The Bureau of Meteorology

Public Weather Service Level Specification

2026–27



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1. Introduction

1.1. Purpose and scope

The purpose of this Service Level Specification (SLS) is to document the public weather services provided by the Bureau of Meteorology (the bureau). This includes weather forecasts and observations that are routine (generated at set intervals or times) as well as some alerts and warnings that are non-routine (generated when certain thresholds or conditions occur) with the exception of those covered by separate hazard-based SLS.

An SLS details **what** the bureau does and **when** it does it. **How** the bureau produces these services is addressed in internal bureau documentation.

There are separate publicly available SLS for specific hazard types:

- tropical cyclone
- heatwave
- fire weather
- thunderstorm and severe weather
- flood

An SLS for marine weather will be developed and will cover forecasts, warnings, and observations for the marine environment. In the meantime, more information about marine weather services and tsunami is available on the bureau website.

1.2. Authority

The *Meteorology Act 1955* outlines a number of functions for the bureau including but not limited to the taking and recording of observations, forecasting the weather, supplying information and publishing reports, and issuing of warnings.

The responsibility for preparation for and response to weather impacts lies with state and territory governments and local governments.

The Bureau of Meteorology Public Weather SLS is issued by the General Manager National Production Services under the authority of the Director of Meteorology.

1.3. Distribution

This document will be made available via the bureau's website later in 2026.

2. Public weather services

2.1. Definition

The bureau's public weather services provide everyday weather forecasts and observations for all Australians and the sectors that support them to live, work, and travel safely and enjoyably. They are typically generated and delivered by the bureau every day of the year (with the exception of warnings and alerts) and cover today and the week ahead (for forecasts) or today and the recent past (for observations).

Public weather services comprise a diverse range of weather observation, forecast, and some warning products. These typically:

- are targeted at the Australian community
- are created for general multi-purpose use and the Australian community in general, and not tailored for use by specific individuals, organisations, or sectors
- have no restrictions on who can access or subscribe to them (although some charges may apply for delivery by channels such as FTP and web mapping service)
- are delivered by public channels where possible with a focus on accessibility and reach
- are subject to change and continuous improvement based on the Australian community's needs.

2.2. Area of responsibility

The bureau's public weather services cover all Australian states and territories as well as the offshore islands of Lord Howe Island, Norfolk Island, Christmas Island, and the Cocos (Keeling) Islands.

Most bureau products span the entire Australian continent, however, there may be a practical limit to geographic extent in some cases, for example due to:

- land use and economic activity (e.g. Warnings to Sheep Graziers are focused on areas known to have sheep)
- location of observation assets (e.g. radars, automatic weather stations)
- computational capacity (e.g. localised modelling provided in higher impact areas)
- variations in climatic conditions and relevance (e.g. warning and alert types).

The bureau's suite of warnings was developed separately across states and territories based on community input and feedback, so not all warnings are available or relevant for every jurisdiction. The bureau is currently working to align public weather services nationally.

2.3. Dissemination of products

2.3.1. Product distribution channels

Public weather products are distributed through the following channels, with the content and format varying depending on customer need and current channel capability:

- Bureau website
- BOM Weather app
- Anonymous (Public) File Transfer Protocol (FTP)
- RSS feeds (warnings only)
- Telephone weather service (audio weather and warnings)
- Registered FTP (charges apply)
- Web mapping service (charges apply)

2.3.3. Real-time data services

Customers can subscribe to access real-time bureau datasets such as numerical weather prediction grids, observations, warnings, satellite imagery and radar data. These services are charged in accordance with the Australian Government Cost Recovery Guidelines.

More information on data bundles can be found at https://reg.bom.gov.au/reguser/

2.4. Community information and engagement

Additional services provided to increase engagement with the Australian community include:

- delivery of live and pre-recorded radio and television crosses, and video content, with weather forecast, observations and hazard information delivered by bureau communicators
- social media to share weather information and build community knowledge
- bureau knowledge centres to support community understanding of our information
- response to telephone and contact form enquiries and feedback, including the National Relay Service
- engagement with the community through partnerships with government entities and community organisations to build our knowledge and understanding of how future services can be enhanced to meet community needs.

3. Quality assurance and performance

3.1. Performance statistics and reporting

Official forecast and warning products are verified where possible against available observations.

Forecast accuracy measures are also published on the bureau website including:

- timeliness of routine forecast products
- accuracy of next day forecast temperatures
- rainfall range reliability
- accuracy of national wind speed forecasts.

Key performance measures are reported in the bureau's Annual Report.

3.2. Meteorologist training and competency

The bureau undertakes competency-based training and assessment programs for qualified meteorologists involved in forecast, warning, and decision support operations.

This includes a public weather training and assessment program, and specific hazard-based training and competency-based assessment programs (e.g. for fire weather). These programs ensure that staff involved in analysing, forecasting, and warning have the qualifications, training and demonstrated ability to provide a high standard of service to the Australian community.

3.3. Forecast amendment

The bureau's forecasts use a blend of Australian and international model data with the latest science, technology, and expert meteorologist input to best represent expected weather.

Routine forecasts are updated at set times or intervals throughout the day – typically twice or four times per day. Forecasts may be updated at other times when newer information indicates a significant departure from the previous forecast, or during periods of severe weather (such as tropical cyclones). This may include a new or changed expectation of precipitation, wind speed, or temperature, or changed timing of hazardous weather that may impact community safety.

3.4. Service continuity

The bureau maintains service continuity through its Business Continuity Plans. Most pertinent to routine public weather services is the built-in redundancy of being able to transfer operations between offices, as required.

To maintain service continuity, the bureau uses a large and diverse range of observational and forecast data in the delivery of all its weather services. This provides redundancy if data sources are unavailable during operations and ensures all products and services are based on the best available information at the time.

3.5. Community feedback

Feedback helps the bureau refine its public weather products and services to better meet the needs of the Australian community.

Feedback can be submitted via:

- website contact form
- pop-up window on the bureau website (where the text *Was this page useful?* is shown at the bottom of a web page)
- feedback through the BOM Weather app
- telephoning Weather Connect 1300 754 389 in Australia (Monday to Friday, 8 am to 6 pm AEST/AEDT, except on Victorian public holidays).

4. Routine public weather forecasts

4.1. State and territory forecasts

4.1.1. Product overview

State and territory forecasts provide a broad weather forecast and overview for each state or territory. Using text description, the narrative includes significant weather, rainfall, temperature and wind information. The forecast is not intended to cover every variance in the weather; this information is contained in the district or location forecasts.

Product codes are shown below.

4.1.2. Issue times

Products are updated twice daily – in the early morning and afternoon – and cover the next four days. The morning issue covers Day 0 (D0) to Day 3 (D3), and the afternoon issue the rest of D0 to Day 4 (D4).

Product code	Product name	Morning issue	Afternoon issue
IDN10031	New South Wales and Australian Capital Territory Forecast	4:20 am	4:30 pm
IDV10310	Victoria Forecast	4:00 am	4:30 pm
IDQ10700	Queensland Forecast	3:00 am	3:30 pm
IDW10100	Western Australia Forecast	1:45 am	1:30 pm
IDS10033	South Australia Forecast	4:00 am	4:00 pm
IDT13100	Tasmania Forecast	4:00 am	4:30 pm
IDD10111	Northern Territory Forecast	2:30 am	3:00 pm

* All times are estimates and are based on local times

4.1.3. Coverage

All Australian states and territories.

Australian Capital Territory is included in the New South Wales forecast but has its own district forecast.

4.1.4. Content

- **Weather situation:** 2–4 sentence discussion of the location and timing of the most significant synoptic features influencing the state or territory during the forecast period. In general, more detail is provided for the early part of the forecast period. Also known as a synoptic situation.
- **4-day forecast**: Narrative describing the types and spatial distribution of significant weather, temperature, wind, and rainfall across the state for each day for the next four days.

4.1.5. Access

Bureau website

New South Wales

Victoria

Queensland

Western Australia

South Australia

Tasmania

Northern Territory

Other channels

Anonymous (Public) FTP

Registered FTP (text forecasts bundle – charges apply)

4.2. District forecasts

4.2.1. Product overview

District forecasts provide an area forecast for the bureau's official public weather forecast districts. They provide a general forecast of weather conditions, rainfall, temperature, ultraviolet (UV) forecast and winds for each forecast district.

Product codes are available in the text forecasts user guide.

4.2.2. Issue times

Products are updated four times per day and cover the next four days. The morning issue covers D0 to D3 and the afternoon issue covers the rest of D0 to D4.

State or territory	Early morning	Mid-morning	Afternoon	Evening
New South Wales and ACT districts	5:05 am	10:00 am	4:30 pm	10:00 pm
Victoria districts	4:40 am	10:00 am	4:15 pm	10:00 pm
Queensland districts	3:30 am	9:00 am	3:15 pm	9:00 pm
Western Australian districts	1:30 am	7:00 am	1:25 pm	7:00 pm
South Australian districts	4:10 am	9:30 am	3:55 pm	9:30 pm
Tasmanian districts	4:40 am	10:00 am	4:25 pm	10:00 pm

* All times are estimates and are based on local times

4.2.3. Coverage

Australian states are divided into several 'forecast district' areas. Where possible, the boundaries of districts are chosen to encompass areas with similar meteorological conditions. Forecast district boundaries may change due to changes in population, Emergency Management boundaries, local government areas, and industry requirements.

District forecasts are available for all states and the Australian Capital Territory. The Northern Territory does not have district forecasts.

See IDM00001 Public weather forecast districts in the spatial data user guide.

4.2.4. Content

- **Weather situation:** 2–4 sentence discussion of the location and timing of the most significant synoptic features influencing the state or territory during the forecast period. In general, more detail is provided for the early part of the forecast period. This text is also included in state and territory forecasts. Also known as a synoptic situation.
- **4-day forecast:** Sentences may include:
    - sky phrase (e.g. *Partly cloudy*)
    - weather phrase (e.g. *The chance of a thunderstorm in the afternoon and evening*)
    - probabilistic rainfall information – slight, medium, high, very high chance of (e.g. *Slight chance of a shower*)
    - wind direction, strength (in km/h), and trend information (e.g. *Winds northeast to southeasterly 15 to 25 km/h tending northwest to southwesterly during the day then tending easterly 15 to 20 km/h during the evening*)
    - temperature range for the day and overnight periods (e.g. *Overnight temperatures falling to between 11 and 17 with daytime temperatures reaching 28 to 35*)
- **UV forecast:** Maximum daily UV Index, rating and sun protection times for D0 on morning issue, D1 on afternoon issue (e.g. *Sun protection 8:50 am to 5:10 pm, UV Index predicted to reach 12 [Extreme]*).
- **Fire danger:** Fire danger rating for D0 on morning issue, D1 on afternoon issue (during fire seasons only) (e.g. *High*).
- **Précis forecasts:** Short summary forecasts for key regional centres within the district.

Note that not all text components are shown on every bureau channel.

Please note the following regional variations:

- **Hazardous surf statement (New South Wales and southern Queensland):** Coastal districts forecasts include a hazardous surf statement when long period swells are likely to cause dangerous conditions near the coast.
- **Snowy Mountains (New South Wales):** The Snowy Mountains district forecast provides a district style forecast with additional forecast information about snow levels. The chance of snow (%) is shown for three levels: 1000m, 1400m and 1800m. This forecast does not include the temperature phrase.
- Northern Territory districts: The Northern Territory does not have district forecasts but does have national park forecasts (see local areas in location-based forecasts).

4.2.5. Access

Bureau website

BOM Weather app

Anonymous (Public) FTP

Registered FTP (text forecasts bundle – charges apply)

4.3. Offshore island forecasts

4.3.1. Product overview

The bureau provides local forecasts for the offshore islands of Lord Howe Island, Norfolk Island, Christmas Island, and the Cocos (Keeling) Islands with weather and marine (winds, sea, swell) forecast information for next 3 or 4 days.

Product codes are shown below.

4.3.2. Issue times

Island forecasts are issued twice daily – morning and afternoon.

Product code	Product name	Morning issue	Afternoon issue
IDN10008	Norfolk Island Forecast	6:00 am NFT	4:00 pm NFT
IDN10033	Lord Howe Island Forecast	5:30 am LHST	3:30 pm LHST
IDW10600	Cocos (Keeling) Islands Forecast	5:30 am WST	4:30 pm WST
IDW10700	Christmas Island Forecast	5:30 am WST	4:30 pm WST

* All times are estimates and are based on local times in:

- NFT = Norfolk Island Time
- LHST = Lord Howe Standard Time
- WST = Western Standard Time

4.3.3. Coverage

The following islands have forecasts that are publicly available:

- Norfolk Island
- Lord Howe Island
- Cocos (Keeling) Islands
- Christmas Island

4.3.4. Content

- **Weather situation:** 2–4 sentence discussion of the location and timing of the most significant synoptic features influencing the forecast period. In general, more detail is provided for the early part of the forecast period.

- **3-day (Christmas and Cocos Keeling Islands) or 4-day (Norfolk and Lord Howe Islands) forecast** containing where relevant:
  - Précis forecast: Short form text describing the weather for that day up to a maximum of 30 characters in length (e.g. *Partly cloudy*)
  - Wind direction, strength in knots, and trend
  - Seas (height) and swell (height and direction)
  - Minimum and maximum temperature
- **UV forecast:** Maximum daily UV Index, rating and sun protection times (for D0 on morning issue, D1 on afternoon issue).

4.3.5. Access

Bureau website

Norfolk Island

Lord Howe Island

Cocos (Keeling) Islands

Christmas Island

Other channels

BOM Weather app (limited information for islands)

Anonymous (Public) FTP

Registered FTP (text forecasts bundle – charges apply)

4.4. Location-based text forecasts

4.4.1. Product overview

The bureau provides a weather forecast for every location across Australia by searching the bureau website or BOM Weather app. Text forecasts include a mix of written text, visual elements (such as a weather icon) and data elements (e.g. temperature or rainfall values). Additional information is provided for major centres and selected national parks – see below.

Product codes for these forecasts are available in the text forecasts user guide.

4.4.2. Issue times

The bureau's text forecasts are routinely updated four times per day. Issuance times are staggered. For example, town forecasts, local area forecasts and district forecasts are issued five to ten minutes apart sequentially.

For each jurisdiction, this means forecasts are routinely updated at around (local times):

State or territory	Early morning	Mid-morning	Afternoon	Evening
NSW, Victoria, Tasmania, ACT	4 am	10 am	4 pm	10 pm
Queensland	3 am	9 am	3 pm	9 pm
Western Australia	1 am	7 am	1 pm	7 pm
South Australia	3:30 am	9:30 am	3:30 pm	9:30 pm
Northern Territory	2:30 am	8:30 am	2:30 pm	8:30 pm

Issue times remain the same in local time year-round for each state and territory, following the clocks where they change for daylight savings time.

More detailed issue times are available in the text forecasts user guide.

4.4.3. Coverage

Every part of the Australian mainland has a location-based forecast. Additional forecast information is available for:

- **Metropolitan centres** – all capital cities and some population centres (the Gold Coast, Sunshine Coast, Mornington Peninsula, Geelong, Launceston, Newcastle, Central Coast, Wollongong)
- **Towns** – well known regional or tourist centres
- **Local areas** – significant tourist areas which experience high numbers of tourists and are considered highly weather sensitive (New South Wales alpine area, Tasmanian Overland Track, and Northern Territory Uluru – Kata Tjuta, Kakadu, and Litchfield National Parks)

Forecast locations for metropolitan centres, local areas, towns and cities are defined by the bureau. Spatial data is further detailed in the spatial data user guide.

4.4.4. Content

All locations in Australia have:

- **Weather icon**: a graphic used to represent the expected weather conditions
- **Précis text**: short form text describing the weather for that day up to a maximum of 30 characters in length (e.g. *Mostly sunny*)
- **Maximum temperature** for the period 6 am to 9 pm (local time)
- **Minimum temperature** for the period 6 pm to 9 am the next day (local time)
- **Possible rainfall** showing the 75th and 25th percentile daily rainfall amounts (mm), appearing when the chance of any rain is above 20% (e.g., *2–10 mm*)
- **Fire danger**: the latest fire danger rating (fire seasons only) (e.g. *High*)
- **UV forecast**: maximum UV Index, rating and sun protection times (next four days only) *(e.g. Sun protection 8:50 am to 5:10 pm, UV Index predicted to reach 12 [Extreme])*.

Please note the following regional variations:

- **Metropolitan centres, local areas, and towns** have a detailed (long-text) forecast description containing sky, wind, rainfall and hazard information. Other locations (except in Northern Territory) will display a district forecast instead.
- **Hazardous surf statement (New South Wales and southern Queensland):** Metropolitan and some town forecasts include a hazardous surf statement when long period swells are likely to cause dangerous conditions near the coast.

4.4.5. Access

Bureau website

BOM Weather app

Anonymous (Public) FTP

Registered FTP (charges apply)

Telephone weather service (limited products only)

4.5. Australian Digital Forecast Database (ADFD) forecasts

4.5.1. Product overview

The Australian Digital Forecast Database (ADFD) is a database of official weather forecast elements produced by the bureau, such as temperature, rainfall, and weather types, presented in a gridded format.

Product codes for the ADFD are available in the ADFD user guide.

4.5.2. Issue times

The ADFD files are updated routinely four times per day at around 2300, 0500, 1100 and 1700 UTC (Coordinated Universal Time). There are no changes to issuance related to daylight saving time.

Forecasts are available in hourly, three-hourly, or daily time increments (also known as time-steps) out of 7 days – depending on the grid type.

4.5.3. Coverage

ADFD grids are available for the entire Australian domain (excluding offshore islands) – see coordinates for each state and territory in the ADFD user guide.

Grids are published at a 6 km resolution. There are 3 km resolution grids for smaller states (Victoria and Tasmania) available from the Registered User Service.

4.5.4. Content

The ADFD includes gridded forecasts for:

- rainfall e.g. chance of any rain (0.2 mm) and other amounts; daily mean; rainfall amounts for 25th, 50th, 75th, and 90th percentiles

- overnight minimum and daytime maximum temperatures
- apparent temperature
- wind speed and direction, and wind gust speed
- dew point and relative humidity
- significant weather e.g., fog, frost, thunderstorms, snow
- sky cover
- daily weather icon codes
- sea and swell

4.5.5. Access

ADFD data are available in several formats:

- grid formats – NetCDF and GRIB2 via Registered FTP (charges apply)
- images via the maps on the bureau website (and MetEye)
- web mapping service (GIS2Web) – limited grids only (charges apply)
- the BOM Weather app and bureau website use some elements from ADFD alongside text forecast products
- the Water and the Land section of the bureau website uses ADFD for rainfall forecasts, including maps that show total forecast rainfall for the next 4 and 8 days.

4.6. UV forecasts and sun protection times

4.6.1. Product overview

The UV Index is a simple way of describing the danger of solar UV radiation intensity. A computer model is used to forecast the UV radiation at ground level. The model takes into account information on the time of day, date, latitude, altitude and ozone concentrations.

The maximum UV Index for a day is calculated for midday, assuming cloud-free skies.

The bureau adds sun protection times and a maximum UV Index and rating to a range of weather forecasts for districts, local areas, towns, metropolitan areas, and précis locations on the bureau website and/or the BOM Weather app.

Product codes are available here.

4.6.2. Issue times

UV forecasts are updated once per day, at around 11 am UTC (9 pm AEST).

Hourly, three-hourly, and daily time-steps are available for the next four days although this varies by product and channel.

4.6.3. Coverage

UV information is available for every location in Australia.

- Gridded UV forecast products cover the entire Australian domain, including coastal waters.
- Point-based UV products are available for 677 Australian locations.

4.6.4. Content

For daily UV products:

- **Maximum UV Index (value and rating):** e.g. UV Index predicted to reach 4 [Moderate]
- **Sun protection times:** Sun protection recommended from 11:00 am to 3:00 pm, OR Sun protection not required

For hourly and three-hourly UV products:

- **UV Index (value and rating)** for each time-step

The bureau uses the World Health Organization UV Index ratings are as follows:

- Low: 0–2
- Moderate: 3–5
- High: 6–7
- Very High: 8–10
- Extreme: 11+

Users are requested to acknowledge the European Centre for Medium–Range Weather Forecasts (ECMWF) Copernicus Atmosphere Monitoring Service (CAMS) in any product or service derived from these data using the following or any similar notice 'Generated using Copernicus Atmosphere Monitoring Service Information [Year]'.

4.6.5. Access

Bureau website

BOM Weather app

Anonymous (Public) FTP

Registered FTP (charges apply)

UV information is also available via the Cancer Council SunSmart Global UV app.

5. Routine public weather observations and analysis

5.1. Latest weather station observations

5.1.1. Product overview

The bureau has a wide network of weather stations where we officially record weather data such as temperature, rainfall, humidity, pressure, and wind. Real-time observations are used together with numerical prediction models to underpin the bureau's routine weather and warning services, and help Australians make decisions. Historical records of observations are essential to feed into Australia's long-term climate record and understand our past and current climate.

Most stations are automatic weather stations recording data every minute of the day. These stations are supported by manually collected observations, and some portable weather stations managed by fire agencies or local government departments.

The bureau collates the weather data from these stations into a variety of products and displays including:

- observation xml files for use in data feeds
- summaries of 'highs and lows' for each state and territory (for example, New South Wales)
- summaries of the latest weather observations by district (for example, South Australia)
- observations presented on a map (MetEye)
- tabular data including daily weather observations

Data from automatic weather stations – the latest weather observation and past observations from the previous 72 hours – are provided when you search for your location on the bureau website or BOM Weather app.

Read more about weather stations on our website. Performance targets and results for automatic weather station uptime are included in the bureau's Annual Report.

5.1.2. Issue times

Observations data on the bureau website or BOM Weather app are typically available at 10 or 30-minute intervals.

Higher-frequency (one-minute) data is available via the bureau's Registered User Service.

Where shown, data from manual weather stations are typically collected once a day at 9 am. A few report more often and at other times.

5.1.3. Coverage

The bureau has automatic weather stations across Australia, offshore islands, and in the Antarctic.

Placement and coverage of bureau automatic weather stations is determined balancing several factors. This can include considerations such as population density, impact on numerical weather model performance, ground truthing of weather radar, continuity of climate records, or the requirements of key partners such as aviation.

The bureau also supports fire management by ingesting and displaying data from fire agency and local government department owned and operated portable automatic weather stations into some observation products. Read more about observations for fire management in the fire weather services level specification. There is an additional flood network of rain and river level gauges described in our flood service level specifications.

5.1.4. Content

Recent observations shown on our website are described below. Some stations in our network do not observe all weather phenomena. For more information, see our website.

Heading or label	Meaning
Date/time	Date and time at the weather station, when the observation is recorded.
Delta T	Indicates evaporation rate and droplet lifetime. Used by the agricultural sector to determine acceptable spray conditions. Expressed in degrees Celsius.
Dew point	Temperature to which air must cool for dew to form. Expressed in degrees Celsius.
Feels like	Apparent temperature taking into account the effects of humidity and wind speed, in degrees Celsius.
Gust	Highest wind gust in the past 30 minutes, measured over 3 seconds.
Highest overnight minimum	Highest overnight minimum temperature across the state, territory or district. Measured from 6 pm to 9 am and expressed in degrees Celsius.
Highest temperature	Daytime high temperature, in degrees Celsius, from 6 am to 9 pm. The date and time show when the observation was taken.
Highest wind gust	Maximum wind gust for today, measured since midnight.
Humidity	Relative humidity. The amount of moisture as a percentage of the amount that air can hold. Indicates how close the air is to being saturated.
Lowest daytime maximum	Lowest daytime maximum temperature across the state or district, measured from 6 am to 9 pm. Expressed in degrees Celsius.
Lowest temperature	Overnight low temperature in degrees Celsius, from 6 pm to 9 am. The date and time show when the observation was taken.
Pressure	Mean sea level pressure (MSLP). Weight of the atmosphere above a point (reduced to mean sea level) in hectopascals.
Rain since midnight	Total rain since midnight, measured in millimetres, in increments of 0.2 mm.
Rainfall	Total rain measured in the past hour, in millimetres.
Temperature	Ambient temperature – temperature of the air. All temperatures are in degrees Celsius.

Heading or label	Meaning
Wind	Average wind speed and direction over the past 10 minutes. Direction is relative to True North, expressed as one of 16 compass points, from which the wind is blowing.

5.1.5. Access

Bureau website

BOM Weather app

Anonymous (Public) FTP

Registered FTP (charges apply)

Telephone weather service (limited observation sites)

Web mapping service (GIS2Web) (charges apply)

5.2. Radar imagery

5.2.1. Product overview

Weather radars show patterns of precipitation (rain, hail and snow) moving across the country in areas that have radar coverage in near real-time to inform safety, protective and practical decisions. The bureau generates maps that show reflected particles for a specified area surrounding the radar. Different colours depict rainfall reflectivity and derived properties including estimated rainfall intensities. Read more about radars on our website. Product codes are available here.

5.2.2. Issue times

Radar images are updated every 5 minutes.

The bureau website shows the past 7 radar images.

The BOM Weather app shows the past 90 minutes, and a radar-based nowcast for the next 90 minutes.

5.2.3. Coverage

The bureau has around 70 weather radars across the mainland and Norfolk Island. View radar coverage and locations.

5.2.4. Content

The BOM Weather app shows:

- rain rate – estimated rainfall intensity in millimetres per hour (mm/h) for the past 90 mins and next 90 minutes
- opt-in rainfall notifications for when there's a 50% chance of at least 0.2 mm of rain in the next half hour (for up to 3 locations)

The bureau website shows:

- rain rate – estimated rainfall intensity in millimetres per hour (mm/h)
- reflectivity – decibels of reflectivity (dBZ), a unit measuring how much energy bounces back from precipitation which is related to its type and intensity (e.g. rain and hail)
- Doppler velocity – estimates radial wind speed (km/h) in the direction of the radar (i.e. either travelling towards or away from the radar)
- estimated rainfall (also known as rainfall accumulations) – a measure (mm) that combines rain gauge and radar data.

Through the bureau's Registered User Service customers can access:

- image formats (such as png and gif) for individual radars with 128 km, 256 km and 512 km views, and 64km for selected radars
- Rainfields rainfall estimates and nowcasts based on radar in addition to rain gauges and numerical weather predictions model data
- other specialised data including Rainfields ground reflectivity and volumetric radar data.

5.2.5. Access

Bureau website

BOM Weather app

Anonymous (Public) FTP

Registered FTP (charges apply)

Web mapping service (GIS2Web) (charges apply)

5.3. Satellite imagery

5.3.1. Product overview

Imagery from weather satellites provide vital information on the location, intensity and movement of storms, tropical cyclones and bushfires. This data can help emergency management agencies prepare and act, to minimise impacts on the Australian community. Satellite imagery can also be used for cloud monitoring, solar radiation, and grassland curing (cycle of drying out).

The bureau receives satellite imagery from the Himawari geostationary weather satellite operated by the Japanese Meteorological Agency.

The Himawari satellite provides a range of data and imagery that the bureau distributes through the BOM Satellite Viewer and Registered User Service.

5.3.2. Issue times

Full disk scans are made by the Himawari satellite every 10 minutes, except for scheduled observation outages.

5.3.3. Coverage

Himawari-9 covers the Australian region or full disk (entire visible hemisphere). It has visible imagery at 500 metres to 1-kilometre spatial resolution and infrared (thermal) imagery at 2 kilometres spatial resolution.

5.3.4. Content and access

- Bureau website: the BOM Satellite Viewer provides infrared images, visible images, and a clouds/surface composite in a free interactive map viewer on the bureau website
- Registered FTP (charges apply): subscribers can receive satellite images (JPEG, GeoTIFF formats) or raw data (NETCDF4 format).

5.4. Notes on the satellite image

5.4.1. Product overview

Notes on the Satellite Image (IDY28000) is a short text description prepared by bureau meteorologists. It provides a narrative of current weather conditions with a national perspective to accompany the latest satellite image of Australia.

5.4.2. Issue times

Notes on the Satellite Image is updated four times per day to accompany satellite images at 00, 06, 12, 18 UTC.

5.4.3. Coverage

It has a broad national perspective covering the Australia region however the text may refer to weather in states and territories depending on the weather situation.

5.4.4. Content

Notes on the Satellite Image contains a text description of the satellite image. It is presented as a narrative with a focus on cloud and visible systems on the image for the Australian region. This may include:

- thunderstorm activity
- low- and high-pressure systems
- cloud – or cloud-free

5.4.5. Access

Bureau website and embedded in BOM Satellite Viewer

Anonymous (Public) FTP

Registered FTP (charges apply)

5.5. Mean sea level pressure maps

5.5.1. Product overview

Mean sea level pressure (MSLP) graphics provide a simple overview of the weather by showing significant meteorological features such as highs, lows (including tropical cyclones) and cold fronts.

The two main types of MSLP charts generated by the bureau are:

- MSLP analysis charts – showing the current situation based on observations
- MSLP forecast (or prognosis) charts – showing how weather patterns are expected to develop over coming days.

Some charts have colour and black and white versions and multiple formats.

5.5.2. Issue times

The bureau's MSLP charts are issued between one and four times per day, depending on the type of chart (frequency is based on the domain, data source, and amount of manual input required).

Each chart has a 'valid time' (such as 00 UTC) which is the time the chart represents conditions in the atmosphere (when it is valid for). There is typically a delay between the valid time and the issue time to allow for processing. Delayed observations or operational demands (where manual input to MSLP charts is required) may result in different issue times.

MSLP analysis charts for the Indian Ocean (IDY65102), Pacific Ocean (IDY65101), Asia (IDD80100), and Southern Hemisphere (IDY65100) are generally issued once daily around 01–02 UTC (based on a valid time of 00 UTC).

MSLP analysis charts for the Australian domain are generally issued four times per day (based on a valid time of 06, 12, 18 and 00 UTC); for example Latest colour MSLP analysis (IDY00030) Latest colour MSLP analysis and infrared greyscale satellite image (IDY65200).

MSLP forecast charts are generally issued once daily around 01–02 UTC including the Colour MSLP forecast map (IDG00074) which shows two maps (10 am and 10 pm AEST) for the next four days, and the Short-term forecast map (IDG00104) which is valid for 00 UTC the next day.

Computer-generated surface pressure and rainfall forecast charts from the ACCESS-G model are generated four times per day, available in the Interactive Weather and Wave Map Viewer and via the FTP service.

MSLP charts delivered by HF Radiofax have a set delivery schedule that may differ from other bureau channels such as the website and FTP.

5.5.3. Coverage

Typically provided for the Australian domain but other MSLP maps are available for:

- Southern Hemisphere
- Pacific Ocean
- Indian Ocean
- Asia

5.5.4. Content

Content varies by chart type but typically include:

- Isobars (lines of equal atmospheric pressure) with hectopascal (hPa) value
- High (H) and low (L) pressure systems with hPa value
- Meteorological features such as fronts and troughs and tropical cyclones

5.5.5. Access

Bureau website

Anonymous (Public) FTP

Registered FTP (charges apply)

Radiofax

6. Weather alerts and warnings

6.1. Bushwalkers Weather Alerts

6.1.1. Product overview

The Bushwalkers Weather Alert is only available in Tasmania's Western and Central Plateau forecast districts to alert bushwalkers of hazardous weather such as cold temperatures, snow down to low levels or when very windy conditions are expected.

Product code	Product name
IDT38200	Bushwalkers Weather Alert

6.1.2. Issue criteria

Bushwalkers Weather Alerts are issued based on forecast conditions – up to 36 hours ahead of the onset of hazardous conditions. The alerts are updated every 6 hours, until cancelled.

Criteria for issuing include combinations of, but not necessarily all, the following:

- generally gale force winds (meaning greater than 62 km/hr)
- cold temperatures generally near or below freezing
- snow settling to levels lower than expected for the time of the year.

6.1.3. Coverage

Western and Central Plateau forecast districts in Tasmania only.

The alerts are defined at the district level, i.e. a warning covers an entire public weather forecast district.

6.1.4. Content

- Warning title
- Issue time
- Warning text (e.g. *Bush walkers are advised that snow as low as 700 metres is expected during Sunday morning. These hazardous conditions are expected to occur in the Western and Central Plateau forecast districts*.)
- Next issue time

Note: A cancellation is issued for this warning using the same product code (IDT38200).

6.1.5. Access

Bureau website

BOM Weather app

Anonymous (Public) FTP

Registered FTP (warnings bundle – charges apply)

Telephone weather service (audio weather and warnings)

RSS feed

6.2. Road Weather Alerts

6.2.1. Product overview

Road Weather Alerts are issued for weather expected to contribute to hazardous driving conditions such as reduced visibility, significant snowfall, flash flooding, or ice. They cover capital city metropolitan areas only, or state-wide in Tasmania.

Product code	Product name
IDN38100	Road Weather Alert for Sydney
IDV30000	Road Weather Alert for Melbourne
IDQ20002	Road Weather Alert for Brisbane
IDW28500	Road Weather Alert for Perth
IDS20240	Road Weather Alert for Adelaide
IDT38100	Road Weather Alert for Tasmania
IDN38200	Road Weather Alert for Canberra

6.2.2. Issue criteria

Road Weather Alerts are issued only when:

- conditions are likely to be worse than normal for the season and location AND
- no Severe Weather Warning, Severe Thunderstorm Warning or Flood Warning is in force.

They are issued at short notice based on observed and forecast conditions – up to 18 hours ahead of the onset of hazardous conditions such as:

- reduced visibility due to fog, smoke, or dust (excluding Tasmania)
- heavy rainfall
- flooding or flash flooding
- rain after a prolonged dry spell
- ice or snow on roads.

6.2.3. Coverage

Road Weather Alerts are only issued for capital city metropolitan areas in New South Wales, Victoria, Western Australia, South Australia, Queensland and the Australian Capital Territory, and state-wide in Tasmania. They are not issued for Darwin.

The warning title and/or text may indicate which areas are most impacted (e.g., northern and eastern suburbs, coastal suburbs, or all suburbs).

Alerts for ice on roads are not normally issued for alpine districts in winter for example, unless expected to be unusually severe or widespread.

6.2.4. Content

- Warning title
- Issue time
- Warning text (e.g. *Reduced visibility in fog can make road conditions dangerous during early Monday morning, mostly in the western suburbs*).
- Next issue time

Note: A cancellation is issued for this warning using the same product IDs.

6.2.5. Access

Bureau website

BOM Weather app

Anonymous (Public) FTP

Telephone weather service (audio weather and warnings)

RSS feed

Registered FTP (warnings bundle – charges apply)

Web mapping service (GIS2Web) (charges apply)

6.3. Frost Warnings

6.3.1. Product overview

Frost Warnings are issued for conditions likely to cause significant damage to frost-sensitive plants. These warnings are only available in Victoria, South Australia and Tasmania.

Product code	Product name
IDV23000	Frost Warning (VIC)
IDS21007	Frost Warning (SA)
IDT21900	Frost Warning (TAS)

6.3.2. Issue criteria

Warnings are normally issued 12–24 hours ahead, typically around noon or in the afternoon.

Victoria and South Australia: The criteria used are a forecast minimum temperature below 1 degree Celsius for a frost warning and minus 2.2 degree Celsius for a severe frost warning.

Tasmania: The criteria used are a forecast minimum temperature below 0 degree Celsius (for a frost warning) and minus 2.2 degree Celsius (for a severe frost warning). Ground frost also occurs in the winter, but since this is not unusual for the season, warnings are not issued between 1 June and 31 August inclusive.

6.3.3. Coverage

Tasmania, Victoria and South Australia only. Elevation restrictions apply with only sub-alpine regions covered.

The warnings are defined at the district level, i.e. a warning covers an entire public weather forecast district. In South Australia Frost Warnings are only issued for relevant districts in the central and eastern agricultural areas.

6.3.4. Content

- Warning title
- Issue time
- Warning text describing the frost level (severe frost/frost), minimum temperatures forecasts and the districts affected.
- Next issue time

Note: A cancellation is issued for this warning using the same product IDs.

6.3.5. Access

Bureau website

BOM Weather app

Anonymous (Public) FTP

Registered FTP (warnings bundle – charges apply)

Telephone weather service (audio weather and warnings)

RSS feed

6.4. Warnings to Sheep Graziers

6.4.1. Product overview

Warnings to Sheep Graziers are issued for conditions which could be dangerous to newborn lambs and recently shorn sheep (a combination of low temperatures, high winds and precipitation).

Product code	Product name
IDN29000	Warning to Sheep Graziers (NSW)
IDV29000	Warning to Sheep Graziers (VIC)
IDQ20000	Warning to Sheep Graziers (QLD)
IDW29000	Warning to Sheep Graziers 1 (WA)
IDW29100	Warning to Sheep Graziers 2 (WA)
IDS20242	Warning to Sheep Graziers (SA)
IDT29000	Warning to Sheep Graziers (TAS)

6.4.2. Issue criteria

Warnings to Sheep Graziers are based on the Nixon-Smith Index, which integrates forecast wind, rainfall and temperature to identify weather conditions that will be hazardous to sheep and lambs.

Warnings are issued for forecast districts when 10% of grids in the district are forecast to meet specified thresholds. Thresholds vary by state (higher in Tasmania) and season (higher in the cooler months between 1 May and 30 September inclusive).

Warnings are issued when conditions are met with a lead time of up to 24 hours. They are updated every 6 hours.

6.4.3. Coverage

Issued for selected districts of New South Wales, Australian Capital Territory, Victoria, Queensland, Western Australia, South Australia, and Tasmania. This product is not issued for alpine areas or the Northern Territory.

These warnings are defined at the district level, i.e. a warning covers an entire public weather forecast district.

6.4.4. Content

- Warning title
- Issue time
- Warning text including an indication of the type of adverse conditions, areas affected, and timing of conditions.
- Next issue time

Note: A cancellation is issued for this warning using the same product IDs.

6.4.5. Access

Bureau website

BOM Weather app

Anonymous (Public) FTP

Registered FTP (warnings bundle – charges apply)

Telephone weather service (audio weather and warnings)

RSS feed

6.5. Other warning types

The bureau issues a range of other public warnings and alerts. More information is available at:

Tropical cyclone	https://www.bom.gov.au/resources/learn-and-explore/tropical-cyclone-knowledge-centre/tropical-cyclone-warning-services
Fire weather	https://www.bom.gov.au/resources/learn-and-explore/fire-weather-knowledge-centre/fire-weather-services
Thunderstorm and severe weather	https://www.bom.gov.au/resources/learn-and-explore/severe-weather-knowledge-centre/severe-weather-and-coastal-hazard-warning-services
Flood	https://www.bom.gov.au/resources/learn-and-explore/flood-knowledge-centre/flood-warning-services
Heatwave	https://www.bom.gov.au/resources/learn-and-explore/heatwave-knowledge-centre/heatwave-services
Marine	https://www.bom.gov.au/resources/learn-and-explore/marine-knowledge-centre/marine-weather-service-areas
Tsunami	https://www.bom.gov.au/resources/learn-and-explore/tsunami-knowledge-centre/about-tsunami-warnings

7. Appendices

7.1. List of acronyms

ACCESS	Australian Community Climate and Earth-System Simulator
ACT	Australian Capital Territory
ADFD	Australian Digital Forecast Database
BOM	Bureau of Meteorology (the bureau)
CAMS	Copernicus Atmosphere Monitoring Service
D0	Day zero – today's forecast
D1	Day 1 – first day of the forecast period
FTP	File Transfer Protocol
hPa	Hectopascals
ID	Identification (numbers or codes)
mm	millimetres
MSLP	Mean sea level pressure
NetCDF	Network Common Data Form
NSW	New South Wales
NT	Northern Territory
Qld	Queensland
RSS	Really Simple Syndication
SA	South Australia
SLS	Service Level Specification
Tas	Tasmania
UTC	Coordinated Universal Time
UV	Ultraviolet
Vic	Victoria
WA	Western Australia
XML	Extensible Markup Language
Z	Zulu time (used in Coordinated Universal Time)

7.2. Product codes

The bureau uses ID codes to refer to many products. For example, IDV10310 is the product code for the State Forecast (VIC) and IDS21007 is the Frost Warning (SA).

The Australian mainland is divided into seven regions based on Australian states and the NT. Starting with ID, the third letter of the product code indicates the region:

- N for New South Wales and the Australian Capital Territory
- V for Victoria
- Q for Queensland
- W for Western Australia
- S for South Australia
- T for Tasmania
- D for Northern Territory
- Y or Z for national products