New Zealand Seasonal Fire Danger Outlook 2017/18

ISSUE: North Island, December 2017

Current fire danger situation & outlook:

The fire season has arrived for the lower North Island, which is experiencing an increase in fire activity. Hastings, Central Hawkes Bay, Wairarapa, Wellington, and coastal Wanganui and Manawatu localities are experiencing, on average, High fire weather severity. Low fire danger and severity exists elsewhere across the north (Figure 1 & 5).

FWI System codes and indices for the areas listed above are indicating elevated fuel dryness, with High to Extreme BUI, DC, DMC and FFMC values (Figures 5-6 & 7-8). The elevated codes and indices are the result of continued warm temperatures and extended dry periods in these areas. This means that a fire could start easily and be difficult to suppress (in terms of mop-up). However, areas of low grass curing (green) would help suppression efforts by slowing or stopping a spreading fire.

The soil moisture maps reflect this, and shows further dryness for many other regions across the North Island (Figure 3 & 4). Dry soils are apparent for the west coast of Northland and Auckland, Gisborne, and Hawkes Bay, Wairarapa, Wellington, Wanganui and Manawatu regions (Figure 3). This is also reflected in the soil moisture anomaly map (Figure 4), where soils are drier than normal for much of the North Island. Soils are normal to wetter than normal for the Central North Island (Taupo), inland Hastings, Thames-Coromandel, northern Gisborne and Northland, due to these regions experiencing regular rain showers over the past few weeks associated with afternoon convective heating.

The El Niño-Southern Oscillation (ENSO) state has recently been declared as La Niña. International climate models suggest La Niña thresholds will likely be met in December 2017 through until at least February (possibly into April) 2018. Historically, late-developing and weak La Niña events have had mixed impacts on rainfall and temperature for New Zealand. During a La Niña, north-easterly and easterly winds are typically more frequent, warmer than normal temperatures are experienced, and rainfall is reduced in the south-west of the South Island.

The climate outlook for the next three months is for high pressure to continue to dominate our weather patterns. Temperatures are forecast to be above average for all regions. It is anticipated that the northern North Island will typically experience wetter conditions than usual.

Looking ahead, December is expected to have well above average temperatures. It will likely be drier than usual for most regions, but a change to more reliable rainfall in the north and east of the North Island by mid-month could occur. As a result, eastern coastal areas will likely experience an increase in fire activity as the fire dangers and severity continue to climb into Very High and Extreme (Figures 1 & 5). The fire season years of 2016/17, 2013/14, 2012/13 & 2008/09 are potentially good indicators for what to expect this coming fire season (Figure 9). However, as with this time last year, any major rain events will reduce the fire danger and severity to Low.

If conditions continue to be warm and dry, the areas to watch are the east coast and lower North Island, especially parts of Gisborne, Hawkes Bay, Wairarapa, Wellington, Manawatu, Rangitikei and Wanganui. These areas could start to experience increased fire activity, especially as grasslands start to dry out.

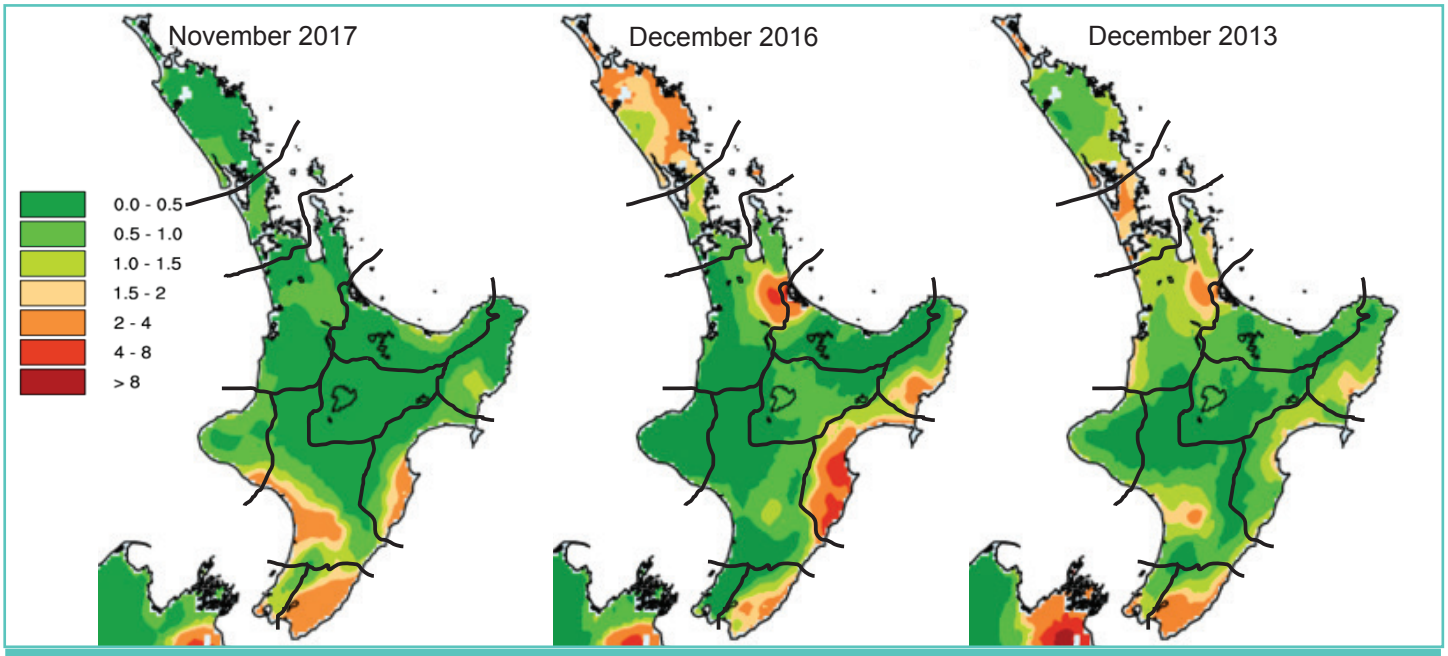

Figure 1. Monthly average Severity Rating for: current (left), last year (middle), and the 2013/14 Neutral to weak La Nina year (right).

EXPECTED CLIMATE OUTLOOK:

The ENSO Outlook has been raised from Neutral to La Niña. The tropical Pacific Ocean and overlying atmosphere have reached La Niña thresholds. International agencies have indicated that La Niña thresholds have been or are close to being met. International climate models suggest La Niña will likely continue through until at least April 2018. These models suggest that if an event does occur this year, it is likely to be weak and short-lived. It should be noted that the impacts of La Niña are not always proportional to its intensity. The models then predict a transition back to ENSO neutral conditions over the March – May 2018 period (72% chance).

Tropical Cyclone season (November – April)

The southern hemisphere Tropical Cyclone season is here. The outlook is for a near-normal season, but with increased activity in the west, and reduced activity in the east. If La Niña conditions develop, they are likely to result in a significant change from normal tropical cyclone activity in many Pacific Islands. The risk for New Zealand is normal to above normal.

Roughly 10 tropical cyclones form in the South Pacific between November and April each year, and on average one of these will have an impact on New Zeeland in the form of an ex-tropical cyclone. If an ex-tropical cyclone comes close to the country, it has equal probability of passing east or west of Auckland and the North Island. An ex-tropical cyclone is a large-scale low pressure system that can result in significant rainfall, damaging winds and coastal damage. This would reduce fire dangers significantly.

This month: December 2017

Across the country, December is expected to have well above average temperatures. High pressures are expected to continue to favour southern and central New Zealand. It will likely be drier than usual for most regions, but we could see a change to more reliable rainfall in the north and east of the North Island by mid-month.

Below-average December rainfall is forecast across regions in the west and south of the North Island. Near-normal rainfall is signalled in the north and east of the North Island, due to frequent northeasterly wind flows.

Further ahead: December 2017 – February 2018

New Zealand is expected to be dominated by higher pressure than normal to the south and southeast of the country, and lower pressure than normal to the north. This pressure pattern is expected to be associated with easterly to northeasterly flow anomalies, a pattern which is consistent with regional conditions typically observed during La Niña events.

For the next three months (Dec 2017 – Feb 2018): Temperatures are forecast to be above average for all North island regions (60% to 70% chance).

Rainfall totals are most likely (45% chance) to be above normal in the north of the North Island. Summer rainfall is about equally likely to be near normal (35% chance) or above normal (40% chance) for the east of the North Island. For the west of the North island, rainfall amounts are most likely to be in the near normal range (45% chance).

Soil moisture levels and river flows are most likely to be above normal (40% chance) in the north of the North Island, and to be near normal (40% chance) in the west of the North Island. Soil moisture levels and river flows are equally likely to be near normal (35% chance) or above normal (35% chance) in the east of the North Island.

Breakdown (Figure 2):

Temperatures are most likely to be:

- above average (60% chance) for Northland, Auckland, Waikato & Bay of Plenty.
- above average (65% chance) for Central North Island, Taranaki, Whanganui, Manawatu, Wellington, Gisborne, Hawkes Bay & Wairarapa.

Rainfall is most likely to be:

- above normal (45% chance) for Northland, Auckland, Waikato, Bay of Plenty, Central North Island, Taranaki, Whanganui, Manawatu & Wellington.
- near normal (40% chance) or above normal (35% chance). However, rainfall amounts may be elevated for northern areas (e.g. Gisborne) and reduced for southern areas (e.g. Wairarapa).

Soil moistures are most likely to be:

- above normal (40% chance) for Northland, Auckland, Waikato, Bay of Plenty, Central North Island, Taranaki, Whanganui, Manawatu &Wellington.
- near normal or above normal range (35% chance) for Gisborne, Hawkes Bay & Wairarapa.

Last month: November 2017

Looking back, November was a month of extremes. Temperatures swung from unusually warm at the start, to cold, then back to warm by the end of the month. Western areas of both Islands saw unsettled westerlies and rainfall for the first 10 days of the month. After that, blocking high pressure systems dominated our weather, resulting in an extended dry run for most regions.

It was a very dry November for many areas of New Zealand: Wellington and Masterton had their 2nd driest November on record, and Napier had its 3rd driest November.

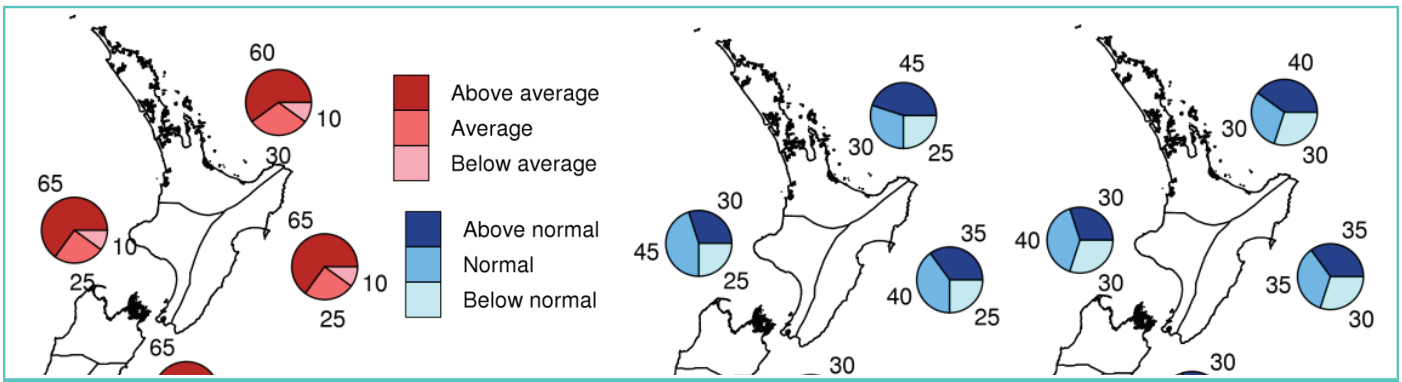

Figure 2. Outlook for Dec 2017- Feb 2018: air temperature (left), rainfall (middle), available soil moisture (right). Source: NIWA.

What does Neutral mean for New Zealand?

The El Niño-Southern Oscillation (ENSO) is a key natural cycle influencing New Zealand's climate. It operates over the Pacific Ocean and beyond, and causes fluctuations in the prevailing trade winds and in the strength of the subtropical high-pressure belt. Although ENSO events have an important influence on New Zealand's climate, they still only account for less than 25% of the year to year variance in seasonal rainfall and temperature.

When neither El Niño nor La Niña are present, weather patterns are said to be in a "neutral" or normal state. Neutral conditions encourage far more variability in weather patterns for New Zealand, whereas El Niño or La Niña tend to have more predictable patterns.

What would La Niña mean for New Zealand?

La Niña tends to warm the ocean surrounding New Zealand, which encourages frequent lows and sub-tropical storms for the north, occasionally stretching down as far as Canterbury. During a La Niña, north-easterly and easterly winds are more frequent, resulting in the risk of heavy rain and flooding. New Zealand is typically warmer than average during a La Niña, although there are regional and seasonal exceptions.

La Niña typically brings more storms, clouds, humidity and rain to the north and east of New Zealand. For the North Island, this means northern and eastern parts are wetter than normal. During a La Niña summer, anticyclones are more frequent, bringing dry weather. Outbreaks of warm northeast winds bring rain to areas in the north and east of the North Island, especially Gisborne, Coromandel and Northland.

It's important to note that ENSO events have an important influence on New Zealand's climate, but account for less than 25% of seasonal rainfall and temperatures. With a weak La Niña expected, it means our 'local' climate players (the Southern Ocean southerlies and Tasman Sea lows) will continue to take turns ruling our weather. This is a good reminder that local climate patterns (blocking Highs over or near New Zealand, Lows over the Tasman Sea or to the north of the country, and the southern ocean storms) generally 'trump' climate patterns such as El Niño and La Niña.

Grass growth:

As we transition into early summer, now is the time to be prepared, as the potential for a fire to ignite and spread is increased as the curing process kicks off in these fuels (formation of seed heads and loss of seeds).

With rising temperatures, strong winds grasslands will be drying out. Some areas would have experienced abundant grass growth over the last month, increasing the fuel loading. Some landscapes may already start to form a mixture of green and brown as grasses begin the curing phase. Areas experiencing a lack of rainfall for several weeks will likely have a cured landscape already.

The finer details:

Typically, grasses undergo curing in late spring/early summer, where the plant dies or becomes dormant following flowering and seed drop. As grasses cure, the amount of dead material increases, heightening the potential for fire to ignite and spread. When grasses cure and fuel moisture content decreases, there is less heat required to ignite the grass. As a result, more heat is released as it combusts. Burning under these conditions can produce large to very high flame heights (2 m+) and fires can spread quickly, be very intense and much more difficult to suppress.

In areas that are still favouring grass growth (mild temperatures and high soil moistures), they will typically remain green lush landscapes. Normally, if a fire started in these fuels, fire spread would be difficult. Any burning will produce small flame heights and low intensities for easy suppression. However, caution should be taken for some areas, as the presence of dead matted material from the previous season's growth (thatch) can contribute to the ease of a fire starting and spreading. This material is often hidden underneath lush green grass that appears to have low curing (30 - 50%). However, thatch can increase the ability of grass fuels to carry and sustain a fire. These fires will typically produce small flame heights and spread in a patchy manner.

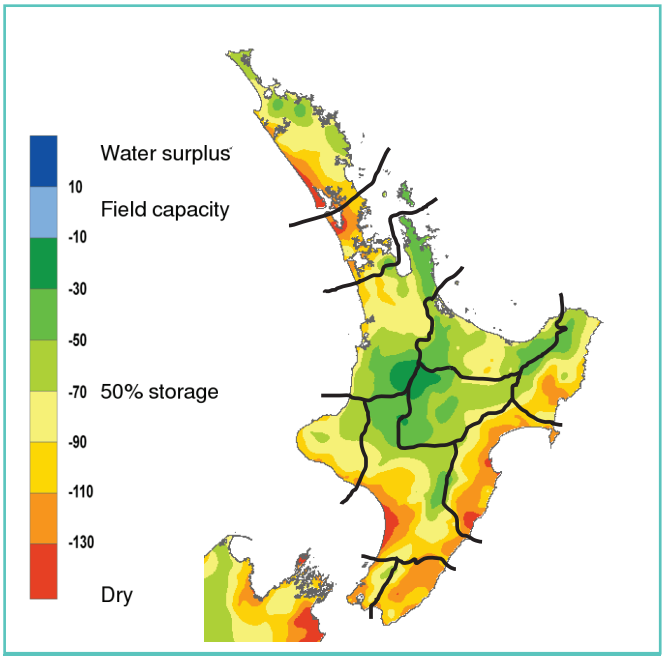

Figure 3. Soil moisture deficits as of 3011/2017.
Source: NIWA.

Note: Soil moisture deficit means the amount of water needed to bring the soil moisture content back to field capacity, which is the maximum amount of water the soil can hold.

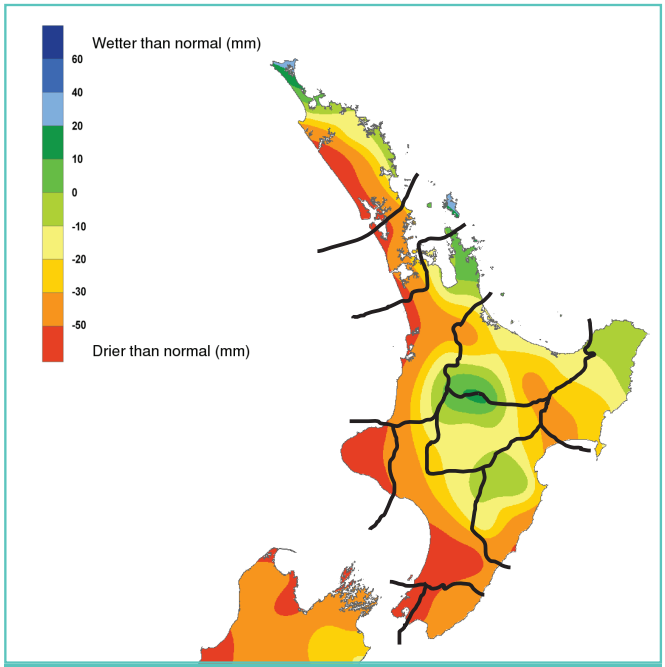

Figure 4. Soil moisture anomaly as of 30/11/2017.
Source: NIWA.

Note: Soil moisture anomaly means the difference between the historical normal soil moisture deficit (or surplus) for a given time of year and actual soil moisture deficits.

Background info

The intention of these monthly outlooks is to provide a heads up on current and potential fire danger for the North and South Islands. This is not a detailed fire seasonal outlook for specific localities, nor does it summarise fire potential (which depends on fuel conditions (i.e. grass curing), risks of ignitions, recent fire history and fire management resources available in an area as well as weather and climate).

It should be used as a prompt for local and regional discussions/debates on fire potential, and where things are at, where it is heading, and to drive awareness about what this might mean in your patch and for your neighbours. Now is the chance to carry out your pre-planning if you haven't done so already.

Fine Fuel Moisture Code (FFMC)

An indicator of the relevant ease of ignition and flammability of fine fuels.

0 - 74	Difficult
75 - 84	Moderately easy
85 - 88	Easy
89 - 91	Very easy
92 +	Extreme easy

Duff Moisture Code (DMC) A rating of the average moisture content of loosely compacted organic soil layers (duff/humus) of moderate depth, and medium-sized woody material

0 - 10	Little mopup needs
11 - 20	Moderate
21 - 30	Difficult
31 - 40	Difficult & extended
41 +	Difficult & extensive

Drought Code (DC) A rating of the average moisture content of deep, compact, organic soil layers, and a useful indicator of seasonal drought effects on forest fuels and amount of smouldering in deep duff layers and large logs.

0 - 100	Little mopup needs
101 - 175	Moderate
176 - 250	Difficult
251 - 300	Difficult & extended
301 +	Difficult & extensive

Buildup Index (BUI)

Combines the DMC and DC, and represents the total amount of fuel available for combustion.

0 - 15	Easy control
16 - 30	Not difficult
31 - 45	Difficult
46 - 59	Very difficult
60 +	Extremely difficult

Initial Spread Index (ISI) Combines the effect of wind speed and the FFMC, providing a numerical rating of potential fire spread rate.

0 - 3	Slow rate of spread
4 - 7	Moderate fast
8 - 12	Fast
13 - 15	Very fast
16 +	Extremely fast

Fire Weather Index (FWI)

Combines the ISI and BUI to indicate the potential head fire intensity of a spreading fire (on level terrain).

0 - 5	Low fire intensity
6 - 12	Moderate
13 - 20	High
21 - 29	Very High
30 +	Extreme

Daily Severity Rating (DSR) A numerical rating of the daily fire weather severity at a particular station, based on the FWI. It indicates the increasing amount of work and difficulty of controlling a fire as fire intensity increases. The DSR can be averaged over any period to provide monthly or seasonal severity ratings.

0 - 1	Low fire behaviour potential
1 - 3	Moderate fire potential
3 - 7	High to very high fire potential
7 +	Extreme fire behaviour potential

Monthly Severity Rating (MSR) is the average of the DSR values over the month. DSR and MSR captures the effects of both wind and fuel dryness on potential fire intensity, and therefore control difficulty and the amount of work required to suppress a fire. It allows for comparison of the severity of fire weather from one year to another.

Acknowledgements:

Fire Danger interpretation was from information gathered from the Average Monthly Maps for: Severity Rating, FWI, BUI, ISI, DC, DMC, FFMC. These maps were obtained from the National Rural Fire Authority Fire Weather System powered by Eco Connect.

Information on the Expected Climate Outlook was gathered from:

- MetService, Rural Monthly outlooks: www.metservice.com/rural/monthly-outlook
- NIWA, Seasonal Climate outlook: www.niwa.co.nz/climate/sco
- Australian Bureau of Meteorology Climate outlooks http://www.bom.gov.au/climate/ahead/?ref=ftr

Front Cover Image:
2017 Broken River Fire, Canterbury (Veronica Clifford, Scion).

If you are keen to submit a weather and fire related photo that will appear on the front page, please email:

- a high resolution image(s)
- with details on the location and the photographer's name and organisation.
- to: Veronica.Clifford@scionresearch.com

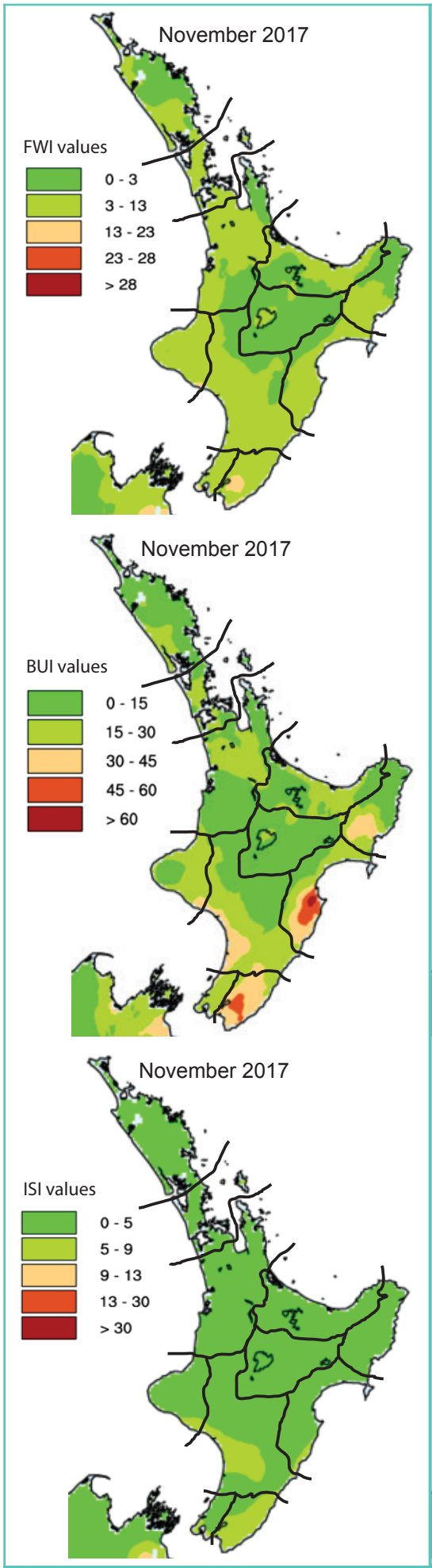

Figure 5. Current Monthly Average for the: Fire Weather Index (top), Buildup Index (middle) and Initial Spread Index (below).

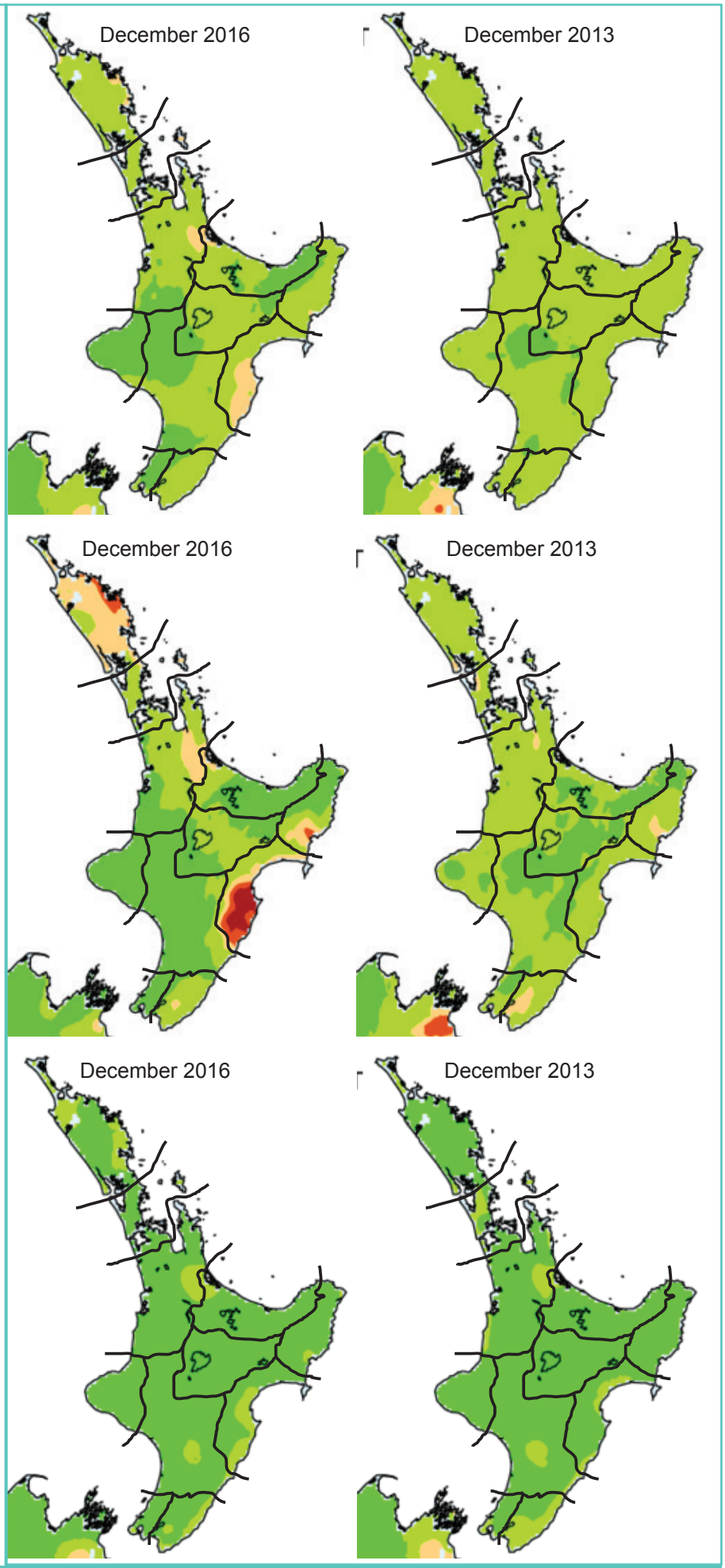

Figure 6. Average Monthly values of: Fire Weather Index (top), Buildup Index (middle) and Initial Spread Index (below); for the previous year (left) and during the 2013/14 Neutral year followed by a weak La Niña year (right).

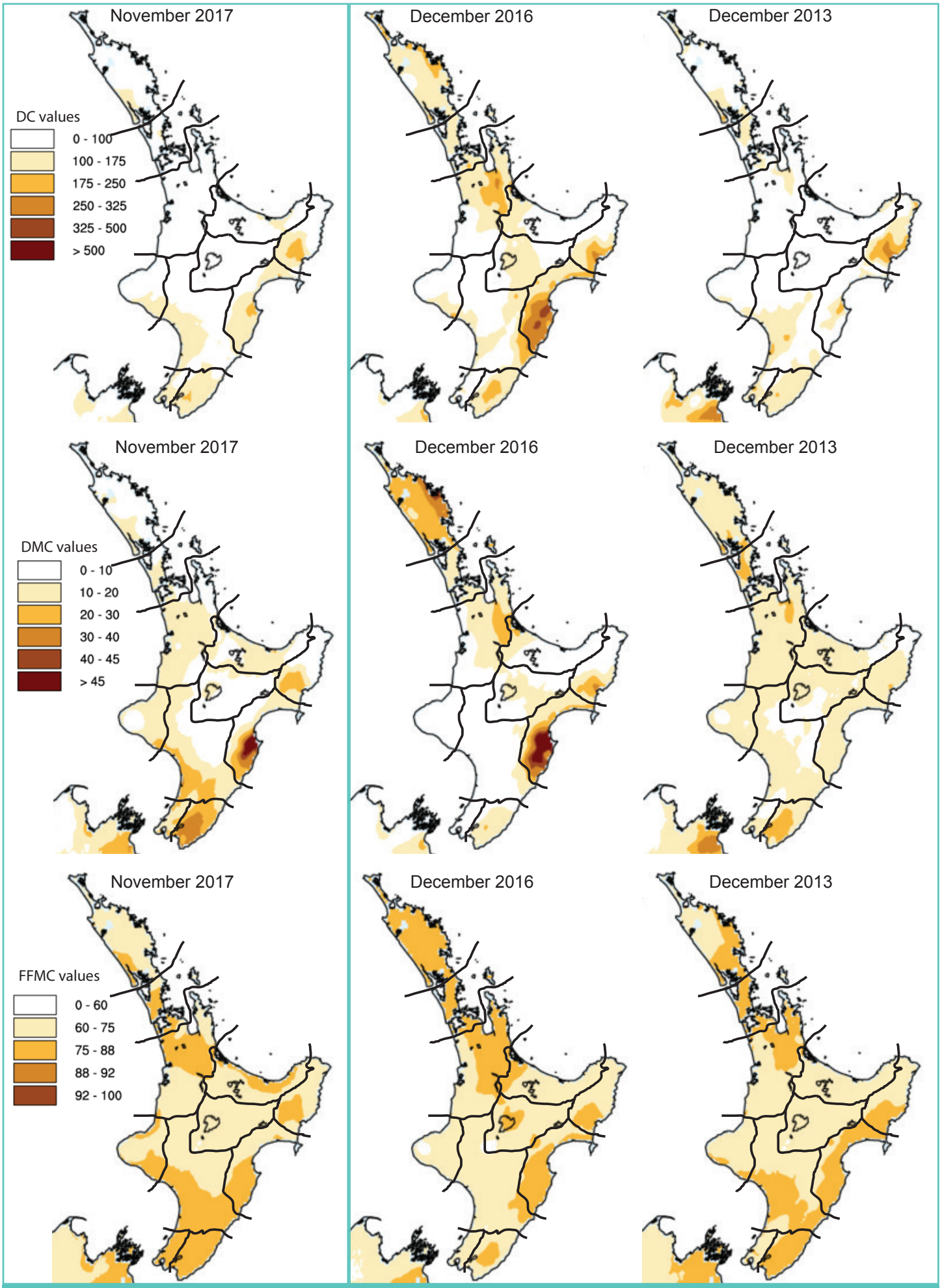

Figure 7. Current monthly average for the: Drought Code (top), Duff Moisture Code (middle) and the Fine Fuel Moisture Code (below). Average monthly values of: Drought Code (top), Duff Moisture Code (middle) and Fine Fuel Moisture Code (below); for the previous year and during the 2011/12 weak La Niña year.

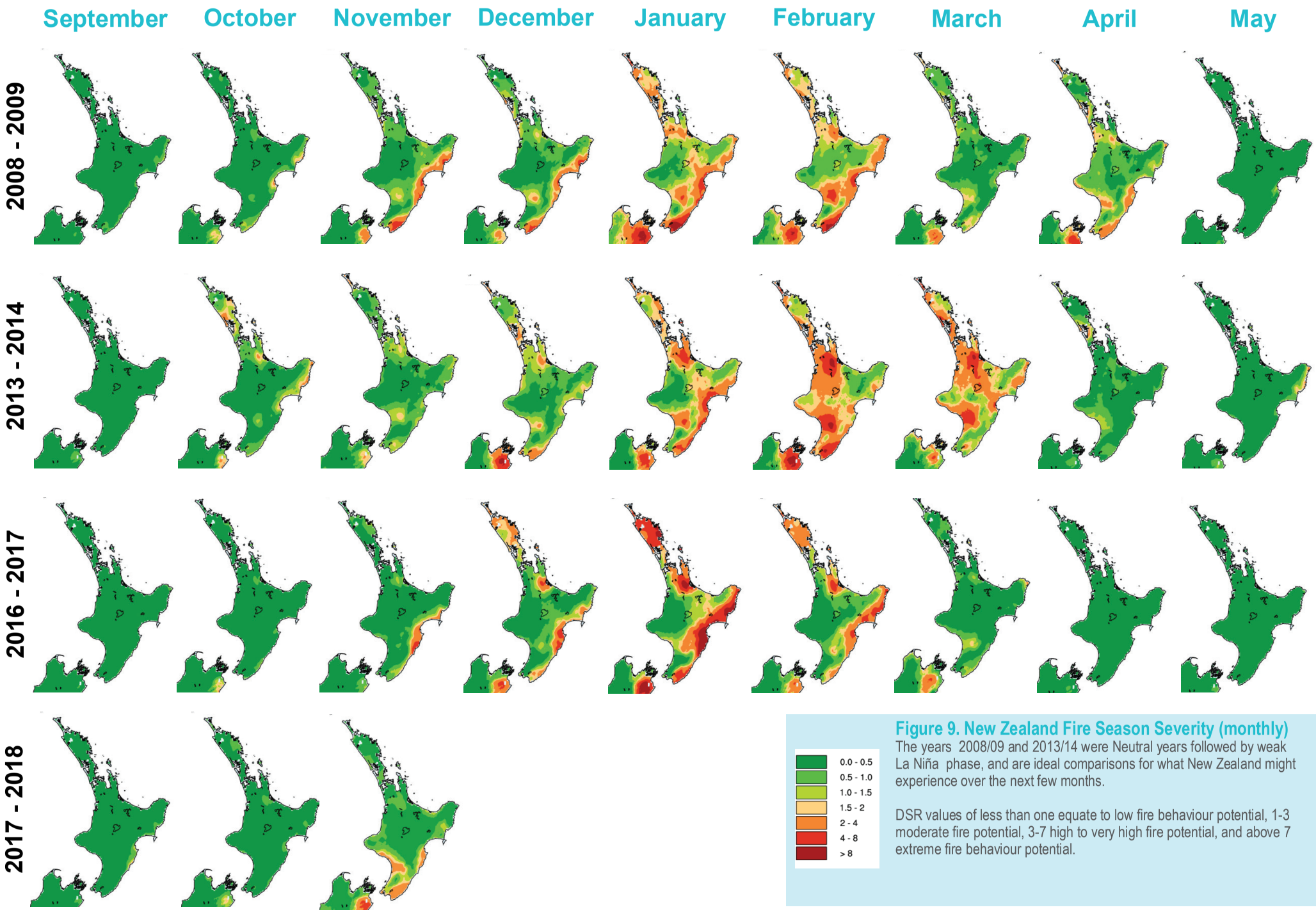

Figure 9. New Zealand Fire Season Severity (monthly)

The years 2008/09 and 2013/14 were Neutral years followed by weak La Niña phase, and are ideal comparisons for what New Zealand might experience over the next few months.

DSR values of less than one equate to low fire behaviour potential, 1-3 moderate fire potential, 3-7 high to very high fire potential, and above 7 extreme fire behaviour potential.

Tracking of trends in BUI, DC and CDSR:

Comparisons of fire dangers for individual indicator stations for different regions are shown overleaf due to increasing fire activity and an increasing likelihood for fire danger and severity across the country. This is in tabular format.

Trends for Drought Code (DC), Buildup Index (BUI) and Cumulative Daily Severity Rating (CDSR) are provided for all stations in a PDF format. For those who are interested in tracking fire season trends for all your weather stations on a more frequent basis (as opposed to the monthly analysis done here), you can download the summary PDF graphs and Excel sheets, and R scripts (to make the pdfs) using the link on the right: (**or click here**)

Link: https://www.dropbox.com/sh/1qy0b1rauv0t6g4/AAC4ziYCv9FUP6a5o7R-HHjna?dl=0

The more detailed regional outlooks highlight where Buildup Index (BUI), Drought Code (DC) and Cumulative Daily Severity Rating (CDSR) values sit in comparison with previous fire seasons. The graphs display:

- Bold red line is the current fire season
- Bold black line is the long-term average
- Light grey shaded areas indicate the range based on historical max and mins
- We've also colour coded the 2013/14 Neutral year followed by a weak La Niña season blue.

Northern North Island:

Northland

Soil moisture:

- Soils across the region are not significantly dry, and are slightly wetter in the north, and drier on the Kaipara coast (Figure 3).
- This is reflected in the soil moisture anomaly map (Figure 4), where the east coast around Whangarei and the Far North are wetter than normal. Conversely, the west coast of the Far North and Kaipara districts are drier than normal.

Fire weather codes and indices:

- Stations to watch are: Dargaville
- However, as with this time last year, any major rain events will provide some added relief.

- Current BUIs across the region range between 10 to 45, indicating that heavy and medium fuels are becoming available for combustion and the difficulty of control will generally be moderate to difficult.
- Maximum BUIs typically peak during February, and can range between 110 and 200.
- BUIs across the region are below the average for this time of the year.

- Current DC values are around the 100 mark, indicating that there is little sign of drought and low risk of extended mop up needs in heavy fuels.
- DCs trends are mixed across the region, either above, at, or below the historical average.
- Maximum DC values typically peak during February or March.
-
- CDSR values across the region are below average, and those seen during the 2013/14 weak La Niña fire season.
- Current fire severity and danger for this region are, on average, Low to Moderate (Figure 1 & 5).
- With forecasted warmer temperatures and also above normal rainfall, expect fire dangers and fire climate severity to remain generally low, but climb as we approach peak summer season in January.

Station Name	BUI trends		DC trends		CDSR trends	
	vs. average	vs. 2013/14	**vs. average**	vs. 2013/14	**vs. average**	vs. 2013/14
Far North						
Aupouri Peninsula raws	below	below	below	below	well below	well below
Waitangi Forest raws	below	slightly below	on trend	slightly below	below	below
Kaikohe aws	below	below	on trend	on trend	below	below
Kaikohe raws	slightly below	slightly below	slightly above	slightly above	below	below
Hokianga raws	slightly below	below	slightly below	below	on trend	below
Whangarei / Kaipara						
Opouteke raws	on trend	slightly above	slightly above	slightly above	on trend	below
Mangakahia raws	below	slightly below	below	below	well below	well below
Whangarei raws	slightly below	on trend	below	below	well below	well below
Whangarei Aero aws	slightly below	on trend	slightly below	slightly below	below	below
Dargaville raws	above	slightly above	above	above	on trend	below
Pouto raws	on trend	on trend	on trend	on trend	on trend	below

Auckland

Soil moisture:

- Soil moisture levels across the Auckland region are dry (Figure 3).
- This is also reflected in the soil moisture anomaly map (Figure 4), where the region is drier than normal for this time of the year, and it is much drier for North Auckland (Rodney district).

Fire weather codes and indices:

- Stations that are worthy of watching are: Kaipara
- However, as with this time last year, any major rain events will provide some added relief.

- BUIs across the region have increased from the last report, and range from 15 to 45, indicating that heavy and medium fuels are becoming available for combustion and the difficulty of control will be moderately difficult.
- Maximum BUIs typically peak during February, and can range between 100 and 180.
- BUIs across the region are above average for this time of the year, and during the 2013/4 fire season.

- Current DCs range between 100 - 200, indicating the heavy and deep organic fuels are becoming readily available, and a moderate risk of extended mop up needs is present in heavy fuels.
- DCs across the region are above the average for this time of the year, and levels observed during 2013/14.
- DC values typically peak around late February, where maximum values can be expected to range between 500 and 800.

- CDSR values across the region are below the average.
- Current fire severity and danger for this region are, on average, Low to Moderate (Figure 1 & 5).
- With forecasted warm temperatures and above normal rainfall, expect fire dangers and fire climate severity to increase over December, but with any major rain events, keep the danger Low.

Station Name	BUI trends		DC trends		CDSR trends	
	vs. average	vs. 2013/14	**vs. average**	vs. 2013/14	**vs. average**	vs. 2013/14
Great Barrier Island						
Great Barrier Island raws	on trend	slightly above	slightly above	above	slightly below	below
Northern						
Mahurangi Forest raws	above	above	on trend	below	well below	well below
Kaipara raws	above	on trend	above	above	on trend	slightly above
Woodhill raws	above	above	above	above	below	below
Southern						
Clevedon Coast raws	above	above	above	above	slightly below	below
Cornwallis Depot raws	above	above	slightly above	above	below	below
Waharau raws	on trend	slightly below	on trend	on trend	slightly below	below
Patumahoe raws	above	above	slightly above	above	below	below

Waikato

Soil moisture:

- Soil moisture levels are currently dry at 50% field capacity across the Waikato region (Figure 3).
- The soil moisture anomaly map shows mostly dry conditions along the west coast, and about normal soil moistures inland and for the Thames-Coromandel district (Figure 4).

Fire weather codes and indices:

- Stations to watch are: there are no stations exhibiting exceptional FWI System values.

- Currently BUIs across the region range from 10 to 45, indicating that heavy and medium fuels are becoming available for combustion, and the difficulty of control will generally be moderately difficult.
- Maximum BUI values usually peak around late February, at around 100 – 160.
- BUIs are either on trend or above the average for this time of the year.

- Current DCs range between 50 - 150, indicating that there is little sign of drought or mop-up needs in heavy fuels.
- Maximum DC values typically peak during March, and can range between 450 – 800.
- DCs are generally slightly above average levels for this time of the year.

- CDSR values across the region are below the historical average and for the 2013/14 fire season.
- Current fire severity and danger for this region are, on average, Low to Moderate (Figure 1 & 5).
- Both above average temperatures and rainfall are forecasted for December. Expect fire dangers and fire climate severity to start to increase over this region in January.

Station Name	BUI trends		DC trends		CDSR trends	
	vs. average	vs. 2013/14	**vs. average**	vs. 2013/14	**vs. average**	vs. 2013/14
Thames Valley						
Waikawau Bay raws	on trend	below	below	below	below	below
Whangamata raws	above	above	slightly above	slightly above	below	below
Paeroa raws	above	above	slightly above	above	on trend	below
Paeroa aws	above	above	slightly above	below	on trend	below
Waihi Gold raws	on trend	slightly above	on trend	below	slightly below	below
Waihi raws	on trend	slightly above	slightly below	slightly above	slightly below	below
Waikato / Waitomo						
Hamilton raws	slightly below	slightly below	below	below	on trend	on trend
Taharoa raws	below	below	below	below	well below	well below
Port Taharoa aws	on trend	slightly above	on trend	slightly below	on trend	below
Athol raws	slightly below	on trend	on trend	on trend	well below	well below
Waitomo raws	on trend	slightly above	below	slightly above	below	below
Bodley Road	discontinued					

Central & Eastern North Island:

Bay of Plenty

Soil moisture:

- Soil moistures across the region are dry at only 50% of field capacity, and slightly drier in central areas (Figure 3).
- The soil moisture anomaly map shows soils are drier than normal across the Bay of Plenty, and slightly wetter for more inland areas of this region.

Fire weather codes and indices:

- Stations to watch are:: Opotiki

- Currently BUIs across the region range from 20 to 40. This indicates that heavy and medium fuels are becoming readily available for combustion and the difficulty of control will generally be moderately difficult. The exception being Opotiki (65), where control would be more difficult.
- BUIs are above average for this time of the year, and also below the levels recorded during the 2013/14 fire season.
- BUIs typically peak in late February, and maximum values can be expected to range between 120 and 160.

- DCs have steadily climbed since the last report. Current DCs range between 120 - 150. These values indicate some signs of drought, and a moderate risk of extended mop-up needs in heavy fuels. The exception being Opotiki (250), where more difficult and extended mop-up needs would likely be required.
- Values typically peak during February or late March, and reach maximum values between 550 and 700.
- DCs are either on trend or above the average for this time of the year, and also above the levels recorded during the 2013/14 fire season.

- CDSR values are generally below the historical average and levels observed during the 2013/14 fire season.
- Current fire severity and danger for this region are, on average, Low to Moderate (Figure 1 & 5).
- With forecasted warm temperatures and above normal rainfall, expect fire dangers and fire climate severity to start to increase over this region in January.

Station Name	BUI trends		DC trends		CDSR trends	
	vs. average	vs. 2013/14	**vs. average**	vs. 2013/14	**vs. average**	vs. 2013/14
Coastal						
Waihi Beach raws	NA	NA	NA	NA	NA	NA
Waihau Bay raws	above	above	on trend	on trend	below	below
Tauranga Aero SYNOP	slightly above	above	on trend	slightly above	below	below
Tauranga raws	slightly above	above	on trend	on trend	below	below
Minden raws	NA	NA	NA	NA	NA	NA
Te Puke ews	slightly above	above	slightly above	above	on trend	on trend
Whakatane raws	slightly below	on trend	on trend	slightly above	below	below
Whakatane Aero aws	on trend	slightly above	on trend	slightly above	below	below
TECT All Terrain Park raws	NA	NA	NA	NA	NA	NA
Rotoehu raws	on trend	slightly above	on trend	on trend	below	on trend
Opotiki raws	well above	well above	well above	well above	well above	well above
Rotorua / Kawerau / Whakatane						
Kawerau raws	on trend	slightly above	on trend	on trend	well below	well below
Rotorua raws	above	above	slightly above	above	below	slightly below
Rotorua Aero aws	above	above	above	above	below	slightly below
Waimana raws	NA	NA	NA	NA	NA	NA
Galatea raws	slightly above	slightly above	above	slightly above	well below	well below

Central North Island
(Taupo / Whakatane)

Soil moisture:

- Soil moisture levels across the region are dry at 50% of field capacity (Figure 3).
- The soil moisture anomaly map shows soils are drying in this region, and at normal levels in the north for this time of the year (Figure 4).

Fire weather codes and indices:

- Stations to watch are: there are no stations exhibiting exceptional FWI System values.

- Currently BUIs across the region range from 0 to 25. This indicates that heavy and medium fuels are not readily available for combustion and the difficulty of control will generally be easy. The exception being Tihoi (40).
- BUIs are below the average for this time of the year.
- BUIs typically peak in late February, when maximum values can reach between 120 and 150.

- Current DCs range between 20 - 100. These indicate that there is little sign of drought and little risk of extended mop-up needs in heavy fuels.
- Values typically peak during February or late March, with maximum DC values reaching between 450 and 650.
- DCs are either below or on trend with the average for this time of the year, and above the levels recorded during the 2013/14 fire season.

- CDSR values are generally below the historical average, and below levels observed during the 2013/14 fire season.
- Current fire severity and danger for this region are, on average, Low to Moderate (Figure 1 & 5).
- Temperatures and rainfall are both forecasted to be above average over December. Expect fire dangers and fire climate severity to start to increase over this region in January.

Station Name	BUI trends		DC trends		CDSR trends	
	vs. average	vs. 2013/14	**vs. average**	vs. 2013/14	**vs. average**	vs. 2013/14
Taupo / Whakatane						
Goudies raws	well below	well below	well below	well below	well below	well below
Tahorakuri raws	below	on trend	slightly below	above	below	below
Minginui raws	below	on trend	above	above	well below	well below
Taupo raws	on trend	slightly above	on trend	above	on trend	slightly above
Taupo Aero SYNOP	slightly below	slightly above	on trend	above	below	slightly below
Matea raws	below	on trend	below	on trend	well below	well below
Tihoi raws						
Ruatahuna raws						
Rotoaira raws						
Hautu raws						

Gisborne

Soil moisture:

- Soil moistures are showing signs of drying along the coast, with soil moisture closer to 50% capacity inland along the ranges (Figure 3).
- The soil moisture anomaly map shows soils are drier than normal in the south, and about normal in the north (Figure 4).

Fire weather codes and indices:

- Stations to watch are: there are no stations exhibiting exceptional FWI System values.

- Currently BUIs across the region range from 15 to 25. This indicates that heavy and medium fuels are not readily available for combustion and the difficulty of control will generally be easy.
- They typically peak during February, with maximum values reaching between 80 and 160.
- BUIs are currently either on trend or below the historical average for this time of the year.

- Currently DC values are ranging between 50 and 240, indicating moderately difficult mop-up requirements in some places.
- DCs across the region are generally below levels for this time of the year compared with the historical average, and are either above or below trends seen in the 2013/14 fire season.
- DC values typically peak in late March, where maximum values can and are expected to range between 400 and 800.

- CDSR values across the region are below both the average and 2013/14 fire season levels.
- Current fire severity and danger for this region are, on average, Low to Moderate (Figure 1 & 5).
- Temperatures and rainfall are both forecasted to be above average over December. Expect fire dangers and fire climate severity to continue to increase over this region especially as conditions continue to dry. However, as with this time last year, any major rain events will provide some added relief.

Station Name	BUI trends		DC trends		CDSR trends	
	vs. average	vs. 2013/14	**vs. average**	vs. 2013/14	**vs. average**	vs. 2013/14
Gisborne						
Hicks Bay SYNOP	on trend	on trend	below	below	well below	well below
Poroporo raws	below	on trend	below	below	well below	well below
Raparapaririki Raws	NA	NA	NA	NA	NA	NA
Wharekopae raws	well below	NA	well above	NA	well below	NA
Pouawa raws	below	on trend	below	slightly above	below	below
Gisborne raws	on trend	slightly above	above	above	below	on trend
Gisborne Aero SYNOP	on trend	slightly above	slightly above	slightly above	below	on trend

Hawkes Bay

Soil moisture:

- Soil moisture levels across the region are dry, and at 50% storage capacity in inland areas (Figure 3)
- The soil moisture anomaly map shows drier than normal soils along the coast, and about normal inland (Figure 4).

Fire weather codes and indices:

- Stations to watch are: Napier (Raws & Aero), Te Apiti,

- Currently BUIs across the region range from 0 to 30, indicating that heavy and medium fuels are not readily available for combustion and the difficulty of control will generally be easy. The exceptions are: Napier (60) and Te Apiti (60), where the fuels are readily available and make control more difficult.
- They typically peak around February, where maximum BUI levels can range between 70 and 225.
- BUIs are generally below the historical average for this time of the year, and are either on trend or above that seen in 2013/14 fire season.

- DC values are currently ranging between 50 and 250, indicating moderate to difficult mop-up requirements in some places.
- DCs are either above or below the historical average for this time of the year.
- The DC is expected to peak around late February or March, when maximum values can be expected to reach between 350 and 850.

- CDSR values are well below the average and also below the levels seen in 2013/14.
- Current fire severity and danger for this region are, on average, Low to Moderate, but High along the coast of Central Hawkes Bay and Hastings districts (Figure 1 & 5).
- Warm temperatures and near normal (or reduced rainfall for southern locations) are forecasted for December. Expect fire dangers and fire climate severity to increase over this region in December. However, as with this time last year, any major rain events will provide some added relief.

Station Name	BUI trends		DC trends		CDSR trends	
	vs. average	vs. 2013/14	**vs. average**	vs. 2013/14	**vs. average**	vs. 2013/14
Wairoa						
Tuai raws	below	on trend	well above	well above	well below	well below
Wharerata raws	below	on trend	below	slightly above	well below	NA
Cricklewood raws	below	on trend	slightly above	slightly above	well below	below
Wairoa raws	NA	NA	NA	NA	NA	NA
Mahia raws	on trend	slightly above	above	above	below	below
Hastings						
Te Haroto raws	well below	well below	slightly below	slightly above	well below	well below
Te Pohue raws	below	slightly below	on trend	above	well below	well below
Kaiwaka raws	below	on trend	above	above	well below	well below
Waihau raws	below	on trend	below	on trend	well below	well below
Napier Aero SYNOP	above	above	above	above	on trend	slightly above
Napier raws	above	above	above	above	below	on trend
Crownthorpe raws	below	slightly above	slightly below	above	below	on trend
Bridge Pa raws	slightly below	slightly above	slightly below	slightly above	below	below
Gwavas raws	below	on trend	slightly above	above	well below	NA
Te Apiti Road raws	well above	NA	well above	NA	well above	NA
Waimarama						
Central Hawke's Bay						
Ongaonga raws	below	slightly above	on trend	above	well below	well below
Waipukurau raws	on trend	slightly above	on trend	above	below	slightly above

Lower North Island:

Taranaki

Soil moisture:

- Soil moistures across the region are leaning towards 50% field capacity (Figure 3).
- The soil moisture anomaly map shows that the area is drier than normal across the region for this time of the year (Figure 4).

Fire weather codes and indices:

- Stations to watch are: New Plymouth, Marco, Okato, Hawera, Waverly

- BUIs have steadily climbed across the region since the last report, and now range between 20 - 50. These indicate that heavy and medium fuels are becoming readily available for combustion and fire control will generally be moderately difficult.
- BUIs typically peak around 70 – 120 in late February or early March.
- BUIs are well above the average for this time of the year, and above the levels recorded during 2013/14 fire season.

- DCs have also steadily climbed since the last report. Values across the region now range between 150 and 200, indicating moderately difficult mop-up requirements.
- DC levels can increase to a peak of 350 – 700 in early March.
- DCs are above the historical average and the 2014/14 fire season for this time of the year.

- CDSR values are generally above the historical average and the 2013/14 season.
- Current fire severity and danger for this region are, on average, Low to Moderate (Figure 1 & 5).
- Above normal temperatures and near normal rainfall are forecasted for December. Expect fire dangers and fire climate severities across the region to elevate over the fire season as conditions continue to dry.

Station Name	BUI trends		DC trends		CDSR trends	
	vs. average	vs. 2013/14	**vs. average**	vs. 2013/14	**vs. average**	vs. 2013/14
Taranaki						
New Plymouth SYNOP	well above	well above	above	above	well above	well above
Marco raws	above	above	above	above	on trend	on trend
Okato raws	well above	well above	well above	well above	slightly above	above
Eltham raws	on trend	slightly above	above	above	slightly below	slightly above
Hawera aws	well above	well above	well above	well above	above	above
Waverly raws	well above	well above	well above	well above	NA	NA

Manawatu-Wanganui

Soil moisture:

- Soils are drying across this region, being driest along coastal areas and close to 50% storage capacity inland (Fig. 3).
- The soil moisture anomaly map shows soils are drier than normal across the region, except for inland Rangitikei district where they are closer to normal levels for this time of the year (Figure 4).

Fire weather codes and indices:

- Stations to watch are: Palmerston North, Ngahere Park, Waitarere Forest, Pahiatua, Levin

- BUIs across the region range between 5 - 30 for the Ruapehu, Rangitikei and Tararua areas, indicating that heavy and medium fuels are not readily available for combustion and the difficulty of control will generally not be difficult, but range from 10 - 75 across the Whangaehu, Palmerston North and Horowhena areas, indicating fuels are becoming more readily available and any fires more difficult to control.
- BUIs typically peak in March, where max ranges can be between 80 and 170.
- BUIs are generally above average levels for this time of the year, and also those observed during the 2013/14 fire season.

- DCs have steadily climbed since the last report, now ranging between 40 and 200 across the region. The exceptions being: Levin, Pahiatua, and Matarawa (around 250). These values indicate that heavy fuels are becoming available.
- DC values typically peak between 300 and 700 in late February or early March. For some stations, they can remain high (400+) until early May.
- DCs are generally above average levels for this time of the year and above values observed during the 2013/14 fire season.

- CDSR values are either above or below the historical average.
- Current fire severity and danger for this region are, on average, Moderate to High (Figure 1 & 5).
- Above average temperatures and near normal rainfall are forecasted for December. Expect fire danger and fire climate severity levels to start to increase over the next few months. However, as with this time last year, any major rain events will provide some added relief.

Station Name	BUI trends		DC trends		CDSR trends	
	vs. average	vs. 2013/14	**vs. average**	vs. 2013/14	**vs. average**	vs. 2013/14
Ruapehu / Rangitikei						
Kirikau Raws	NA	NA	NA	NA	NA	NA
National Park raws	below	below	well below	well below	below	slightly below
Paradise Valley raws	below	slightly above	above	above	well below	well below
Desert Road Summit raws	on trend	slightly above	above	above	below	below
Three Kings raws	below	on trend	below	slightly above	on trend	slightly above
Waimarino Forest raws	slightly below	slightly above	on trend	above	on trend	on trend
Waiouru Airstrip aws	well above	NA	well above	NA	slightly below	NA
Ngamatea raws	below	on trend	below	on trend	below	on trend
Westlawn raws	below	on trend	below	slightly above	below	on trend
Tarn Track Raws	NA	NA	NA	NA	NA	NA
Whangaehu raws	below	slightly above	on trend	slightly above	below	slightly below
Whangaehu						
Wanganui Spriggens P.	above	above	above	above	slightly above	slightly above
Matarawa raws	well above	NA	well above	NA	well above	NA
Wanganui aws	well above	well above	above	above	slightly above	above
Whanganui raws	above	above	above	above	on trend	on trend
Tapuae raws	slightly below	on trend	on trend	on trend	below	on trend
Raumai raws	well above	well above	above	above	above	above
Palmerston North City / Horowhenua						
Palmerston North SYNOP	well above	well above	well above	well above	slightly above	above
Ngahere Park raws	above	above	above	above	slightly below	on trend
Waitarere Forest raws	well above	well above	above	above	on trend	on trend
Levin aws	well above	well above	well above	well above	well above	well above
Tararua						
Dannevirke ews	slightly below	on trend	slightly below	slightly above	below	well below
Waione raws	on trend	slightly above	above	above	well above	well above
Pahiatua ews	well above	well above	well above	well above	well above	well above
Akitio ews	above	above	well above	well above	below	slightly below
Alfredton raws	slightly above	above	above	above	above	well above

Wellington

Soil moisture:

- Soils are also showing signs of dryness, being close to 50% of field capacity (Figure 3).
- The soil moisture anomaly map shows soils are drier than normal for this time of the year across the region (Figure 4).

Fire weather codes and indices:

- Stations to watch are: Paraparaumu, Porirua, Belmont, Wellington, Rimutaka Forest

- BUIs have steadily climbed across the region since the last report, with values nowranging between 30 - 75. This indicates that heavy and medium fuels are becoming available for combustion and control of fires could be very difficult in some places.
- BUIs typically peak up to 100 around late February.
- BUIs are well above average for this time of the year, and levels seen during the 2013/14 fire season.

- DCs values are currently ranging between 150 - 250 indicating that heavy fuels and deep organic layers are available, and mop-up requirements likely moderate to difficult.
- However, they typically peak in late February (600 -700) and remain high until late April.
- DCs are well above average for this time of the year, and levels seen during the 2013/14 fire season.

- CDSR values across the region are generally above average.
- Current fire severity and danger for this region is, on average, Moderate to High (Figure 1 & 5).
- Above average temperatures and near normal rainfall are forecasted for December. Expect fire dangers and fire climate severities to start to increase if conditions continue to dry. However, as with this time last year, any major rain events will provide some added relief.

Station Name	BUI trends		DC trends		CDSR trends	
	vs. average	vs. 2013/14	**vs. average**	vs. 2013/14	**vs. average**	vs. 2013/14
Kapiti Coast						
Te Horo Raws	NA	NA	NA	NA	NA	NA
Paraparaumu Aero	above	above	above	above	above	above
Porirua Elsdon Park aws	well above	well above	slightly above	above	on trend	slightly above
City						
Titahi Bay	NA	NA	NA	NA	NA	NA
Long Gully Raws	NA	NA	NA	NA	NA	NA
Belmont raws	well above	well above	well above	well above	below	slightly below
Wellington Aero SYNOP	well above	well above	well above	well above	slightly above	above
Rimutaka Forest Park	well above	well above	well above	well above	slightly above	on trend

Wairarapa

Soil moisture:

- Soils are close to or showing signs of dryness for this time of the year (Figure 3).
- The soil moisture anomaly map shows soils are drier than normal for this time of the year (Figure 4).

Fire weather codes and indices:

- Stations to watch are: Stoney Creek, Haurangi, Ngaumu, Masterton

- BUIs have steadily climbed since the last report, with values currently ranging between 50 - 75. These indicate that heavy and medium fuels are available for combustion, and the control of fires will likely be difficult.
- BUI values typically peak at most stations in the region in late January to mid-February (100 – 180).
- BUIs are well above average for this time of the year, and levels seen during the 2013/14 fire season.

- DCs across the region have steadily climbed since the last report. Currently, values are ranging between 175 - 250, indicating moderate to difficult mop-up requirements.
- DCs are well above average for this time of the year, and levels seen during the 2013/14 fire season.
- DC values usually peak in late February, reaching between 500 and 800, and can remain high at some stations until early May.

- CDSR values are generally on trend with the average, and with the 2013/14 fire season.
- Fire severity and fire danger levels for the region are currently High, on average (Figure 1 & 5).
- Above average temperatures and near normal (or slightly reduced) rainfall are forecasted for December. Expect fire dangers and fire climate severity in this region to increase if conditions continue to dry. However, as with this time last year, any major rain events will provide some added relief.

Station Name	BUI trends		DC trends		CDSR trends	
	vs. average	vs. 2013/14	**vs. average**	vs. 2013/14	**vs. average**	vs. 2013/14
Masterton / Carterton						
Castlepoint SYNOP #	well above	well above	above	above	on trend	slightly above
Crofoot raws #	well above	well above	well above	well above	slightly below	slightly above
Holdsworth Station raws	above	above	above	above	on trend	slightly above
Masterton Aero aws *	well above	well above	well above	well above	on trend	above
Homebush raws *	well above	well above	above	well above	below	on trend
Ngaumu Forest raws	above	above	well above	well above	on trend	slightly above
Featherston Raws	NA	NA	NA	NA	NA	NA
South Wairarapa						
Haurangi raws	well above	well above	well above	well above	slightly above	above
Stony Creek raws	above	above	well above	well above	on trend	slightly above
Ngawi aws ^	above	above	slightly above	above	below	on trend
Palliser raws ^	above	above	above	above	below	on trend

Pacific Islands:

Chatham Island

- 12 noon monthly average temperatures experienced over November continued to climb and were above average (based on a three-year historical average from the Chatham Island Aero station).
- Total rainfall for the month of November steadily declined and is below normal.

Fire weather codes and indices:

- Stations to watch are: Kaiwhata

- BUI values range from 0 to 75. This indicates that heavy and medium fuels are becoming available for combustion and control could be very difficult in some places.
- Historically the values tend to peak from early February until March (up to 80).
- BUI values are currently trending well above average for this time of the year.

- DCs are ranging between 200 to 290, indicating that heavy fuels and deep organic layers are available, and likely present difficult mop-up requirements.
- Maximum DCs typically peak (around 300 – 600) during February.
- The drought indices are generally trending well above the historical average for this time of the year.

- The cumulative Fire Severity Rating is trending below average for this time of the year.
- Currently, the Chathams are experiencing Low fire severity and Moderate to High fire danger. As conditions continue to warm and dry out, expect fire dangers to increase over the next few months.

Station Name	BUI trends		DC trends		CDSR trends	
	vs. average	vs. 11/12	vs. average	vs. 11/12	vs. average	vs. 11/12
Chathams						
Kaiwhata raws	well above	NA	above	NA	slightly below	NA
Chatham Islands Aero	well above	well above	well above	well above	on trend	slightly above
Waitangi raws	well above	NA	well above	NA	NA	NA