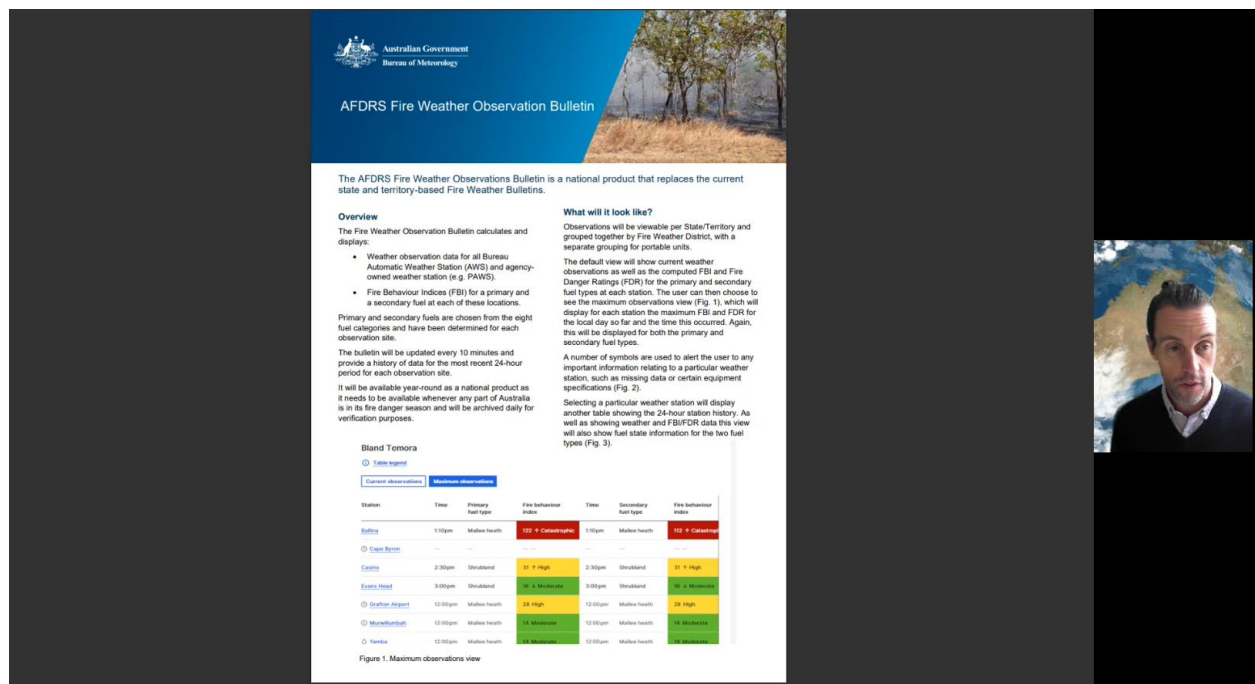
- **Weather observation data** for all Bureau Automatic Weather Station (AWS) and agency-owned Portable Automatic Weather Stations (PAWS).
- **FBI** for a primary and a secondary fuel.

Primary and secondary fuels are chosen from the eight fuel categories and will be determined for each observation site.

The Bulletin is updated every 10 minutes and provides data for the most recent 24-hour period for each observation site.

The Bulletin is archived so historic information can also be accessed.

Steve McGibbony from the Bureau of Meteorology guides users about using the **Observation Bulletin** product in the video below. Click on the image or the link below the image to view it.



The screenshot shows the AFDRS Fire Weather Observation Bulletin interface. It includes a header with the Australian Government Bureau of Meteorology logo and the title 'AFDRS Fire Weather Observation Bulletin'. Below the header, there is an overview section and a 'What will it look like?' section. The main content is a table titled 'Maximum observations' for the station 'Bland Temora'. The table has columns for Station, Time, Primary fuel type, Fire behaviour index, Time, Secondary fuel type, and Fire behaviour index. The data is as follows:

Station	Time	Primary fuel type	Fire behaviour index	Time	Secondary fuel type	Fire behaviour index
Bland Temora	1:10pm	Mallee heath	122 - 9 Catastrophic	1:10pm	Mallee heath	122 - 9 Catastrophic
Castro	2:30pm	Shrubland	31 - 1 High	2:30pm	Shrubland	31 - 1 High
East Hill	3:00pm	Shrubland	41 - 1 Moderate	3:00pm	Shrubland	41 - 1 Moderate
Griffith Airport	12:00pm	Mallee heath	28 - High	12:00pm	Mallee heath	28 - High
Manildra	12:00pm	Mallee heath	17 - Moderate	12:00pm	Mallee heath	17 - Moderate
Yamba	12:00pm	Mallee heath	22 - Moderate	12:00pm	Mallee heath	22 - Moderate

Figure 1. Maximum observations view

YouTube link: <https://youtu.be/BWT8e-wl-P4>

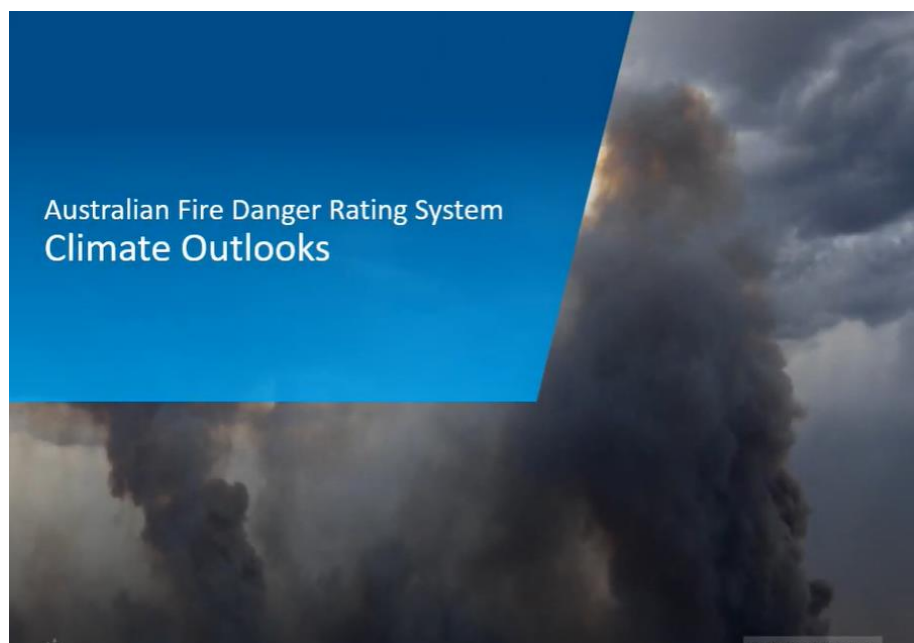
The Bureau Product Guide contains further information: [Here](#).

## What are the Fire Danger Outlooks?

The **Fire Danger Outlooks** include three products designed to interpret climatological data. These products support the process of preparing Seasonal Outlooks that forecast and describe the coming fire season. **Seasonal Outlooks** are prepared by AFAC with The Bureau and the jurisdictions to give guidance for strategic planning of fire management capabilities and operational fire readiness.

The AFDRS Fire Danger Outlooks provide probabilistic outlooks (out to three months) using climate modelling and fuel information. Outlooks are produced twice weekly, coinciding with the existing public rain/temperature outlook generation. AFDRS climate data is processed by collecting AFDRS fire danger data into either two or three categories for specific time periods. This process enables the creation of two kinds of visualisations: 'chance of above median' plots and 'tercile' plots. A third product examining the tercile timeseries is also provided.

Dr Naomi Bengler from the Bureau of Meteorology guides users about using the **Fire Danger Outlooks** in the video below. Click on the image or the link below the image to view it.



YouTube link: <https://youtu.be/3XbNaNTx8S4>

The Bureau Product Guide contains further information: [Here](#).