

Figure 1 Seasonal Bushfire Outlook Spring 2023. Areas are based on the interim biogeographic regionalisation for Australia and other geographical features.



Increased risk of fire is the likelihood of an increased number of significant bushfires occurring in the outlook period compared to average.

Overview

Australia's climate influences have shifted significantly since last spring, with above average temperatures and below average rainfall expected for almost the entire country for the coming season. Many regions have also seen increased fuel growth due to above average rainfall throughout recent La Niña years, which is contributing to increased risk of bushfire across locations in Australia during the spring 2023.

Increased risk of fire is expected for regions in Queensland, NSW, Victoria, SA and NT. Communities in these regions are urged to prepare for bushfire and monitor local conditions.

About the Outlook

Fire management is a year-round process. The Seasonal Outlook reflects the priorities in each state and territory for the coming months given the expected climate conditions. It identifies areas of increased risk of bushfire so communities are aware and primed to take appropriate action. It is not intended as a prediction of where and when bushfires will occur. Fire risk can vary greatly, even at the smaller scale, between bordering states and territories. Each state and territory's assessment takes into account different land use types and vegetation types. This is influenced by different forecasts for temperature and rainfall over these regions. It should be noted that forecasting for longer time periods can be less accurate as the atmospheric system is dynamic; the more time passes, the less certain forecasters can be of its state. A significant bushfire is defined as being of such size,

complexity, duration or other impact that requires resources (from both a pre-emptive management and suppression capability) beyond the region in which fires originate. Increased bushfire risk depends on many factors including weather and climate, fuel amount and availability, recent fire and disturbance history, natural and human barriers, and how quickly and effectively firefighting resources are able to suppress fires in an area.

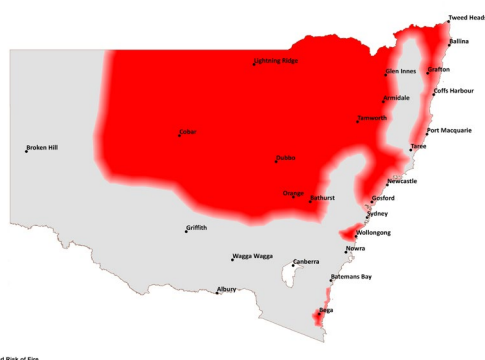
The Seasonal Outlook format has changed

The format of the Seasonal Bushfire Outlook has been reviewed and updated to communicate fire risk more effectively to the community. Key changes include:

- Assessing increased risk of fire rather than bushfire potential. See definition for increased risk of fire above.
- Simplifying information by identifying areas with increased risk of fire. References to areas of 'normal fire potential' and 'below normal fire potential' have been removed.
- Delivering more targeted information to communities by providing maps for each state and territory in the jurisdictional bushfire outlook summaries below.
- Providing place names on maps, and highlighting key information and links for each jurisdiction.
- Prioritising information about fire risk earlier in the document, supported by a detailed climate overview.
- For more information on these changes, [visit the AFAC website](#).

AFAC is the National Council for fire and emergency services, supporting the sector to create safer, more resilient communities. AFAC drives national consistency through collaboration, innovation and partnerships. It delivers enhanced capability by developing doctrine and supporting operations.

New South Wales



Seasonal Bushfire Outlook for Spring 2023 in New South Wales

Summary

- Large areas of central and northern NSW are expected to see increased risk of fire in spring 2023.
- Hazard reduction burns will be undertaken where permitted.

For further information see: rfs.nsw.gov.au

Due to high fuel loads and the forecast of warmer and drier conditions, large areas of central and northern NSW are expected to see increased risk of fire this spring.

Although stocking rates continue to recover, large areas of high grass loads persist. These are particularly evident in the central and north-western areas of the state. Drier than average conditions and frost curing in these areas can mean an early start to the bushfire danger period. In the event of fires and windy weather, these high grass fuel loads can support intense and fast spreading grass fires.

High forest fuel loads are evident in parts of the coast and ranges not affected by the 2019-20 fires. These are particularly noticeable around the Sydney Basin, parts of the coast and north of the Hunter. The forecast of warmer, and in some areas drier, conditions these areas present increased risk of fire this season.

In areas affected by the 2019-20 fires, fuels continue to recover in response to ideal growing conditions over the last three wet La Niña years. However, high severity fire during 2019-20 fires has altered the way this regrowth is structured. Some parts of the forest (for example shrubs) are regrowing quicker, other parts are accumulating slower (surface and canopy fuels). Overall fuel loads are close to what are expected and regrowth in these areas is being monitored closely.

In the southwest, higher than average soil moisture and low rates of curing have led to the forecast of a normal spring bushfire outlook. Warmer conditions and spring growth could see this situation change quickly.

Where weather and resource opportunities permit, hazard reduction burning will be undertaken to reduce the potential for future fires to impact on communities. ■

Australian Capital Territory



Seasonal Bushfire Outlook for Spring 2023 in Australian Capital Territory

Summary

- Normal bushfire risk during spring expected for the ACT.
- The long-range outlook for spring predicts drier and warmer conditions, raising the possibility of increased bush and grass fire risks for summer.
- Fire agencies and land managers will conduct prescribed burning during spring to mitigate potential hazards.

For further information see: esa.act.gov.au

After experiencing three very wet years, the ACT is now facing drier conditions, although catchments still hold a significant amount of water. Considering the current landscape and water availability, there is a normal risk of bushfires in the ACT this spring.

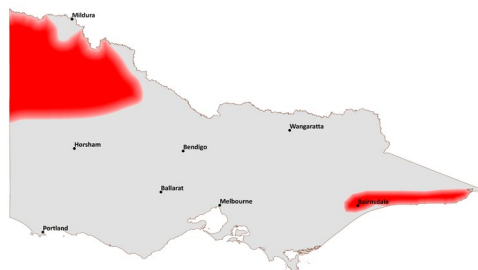
However, long-range outlooks for spring in the ACT predict drier than average conditions and above average day and night temperatures. There is a high chance of unusually warm conditions within the top 20% of the historical range. If these drying trends continue throughout spring, there could be an increased risk of bush and grass fires as we move into summer, particularly due to the grassland growth from the previous three wet years.

It is crucial for the community to stay vigilant and prepare their properties throughout spring. Residents should review, update, or prepare their Emergency Plans in anticipation of the high-risk weather season. Emergency Plan templates can be accessed at the ACT Emergency Services Agency website.

Fire agencies and land managers continue to conduct mitigation activities during spring, including prescribed burns when conditions permit during. ACT residents can keep track of planned and ongoing prescribed burns through the ACT Emergency Services Agency and ACT Parks and Conservation Service websites, or the Hazards Near Me App.

By staying informed and prepared, residents can help minimise the impact of potential bushfires during this period. Prioritising safety and ensuring a proactive approach helps to safeguard the community and environment. ■

Victoria



Increased Risk of Fire

Seasonal Bushfire Outlook for Spring 2023 in Victoria

Summary

- Victoria can expect a warmer spring and earlier start to the high risk fire season this year, following three years of lower fire risk seasons as a result of La Niña conditions
- Sit down with your family or household and make or review your Bushfire Survival Plan at www.cfa.vic.gov.au/bushfireplan
- Know how to stay informed and know which information channels work for you.

For further information see: emergency.vic.gov.au

Despite below average rainfalls for winter, much of the state has moist soils due to above average rainfall for much of the last three years. This moisture is likely to result in higher grass and crop growth during the spring outlook period.

In the east, a strong drying trend has emerged recently in far east Gippsland, extending to central Gippsland, which has resulted in recent planned burn opportunities. As a result, there is a higher than normal potential for forests to carry fire in the outlook period, especially in and surrounding coastal communities close to bushland where vegetation was unburnt or lightly burnt during the 2019-20 fires.

This outlook indicates drier and warmer conditions than usual for spring. As a result, there is a high likelihood that the bushfire season of 2023-24 will commence earlier across much of central, western and northern Victoria. In agricultural areas, elevated grass fuel loads will likely cure earlier than most years and may present an elevated risk until harvest occurs.

Elsewhere around the state, the fire risk potential is assessed to be normal noting that drier forests, woodlands and heathlands (inland and coastal) can pose a fire risk under the onset of hot, dry and windy weather conditions. There is considerable uncertainty around the effect that forecast climate drivers will have in regard to any potential extremes in drying rates and flammability of foothill and damper forests. As a result, landscape conditions will be monitored during the outlook period to identify key risk areas leading into the summer period. ■

Tasmania



Increased Risk of Fire

Seasonal Bushfire Outlook for Spring 2023 in Tasmania

Summary

- Normal bushfire risk is predicted for spring.
- Drier and warmer conditions, and an abundance of fuel will see bushfire risk increase towards summer.
- Property owners must prepare now.

For further information see: fire.tas.gov.au

Winter has seen below average rainfall for some areas in the east of the state. Maximum temperatures have been above average across the entire state for the period. Consequently, the soil dryness index across parts of the east is higher than expected for this time of year, indicating drier bushfire fuels more generally.

The contrast of climatic conditions for this spring season compared to the previous is significant. The potential for El Niño to establish this year is likely, and the development of a positive Indian Ocean Dipole is possible. These climate drivers combined typically strengthen the drying effect across Tasmania.

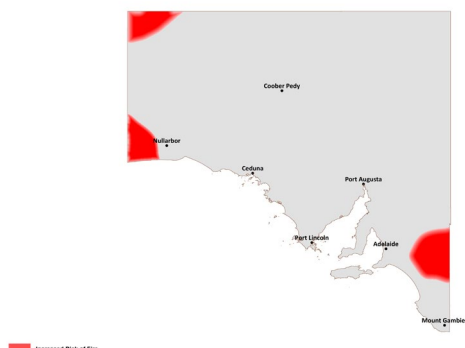
The past three years of wetter and warmer than normal conditions have led to significant growth and accumulation of fine fuels across the state. This is likely to increase bushfire intensity and make fire control more challenging.

The rates at which the landscape dries and fuels increase in flammability will be influenced by spring rainfall, daytime temperatures, windy days, and cloudiness. If the current trend continues as forecast, the onset of grassland curing in areas of the east will occur earlier than previous years, and forest fuels will become more readily available to burn earlier in the season.

Conditions are anticipated to remain favourable for fuel reduction burning through much of the spring period. Eastern and southern areas are likely to become too dry for low intensity fuel reduction burning earlier than other areas. Land managers are encouraged to seize opportunities to reduce fire hazards.

The Tasmanian community is reminded that there is potential for significant bushfires to occur during spring. Get ready by reviewing bushfire plans, preparing properties, and maintaining awareness of local conditions as fire danger increases. ■

South Australia



Seasonal Bushfire Outlook for Spring 2023 in South Australia

Summary

- Above average rainfall has rapidly switched to below average rainfall and drying out of soil in many areas of the state.
- Much greater fuel loads are present, requiring greater efforts for hazard reduction throughout spring before the hotter weather arrives.
- SA is expecting well above average maximum temperatures and above average minimum temperatures in spring.

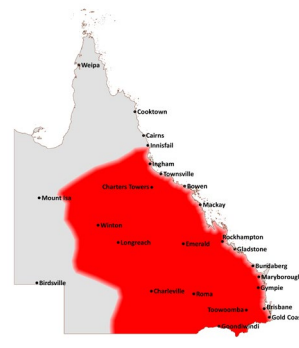
For further information see: cfs.sa.gov.au

Very much above average rainfalls across much of the state throughout early winter 2023 have rapidly switched to below average rainfall during July in all but the far northeast of the state. Consequently, the fire danger outlook has increased from below average to above average for spring across much of the southern half of the SA.

The far southwest corner of the state is currently showing very much below average root zone soil moisture and higher ratings of evaporative stress compared to previous years.

The spring outlook shows well-above average maximum temperatures and above average minimum temperatures coupled with average rainfall for much of the state or well below average rain for southern coastal areas. fire danger outlook is showing increased risk of fire for grassland in the SA-Victoria border region and also for Mallee Heath areas across southern SA approaching the Victorian border. These factors raise expectations of an early start to the 2023 fire danger season. ■

Queensland



Seasonal Bushfire Outlook for Spring 2023 in Queensland

Summary

- The combination of drying fuels, forecast below average rainfall and above average temperatures is likely to bring locally intense bushfire activity.
- Bushfires may be destructive across parts of Queensland as vegetation becomes flammable during the spring months.

For further information see: qfes.qld.gov.au

Whilst there has been periods of episodic rain events across southern Queensland during the late summer and early autumn periods, the general rainfall totals are significantly lower than the past two years. This has led to reductions in soil moisture rates across the sub-tropical and temperate zones, and increased fire activity in these areas.

There has been significant rainfall across the central and far northwest areas of Queensland during the July months, this rain fall has delayed the onset of the northern Australian fire season. Without follow up mid-spring rainfall this area is likely to see elevated fire potential in the late parts of spring around the northern and central Queensland grasslands, timber country and savannah grasslands, with many of these areas not experiencing fire conditions for a number of years due to prolonged drought.

Whilst Queensland has experienced significant rainfall across many parts of the state, which has resulted in significant growth in vegetation, the fuel loads being observed are similar to traditional post La Niña growth patterns.

The combination of drying fuels, forecast below average rainfall and above average temperatures is likely to bring locally intense bushfires that maybe destructive across parts of Queensland as vegetation becomes flammable during the spring months. Reduced seasonal rainfall, low root zone soil moisture levels and elevated evaporation rates across areas around the inland parts of the Capricornia, Wide Bay–Burnett and the Southeast Coastal forecast areas, and in wide-spread parts of the Southern Downs and Granite Belt, have combined to produce above average fire potential for these areas moving into the spring fire season. ■

Western Australia



Seasonal Bushfire Outlook for Spring 2023 in Western Australia

Summary

- Winter rainfall has been below average for southern WA and above average for northern WA. This is reflected in the relative root zone soil moisture for these regions.
- An above average wet season in the Kimberley has delayed curing in the savanna grassland and subsequently the late dry season.

For southern WA in late spring, drier and warmer conditions may contribute to higher surface fuel availability and make bushfires more difficult to suppress.

For further information see: dfes.wa.gov.au

With average root zone soil moisture, average fuel growth, and forecast average spring conditions, an increased risk of fire for the Pilbara is unlikely. An above average wet season in the Kimberley has delayed the onset of late dry season conditions. The Kimberley region has experienced delayed curing in the savanna grassland due to above average root zone soil moisture, facilitating ongoing planned burning activities to reduce landscape fuel availability. Bushfire risk will increase as the vegetation continues to cure and the weather becomes drier and warmer. However, good planned burning achievements and above average root zone soil moisture should result in average fire risk until the end of spring season.

Significant areas of southern WA are experiencing below average relative root zone soil moisture and the drier and warmer than average spring forecast will likely increase these root zone soil moisture deficits. Reduced relative root zone soil moisture will likely result in the earlier curing of grasslands and the increased surface fuel availability within woody vegetation in late spring compared to an average year. The forecast drier and warmer than average spring forecast for southern WA has the potential to impact planned burning opportunities in some areas, and bushfires in late spring may be more difficult to suppress due to higher surface fuel availability. As the southern bushfire season approaches, it is important for the community to stay alert and prepare their properties throughout spring. ■

Northern Territory



Seasonal Bushfire Outlook for Spring 2023 in Northern Territory

Summary

- Drying conditions are predicted to impact the entire NT as El Niño continues to develop.
 - Average grass fuel loads and adequate fire scar coverage across the Top End, Katherine and Arnhem districts mean there is normal fire potential for these regions.
 - Above-average grass fuel loads, continuity of these fuels and high densities of invasive Buffel Grass have increased the risk for wildfires to travel across vast distances during spring. or
- For further information see pfes.nt.gov.au or [Bushfires NT](https://bushfires.nt.gov.au)

Grass fuel loads are at average levels throughout the Northern Savanna and Top End of the NT, except for areas where invasive Gamba Grass is located within peri-urban areas south of Darwin and north of Katherine. Early season mitigation programs have concluded throughout the Northern Savanna, Arnhem and Top End regions. It was challenging for fire managers to access many areas around Darwin, Katherine and the Victoria River Region to conduct early dry season mitigation burns due to persisting soil moisture levels.

Occurrences of wildfires has increased for urban and peri-urban areas in these regions from June through August, with over 3,000 wildfire incidents. Fire scar coverage is adequate across the Northern Savanna and Top End, and carbon abatement programs have also been largely successful in creating suitable mosaic-style fire scar coverage for the Arnhem region, reducing the risk of wildfire potential in these areas.

Central Australia and the Barkly region experienced a burst of heavy rainfall in June, contributing to further growth of already above average grass fuel loads. With minimal fire scar coverage, well-above average fuel loads, above median temperatures and dry, windy conditions predicted for spring, increased fire risk is predicted for the Barkly, Tanami, Alice Springs and Lassiter forecast regions.

Fire authorities have been working with stakeholders in Central Australia and Barkly regions, to assist with preparedness, planning and mitigation programs over the spring period. ■

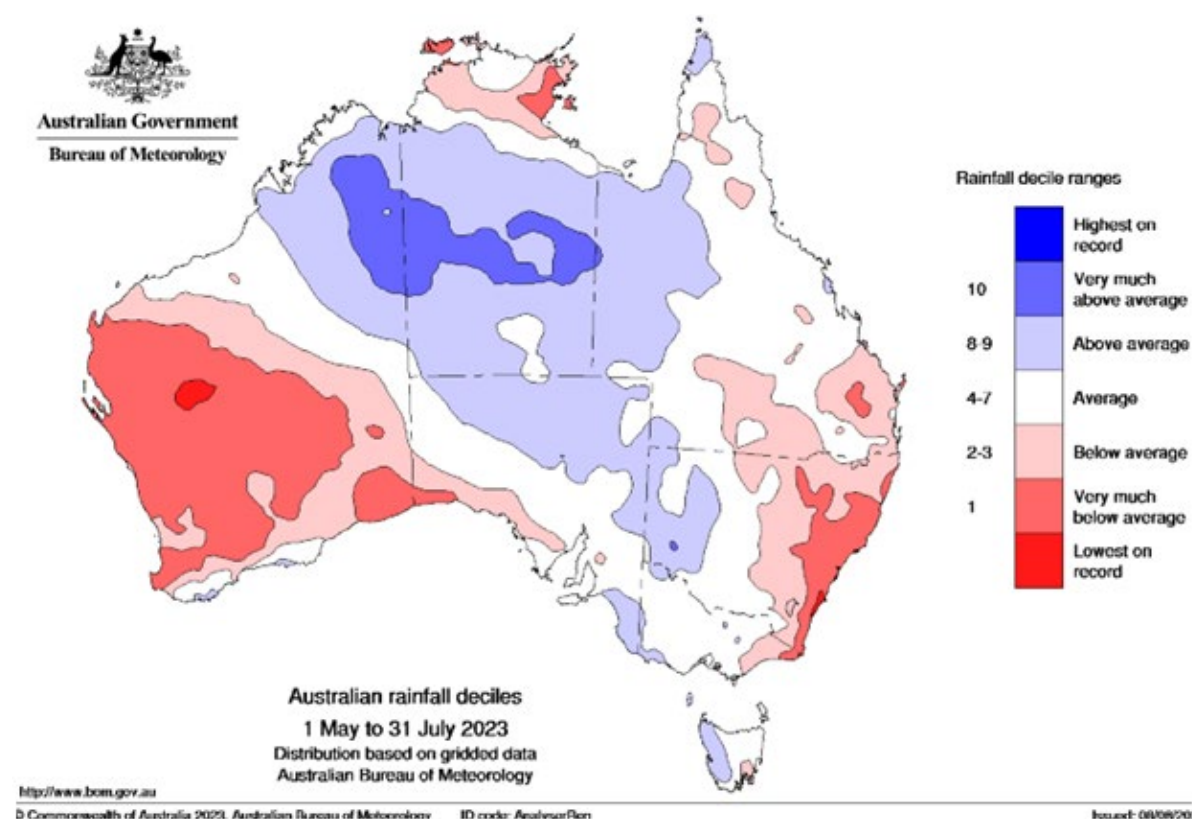


Figure 2 1 May 2023 – 31 July 2023 rainfall deciles

Seasonal fire conditions depend on many factors, including the amount and type of fuel (vegetation) and how dry that fuel is. Fuel conditions are influenced by recent rainfall, temperatures, and soil moisture.

For Australia as a whole, May to July 2023 rainfall was 20% below the 1961-1990 average. Above average rainfall for the three months (Figure 2) occurred across broad areas of northern and central Australia, from the Kimberley in WA, southern and central NT, western Queensland, northern SA and western NSW. Much of this above average rainfall was unseasonable rainfall that fell in late June or early July, and it obscures the otherwise drier than usual conditions which prevailed in the south, except for western Tasmania.

Rainfall for the three months was below average along much of the eastern coast of Australia, and most of the southern half of WA, with pockets of below average rainfall in southwest SA, the Top End of the NT and southeast Tasmania. Below to very much below average rainfall was observed during July for most of southern Australia. No states or territories were in the top or bottom 10 of their respective records for the three months.

For much of 2023, rainfall has been closer to average following a very wet 12 months, which saw both La Niña and negative Indian Ocean Dipole events influencing the Australian climate. The latter part of 2022 also saw an extended positive Southern Annular Mode, which also likely contributed towards the extended wet period.

Recent months have seen warmer than average maximum temperatures in parts of the country, with May to July 2023 above average for much of the eastern two-thirds of the country, and parts of western WA. We have also observed drier than average conditions in many of these areas, with drier conditions seen in 2023 across southern parts of WA and parts of eastern Australia, particularly southeastern Queensland, northern and eastern NSW, and eastern parts of Victoria and Tasmania.

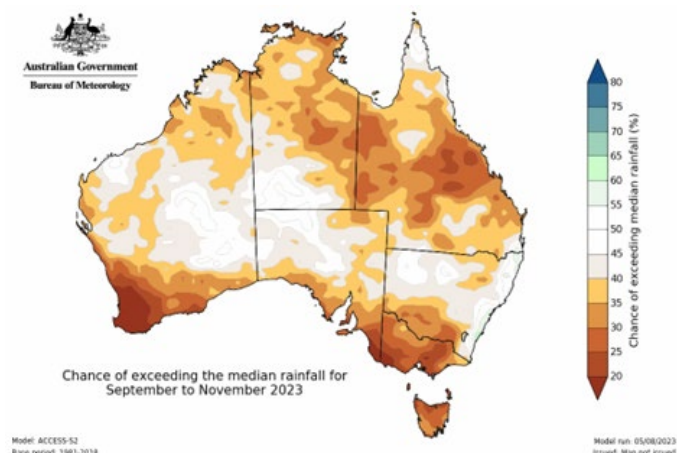


Figure 3 September – November 2023 chance of above normal rainfall

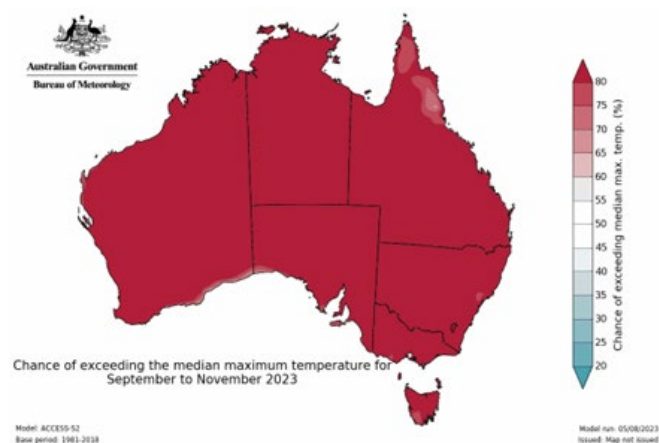


Figure 4 September – November 2023 chance of above normal maximum temperature

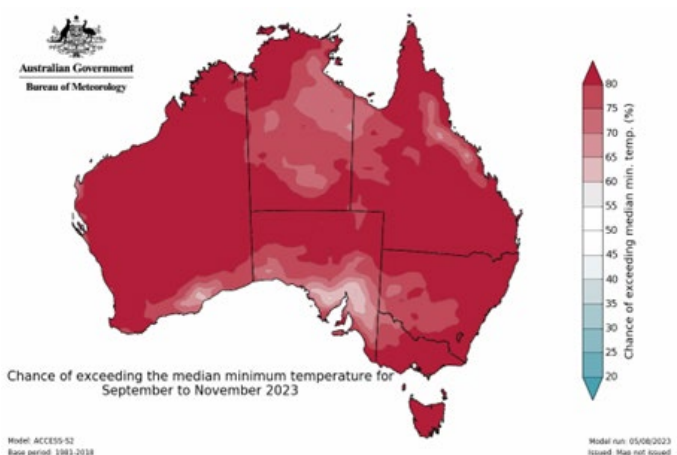


Figure 5 September – November 2023 chance of above normal minimum temperature

Australian Water Outlook - Proportion of ensembles above climatology median

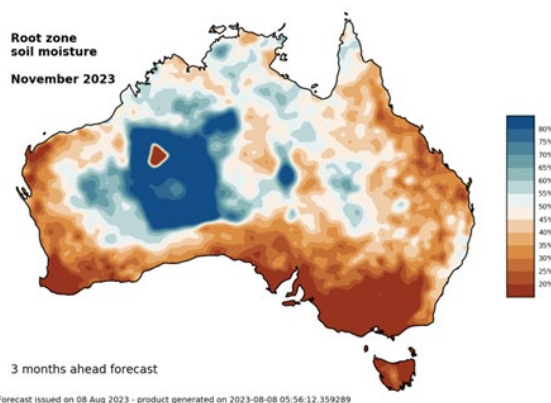


Figure 6 November 2023 chance of above normal soil moisture

The Bureau of Meteorology's long-range forecasts are based on global models of the oceans, atmosphere, land, and ice. These models implicitly include physics that capture the influence of all climate drivers, including long-term trends.

September to November rainfall (Figure 3) is likely (greater than 60% chance) to be below median across northern parts of Australia from the Kimberley in WA stretching across to Queensland, and southern parts of Australia from southern WA, stretching across Victoria and Tasmania to the Riverina region in southern NSW. Isolated areas of the southwest and southeast of Australia are very likely to experience below median rainfall (greater than 80% chance). No areas favour above average rainfall for the period.

September to November maximum temperatures (Figure 4) are very likely (greater than 80% chance) to be above median for almost all of Australia.

September to November minimum temperatures (Figure 5) are likely (greater than 60% chance) to be above median for areas surrounding the Great Australian Bight, and the central NT, extending into western Queensland. Elsewhere, minimum temperatures are very likely (greater than 80% chance) to be above median.

The combination of reduced rainfall and above average temperatures and evaporation results in outlooks for drier than average root zone (top metre) soil moisture (Figure 6) by late spring for much of the south and east of the country. Small scattered parts of inland WA, the NT, northern SA, and western Queensland may continue to have wetter than average soils. For eastern Australia, this is a significant change from the wet soils of 2022, suggesting the abundant growth associated with high moisture availability in spring 2022 may be drying out in 2023; the high fuel loads are likely to become more flammable in some places.

Updates to climate forecasts, including forecasts of monthly, fortnightly and weekly outlooks and the outlook for the Indian Ocean Dipole and El Niño–Southern Oscillation will continue to be published at www.bom.gov.au/climate/ahead and <https://awo.bom.gov.au/>

The El Niño-Southern Oscillation (ENSO) is currently neutral (neither La Niña nor El Niño). However, tropical Pacific ocean waters have been steadily warming since the start of 2023, and have passed El Niño thresholds. Climate models anticipate further warming of the tropical Pacific in the coming months. In the atmosphere, however, wind, cloud and broad-scale pressure patterns mostly continue to reflect neutral ENSO conditions. This means the Pacific Ocean and atmosphere have yet to become fully coupled, as occurs during El Niño events. With these factors in mind, the ENSO Outlook remains at El Niño Alert. When El Niño Alert criteria have been met in the past, an El Niño event has subsequently developed around 70% of the time. El Niño typically reduces winter-spring rainfall across much of eastern Australia.

The Indian Ocean Dipole (IOD) is currently neutral. Climate models suggest the possibility of positive IOD development in the coming months. A positive IOD typically reduces winter-spring rainfall across much of southern and central Australia.

Globally, sea surface temperatures have been the warmest on record (since 1900) for each respective month since April. While March is typically the time of the year where sea surface temperatures are highest, Copernicus reports that July 2023 has come in as equal highest for any month, on par with March 2016. July was also the globe's hottest month on record for air temperatures (combined land and ocean).

Australia's temperature and rainfall variability are also influenced by global warming caused anthropogenic influences (human activities). Australia's climate has warmed by around 1.47 °C in the period between 1910 and 2021. There has also been a trend towards a greater proportion of rainfall from high intensity short duration rainfall events, especially across northern Australia. Southern Australia has seen a reduction of 10 to 20% in cool season (April–October) rainfall in recent decades.

Historically, forest fire activity in eastern Australia is lower during a La Niña, such as last summer, or negative IOD years. However, regions that see above average winter, spring and summer rainfall typically experience increased grass and vegetation growth which increase subsequent fuel loads in the year following. This means going in to the spring 2023 season, increased fuel growth is likely to be present.

The tendency for fire seasons to have elevated fire dangers more frequently, and for elevated fire danger to appear earlier and later in the season, is an observed trend in Australia's climate. This reflects reduced and/or less reliable cool season (April–October) rainfall in southern parts of the country and rising temperatures. Year-to-year variability can reduce the impact of the long-term trends in increased severity and length of fire seasons, as was the case during the recent La Niña events. A change in ENSO state would expect to see a return to the general trend, or even an increase to the general trend.

The frequency of dangerous fire weather days has increased significantly in recent decades across many regions of Australia, especially in the south and east. These increases are particularly evident during spring and summer and are associated with an earlier start to the southern fire weather season (State of the Climate 2022).

Further information

For further information about climate forecasts and conditions, please visit the following pages

- bom.gov.au/climate/ahead
- bom.gov.au/weather-services/fire-weather-centre/fire-weather-services

This Seasonal Outlook was developed by AFAC, the Bureau of Meteorology, Queensland Fire and Emergency Services, the NSW Rural Fire Service, ACT Emergency Services Agency, ACT Parks and Conservation Service, Country Fire Authority, Department of Energy, Environment and Climate Action Victoria, Tasmania Fire Service, SA Country Fire Service, Department of Fire and Emergency Services and Department of Biodiversity, Conservation and Attractions WA, and Bushfires NT.