Background briefings on emerging issues for fire managers from AFAC and Bushfire CRC.

bushfire CRC afac

FIRE NOTE

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NEW ZEALAND SEASONAL WILDFIRE ASSESSMENT 2010-11: SUMMARY

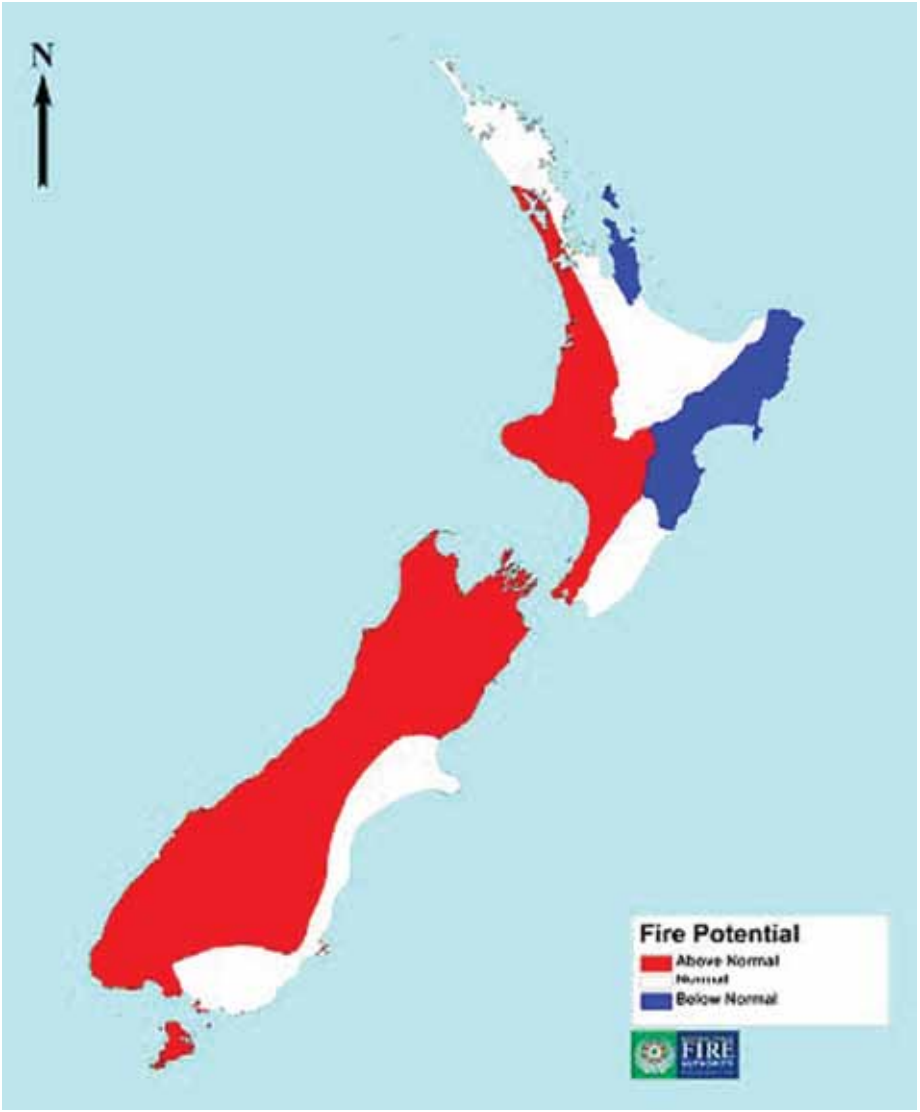
INTRODUCTION

Across New Zealand, significant areas have Above Normal Fire Potential for the wildfire season of 2010 – 11 (Figure 1).

A La Niña event became firmly established over Winter 2010 and is expected to continue through to Autumn 2011. As a consequence, the fire season in western parts of both the North and South islands will be challenging unless significantly higher than normal rains are delivered over Summer. Conversely some of the eastern parts of the North Island are expecting a less demanding fire season.

These expectations summarise the views of the attendees at the New Zealand Seasonal Wildfire Assessment Workshop, held in Christchurch on 7 December 2010. This workshop was organised by the Bushfire CRC and facilitated by Mark Chladil, of the Tasmanian Fire Service. It brought fire managers and researchers, meteorologists and climatologists together to evaluate the fire potential for the coming season. This process has been conducted by the Bushfire CRC for Australian fire seasons annually since 2006 [See Bushfire CRC *Fire Note 67*].

This assessment may surprise people who associate La Niña conditions with rain, not understanding that significant fires may happen before season-ending rains occur. Fire Potential depends on multiple factors. The stage is set by the antecedent rainfall. This is important for estimating the fuel amounts and growth, as well as determining the timing of the drying or curing of the fuel. The climate outlook for the next few months is a crucial factor. Of particular interest are the future tendencies of equatorial Pacific sea surface temperature associated with the El Niño-Southern Oscillation, an important climate driver over New Zealand. Other, less quantifiable factors, such as the distribution and readiness of fire-fighting resources, are also considered. The participants at the workshop discussed these factors to obtain the consensus outlook presented here. This Fire Note presents a brief summary of the workshop.

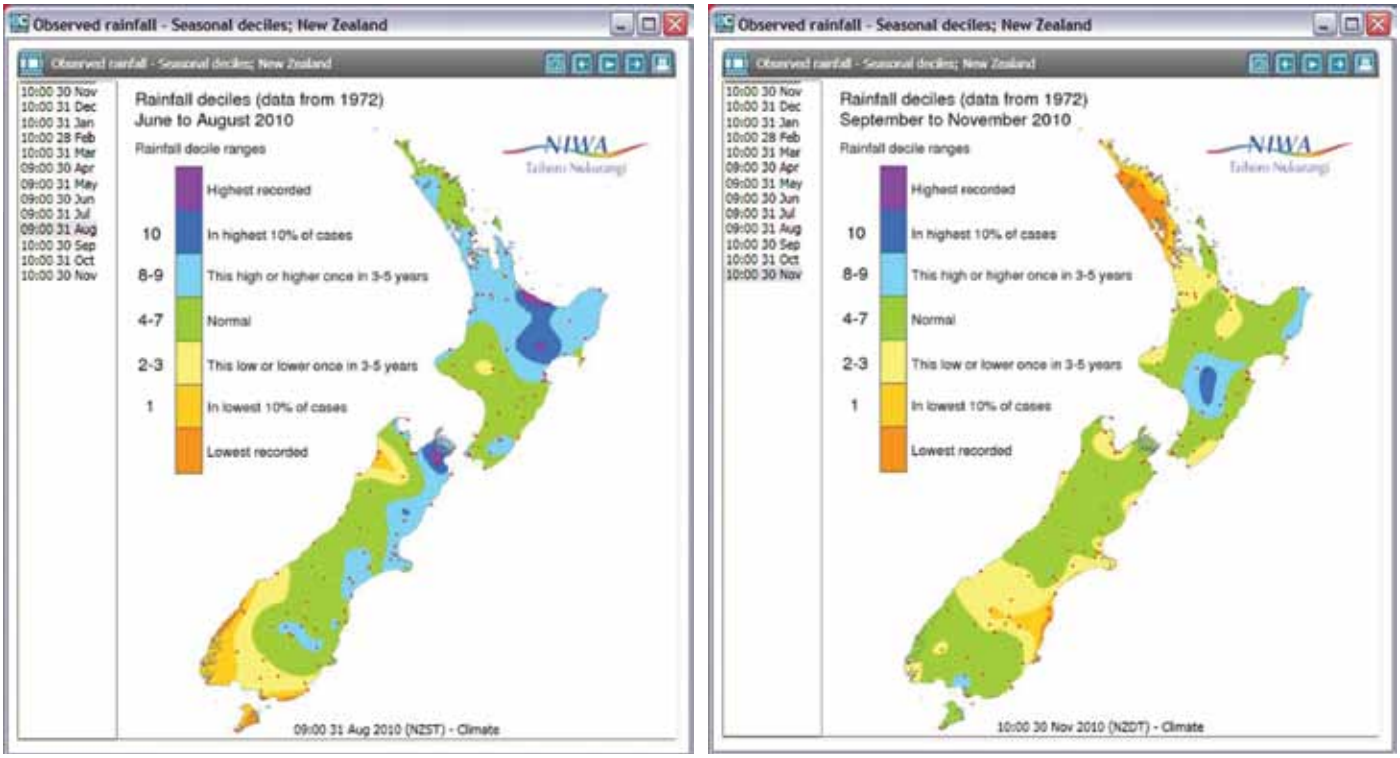


▲ **Figure 1:** National outlook for Fire Potential for the season 2010 – 2011.

ANTECEDENT CONDITIONS

Winter (June – August) 2010 was characterised by more easterly winds than usual over southern and central districts. This resulted in wet conditions in the northeast of both islands, but below normal rainfall in the southwest of New Zealand. It was extremely wet in the Bay of Plenty, Marlborough, north Canterbury and eastern Otago, with well above normal winter rainfalls (more than 150 percent of normal in some cases).

In September rainfall in the far south and over much of central New Zealand was higher than normal, but in October western areas of the North Island, and much of the South Island were drier than usual. November brought



▲ **Figure 2:** Rainfall anomaly deciles (relative to 30 year climate normal) for winter (left) and spring (right) .

DEFINITION

Fire Potential: The chance of a fire or number of fires occurring of such size, complexity or impact that requires resources (from both a pre-emptive management and suppression capability) beyond the area of fire origin. Fire Potential depends on many factors including weather and climate, fuel abundance and availability, recent fire history and fire management resources available in an area.

record high temperatures over much of the South Island and dry conditions to much of New Zealand apart from central Canterbury, eastern Otago and Fiordland. Early spring brought above average rains (Figure 2) to a number of areas promoting a surge of spring growth. The resultant conditions for the lead in to summer produced significant areas with increased soil moisture deficits (Figure 3).

EXPECTED CLIMATE OUTLOOK

A moderate to strong La Niña in the tropical Pacific is expected to persist through to Autumn of 2011. Summer (December to February) temperatures are likely to be average or above average for the time of year, for all districts.

Summer rainfall is likely to be below normal in the western South Island, normal or below normal in the north of the South Island, normal or above normal in the north and east of the North Island, and normal elsewhere.

◀ Fire at Port Underwood, Marlborough Sounds, South Island, New Zealand, February 2010.

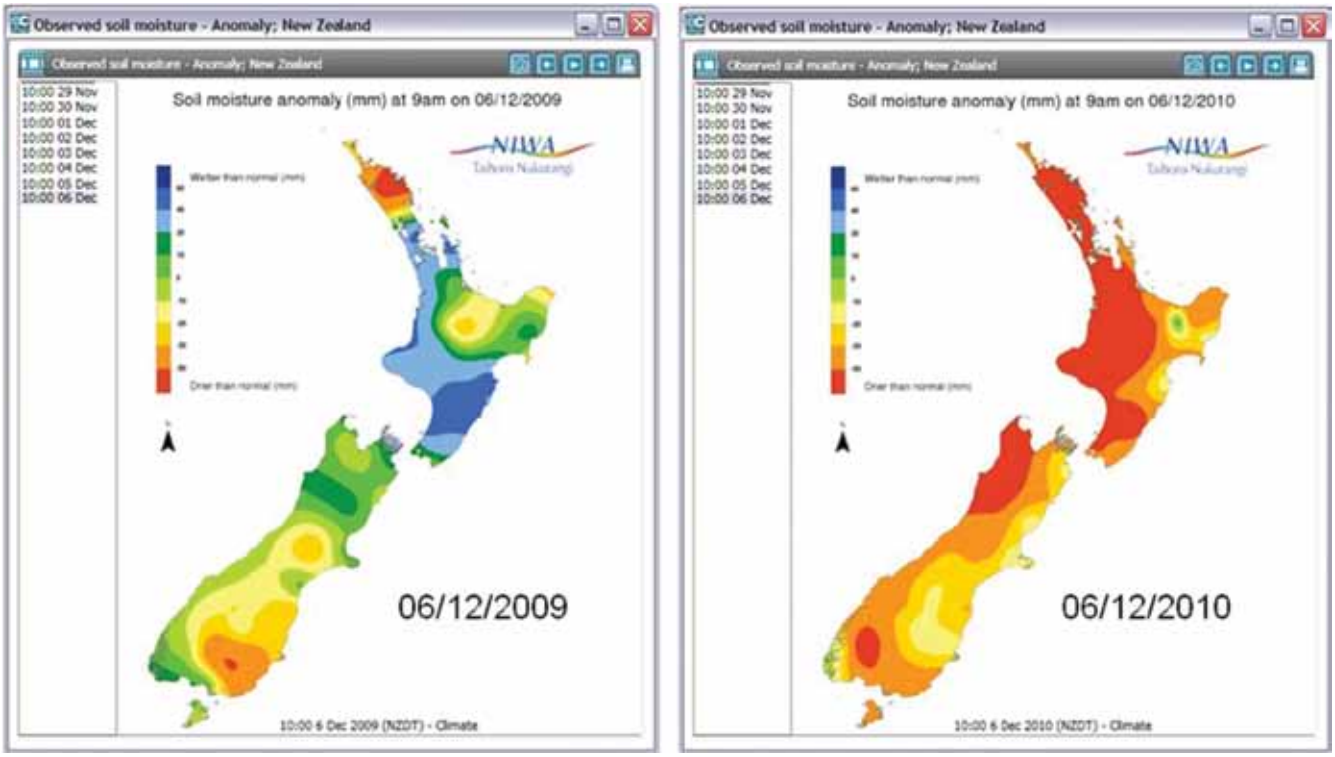
Lower wind speeds than normal are expected during La Nina events.

Although rainfall is likely to be normal or above normal in the north and east of the North Island, summer soil moisture levels and river flows are likely to be normal or below normal in those regions, because of the already dry conditions. River flows and soil moisture levels are very likely to be below normal in the west and south of the South Island, and are likely to be near normal or below normal in all other regions.

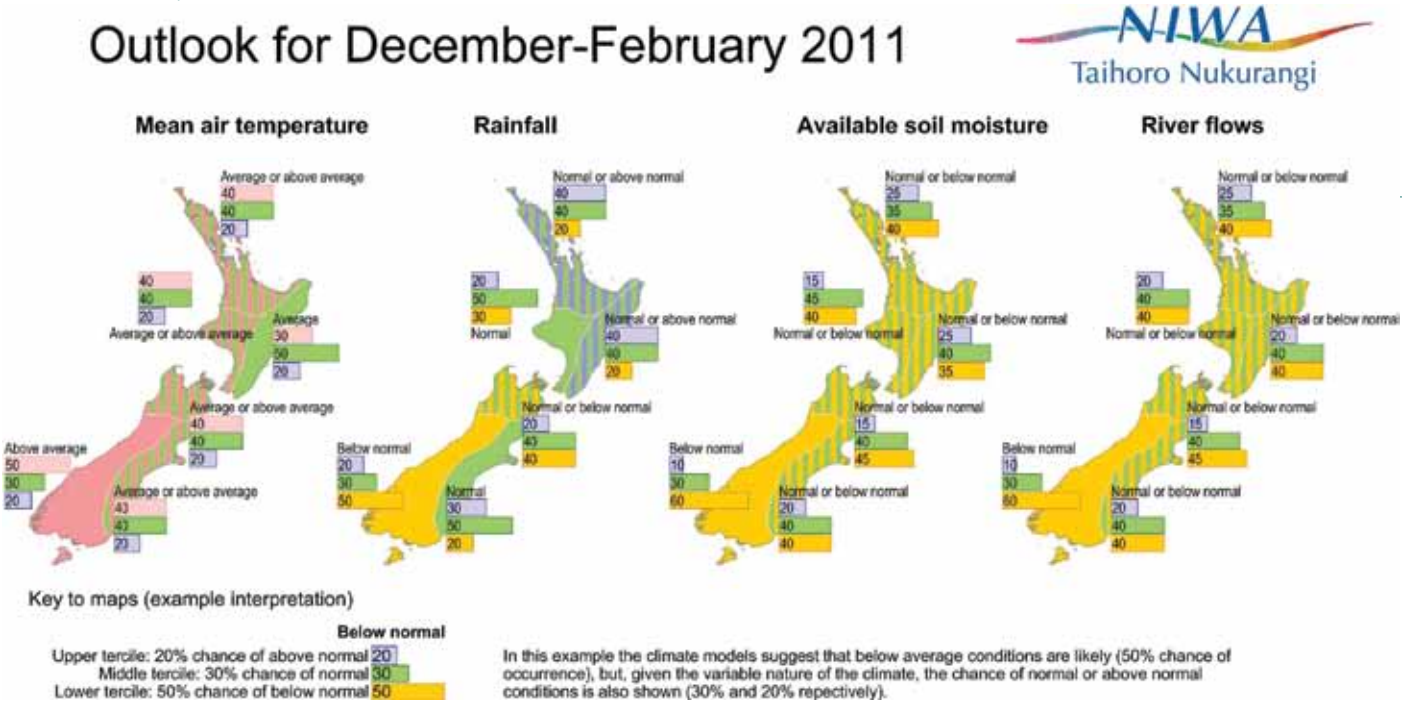
REGIONAL SUMMARIES

Northern North Island

Due to more frequent easterly winds and average to above average rainfall and higher humidity, Fire Potential over most of this region is likely to be Normal to Below Normal.



▲ **Figure 3:** Soil moisture anomalies as of the 6 December: the left hand panel shows the situation at this date in 2009, and the right hand panel the situation this year.



▲ **Figure 4:** Seasonal Climate Outlook for Temperature, Rainfall, Available Soil Moisture and River Flows over the period December 2010 to February 2011.

Exceptions are western areas of Waikato and Northland where the currently elevated fire danger has the potential to remain above normal. On the Coromandel Peninsula conditions are already Normal to Below Normal Fire Potential and not expected to increase.

Central North Island

Above average annual rainfall was negated by above average temperatures and evaporation leading to drier than normal heavy fuels by mid November. The more easterly weather pattern associated with the La Niña event will bring warm humid weather with occasional heavy rain events. There is an area of Above Normal Fire potential in the forest areas from Rotoehu, Kawerau, Galatea and across the Central Plateau to Taupo. The grassland areas of the coastal region are likely to have increased fire potential during January and February 2011.

Eastern North Island

The La Niña event is expected to deliver higher than normal rainfalls and the assessed Fire Potential is Below Normal. Coastal grassland areas and sites on shallow and sandy soils will be subject to periods of increased fire danger during summer.

Lower North Island (Taranaki, Manawatu, Wairarapa and Wellington)

For the region west of the main ranges from Taranaki to Wellington, Fire Potential is likely to be Normal to Above Normal, based on the La Niña event bringing more dry easterly winds and continuing below normal

Fire at Port Underwood, New Zealand.

rainfall. These conditions will exacerbate the existing severe soil moisture deficits. For areas east of the main divide from Tararua to Wairarapa, the Fire Potential is expected to be Normal due to the likelihood of average to above average rainfall.

Nelson/ Marlborough
Rainfall is predicted to be normal or below normal. There is already a considerable soil moisture deficit over the entire area which is especially severe in Nelson. There are heavy fuels in Nelson due to forest harvesting. In south Marlborough there are considerable grass fuels due to a damp Spring and low stocking rates (from the past drought). The current trends are similar to the 2000-01 fire season (the Wither Hills fire). In high wind weather events fire management and containment will be difficult. Fire Potential is assessed to be Above Normal, mostly due to the very high fuel loads.

Canterbury
Areas of the Canterbury High Country, including the eastern foothills and large areas of North Canterbury are likely to receive below normal rainfall and above normal temperatures. This will result in very dry conditions prevailing over the next two to three months with fire danger conditions in the Very High to Extreme ranges for extended periods producing Above Normal Fire Potential.

Other areas of Canterbury including the plains, coastal areas and the Banks Peninsula are likely to receive about normal rainfall and temperatures. This will produce near normal fire danger conditions and Normal Fire Potential.

West Coast South Island
Areas of the West Coast are likely to receive significantly lower than normal rainfalls with higher than normal temperatures. This will result in considerably drier conditions than normal. Fires are likely to be larger and more difficult to extinguish in medium to heavy fuels. The West Coast is assessed to have Above Normal Fire Potential.

Otago/ Southland
The very dry conditions currently being experienced in Wanaka and Alexandra are expected to progressively expand to encompass all of Central Otago by mid to late January providing Above Normal Fire Potential. The western south coast is expected to experience below normal rainfall with long dry periods resulting in Above Normal Fire Potential.

The south east coast is expected to have below normal rainfall with seasonal vegetation curing and some easterly rainfalls producing Normal Fire Potential.

PARTICIPATING ORGANISATIONS

Bushfire CRC, National Rural Fire Authority, Department of Conservation, National Institute of Water and Atmospheric Research (NIWA), MetService, Scion, New Zealand Fire Service Data and Spatial Intelligence Group, Pumicelands Rural Fire Authority, Tasmania Fire Service.

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AFAC is the peak representative body for fire, emergency services and land management agencies in the Australasia region. It was established in 1993 and has 35 full and 10 affiliate member organisations.