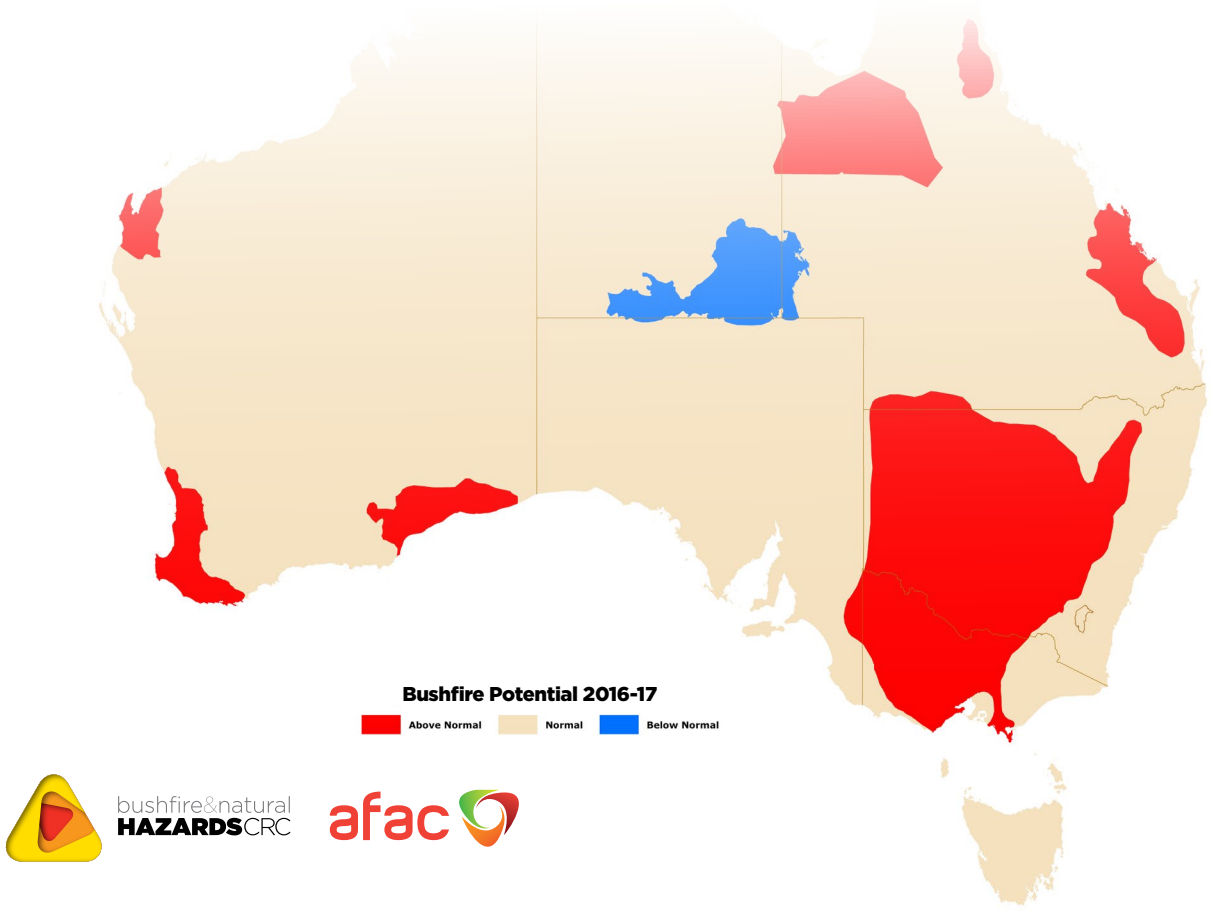
HAZARD NOTE

bushfire&natural HAZARDSCRC

ISSUE 023 NOVEMBER 2016

TOPICS IN THIS EDITION | FIRE WEATHER | FUEL MANAGEMENT

SOUTHERN AUSTRALIA SEASONAL BUSHFIRE OUTLOOK 2016-17: NOVEMBER UPDATE



OVERVIEW

The bushfire seasonal outlook for 2016-2017 has been re-examined for southern Australia due to a combination of weather factors. Following on from a wet winter across large parts of southern Australia (the second wettest winter on record for the country), September saw further rainfall, with more records broken in parts of central and western New South Wales, western Victoria, eastern South Australia and western Queensland (Figure 1, page 2). Further rainfall is expected to be average to below average in most areas, and when this is coupled with summer temperatures that are forecast to be average to above average, more areas are now expected to experience above normal fire conditions. This risk is predominantly in grassland areas of Victoria and New South Wales, with above average rainfall leading to ideal growing conditions. As temperatures warm, this grass will dry, increasing the risk.

These conditions have resulted in an update to the Southern Australia Seasonal Bushfire Outlook. This new edition, released as *Hazard Note* 23, replaces the previous Outlook, published as *Hazard Note* 19 in August 2016. While Victoria, NSW and Queensland are the areas to receive an update to the map, all states and the ACT are warning of increased grass fire danger, particularly as the fire season progresses.

Other changes to the fire potential are in Western Australia, where the fire risk in the South Western Gascoyne has been reassessed as normal due to the predicted increase in grass fuel loads not eventuating, with soil moisture returning to normal during spring. In Victoria's east, normal fire conditions are now predicted due to a drying of fuels since the August outlook. This area was previously classified as below normal fire potential.

The above map reveals the updated bushfire outlook for 2016-2017 for southern Australia, and has been combined with the outlook for the northern fire season, released as *Hazard Note* 18 in July 2016. It is important to remember that normal fire conditions can still produce fast running and large fires.

DEFINITIONS

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

Rainfall decile: A decile is a statistical technique that ranks sorted observations into 10 equal groups. A decile rainfall map will show whether the rainfall is above average, average or below average for the chosen time period and area.

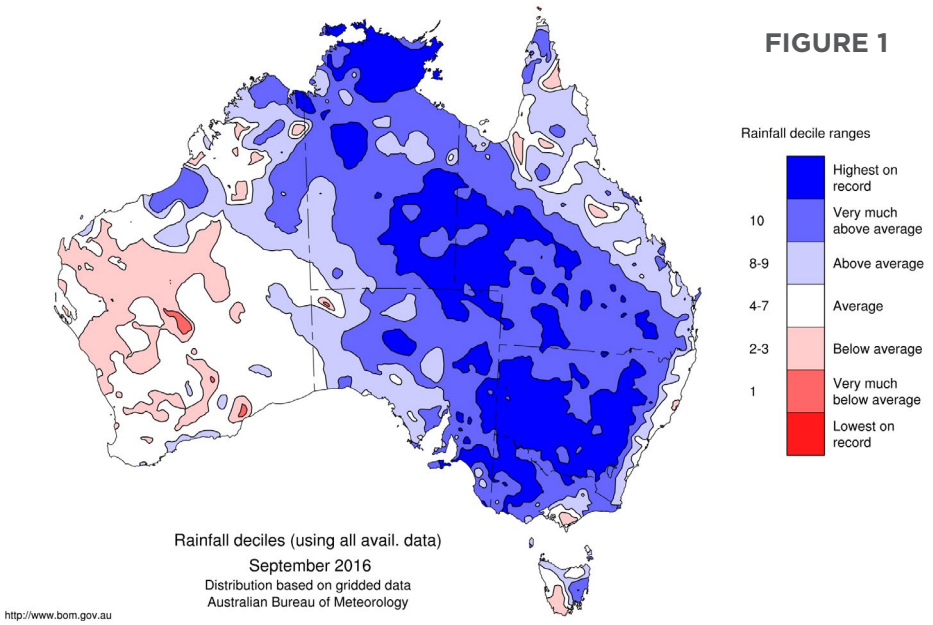


FIGURE 1

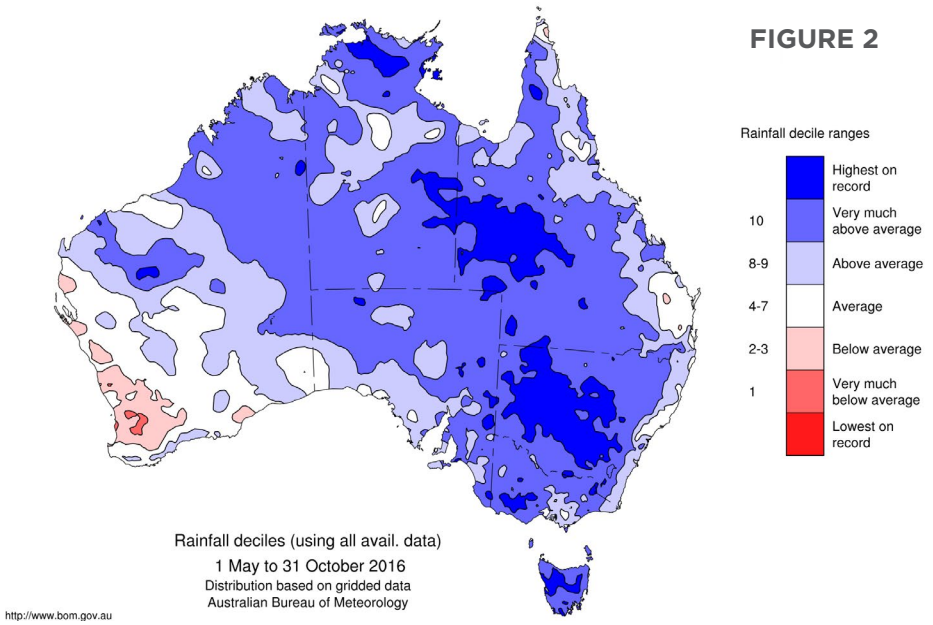


FIGURE 2

RECENT CONDITIONS

The six months from May to October 2016 were the wettest on record for Australia (Figure 2, page 2). However, several regions did miss out on this rainfall, including the coastal strip of New South Wales, eastern Queensland and south west Western Australia. In the areas that did receive it, the high rainfall has contributed to substantial vegetation growth. Maximum and minimum temperatures were cooler than average across large parts of Australia throughout this period, particularly during September and October.

The combination of a strong negative Indian Ocean Dipole and some La Niña-like patterns in the Pacific Ocean have been the key climate influences since autumn. However, these drivers have now returned to a neutral state, which has seen many areas revert to warmer and drier conditions during November, particularly across south west Western Australia and areas east of the Great Dividing Range. More recently, hot and dry conditions have triggered dangerous fire weather conditions across parts of Western Australia, South Australia, Victoria and New South Wales.

UPDATED CLIMATE OUTLOOK

The climate outlook for the coming months through to February 2017 is influenced by warm ocean patterns both in the western Pacific and eastern Indian Oceans, as well as an anomalous northward shift in the prevailing subtropical westerly winds to the south of Australia (known as a negative Southern Annular Mode, or SAM). The outlook for eastern Australia is much drier than earlier forecasts as a result of the decline of the Indian Ocean Dipole, and this northward shift in the westerly winds (Figure 3, page 3). In the tropical Pacific, most indicators of the El Niño–Southern Oscillation are well within neutral bounds. In recent weeks, sea surface temperatures in the central tropical Pacific have warmed, dampening the chances of La Niña development.

In the shorter term, a northerly shift in the average position of westerly winds and high pressure systems (SAM) is forecast for December. When this shift occurs in summer months, it prevents the flow of tropical moisture into southern and eastern Australia, increasing the chances for drier than usual conditions. For December, the outlook indicates it is likely to be drier across much of the continent, particularly for the eastern mainland and parts of southern Western Australia. The summer outlook shows that it is more likely to be drier across eastern mainland Australia.

Temperatures during summer are likely to be above average in large areas of eastern Australia (Figure 5, page 4). Probability shifts in December are strongest across much of eastern Australia, where there is a greater than 80% chance of warmer than average maximum temperatures (Figure 6, page 4). For the

summer period, probability shifts are strongest across southern Queensland and much of New South Wales, with each having a greater than 70% chance of a warmer than average summer.

REGIONAL SUMMARIES

QUEENSLAND

Much of inland Queensland had record or very much above average rainfall from April to September, and as a result there has been significant pasture growth, with grassland curing rates lower than average for this time of year.

Forests were generally wetter than average, with the exception of areas west of the Great Dividing Range, from around Bundaberg, south to the New South Wales border and particularly around Biggenden, Gayndah and Kingaroy.

Since September rainfall has been below average or average, and forest fuel availability continues to increase. With the high likelihood of a dry and hot summer, in particular December, the bushfire potential for areas of south east Queensland is now above normal.

NEW SOUTH WALES

Spring grass growth in the NSW southern border regions has resulted in an amended outlook for this area, with above normal fire potential now indicated. As indicated in the August outlook (see *Hazard Note* 19), a majority of central NSW has above normal fire potential, with prolific grass growth experienced during the spring, and a forecast tending towards above average temperatures for summer. These temperatures are likely to result in accelerated grass curing and increased fire danger.

ACT

With a forecast trend towards hotter and drier weather for the next few months, there is now some potential for conditions conducive to wildfires to develop. Given the wet spring, these conditions are unlikely before January for forests and grasslands. The main operational concern is the raised grassland fuel loading, and the resulting increase in potential fire behaviour. As summer develops, conditions will be closely monitored, particularly if the change to drier conditions occurs earlier than is currently expected.

VICTORIA

An above normal bushfire season is likely across most of Victoria. A departure from longer term drying trends is countered by close to ideal growing conditions for crops and pasture. Severe long term rainfall deficiencies remain in many parts of western Victoria and West and South Gippsland, and may increase the fire risk in forests mid-season. This risk may be pronounced where recent rainfall has not been abundant, such as in West and South Gippsland. In these areas forest fire risk is likely to increase early in summer, along with grass fire risk.

Above to very much above average rain across the state over the last six months has yielded above average or well above average grass fuel, with prolific grass growth in the state's north. In some central and south western areas growth has been limited until now by cooler than normal conditions.

The emergence of widespread fire risk from grass curing is likely to occur later than usual. This may mean crop harvesting in northern and western areas coincides with more severe or extreme fire danger, while expected milder temperatures and available soil moisture near to the south west coast may see curing delayed until February.

The advancement of curing and fire risk is likely to progress quickly across Victoria once temperatures begin to warm and a trend of strong drying in the far east has emerged with an increasing

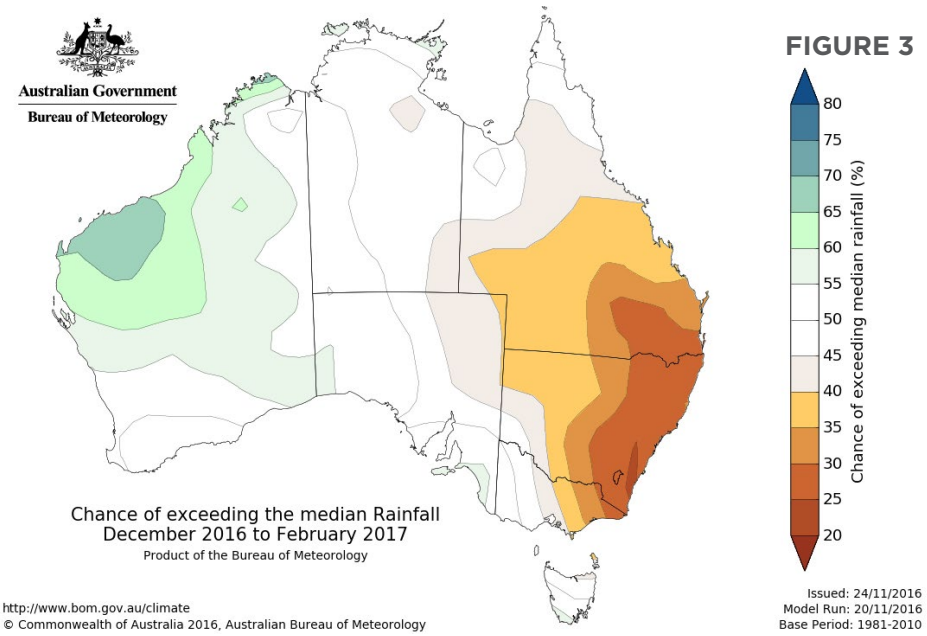


FIGURE 3

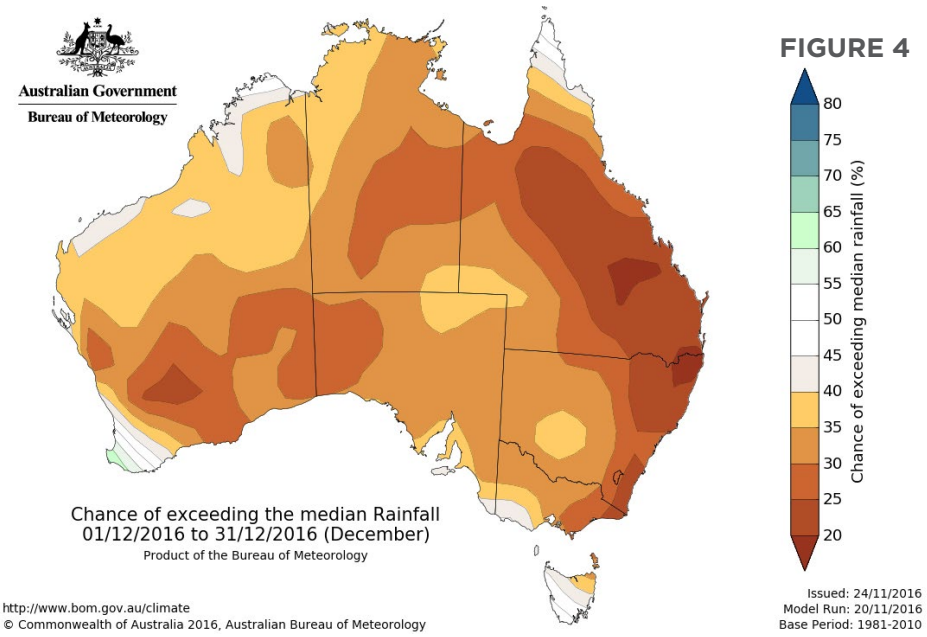


FIGURE 4

dominance of westerly winds. This area has normal fire potential, and the emergence of forest fire risk is expected to consolidate around Christmas. These areas will be closely monitored for further emerging trends throughout summer.

TASMANIA

The fire season continues to be delayed with few vegetation fires to date, and the influence of high soil moisture levels dominates. November rains have reduced threat levels and December rains will determine the commencement of a more normal fire season. Significantly dry conditions in early summer will increase threat levels considerably for February onwards.

Vegetation less influenced by soil moisture such as moorlands, heaths and scrubs have a normal bushfire potential, while forest fuels have normal to below normal bushfire potential. Grassland fuels have a below normal potential until the end of summer, when they may provide a significant threat once they are cured. Opportunities for planned burning will be very limited at least until autumn.

SOUTH AUSTRALIA

The updated outlook conditions for South Australia indicate the majority of the state may experience normal levels of fire activity. The exception to this are parts of the Upper South East, Murraylands and Riverland, which are likely to see above normal fire potential due to significant rainfall deficits in recent years. Whilst the rainfall received across the state during spring will assist with growth, field observations have resulted in the fire danger season commencing on the traditional dates. Normal to above normal fire activity may see the need for firefighting resources deployed over a longer period of time, together with a longer time for mop up post-fires. The areas where there is potential for above normal activity may pose resourcing issues should an above normal level of activity be experienced.

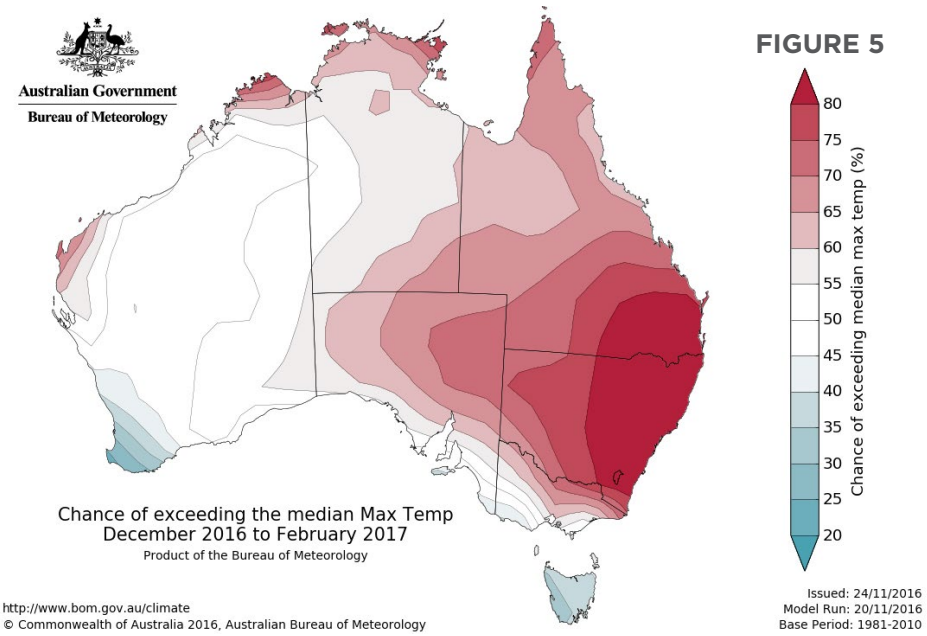


FIGURE 5

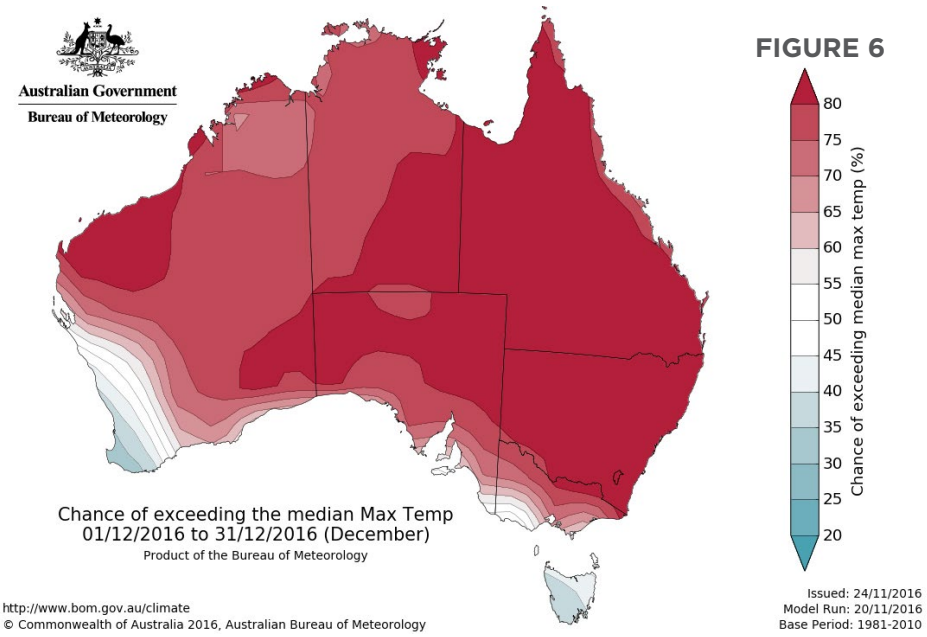


FIGURE 6

WESTERN AUSTRALIA

In the Gascoyne, Murchison, Goldfields, Central West and Desert areas, there is normal bushfire potential due to average rainfall and grass growth. In the Western Pilbara region there is above normal fire potential as a consequence of higher than average grass fuel loads as a result of above average soil moisture. Note that the above normal prediction for the South Western Gascoyne as detailed in *Hazard Note* 19 has been reassessed as the predicted increase in grass fuel loads due to higher than normal late winter soil moistures did not persist into spring. The Eucla and South West areas remain classified as above normal fire potential as described in *Hazard Note* 19.

The Bushfire and Natural Hazards CRC is a national research centre funded by the Australian Government Cooperative Research Centre Program. It was formed in 2013 for an eight-year program to undertake end-user focused research for Australia and New Zealand.

Hazard Notes are prepared from available research at the time of publication to encourage discussion and debate. The contents of *Hazard Notes* do not necessarily represent the views, policies, practices or positions of any of the individual agencies or organisations who are stakeholders of the Bushfire and Natural Hazards CRC.

Bushfire and Natural Hazards CRC
Level 1/340
Albert Street
East Melbourne
VIC 3002
www.bnhcrc.com.au