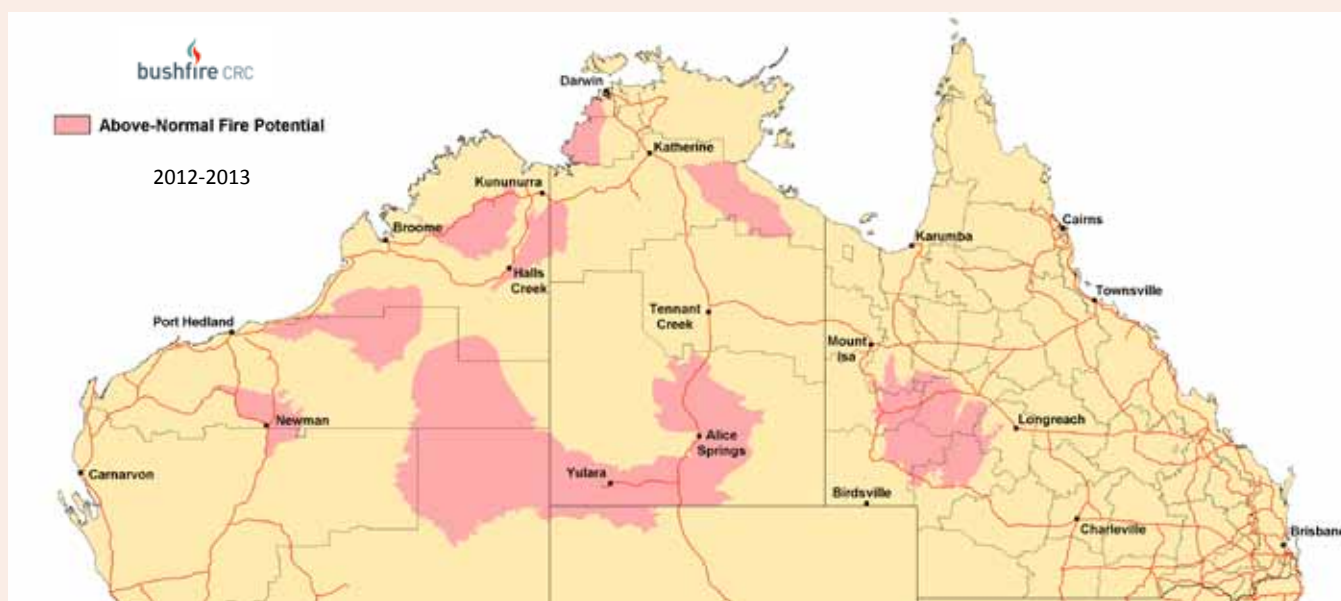


# FIRE NOTE

ISSUE 93 AUGUST 2012

## NORTHERN AUSTRALIA SEASONAL BUSHFIRE ASSESSMENT 2012



### SUMMARY

Large areas of Northern Australia still face above-normal fire potential for the 2012-13 fire season, despite the extensive fires in some parts of the region last season. Significant areas of land were not burnt last year so the fire potential in these areas remains above-normal, largely because of the widespread vegetation growth in many areas fuelled by the wet weather that accompanied the strong La Niña events of 2010 and 2011. Elsewhere, the fire potential is considered to be average across Northern Australia for 2012-13.

Across Australia, back-to-back La Niña events resulted in the wettest two-year period on record (2010-2011), with 2011 being the second wettest year on record behind 1974.

With increasing chances of a turnaround to El Niño later in 2012 the upcoming dry season is likely to be drier than normal. Under these conditions there will be many clear and hotter days, with cooler nights. Into 2013 there will be a later onset of the wet season rains and the Northern Australia Monsoons.

### BUSHFIRE POTENTIAL

**Bushfire potential depends on many factors. The stage is set by the previous wet season. The volume, location and timing of rainfall are critically important when estimating fuel volumes and growth. They also affect the timing of the curing (that is, the drying) of the fuel.**

The climate outlook for the next few months is also a crucial factor. Of particular interest are the future tendencies of Pacific sea surface temperature associated with the El Niño-Southern Oscillation, a major climate driver over Australia. Other less quantifiable factors, such as the distribution and readiness of firefighting resources, are also considered.

Members of the Northern Australian Fire Managers' Group Forum, chaired by Bushfire CRC Deputy CEO Richard Thornton, met in Townsville at the offices of the Queensland Fire and Rescue Service in late June. During the proceedings they discussed the seasonal outlook for the imminent fire season, enabling the production of this *Fire Note*.

Attendees included representatives of the Bureau of Meteorology, Bushfires NT, Northern Territory Fire and Rescue Service, Western Australia's Fire and Emergency Services Authority and Department of Environment and Conservation, University of Western Australia,

CSIRO, Charles Darwin University, Far North Queensland Regional Organisation of Councils, Townsville City Council, the Australasian Fire and Emergency Service Authorities Council, Queensland Fire and Rescue Service and Queensland Parks and Wildlife Service.

The *Seasonal Bushfire Outlook* provides information to assist fire authorities in making strategic decisions such as resource planning and prescribed fire management, and to reduce the negative impacts of bushfire.

A *Seasonal Bushfire Outlook* for southern Australia will be distributed in late August.

## DEFINITIONS

**Fire potential:** The chance of a fire or number of fires occurring of such size, complexity or other impact (such as biodiversity or global emissions) which requires resources (from both a pre-emptive 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.

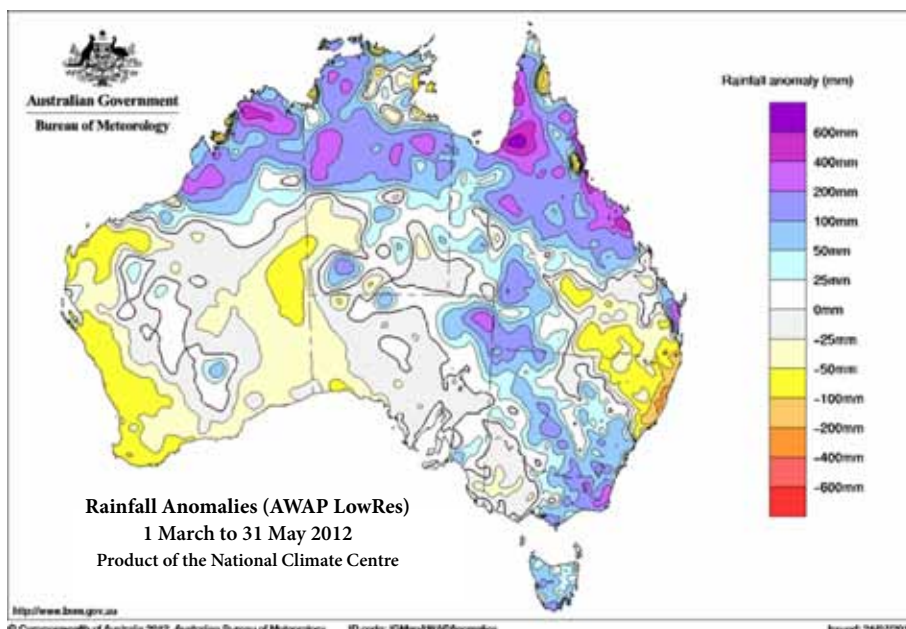
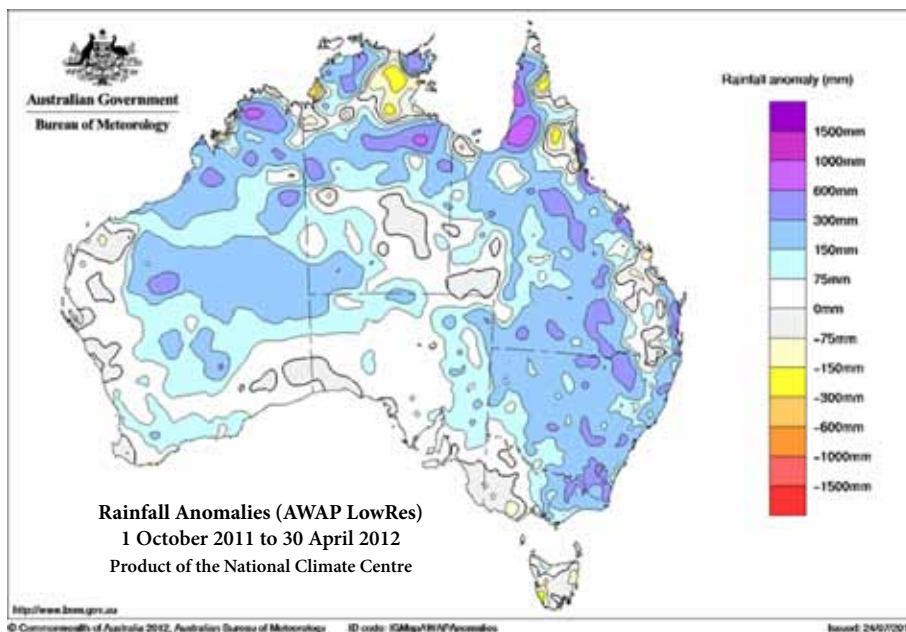
**Rainfall decile:** A decile is a statistical technique that ranks sorted observations into 10 equal groups. A decile rainfall map (above) will show whether the rainfall is above average, average or below average for the chosen time period and area.

## ANTECEDENT CONDITIONS

The 2011-2012 wet season was characterised by a second consecutive La Niña with above-average rainfall across most of northern Australia during the wet season period (1 October to 30 April). Areas of eastern Arnhem Land and eastern Cape York Peninsula were an exception to this, with below average rainfall observed during this period.

While the 2010-2011 La Niña event declined during the 2011 dry season, a weaker event re-emerged in the early stages of the wet season and persisted into early 2012. The 2011-2012 La Niña was considerably weaker than the 2010-2011 event, with less rainfall observed in comparison to the previous wet season. While the strong 2010-2011 La Niña was preceded by an unseasonably wet dry season, the 2011-2012 La Niña was preceded by a more typical dry season. A relative absence of dry, southeasterly trade winds during 2010 and the prevalence of northwest cloudbands contributed to the wettest May to October period on record for northern Australia (north of 26°S).

Nationwide, the back-to-back La Niña events resulted in Australia's wettest two-year period on record (2010-2011), with 2011 being the second wettest year on record behind 1974. During the 2011-2012 wet season, much of the rain fell in relatively shorter events with long breaks in the Northern Australian Monsoon. Drier conditions through most of January and February were responsible for lower than average relative soil moisture content across northern Western Australia, the north of the Northern Territory and northern



Queensland. In comparison, the March to May period was relatively wet, with above-average rainfall across most of northern Australia. This led to higher relative soil moisture in the early stages of the dry season across the northern parts of the Northern Territory and Queensland.

## CLIMATE OUTLOOK

Over the last few months, observations have been trending toward El Niño. This is consistent with most model forecasts indicating that the tropical Pacific may approach or exceed El Niño thresholds by the end of the dry season. Some models indicate only borderline El Niño conditions may occur, but none suggest a return of La Niña.

Moreover, the Bureau's climate model indicates an increasing chance of a weak

positive Indian Ocean Dipole (IOD) event developing between August and November. Over the past few months sea surface temperatures across northern Australia have cooled down considerably, one of the conditions that characterises a positive IOD.

Based upon the current state of the Pacific and Indian oceans, the Bureau's official August to October outlook for northern Australia indicates a typical dry season rainfall (August to October rainfall is commonly low and contributes only a small fraction to the annual total) except for large parts of the interior of Queensland extending into southern Northern Territory, where the chance of receiving above-average rainfall is between 30 to 40 per cent. Warmer than average days are more likely over the southern Northern Territory, southern Queensland and central

Western Australia, with warmer than average nights more likely across most of northern Australia, with the exception of the Top End, the Cape York Peninsula and Queensland's eastern coast.

If a positive IOD and an El Niño should eventuate, northern Australia can expect a late onset of the rainy season (where the rain season onset is defined as the date when a threshold of 50 mm of accumulated rainfall is reached after 1 September) and a later onset of the North Australian Monsoon. Historically, positive IOD events lead to enhanced cool and dry south-easterly winds across central and northern Australia with warmer days and cooler nights. Furthermore, the weakening of the trade winds associated with an El Niño event tend to decrease the moisture influx from the Pacific Ocean into the continent, leading to drier than normal conditions in the last quarter of the year. This is more significant over eastern Queensland, the Gulf Country and the eastern Top End.

## REGIONAL SUMMARIES

### Defining bushfire potential

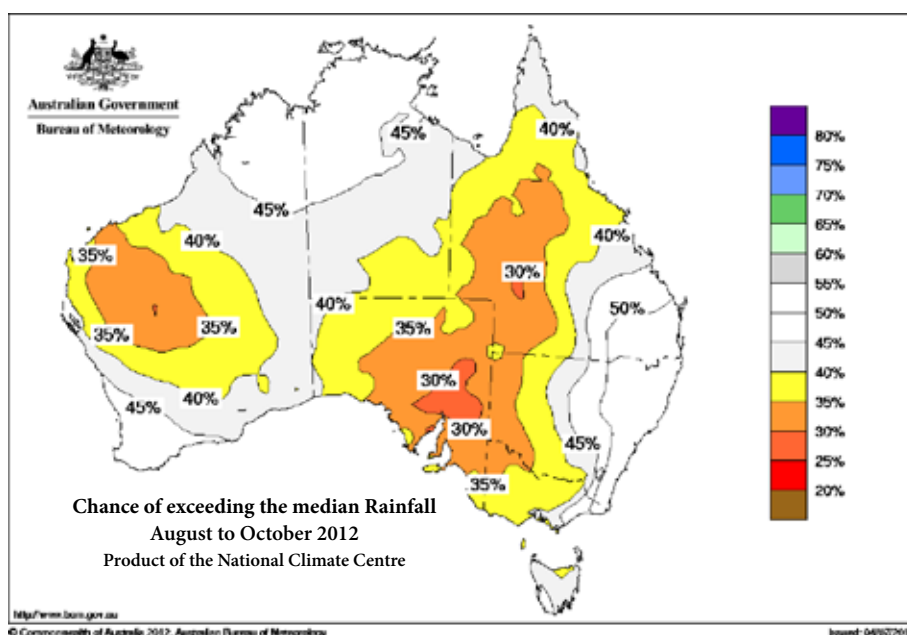
Much of northern Australia is a fire-prone landscape and it is normal for bushfires to occur each year. Bushfire potential depends on many factors, including climate and weather, fuel abundance and availability, recent fire history, and available firefighting resources. Above-normal bushfire potential is the chance of fires occurring that may be complex, protracted or could require resources beyond the local capacity.

### WESTERN AUSTRALIA

**Kimberley:** Overall, the bushfire potential for the Kimberley is average, but there are a number of areas that have above-average potential. The Kimberley area has been subject to high rainfall in the last six months and this has resulted in significant and widespread grass growth across the region. This assessment is mindful of the increased prescribed burning planned across the region, but the rainfall and consequent fuel loads are significant.

**Pilbara/Northern Goldfields:** In general, rainfall across the Pilbara has been average or above average, but less than the last calendar year. Due to a few large fires in the pastoral grass fuel areas last year, average rainfall and the fuel type, the outlook potential is for an average season, with a number of areas being above average. This is in the general area from the coast to the area west of Newman/Nullagine.

Rainfall across the rest of the Pilbara and the Northern Goldfields (mainly east of Newman) has been above average, but when considering the fuel type, load and structure, it is expected to be an average bushfire season.



### NORTHERN TERRITORY

#### Overview

There are three areas of above-average fire potential in the Northern Territory. The north-west of the Top End has increasing amounts of Gamba grass fuels and limited fire mitigation opportunities. The Gulf Region had relatively low fire impacts in 2011 followed by above-average rainfall and reduced management and mitigation capacity in 2012. The Alice Springs area extending to the south-west corner of the Northern Territory is a mix of high fuel areas unburnt in 2011 and proportions with rapid pasture recovery; especially the areas dominated by Buffel grass, which will create fire management challenges in 2012.

#### Regional summary

The south-western Top End receives reliably high wet season rainfall and the mix of tropical grasses and an expansion of Gamba grass into this area creates large tracts of high and continuous fuel loads. The large rivers, and many creeks and wet areas, restrict access for early dry season fire management. The result is most prescriptive fire management has limited effect and is later than desired. Until land managers can manage fire earlier, the area will continue to be dominated by hot and late dry season fires and the rating of above-average fire potential.

The central Gulf area of the Savannas Fire Control Region received above-average rainfall this year, and fuel accumulation is estimated at six tonnes per hectare. There have been recent changes in the management styles of the pastoral lands that have had significant fire management effects. Many stations now release staff after the mid to late dry season muster, and leave the property with caretakers that rarely have the experience, knowledge or

resources to manage bushfires. The bushfire seasonal assessment is above average – fire potential reflects the reduced capacity of the region to respond and contain bushfires.

The far western Victoria River Downs area of the Savannas Fire Control Region has higher than average fuel loads this year and an above-average fire potential. It is linked to the associated bioregion extending into Western Australia and both are expected to experience more bushfires than the surrounding fuel types.

The extensive fires in Central Australia during 2011 have reduced the fire potential across the majority of the southern Northern Territory, especially in the Tanami and Simpson deserts. The south-west corner of the Northern Territory, extending into South Australia and Western Australia, was not affected by fire in 2011 and has had sufficient rainfall to increase the fire potential to above average. The developing mitigation capacity on the APY lands is not expected to achieve sufficient outcomes in 2012 to reduce the fire potential. The area surrounding Alice Springs and connecting to the south-west Northern Territory area has a mix of fuel loads with a significant proportion that was unburnt in 2011. Within the landscape matrix are areas of productive country that received above-average rainfall after the 2011 fires to promote good pasture growth. During cool conditions, these areas will be a challenge for mitigation efforts to achieve effective management burns, but during the summer period of high fire danger they are expected to carry fires.

The remainder of the Northern Territory has a diversity of fuel types and fuel loads, including some areas left unburnt from the 2011 season. The fuel loads range from two to 11 tonnes per hectare. Despite the forecast of an El Niño and its associated late start to the wet season,



the assessment for these extensive areas is an average fire potential due to the effectiveness of the mitigation and management efforts of landholders, and strategic and opportunistic fuel reduction.

## QUEENSLAND

Queensland's bushfire season is primarily influenced by long-term and seasonal short-term climate conditions and the relationship the climate has on vegetation. A strong La Niña pattern in 2010 followed by a moderate La Niña in 2011 produced record rainfall that promoted a prolific increase in vegetation growth across the State. During January to April 2012 above-average rainfall continued to influence the vegetation growth profile.

Long-range climate models suggest that the current ENSO Neutral conditions may continue until late winter and there is a strong chance of an El Niño pattern forming during spring and into summer.

Rainfall outlook from June to August 2012 indicates more than a 60% probability of above median rainfall across most coastal and inland parts with far western inland areas having a 50% probability of median rainfall during the period. The outlook also indicates average daytime maximum temperatures, but warmer minimum temperatures.

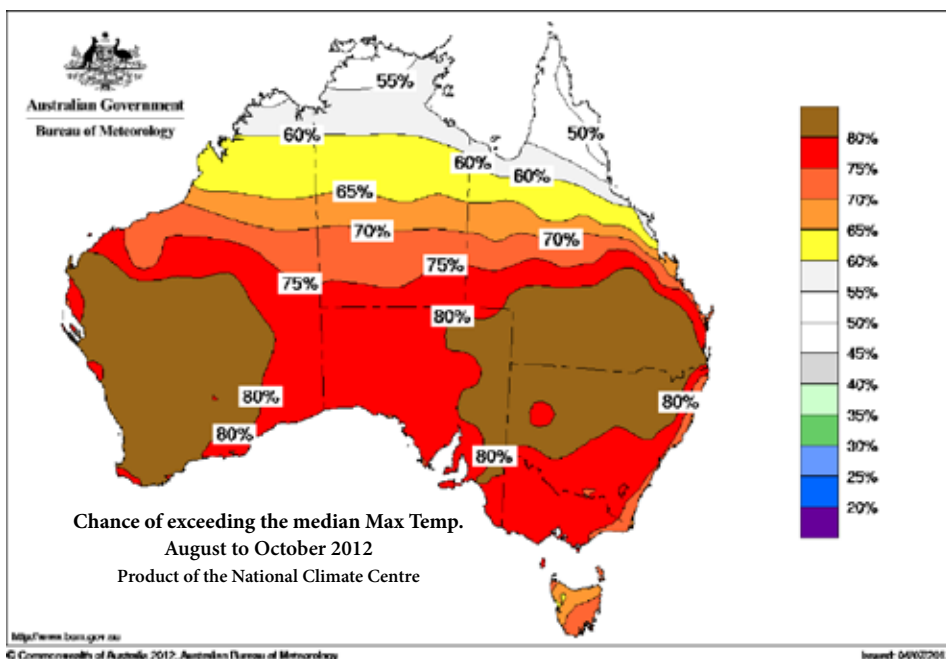
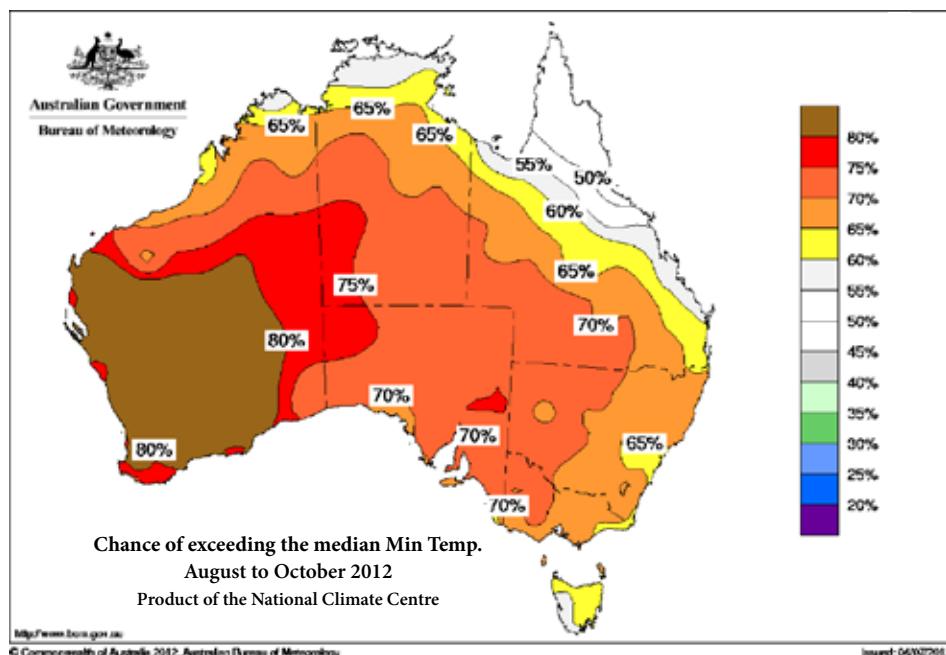
Current grassfire fuel levels throughout Queensland are considered abundant and continuous. However, the moist conditions with moist soil profiles have the fire risk as assessed as Moderate to High grassfire risk, and in forest areas with average to high fine fuel loads a Low to Moderate forest fire risk is current.

Slightly wetter than normal early winter conditions are tending to indicate a normal to slightly delayed start to the bushfire season across Northern, Central and South East Queensland. However, general vegetation conditions in the south west of the state may lead into a slightly early start to the bushfire season over a wide area.

During May large areas within the state received below average rainfall and without follow-up mid-winter rain the fire season may start abruptly as soon as conditions warm during late August.

With an El Niño pattern predicted to take affect during spring with drying conditions, the bushfire season will be extended along with the forecasted late northern monsoonal wet and the tropical thunderstorm season in southern and central Queensland.

Fast running, high intensity grassfires can be expected over most of the state, with concerns for larger fires in southern rural areas due to



the abundance and continuity of the grassland sward. Woodlands may have similar fire behaviour with a grassy understory. However, rates of spread may be slightly less.

Forest fires are expected with moderate intensities early in the bushfire season. The intensity may increase later in the season, especially if the season is prolonged. This will be due to the drying moisture profile within the forest soils and an increase of fine forest fuels, coupled with warmer temperatures and the influence of dry north-west to south-westerly winds. The area of above-average fire risk is the high grass fuel loads in central western Queensland. Low stocking levels and above-average fuel loads have the potential to increase fire intensity in this area. All other areas are considered an average fire risk.

Fire Note is published jointly by the Bushfire Cooperative Research Centre (Bushfire CRC) and the Australasian Fire and Emergency Service Authorities Council (AFAC).

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