

Spring 2021

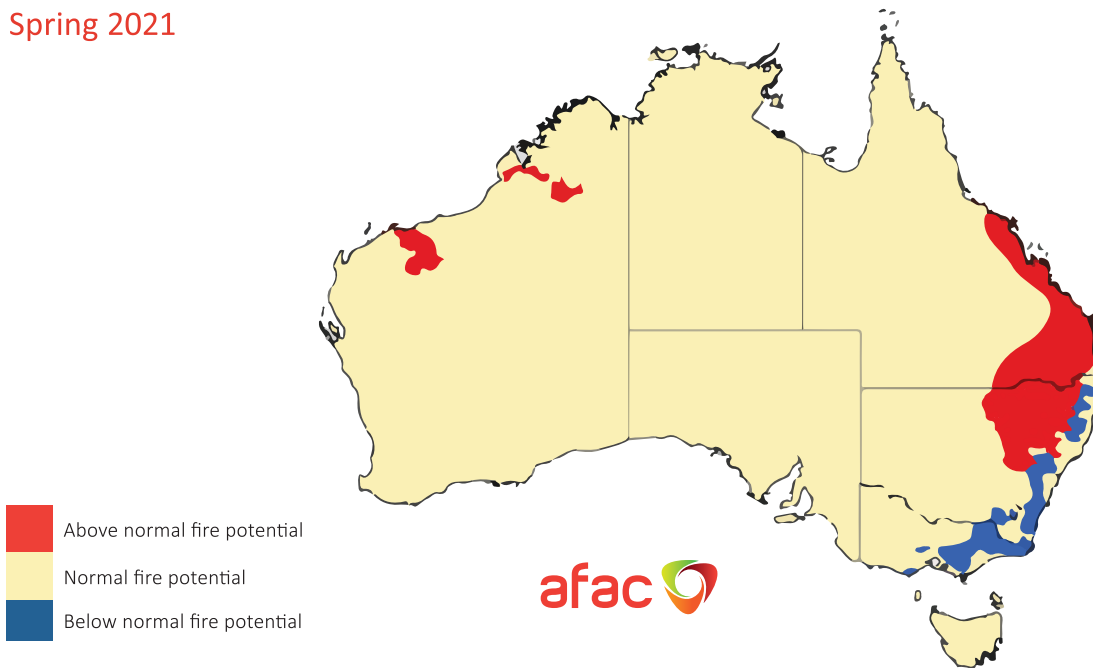


Figure 1 Seasonal Bushfire Outlook Spring 2021. Areas are based on the interim biogeographic regionalisation for Australia and other geographical features.

Fire potential definition: The chance of a bushfire or number of fires occurring of such size, complexity or other impact that requires resources (from both a preemptive management and suppression capability) beyond the area in which it or they originate. Fire potential depends on many factors including weather and climate, fuel abundance and availability, recent fire history and firefighting resources available in an area.

Overview

Recent rainfall has resulted in average-to-above average soil moisture and stream flows across large parts of eastern Australia. The outlook through until the end of spring suggests above average rainfall is likely over much of the country except western parts of Western Australia (WA). The negative Indian Ocean Dipole (IOD) driving the wetter outlooks is very likely to end in November or early December, as is typical of its seasonal cycle.

The above normal fire potential for conditions over south-east Queensland and northern New South Wales (NSW) is driven by grass and crop growth in these areas. In WA, the above normal fire potential in the north is driven by grass growth and dry soil in this area.

Below normal fire potential predicted across the ACT, NSW and Victoria is a result of vegetation recovering from the 2019-20 bushfire season.

About the Outlook

Fire management is a year-round process, and the *Outlook* reflects the priorities in each state and territory for the coming months given the expected climate conditions. It provides information to assist fire authorities in making strategic decisions such as resource planning and prescribed fire management to reduce the negative impacts of bushfire.

Fire potential 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 in turn is influenced by different forecasts for temperature and rainfall over these regions.

While most of Australia shows normal bushfire potential during the spring outlook period, anyone living and working in these areas needs to be vigilant. Destructive and deadly fires can still occur during normal bushfire seasons across Australia.

This *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 Environment, Land, Water and Planning Victoria, Tasmania Fire Service, Country Fire Service, Department of Fire and Emergency Services and Department of Biodiversity, Conservation and Attractions Western Australia, and Bushfires NT.

AFAC acknowledges work of the Bushfire and Natural Hazards CRC and its predecessor the Bushfire CRC, who produced the *Bushfire Seasonal Outlook* for 16 years. With the conclusion of the Bushfire and Natural Hazards CRC, the *Outlook* joins a range of successful research outputs that have transitioned and adopted into practice by the end-user community.

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.

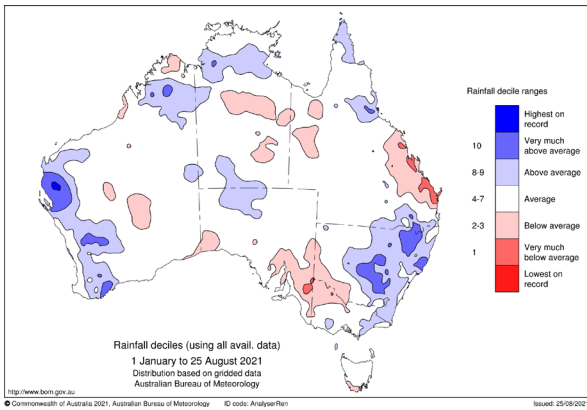


Figure 2 1 January–25 August 2021 rainfall deciles

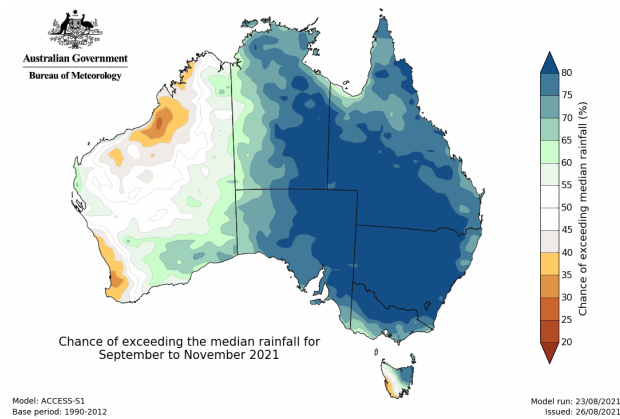


Figure 3 September–November 2021 rainfall outlook

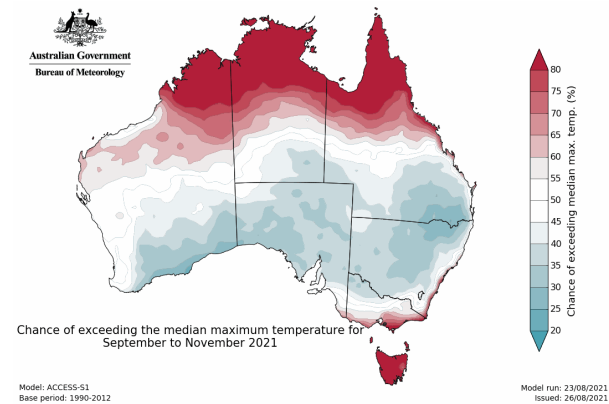


Figure 4 September–November 2021 maximum temperature outlook

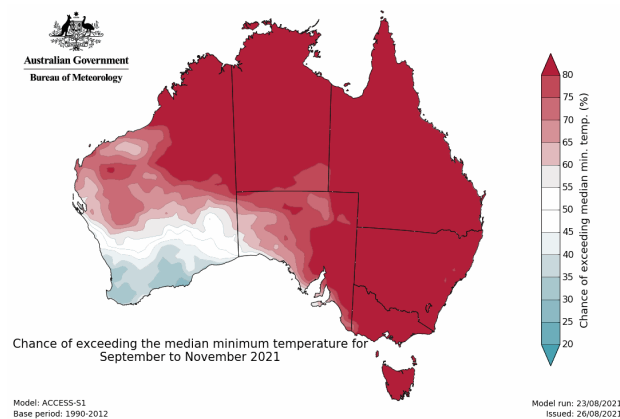


Figure 5 September–November 2021 minimum temperature outlook

Recent conditions

Seasonal fire conditions are a function of fuel (vegetation) amount and dryness, and recent rainfall and temperatures. The year to date (January 2020 to August 25th 2021, Figure 2) has seen above average rainfall for many areas. However, there were a few notable exceptions, with central coast Queensland and an area of south-east South Australia (SA) extending into western Victoria and south-west NSW all experiencing below average rainfall for the eight-month period.

Australia's recent climate has been affected by a negative IOD event. Negative IOD events typically increase the likelihood of above-average rainfall across large parts of eastern and southern Australia during winter to spring, especially the south-east. The 2016 negative IOD saw Australia's wettest May to October period on record. This year's event is likely to be much weaker than 2016, although that does not remove the risk of flooding in some areas of the greater southeast.

Typically, negative IOD events end in late spring to early summer. If they are not accompanied by La Niña events, which can extend wet conditions into summer, there can be a rapid return to average or even drier/warmer than average conditions. This can rapidly cure abundant winter/spring growth.

The long-term warming trend means that above average temperatures now dominate most years, and recent months have generally followed this pattern despite the cooling influence of the negative IOD in some areas. Averaged Australia-wide, July was the fourth warmest since records commenced in 1910. A number of record high July daily temperatures were set in 2021, including Australia's second-warmest July day on record, which was set on three separate occasions during the month.

While the above average rainfall and relatively cooler weather have eased fire risk for some areas, this has also meant increased vegetation growth in many areas. July rainfall was not enough to clear rainfall deficiencies present across the central coast of Queensland. In July, below average rainfall was observed across east-facing coastal areas of the south-east, including Tasmania; and August has seen drier than average conditions across much of southern Australia, this will continue to be monitored.

Year-to-year variability can counteract long-term trends in increased severity and length of fire seasons. Whilst fire seasons can be more benign during La Niña and negative IOD years, the tendency for fire seasons to have elevated fire dangers more frequently, and for elevated fire danger to occur earlier and later in the season is a clear trend in Australia's climate. This reflects reduced and/or less reliable cool season (April to October) rainfall in southern parts of the country and rising temperatures. Fire season length and severity is increasing across much of Australia as measured by annual (July to June) indices of the Forest Fire Danger Index, with increases tending to be greatest across inland eastern Australia and coastal WA.

For more details on the changes we are observing, see the [State of the Climate 2020 report](#) from the Bureau of Meteorology and CSIRO.

Climate outlook

The Bureau of Meteorology's climate outlooks are based on the physics of the oceans, atmosphere, land and ice. They implicitly include all current climate drivers, including long-term trends. The IOD is currently negative. The El Niño–Southern Oscillation (ENSO) is neutral, and while the Bureau's ENSO Outlook is yet to reach La Niña WATCH (i.e. currently less than 50 per cent chance of La Niña forming), further cooling of the tropical Pacific Ocean is expected, potentially reinforcing the negative IOD impacts. Climate models also indicate the IOD is most likely to remain negative through spring, ending in November or early December. A negative IOD increases the chances of above average spring rainfall for much of southern and eastern Australia, especially in the south-east. Above average sea surface temperature patterns around Indonesia and northern Australia may also provide conditions more conducive for rainfall across some parts of Australia.

The rainfall outlook for September to November (**Figure 3**) shows that a wetter than average spring is likely for most of the eastern two thirds of Australia, except western Tasmania. Below average rainfall is more likely for parts of western WA. Historical outlook accuracy for September to November outlooks is high to very high for most of Australia, but accuracy is moderate for southern and far north WA shifting to low accuracy for remaining areas of WA. Average maximum temperatures for winter are likely to be above average for the northern tropics, Tasmania and coastal areas of Victoria (**Figure 4**). Average minimum temperatures for the same period are very likely to be above the long-term average across most of Australia except for southern parts of WA (**Figure 5**). Historical accuracy for maximum temperatures is high to very high for most parts of Australia, with moderate to low accuracy in northern Western Australia. For minimum temperatures, accuracy is high to very high across most areas, but generally moderate to low accuracy in a band extending from northern WA, through the central and southern Northern Territory (NT) and across to central Queensland.

Updates to climate forecasts, including forecasts of monthly, fortnightly and weekly outlooks and the outlook for the Indian Ocean Dipole and the El Niño–Southern Oscillation will continue to be [published online](#).

Jurisdictional summaries

New South Wales

The outlook for depicts above normal fire potential for grassland areas in central and northern NSW. This is based on reports of high grass and crop fuel loads particularly in the New England, Northern Tablelands and Liverpool Ranges. Higher grass fuel loads can result in higher intensity fires and fire danger. Continuity of grass fuels is also important with more continuous fuels meaning that grass fires can spread more easily. Although odds suggest slightly higher chances of above median rainfall for some of these areas depicted as having above normal potential, these odds are less favourable than areas further to the south. Curing or how readily grass will burn is also higher through these areas and includes parts of the Hunter.

Traditionally, the northern areas of the state are the first to start their Bush Fire Danger Periods, this pattern is likely to occur during this quarter with average to slightly drier than

average conditions being experienced on the north coast. For areas east of the divide not affected by the 2019-20 fires, this outlook period could see the normal risk. In any season we could see periods of escalated fire danger and fires that require assistance from beyond the area from which they originate. The blue areas considered to have below normal potential are those recovering from the 2019-20 fire season. Although it may appear to be a significant jump between some of the blue areas and the above normal, this has arisen as the grassland areas are more dynamic in their response to fire than the forested areas. Forest fuels take longer to re-accumulate than grass land areas. With the strongly favourable signal for above median rainfall in grassland areas west of the ranges and south of Sydney, these areas may see a delayed start to the fire season. However, this rainfall and warmer spring growth may see grass and crop fuel loads build during this period.

ACT

Over winter the ACT experienced above average rainfall under the influence of a negative IOD, with this expected to continue well into spring. It is predicted the ACT will continue to receive above average rainfall throughout this period. Daytime temperatures are expected to be close to average with above average overnight temperatures. As a result of these conditions, the ACT for spring is expecting normal fire potential for our grasslands, however below normal fire potential for forested areas given sustained and increased fuel moisture conditions from increased rainfall, and as a result of forest areas burnt in the 2019-20 fire season. Fire agencies and land managers may continue to undertake prescribed burning when conditions allow. ACT residents can monitor prescribed burns that are being planned and undertaken through either the ACT Emergency Services Agency and ACT Parks and Conservation Service websites or Fires Near Me App. Any fires that are unattended should be reported to Triple Zero.

Victoria

To date, much of the state has experienced average to above average rainfall conditions and this is likely to result in continuous grass and crop fuels through most areas west and north of the Great Dividing Range. Soils in the south-western pastures have saturated upper and lower layers this year meaning that a median to above median rainfall forecast for this region in spring is likely to result in normal to above normal pasture growth conditions. As a result, the north-west and west of the state may see an increase in fire potential later in spring, prior to harvest. Many forest areas are normal or wetter than normal with the forecast of above-median rainfall during Spring, the fire season is expected to be below normal across the eastern, north-east, central ranges and Otway ranges. Along the coastal and foothill forests of Gippsland, monthly rainfall in July was much drier than normal. Given the higher than median temperature and median rainfall outlook along the coast of eastern Victoria, the Gippsland fire season is likely to commence in early Summer. Burnt areas from the 2018-19 and 2019-20 seasons are included as part of the below normal assessment in eastern Victoria on the map. The higher soil and fuel moistures in many forests may promote opportunities for planned burning during the outlook period and may extend further into late spring compared to drier years.

Tasmania

The spring planned burning season will commence earlier in the south-west and south-east and Midlands compared to the northern half of the state and the Bass Strait islands. Grassy fuel types have significant fuels from last season which will bring forward the fire danger period for these fuels. The south-west is being closely monitored for the possibility of increased fire potential should rainfall deficits increase and make the peat soils available together with moorlands, scrubs and heaths. Fuel conditions for the remainder of the state are considered normal and so the overall assessment is for normal fire potential for spring 2021.

South Australia

SA can expect either a standard start to the Fire Danger Season – or even a later start in some areas of the State, largely as a result of a negative IOD. Winter rainfall during June and July has been above average over large parts of southern SA, and early indications from the climate outlook suggests that the wetter than average trend is likely to continue more broadly through spring. Supporting this, are indications that near to below average daytime temperatures are also likely over the same period. CFS will closely monitor the pastoral areas over the next few months, where the above average late-summer/early-autumn rainfall has promoted more grass growth than normal. SA could anticipate some sizeable grass fires to occur through the north, especially around the APY Lands. This pattern of increased risk from grass fires, due to good growth conditions, is likely to be repeated around SA more broadly as we head deeper into spring and early summer.

Days of dangerous fire conditions are a feature of every warm season in SA, and while the current outlook is more positive for the start of the fire season than some recent years, we will continue to face the risk of losses from fire as per an average fire season.

Queensland

Queensland has continued to experience mild and wet conditions over the first seven months of 2021 with long term rainfall deficits returning to average conditions across most of the state, except coastal and inland areas between the Capricornia and Wide Bay areas and the Granite belt. These weather events have led to a slower start to the fire season with the exception of the Burnett, Wide Bay and Bundaberg regions which have experienced an earlier than expected start to their fire season. A dry and mild August period has generated higher than average median growth in the Wide Bay and Burnett regions and a higher than normal chance of ignition. With a negative IOD and neutral ENSO conditions and a La Niña outlook forecast, the climate outlook for the August to November period is likely to be influenced by significant rainfall and local drivers. The temperature outlooks are for average to lower maximum temperatures across most of the state with above average temperatures in the Far North/Cape area; increased minimum temperatures are forecast for the entire state. Rainfall outlook is above median rainfall across the remainder of the state. The milder conditions and the probability of above median rainfall across the state will likely result in continuation of the favourable conditions for new grass growth. Queensland is likely to see a slight increase in

localised areas of grassland fires across the South East area, the Burnett/Wide Bay areas, coastal areas between Gladstone and Mackay and North Queensland.

Western Australia

WA has received above average rainfall for the year to date, resulting in increased grass fuel loads and alleviated drought stress in woody vegetation. In northern WA, grasses are fully cured and some areas are experiencing below average soil moisture in the root zone. The outlook is for below average rainfall and warmer than average temperatures for September to November. These fuel and weather conditions may result in above normal fire potential in parts of the Pilbara, Dampierland, Central Kimberley and Ord Victoria Plain bioregions. In addition, unusually high tourist numbers in northern WA may increase the ignition potential and complexity of control strategies. In southern WA, rainfall deficiencies have eased. This, along with mostly above average root zone soil moisture levels, are expected to provide suitable conditions for planned burning. Although broad climate drivers indicate spring rainfall is likely to be below average, the antecedent conditions mitigate this, and normal fire potential is expected throughout the south of the State for the September to November period.

Northern Territory

For the top half of the Territory, the duration and extent of the fire weather has been less than what has been experienced in the previous two northern fire seasons. The fire danger period was declared for areas north of Elliot on 28 June to November 2021. To date, there have been seven fire ban periods declared. Fuel curing has reached 95-100 per cent in all areas of the Northern Fire Protection Zone (NFPZ) and if more high pressure systems arrive in the Top End, fire ban periods are likely over the coming weeks. In the previous outlook, there were concerns around the increased fuel leading up to June due to above normal rainfall in the NFPZ. While extensive prescribed burning operations were completed in the rural and remote areas of this region, targets were not met in the urban and peri-urban areas. As a result, this residual risk is of concern through the remainder of the late dry season. This situation extends to the Daly Basin and Sturt Plateau in the Savanna region, in areas where strategic landscape burns and roadside mitigation targets were not achieved. Extensive early dry season savanna burning was completed in May–June through western and central Arnhem Land. Through the Arnhem Coast and Central Arnhem bioregions, curing increased through August, allowing fire managers to commence prescribed burning operations which will continue through early September. Towards the end of this outlook period early rainfall is expected across most of the Territory. Central Australia has been dry since March, and the onset of growth after the above average rainfall over the southern summer has resulted in increased but predominately, discontinuous fuel loads in areas of the MacDonnell Ranges, Burt Plain, Tanami, Finke and Simpson Strzelecki Dune Fields. Review of current fire season activity and forecast early onset rains indicates normal fire potential for all regions through to December.