SEASONAL BUSHFIRE OUTLOOK





Figure 1 Seasonal Bushfire Outlook Summer 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. Influenced by the current La Niña event, the outlook for summer suggests above-average rainfall is likely over eastern parts of the country. The negative Indian Ocean Dipole which has contributed to the wetter conditions over spring is very likely to end in early December, as is typical of its seasonal cycle.

Despite this, grass growth in the east may lead to above average bushfire potential through part of New South Wales (NSW). Dry conditions in Western Australia (WA) may also lead to above average bushfire conditions.

While most of Australia is expecting normal fire potential, there are areas of below normal potential in the ACT, NSW and Victoria. This is due to increased rainfall and areas burnt during the 2019-20 fires.

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 summer 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 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 2021–24 November 2021 rainfall deciles



Model: ACCESS-S2 Base period: 1981-2018

Figure 3 December 2021—February 2022 rainfall outlook



Figure 4 December 2021–February 2022 maximum temperature outlook



Figure 5 December 2021—February 2022 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 2021 to November 24 2021, **Figure 2**) has seen above average rainfall for many areas. However, there were a few notable exceptions, with central and southern coastal regions of Queensland, central parts of the Northern Territory (NT) and far-northern WA the largest areas of below-average rainfall over the period.

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. Australia's recent climate has been affected by a negative Indian Ocean Dipole (IOD) event. Typically, negative Indian Ocean Dipole 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.

La Niña is currently active in the tropical Pacific. All surveyed models maintain La Niña conditions through January 2022, with four out of seven maintaining these values until February 2022. Forecast conditions are generally comparable to those observed during the 2020-21 La Niña event, and is expected to be relatively short-lived. This pattern is likely to be contributing to the wetter than average outlooks for eastern Australia with wetter than average conditions typically observed over eastern and northern Australia during the summer of a La Niña year. Above-average sea surface temperature patterns around Indonesia and northern Australia may also provide conditions more conducive for increased rainfall across some parts of Australia.

Other factors influencing the wetter than average conditions over eastern Australia are the sustained positive values of the Southern Annular Mode (SAM). A positive SAM at this time of year typically brings above-average rainfall to parts of eastern Australia but below-average rainfall for western Tasmania. SAM is forecast to remain generally positive through December.

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 Western Australia. 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 longterm trends.

The rainfall outlook for December to February (Figure 3) shows above-median rainfall is likely for large parts of eastern Australia for summer (December to February). Below average rainfall is more likely for parts of western Tasmania. Historical outlook accuracy for December to February outlooks is moderate to high for most of Australia, shifting to low accuracy along the Queensland/NT border, the WA/SA border, parts of central WA, central NT, and southern parts of Tasmania. There is a moderate to high chance that maximum temperatures for summer will be above average for much of northern Australia and WA, Tasmania, and parts of western Victoria into southeast Australia and southwest NSW. Cooler daytime temperatures are more likely along the east coast of NSW into eastern Victoria (Figure 4). There is a high chance that minimum temperatures for the same period will be above the long-term average across most of Australia except for southern parts of Western Australia (Figure 5) into southwest South Australia. Historical accuracy for December to February maximum temperatures is moderate to very high for almost all of Australia, with low accuracy for the central NT, extending slightly across the border to Queensland. For minimum temperatures, accuracy is moderate to very high across most of Australia with low accuracy for the central NT.

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 at <u>www.bom.gov.au/climate/ahead</u>.

Jurisdictional summaries

New South Wales

The December to February quarter outlook for NSW depicts above normal fire potential for large areas of NSW containing crop and grassland fuels. This has been based on reports of high grass and crop fuel loads through areas west of divide and in the Cooma Monaro. Good growing conditions are forecast to continue with significantly above average yields from crops expected (NSW Agriculture). Reports of delayed harvest could increase the risk of high crop loads coinciding with the peak of summer.

Although high grass fuel loads exist along the ranges, the likelihood of wetter than average conditions for the coast and ranges balances the risk. If above average rainfall does not eventuate or the distribution of rainfall is not consistent (spaced at regular intervals), these areas could also present a risk of above normal fire potential.

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, especially if rainfall distribution through the period is not consistent. The blue areas are those considered to have below normal potential. These areas 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.

ACT

Over spring the ACT has experienced above average rainfall, in particular November has been a very wet month for the ACT. As a result of this extensive rain soil moisture across the ACT is well above average. The ACT is predicted to continue to receive above average rainfall throughout summer and daytime temperatures are not expected to exceed median maximum temperature.

As a result of these conditions, the ACT for summer is expecting normal fire potential for our grasslands. In forested areas, below normal fire potential is expected given a combination of sustained and increased fuel moisture conditions from increased rainfall, and the forest areas burnt in the 2019-20 fire season. However, if the expected rainfall is not received throughout summer there is the potential risk of seeing increase grass fires during this period.

ACT residents need to review their survival plans with a particular focus on grass fire risk, and to manage grasses near their property to prevent potential impacts of fast-running grass fires. It is important to clear around fences. Rural residents are advised to place and maintain strategic breaks to check fire runs. Fire services and land managers will also be implementing plans to further mitigate that risk.

Victoria

During winter and spring most of the state received average to above average rainfall, with the exception of the northwest and far west of the state. This has resulted in a later start to the fire season compared to recent years. The current climate outlook for summer indicates average rainfall for most of Victoria with generally warmer than average conditions in the west of the state and cooler than average conditions in the east of the state.

The rainfall outlook when viewed in combination with the existing underlying moisture indicates that there is a low likelihood of large-scale fires in the foothill forests, with below normal risk across the eastern, northeast and central ranges and Otway ranges. Additionally, burnt areas from the 2018-19 and 2019-20 seasons are included as part of the below normal assessment in eastern Victoria.

Higher than normal rainfall in recent months has however led to above normal pasture growth across paddocks and roadsides for much of the state, which is likely to increase the grass fire risk throughout the summer period. Roadside grass senescence and cropland harvest activities have been delayed and this will extend the period of heightened risk associated with unharvested crops, compared to previous seasons. Although grassland and drier forests including woodlands and heathlands have been assessed as normal, shorter-duration fires are still likely to occur on hot, dry and windy days.

Tasmania

The spring planned burning season has been difficult due to continuing rains. Soil moisture levels are normal in the southwest and generally above normal elsewhere. Grassy fuel types have significant fuels from last season which will bring forward the fire danger period for these fuels. The southwest is being closely monitored for the possibility of increased fire potential should rainfall deficits develop and make the peat soils available together with moorlands, scrubs and heaths. Fuel conditions for the remainder of the state are considered only slightly below normal and so the overall assessment is for normal fire potential for early summer 2021-22.

South Australia

Mixed spring rainfall results across the state has meant areas that have received good rainfall have seen a reduction in the immediate effects of the fire season. This has resulted in milder fire behaviour being observed in parts of the state. However, modeling suggests that the coming three-month period is unlikely to be as wet as the preceding period, resulting in a forecast more aligned with typical summer conditions in SA. The abundance of grass fuels enhanced by winter and spring rainfall, is likely to dry out and have an increasing influence on fire behaviour, and SA can expect to see grass fires as a key risk during the summer months. The season is likely to be characterised by days of peak fire risk to the community, with moderate conditions either side. The community is urged to not be complacent as any return to widespread hot and dry conditions will quickly exacerbate this fire risk.

Queensland

Queensland has continued to experience mild and wet conditions during 2021, with long term rainfall deficits and underlying soil moisture recovering across the state, except coastal and inland areas between the Fraser Coast and Mackay and the central coalfields. Parts of the central highlands and coalfields areas have received between 10 to 25mm rainfall since September which has not been sufficient to clear rainfall deficiencies. Although this area continues to present an average grass fire risk, it displays low standing dry matter levels (available grass fuel level) < 2.5 t/ha.

With a positive SAM, neutral IOD, a strengthening Madden-Julian Oscillation and a La Niña over the December to January period, the climate outlook will be influenced by significant rainfall and local drivers. This should correct soil moisture deficiencies. These milder conditions and the probability of above median rainfall across the state will likely result in increased soil moisture levels, favourable conditions promoting new grass growth, increasing future fuel loads and potential fire risk.

Western Australia

Soil and live fuel moisture levels are above average for areas of woody vegetation within the South West Land Division north of Perth. These conditions are conducive to late spring planned burning and may delay the onset of peak bushfire fuel conditions for these areas.

For the outlook period daily minimum and maximum temperatures are forecast to be above average across much of the state. When combined with observed above average grass fuel loads this is expected to result in an above normal fire potential for the Pilbara, Gascoyne and Murchison as well as for the Swan Coastal Plain, Jarrah Forest, and western most parts of the Esperance Plains and Mallee Bioregions. Normal fire potential is expected for the remainder of the state, including the far north where near average rainfall is expected.

Northern Territory

Central NT including the Daly and Tanami districts saw unseasonal above average rainfall in September and October. The Fire Danger period came to an end in early November with soil moisture increasing following the early onset monsoon period. With these conditions wildfire risk has decreased in the Northern Fire Protection Zone. Fuel curing continues to fall, having reached 80 percent across most districts.

The rainfall outlook for the Gulf is uncertain, if rainfall arrives late fire risk will be heightened due to unusually dry conditions over the forecast period. Above average rainfall is more likely in central parts of the NT impacting the Finke, MacDonnell Ranges, eastern Tanami and extending through to the Sturt Plateau and Mitchell Grass Downs. Significant rainfall has already been recorded in some areas in Central Australia, fire risk continues in localised areas which have not received rainfall. Normal fire potential is expected across all regions for the summer period.