Letter of transmittal

Australian Government
Bureau of Meteorology

Office of the CEO

The Hon Tanya Plibersek MP
Minister for the Environment and Water
Parliament House
CANBERRA ACT 2600

Dear Minister

As the accountable authority for the Bureau of Meteorology (the Bureau), I am pleased to present the Annual Report of the Bureau of Meteorology for 2022–23. The report details our ongoing efforts to provide trusted, reliable and responsive weather, water, climate, ocean and space weather services for Australia – all day, every day. The report has been prepared in accordance with section 46 of the *Public Governance, Performance and Accountability Act 2013* which requires that you present the report to the Parliament.

In accordance with the *Public Governance, Performance and Accountability Rule 2014*, I certify that the Bureau has a fraud risk assessment and fraud control plan, and has in place appropriate fraud prevention, detection and investigation procedures for dealing with, recording and reporting fraud, and that all reasonable measures have been taken to deal appropriately with fraud relating to the Bureau.

Yours sincerely

Dr Andrew Johnson FTSE FAICD
CEO and Director of Meteorology

19 September 2023

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The Bureau at a glance

Our purpose

Our purpose is defined by our mission:

To provide trusted, reliable and responsive weather, water, climate, ocean and space weather services for Australia – all day, every day.

To achieve our purpose – across the domains of weather, water, climate, oceans and space weather – we:

- monitor and report on current conditions
- provide forecasts, warnings and long-term outlooks
- analyse and explain trends
- foster greater public understanding and use of the information we provide
- continue to extend our understanding of, and ability to forecast, Australian conditions.

Our vision

Our vision is:

To be an organisation of global standing, that is highly valued by the community for our pivotal role in enabling a safe, prosperous, secure and healthy Australia.

Our Strategy

Our Strategy is focused on four pillars of success:

Impact and value

Products and services that enhance the wellbeing of all Australians.

Operational excellence

Outstanding people supported by secure, effective and resilient systems, processes and technology.

Insight and innovation

Practical implementation of novel, mission-directed solutions for our customers.

The Bureau way

One enterprise that lives its values through agreed behaviours every day.

Authority

The Bureau operates under the authority of the *Meteorology Act 1955* and the *Water Act 2007*. The Bureau is an Executive Agency under the *Public Service Act 1999*, and a non-corporate entity under the *Public Governance, Performance and Accountability Act 2013*. The *Meteorology Act 1955* requires the Bureau to fulfil Australia's international obligations under the Convention of the World Meteorological Organization (WMO) and related international treaties and agreements.

Portfolio and ministers

At 30 June 2023, the Bureau operated within the Climate Change, Energy, the Environment and Water Portfolio reporting to the Minister for the Environment and Water, the Hon Tanya Plibersek MP.

Funding

The Bureau receives the majority of its funding from the Australian Government ($345.5 million in 2022–23). Additional revenue ($101.8 million in 2022–23) was derived from other sources, including the sale of goods and services. More information is provided in the Financial resource management chapter (p.203) and in the Climate Change, Energy, the Environment and Water Portfolio Budget Statements 2022–23.

Under the Portfolio Budget Statements, the Bureau is responsible to the Australian Government for Program 1.1 – Bureau of Meteorology, and for delivering the following outcome:

Enabling a safe, prosperous, secure and healthy Australia through the provision of weather, water, climate, ocean and space weather services.

Top: Senior Meteorologists Rosa Hoff and Baden Gilbert in National Production Services in Brisbane. Bottom: Ashwin Naidu, Aviation Customer Lead at the 2023 Avalon Airshow.

Our staff

At 30 June 2023, the Bureau had 2,374 total staff, including 1,583 ongoing staff, 213 non-ongoing staff, and 578 contractors, as well as over 3,100 volunteer rainfall observers who help maintain Australia's climate record. More information can be found in the People management chapter (p.180).

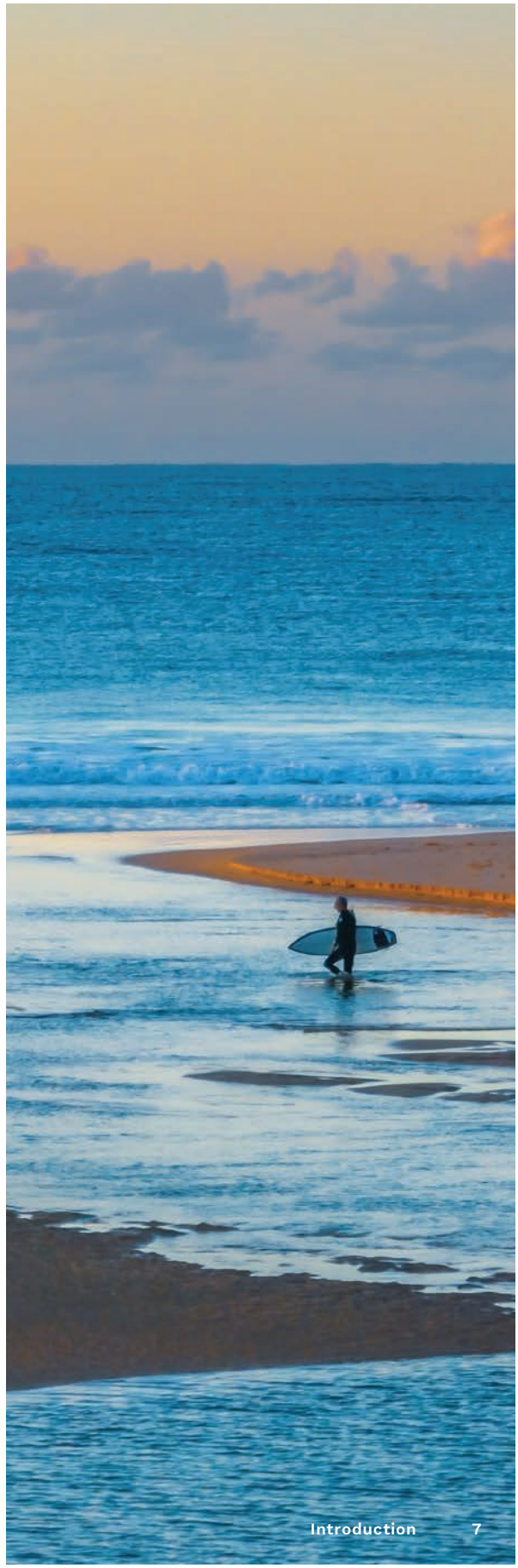
Bureau staff are located across Australia, on remote islands and in Antarctica. The Bureau's administrative and operational headquarters are in Melbourne. The Bureau observe and forecast from the Antarctic to north of the equator, and from the Indian Ocean to the Pacific. More information on the location of our staff and services is provided in the Agency overview (p.28).

Our values

The values that guide our behaviours are:

- safety
- integrity
- customer focus
- passion and tenacity
- responsibility
- humility.

More information on the Bureau's values can be found in the Agency overview (p.28).



The impact and value of our work

The Bureau is entirely focused on providing products and services that enhance the wellbeing of all Australians. Here are some of the ways the Bureau contributes to a safe, prosperous, secure and healthy Australia.

Our severe weather forecasts and warnings

- alert Australians to protect themselves and their property from severe weather such as tropical cyclones, thunderstorms and damaging winds
- enable communities to prepare for and respond to the effects of heavy rainfall including flash flooding
- support emergency services agencies to carry out effective emergency and disaster preparation, response and recovery.

Our flood watches and warnings

- alert Australians to protect themselves and their property from riverine flooding
- enable communities to prepare for and respond to the effects of flooding, including making timely evacuations
- support emergency services agencies to carry out effective emergency and disaster preparation, response and recovery.

Our fire weather forecasts and warnings

- alert Australians to weather conditions conducive to the spread of dangerous bushfires
- help state and territory fire agencies predict fire conditions and make decisions about total fire ban days and bushfire warnings
- allow emergency services to pre-position personnel and equipment to minimise fire damage.

Our marine and ocean services

- support safe navigation of Australia's local and coastal waters and high seas
- alert Australians to dangerous winds, waves, tides, currents and surf conditions
- support ports and shipping operations, fishing and aquaculture industries
- support safe and efficient operation of offshore infrastructure such as windfarms and oil and gas platforms.

Our aviation and defence forecasts and warnings

- facilitate safe and efficient aviation sector operations
- inform flight planning and fuel load decisions
- provide alerts on hazardous weather and atmospheric conditions such as turbulence and volcanic ash
- support Australia's defence operations in Australia and overseas including anticipating global climatic events.

Our UV forecasts and heatwave warnings

- help Australians avoid dangerous UV exposure, to protect against skin cancer
- help protect vulnerable Australians against heat exhaustion and heatstroke
- alert health authorities to periods of heightened demand
- allow energy operators to prepare for increased power demand.

Our climate maps and information

- help Australians understand the nation's climate patterns, trends and variations, and climate-related risks
- support natural resource managers to respond to climate risks and opportunities
- inform solar, wind and hydropower installations and production potential
- support insurance claims processes
- support the development of climate-appropriate infrastructure.

Our water and environmental information services

- underpin water planning, efficient water use and water operations
- guide investment in and maintenance of water infrastructure, and aid decision-making in water supply and irrigation activities
- provide transparency to communities and water users around water management and trade
- support ecosystem management.

Our seasonal climate outlooks

- help farmers make decisions about crop planting, fertiliser application and stock management
- allow emergency managers to prepare themselves and their communities ahead of flood, bushfire and tropical cyclone seasons
- help retailers and tourist operators tailor their activities to seasonal variations.

Our everyday weather forecasts

- help Australians plan their everyday activities, from the daily commute, sporting and outdoor activities, to hanging out washing
- support activities in the construction and transport industries
- help tourism operators and event managers optimise their activities and events, and prepare contingencies when required.

Our space weather forecasts

help defence, aviation, energy, emergency services, and space industries to manage and mitigate the impacts of space weather

help Australians understand how space weather can significantly disrupt the technology that underpins our energy, transport, communication, navigation and financial systems.

2022–23 snapshot

Eye on the environment

69
weather radars

720+
automatic weather stations

13
wind profilers

38
upper air balloon stations

5,600+
hydrological monitoring stations operated by the Bureau and its partners

~3,100
volunteer rainfall observers

41
sea level stations

43
wave buoys operated by the Bureau and its partners

54
drifting meteorological buoys

6
ozone monitoring sites

13
terrestrial solar radiation monitors

21
space weather observation stations

30+
satellites operated by international partners

What we delivered

698,000+
public forecast services

~161,000
marine safety broadcasts

22,000+
weather and ocean warnings

6,000+
flood watches and warnings

18,000+
fire weather forecasts and warnings

1.5 million
aviation forecast products

835+
briefings to the Australian Government's National Situation Room

500,000+
climate graphs and charts

139
peer-reviewed scientific journal articles

~110
climate briefings

268
locations in the seasonal streamflow forecasts service

The reach of our services

almost 1.4 million
Facebook followers

774,000+
Twitter followers

191,000+
Instagram followers

10.4 million
total BOM Weather app downloads (since launch)

2.3 million
BOM Weather app downloads (during 2022–23)

688 million
visits to the Bureau's website

5,450
responses to media enquiries

139
media releases issued

~99%
of the population covered by a Bureau radar

~91%
of the population within 20 km of a Bureau automatic weather station

Our service highlights

99.0%
uptime of automatic weather stations

95.5%
uptime of weather radars

97.2%
uptime of wind profilers

99.9%
uptime of the Australis supercomputer

Top 5
performance of ACCESS among global forecasting models

15.6 minutes
average time from earthquake to tsunami bulletin

Top ranked
free weather app in Australia in both the Apple and Google Play stores

84%
of users satisfied with the BOM Weather app

+47
Net Promoter Score for community customers

+58
Net Promoter Score for emergency management customers and partners

How we performed

The Bureau's performance is measured against 12 strategic success measures. For each measure, a critical assessment determines whether the Bureau's performance met expectations, partially met expectations or did not meet expectations. For more information see the Annual Performance Statement (p.33).

Impact and value

The financial and social value we deliver to government, industry and the Australian community.	Performance met expectations
The levels of satisfaction and trust our customers, partners and stakeholders have in the products and services we provide.	Performance met expectations
The utilisation of our services by new customers and the return rate from existing customers.	Performance met expectations

Operational excellence

Our delivery against agreed customer requirements and commitments.	Performance met expectations
Capacity utilisation, system reliability, security and resilience benchmarked against best practice.	Performance partially met expectations
Verification of our products and services.	Performance met expectations

Insight and innovation

The depth, breadth and quality of our external partnerships and collaborations.	Performance met expectations
The conversion rate of ideas to opportunities to customer outcomes.	Performance partially met expectations
The quality and application of our research and development, benchmarked internationally.	Performance met expectations

The Bureau way

Our performance benchmarked internationally against work health, safety and environment best practice.	Performance met expectations
Individual and team actions demonstrate commitment to enterprise values and behaviours.	Performance met expectations
A diverse and inclusive workforce, that reflects the communities we serve.	Performance did not meet expectations

National weather event summary

July

4-7: An east coast low brought several days of heavy rainfall around Sydney and resulted in major flooding of the Hawkesbury-Nepean River, the Hunter Valley and the New South Wales North Coast. A natural disaster was declared for New South Wales following the flooding and heavy rainfall.

12: Fog covered Adelaide's western suburbs and caused several flight cancellations and many more delayed throughout the day.

21-25: An east coast low brought strong winds, rain and heavy seas to south-east Queensland and north-east New South Wales. Swells up to 2.5 m extended north from the Gold Coast to the Capricorn Coast and a hazardous surf warning was issued for the Gold Coast.

August

2: Widespread areas of fog over South-East Queensland delayed flights at Brisbane Airport and reduced visibility around Brisbane.

4: High minimum temperatures across much of south-western Queensland, inland New South Wales and the southern Northern Territory, with large areas more than 10 °C above the August average.

5-8: Minor to major flooding occurred along the Western Slopes of New South Wales, with residents in low lying areas of Wagga Wagga evacuated.

13-17: Heavy rainfall to Victoria and Tasmania, with eastern Tasmania and West Gippsland in Victoria receiving multi-day rainfall totals of 50 to 100 mm. Several rivers in West Gippsland and eastern Tasmania experienced minor to major flooding.

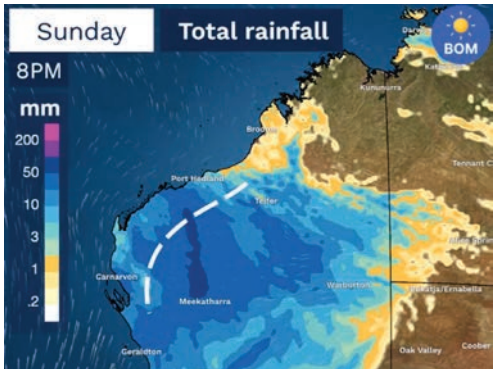
23: Several centimetres of snow settled across the New South Wales Blue Mountains and around Orange, closing roads and delaying trains. A cold front that crossed South Australia brought the state's first reports of snow this winter as snow settled on Mount Remarkable.

29-30: Strong winds and severe thunderstorms crossed western and northern Victoria. There were reports of hail around Mildura and Wentworth (2 to 5 cm diameter) and a funnel cloud and a possible tornado were observed near Lake Tyrell in north-west Victoria.

29: North-easterly winds (Fohn Winds) over western Tasmania resulted in record high August daily maximum temperature at many sites, including Strahan which recorded the highest temperature of 22.5 °C, a daily record for August.

September

3-4: Large parts of the Pilbara and Gascoyne districts in Western Australia received their highest September rainfall on record. Rainfall totals in the inland Pilbara, Gascoyne, Central West, Lower West and Central Wheat Belt were approximately 10 times the September average and contributed to the wettest September on record in affected areas.



4: A low pressure system off the east coast of Australia brought strong winds to Lord Howe Island, with a wind gust recorded at 128 km/h.

7: A cold front that brought heavy rain and hail to Port Augusta, caused flash flooding and inundated streets and collapsed ceilings.

9: Snow fell as low as 300 m elevation in southern Tasmania, including near the summit at kunanyi/Mount Wellington and at Mount Mawson.

15-20: Significant rainfall caused moderate to major flooding in parts of New South Wales and some homes were flooded by the Naomi River at Gunnedah. The State Emergency Services rescued residents from flood waters across the state's Central West Coast.

18: Gusty thunderstorms across Victoria and Melbourne brought large quantities of hail and there were also reports of a tornado in the western suburbs with damage to houses.

23-30: The Naomi River at Wee Waa reached major flood levels, leaving the town's 2,000 residents cut off from neighbouring areas and the State Emergency Services transporting residents across floodwaters.

27: The Greater Sydney Area and the New South Wales Mid-North Coast were hit by storms, with more than 65,000 lightning strikes and heavy rain and hail reported across several suburbs.

October

5-10: Heavy rainfall on already wet soils and full or close to full catchments led to major flooding in New South Wales, Queensland, Victoria and Tasmania in the first half of October.

Inland areas of New South Wales received 50 mm of 7-day accumulated rainfall, while some areas had over 100 mm of rainfall.

12-18: Several days of heavy rainfall caused major flooding in Victoria, northern Tasmania and southern New South Wales. On the 13th many sites across Greater Melbourne had their highest daily October rainfall on record. Major flooding occurred along the Maribyrnong River and resulted in evacuations of inner-city Melbourne suburbs.

19-25: Continued widespread rain on wet catchments resulted in renewed major riverine flooding in Victoria, New South Wales, Queensland and Tasmania. Major flooding occurred along the Loddon River at Kerang in Victoria, Murray River at Echuca and Moama, Mehi River at Moree, Naomi River at Gunnedah and along the Murrumbidgee River and Goulburn River.

24: In South Australia, storms caused flash flooding, road closures and there were reports of a tornado near Hamley Bridge lasting for up to 10 minutes.

24: Severe thunderstorms with large hail hit areas of central and north Queensland, with reports of large hailstones around Gladstone (7 cm in diameter) and Mount Larcom (10 cm in diameter).

30: A low pressure system and cold front crossed south-east Australia, with Oodnadatta Airport recording a maximum wind gust of 139 km/h, the site's highest wind gust on record for October.

November

1: Late spring snow settled across higher elevations in South Australia, Tasmania and Victoria. In Victoria more than 30 cm of snowfall was reported across alpine regions.

1-4: Major flooding of the Lachlan River and Murrumbidgee River at Gundagai, Wagga Wagga and Forbes, resulted in large-scale evacuation orders to be issued for Wagga Wagga and Forbes.

4-9: Moderate to major flooding continued along the Murray-Darling river system, with major flooding along the Darling River extending into January 2023.

12: Severe thunderstorms with up to 423,000 lightning strikes, large hail and wind gusts up to 100 km/h were reported in South Australia. The storm caused significant power outages across metropolitan Adelaide for several days and an interstate transmission line was damaged.

12: A thunderstorm tore through Alice Springs and caused homes to be severely damaged, and at least 80 residences without power the next day.

14-18: Several inland towns in New South Wales including Forbes, Condobolin and Euabalong were inundated from renewed major flooding along the Darling and Lachlan rivers.

19-22: Strong winds, hail and snow to low levels across elevated regions of Tasmania, Victoria and southern New South Wales. Wind gusts were over 100 km/h across Victoria and high sea levels around Lakes Entrance in Victoria caused coastal inundation of paths and local streets.

20-21: Severe thunderstorms with strong winds, hail and heavy rainfall lashed the Mallee region of Victoria, with hailstorms causing major crop damage.

21: Severe thunderstorms hit the Townsville region with more than 100 mm of rain falling in the 24 hours to 9am on 22 November.

27: The Murray River near Renmark, South Australia rose above moderate flood levels. Moderate to major flooding occurred along the Murray River until January.

27: A hailstorm brought strong winds and hail to parts of southern Canberra and resulted in power outages to 3,858 properties.

29: Storms extended from Cape York down to south-eastern Queensland bringing rain, lightning, and large waves along the coast. Power failures were reported across the greater Cairns area.

December

4-9: Severe to extreme heatwave conditions affected large areas of northern Australia during the first half of the month including multiple population centres such as Darwin (Northern Territory), Cairns (Queensland) and Broome (Western Australia).

7-8: Southern areas of Western Australia experienced more than 320,000 lightning strikes as thunderstorms blanketed the region.

8-9: Parts of south-east and central Queensland experienced intense thunderstorm activity and locally destructive wind gusts. Hail stones up to 10 cm in diameter were reported at Anderleigh, north of Gympie and up to 4 cm in Pomona on the Sunshine Coast.

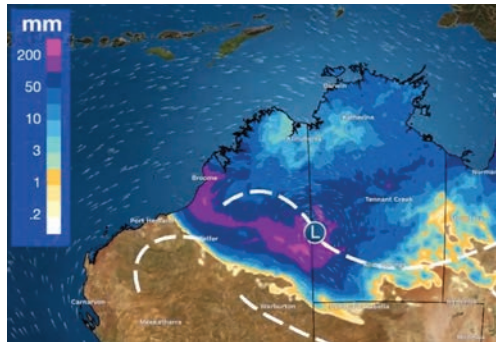
9: Perisher Valley in New South Wales dropped to -7.0 ° C, equalling the Australian record for the lowest temperature in December.

19: A low pressure trough extending across northern and central Australia brought strong winds across central Australia with wind gusts in excess of 100 km/h at Alice Springs.

22-31: Tropical cyclone Ellie crossed the north-west Northern Territory coast as a Category 1 cyclone. It continued to move inland and dropped to tropical low strength on the 23rd producing heavy rainfall over central and northern parts of the Territory and parts of the Kimberley.

January

1-9: Ex-tropical cyclone Ellie brought heavy rainfall to the Northern Territory and Kimberley region of Western Australia, leading to significant flooding on the Fitzroy River.



The Fitzroy River reached its highest levels on record, peaking at 15.81 m on 4 January at Fitzroy Crossing, isolating the town and many other nearby communities and significantly damaging the Great Northern Highway bridge.

1–7: Heavy rainfall and thunderstorms affected many areas of Queensland. Major flooding occurred along the Georgina River between Roxborough Downs and Glenormiston. Burketown, Doomadgee and Gregory remained isolated into mid-January.

4: An electrical storm sparked a major power outage in Greater Brisbane.

9–14: Lightning ignited spot fires across a large area of the Shire of Donnybrook–Balingup in south-west Western Australia.

14–19: Severe thunderstorms with locally heavy rainfall resulted in flooding in northern and central Queensland. Townsville Aero recorded more than 150 mm in the 24 hours to 9am on the 15th, whilst Proserpine Airport recorded more than 300 mm in the 24 hours to 9am on the 16th.

24: Sydney, the Central Coast and Wollongong were hit by storms, strong winds, rain and hail. Suburbs on the south-west outskirts, like Razorback and Douglas Park, reported hail the size of golf balls.

24: Severe storms, with heavy rainfall and damaging winds affected Victoria. Particularly intense rainfall caused flash flooding in Geelong and surrounds. Thousands of properties across Victoria were left without power.

1–31: Moderate to major flooding that started in 2022 continued along the Murray–Darling river system, with major flooding along the Darling River continuing for most of January.

February

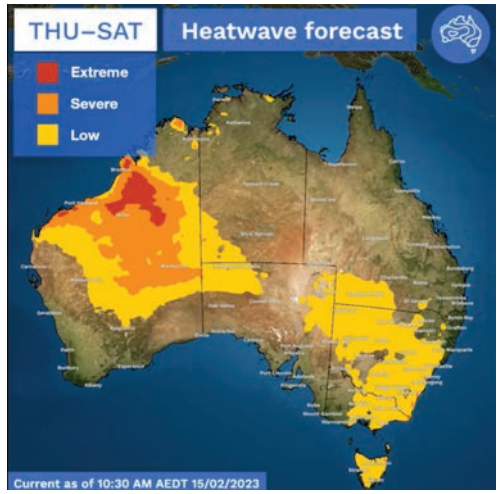
1–4: Severe heatwave conditions affected south-east Queensland, including Brisbane and the Sunshine Coast. Hotter than average temperatures were recorded around Sydney and the east coast of New South Wales.

3: An afternoon storm brought damaging winds that left significant damage across Port Macquarie, with trees and powerlines downed and roofs ripped from buildings.

11–12: Tropical cyclone Gabrielle, a category 3 system, impacted Norfolk Island causing widespread damage.

13: Heavy rainfall caused flash flooding, and large to giant-sized hail hit south-east Queensland and north-east New South Wales as severe thunderstorms moved through the area.

14–18: Heatwave conditions affected many areas of Australia, including severe intensity in southern Victoria, and the Pilbara and central and southern areas of Western Australia. Several fires burnt across parts of New South Wales and in Queensland's Darling Downs near Tara and Miles, where multiple structures were damaged.



21–22: High temperatures returned to parts of the southern mainland – Nullarbor and Tarcoola Aero in South Australia recorded daily temperatures above 43.0 °C on the 21st, while Eucla and Red Rocks Point, in the far south-east of Western Australia, both reached 46.8 °C on the 22nd.

21–28: Storms and heavy rain occurred across the northern tropics during the last week of February, with weekly totals of 150 to 300 mm from the eastern Kimberley (Western Australia), through the Northern Territory Top End and the Cape York Peninsula (Queensland). Minor to moderate flooding resulted in some areas, leading to the closure of the Victoria Highway in the Katherine region.

March

1-10: Storms and widespread heavy rain in the northern tropics, associated with a monsoon trough and a tropical low (16U), continued throughout early March. Ten-day totals of 400 to 800 mm were recorded in an area of the Carpentaria and Barkly districts in the Northern Territory and in Queensland's Gulf Country and North-West districts. This event resulted in major flooding along several rivers across the eastern Northern Territory and north-western Queensland, leading to evacuation of some communities and the closure of many transport routes.

12: More than 100 mm of rain fell in 24 hours at some locations in the South Western Slopes region of southern New South Wales, causing flash flooding. High daily totals led to river rises and flooding along Muttama Creek. The State Emergency Services issued an emergency evacuation order for 880 properties along the creek.

14-20: Heatwave conditions reached severe intensity in the Pilbara. On the 18th and 19th, the highest March temperature on record was observed at many sites in New South Wales and Victoria. There were multiple grassfires and bushfires across Victoria and New South Wales with hundreds of firefighters deployed and total fire bans in place across Victoria and for much of New South Wales and South Australia.

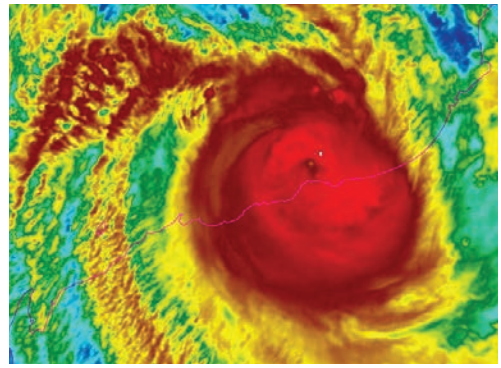
19-20: Strong wind gusts brought down trees across parts of South Australia, resulting in power blackouts. More than 31,000 properties, mostly across Greater Adelaide and the Adelaide Hills were without power on the 20th.

27-29: Weather systems brought several days of widespread rainfall, showers and storms to large parts of Australia.

April

2: Thunderstorms brought heavy rain and daily totals of more than 50 mm to Greater Sydney, resulting in flash flooding that blocked roads and disrupted train lines.

11-14: Tropical cyclone Ilsa formed off the Kimberley coast of Western Australia on the 11th and intensified rapidly to reach severe intensity (Category 3) on the 12th. Ilsa made landfall on the Pilbara Coast on the 14th as a Category 5 system, causing extensive damage in the area. Prior to making landfall on the mainland, Ilsa passed directly over Bedout Island, the sustained wind speed (10-minute mean) of 219 km/h was the highest ever recorded by the Bureau observation network, as was the maximum wind-gust speed (3-second mean) of 289 km/h.



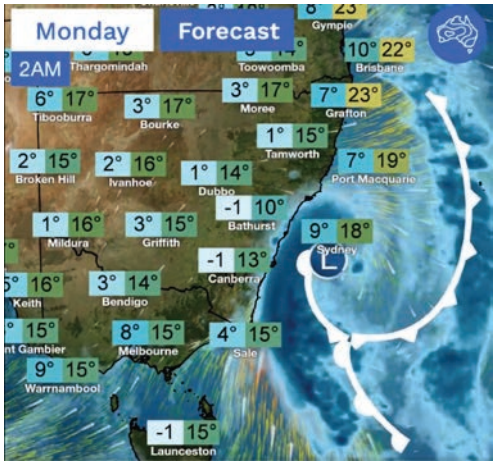
13-16: A cold front that moved across southern Australia produced widespread heavy rain. Several long record stations in Western Australia and South Australia had their highest daily rainfall for April to 9am on the 14th and 15th. Heavy rainfall resulted in flash flooding across Melbourne. Building damage and disruptions to transport were reported.

29: A coastal low formed just of the South Coast of New South Wales, bringing moderate to locally heavy rainfall. Daily rainfall totals to 9am on the 30th of 70 to 100 mm were recorded along the South Coast before the system moved offshore.

May

7: Parts of south-eastern New South Wales and north-eastern Victoria recorded daily maximum temperatures more than 8 degrees below average on the 7th and some stations had their lowest May daily maximum temperatures on record. Cooma Airport (NSW) had a maximum temperature of 2.7 °C, a May record by 2.2 °C.

Many locations in south-east New South Wales and north-east Victoria reported snowfall down to 700 m.



19: A magnitude 7.7 earthquake off the Loyalty Islands generated tsunami waves across the Southwest Pacific region and the Australian east coast. They were mostly small and posed little danger but Lord Howe Island experienced a Marine Threat tsunami with strong ocean currents and dangerous waves and rips in the marine environment.

20-21: A cold front that crossed Tasmania brought damaging to destructive winds with gusts in excess of 100 km/h to much of Victoria, Tasmania and southern New South Wales. Strong winds caused disruptions to electricity supplies and widespread power outages affected various parts of Tasmania.

26: Severe thunderstorms across the Hunter coast and Newcastle brought flash flooding, large to giant hail, waterspouts (near RAAF Base Wiliamtown) and heavy rainfall which locally exceeded 50 mm in one hour.

June

5-6: A cold front brought damaging winds, widespread rain, thunderstorms, hail and flash flooding to south-west Western Australia. Several sites, including Perth Metro, had their highest June daily rainfall total on record on the 5th, while numerous locations had their coldest June day on record on the 6th.

7-9: Severe thunderstorms and heavy rainfall impacted parts of eastern South Australia, Victoria, southern New South Wales and northern Tasmania. Numerous sites in Victoria's north-east recorded daily rainfall totals of more than 100 mm.

15-21: Widespread frost and patchy fog formed over large parts of central and eastern Australia and many sites recorded sub-zero daily minimum temperatures. On the 21st many stations in New South Wales and the Australian Capital Territory had their lowest daily minimum temperature for June on record. Canberra Airport recorded -7.2 °C on the 21st, its lowest June minimum temperature since 1986.

18-20: More than 40 cm of snow fell at Victoria's Mount Hotham, while widespread snow was recorded across elevated areas of Tasmania.

21-25: Multiple cold fronts brought storms, strong winds, high daily rainfall totals and snow to the south of the country. Many sites in south-eastern South Australia had their highest daily rainfall total for June on record to 9am on the 23rd, including some sites with more than 100 years of data.

24-27: Extensive areas of morning fog were observed in eastern Queensland, including about the Capricornia, Wide Bay, and Mackay Coast districts, during the morning for several consecutive days.

25-28: Daily maximum temperatures were above average across most of Queensland, including more than 9 degrees above average in inland areas. Many sites recorded daytime temperatures above 30.0 °C.