New Zealand Seasonal Fire Danger Outlook 2017/18

ISSUE: North Island, January 2018

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Current fire danger situation & outlook:

New Zealand experienced unsettled weather during December, where hot and dry conditions see-sawed with cool wet, weather. Some locations were closing in on thresholds for enforcing prohibited fire seasons, however fronts with moderate rainfall drove the fire indices back down again.

On average, Very High fire potential currently exists in the Wairarapa, coastal Wanganui and Manawatu, and Hawkes Bay regions. Low fire danger and fire climate severity exists elsewhere across the north (Figure 1 & 5). FWI System codes and indices, especially the BUI, are indicating elevated fuel dryness for the lower north (Wanganui/ Manawatu, Wellington, Wairarapa). Auckland, and parts of the Waikato, Northland, Gisborne and Hawkes Bay are High to Very High (Figures 5-6 & 7-8). These elevated codes and indices are the result of continued warm temperatures and extended dry periods. However, if heavy rainfalls forecast over coming days for much of the South Island eventuate, then fire dangers could be reduced significantly in many areas

Significant rainfalls reported over parts of northern and central New Zealand in early January has helped to alleviate drought conditions for some across the north. However, regions currently experiencing severely drier than normal soil conditions include the Far North and Hawkes Bay. Soils are somewhat dry (at 50% storage or less) in Auckland, Waikato, coastal Taranaki, Wanganui/Manawatu, and Gisborne (Figure 3). Soils have been much drier than normal in the Far North and Manawatu compared to this time last year. Soils are wetter than normal for Northland, Bay of Plenty, Central North Island and the Wairarapa (Figure 4).

The current El Niño-Southern Oscillation (ENSO) state remains a weak La Niña. International climate models are anticipating this La Niña state to be short lived, but persist for the next three months (January – March 2018). Typically, ENSO events peak in December or January. Most models are predicting a transition back to ENSO Neutral during autumn 2018 (April – June 2018).
The outlook for the next three months is for further unsettled weather. Higher pressures than normal will dominate the east and south of the country, while lower pressure than normal is forecast over the Tasman Sea area, extending over the country. Warm coastal and ocean waters are set to continue, which will influence the likelihood of significant rain events. Temperatures are forecasted to be above average across the country. Rainfall amounts are most likely to be above normal in the North Island.
Looking ahead, the west and north of both Islands are expected to run wet in January, with about average rainfall elsewhere. Temperatures at or slightly above average are predicted for all regions. As a result, fire danger and fire climate severities for January are expected to continue to climb for locations along the east coast (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).

Based on the current situation, the January outlook and historical La Niña years, regions to watch for elevated fire activity in January are along the east coast and lower North Island (especially parts of Gisborne, Hawkes Bay, Wairarapa and Manawatu). However, as with this time last year, any major rain events in the next few days or weeks will provide some welcome relief and reduce the fire dangers and severities.

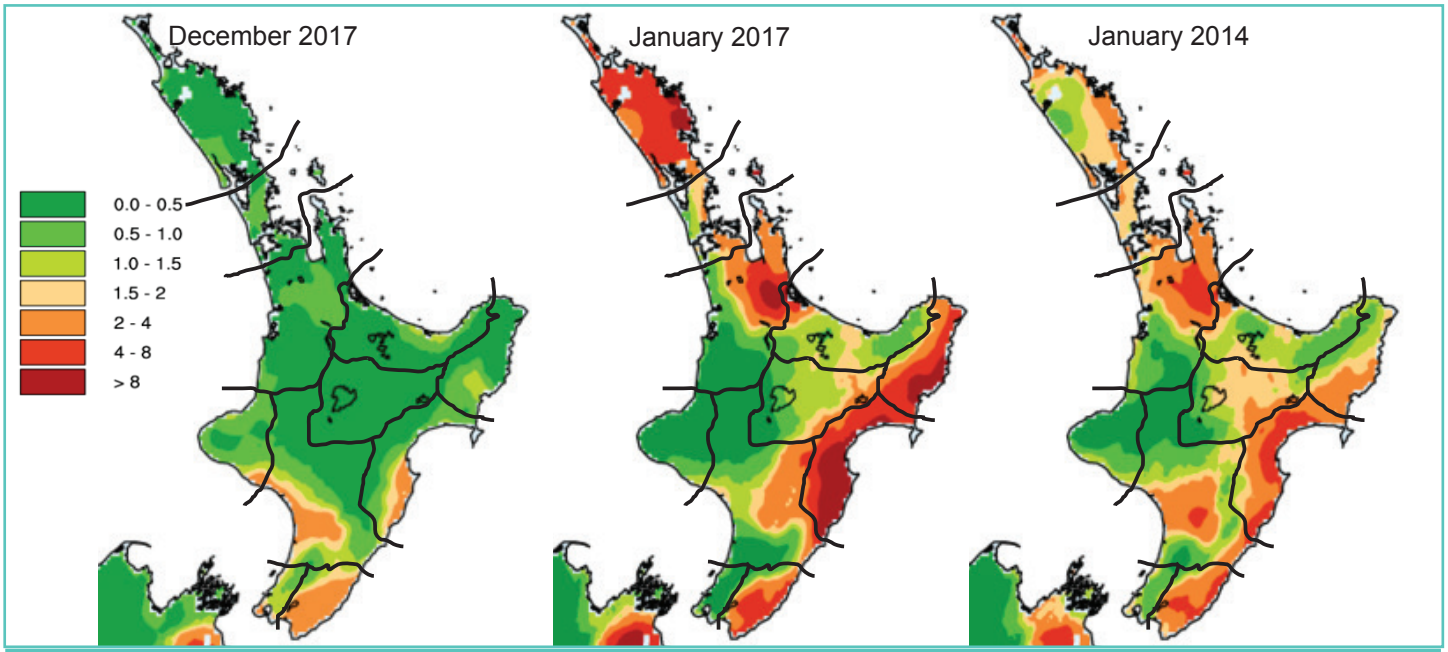


Figure 1. Monthly average Severity Rating for: current (left), last year (middle), and the 2013/14 Neutral to weak La Nina year (right).

EXPECTED CLIMATE OUTLOOK:

Currently, the El Niño-Southern Oscillation (ENSO) remains a weak La Niña despite some ocean and atmospheric indicators of La Niña easing in the past month (December 2017). This is due to transient weather factors, and does not indicate an early easing of the La Niña event itself. International climate models suggest La Niña thresholds will remain for a further 3 months (January – March 2018), then return to ENSO-neutral conditions over April – June 2018.

New Zealand coastal waters have continued to be much warmer than average, between 2 and 5 degrees above average for the time of year. This "marine heat wave" is likely to continue for at least part of the next 3 months (January – March 2018).

Tropical Cyclone season (November – April)

The southern hemisphere Tropical Cyclone risk for New Zealand is normal or above normal, but with increased activity in the west, and reduced activity in the east.

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 Zealand 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, as well as damaging winds and coastal damage, which would ultimately see a significant reduction in fire dangers for affected areas.

This month: January 2018

The first week was dominated by a rapidly developing low pressure system, which brought heavy rain and broke the dry spell for many North Island locations.

For the remainder of January, the west of the North Island is forecast to receive about average rainfall, while the east of the North Island is expected to run slightly drier than usual. Temperatures are forecast to be average to slightly above average.

Soil moisture (Figure 3 & 4)

Soil moisture levels improved very significantly nearly everywhere. The only notable decrease in soil moisture levels occurred on the Aupouri Peninsula in the Far North.

The vast majority of the North Island hotspots that were previously in place have now dissipated due to the recent heavy rainfall. Current hotspots are found on the Aupouri Peninsula in the Far North, as well as small portions of Kapiti Coast, Horowhenua, and Central Hawke's Bay.

Further ahead: January – March 2018

New Zealand's climate is expected to be dominated by the very warm ocean waters present in the Tasman Sea and surrounding coastal waters. This will influence air temperatures and the likelihood of significant rainfall events. For the next three months, higher pressures than normal are forecast for the east and south of the country, while lower pressure than normal is forecast over the Tasman Sea area, extending over the country. This pressure pattern is expected to be associated with unsettled conditions and north-easterlies.

For the next three months (Jan – Mar 2018): Temperatures are forecast to be above average for all. Above normal rainfall amounts are most likely for the North Island. Soil moistures and river flows are expected to be below normal or near normal.

Breakdown (Figure 2):

Temperatures are most likely to be:

- above average (70% chance) for Northland, Auckland, Waikato, Bay of Plenty, Central North Island, Taranaki, Whanganui, Manawatu & Wellington;
- above average (65% chance) for Gisborne, Hawkes Bay & Wairarapa.

Rainfall is most likely to be:

- above normal range (50% chance) for Northland, Auckland, Waikato, & Bay of Plenty;
- above normal (45% chance) for the Central North Island, Taranaki, Whanganui, Manawatu, Wellington, Gisborne, Hawke's Bay & Wairarapa.

Soil moistures are most likely to be:

- near normal (40-45% chance) or below normal (40-45% chance) for Northland, Auckland, Waikato & Bay of Plenty;
- equally likely to be in the below normal range (45% chance) or near normal range (40% chance) for Central North Island, Taranaki, Whanganui, Manawatu &Wellington;
- equally likely to be near normal range (40% chance) or below normal (40% chance) for Gisborne, Hawkes Bay & Wairarapa.

Last month: December 2017

Looking back, December was notably warm with low to modest rainfall amounts. High pressure dominated the weather map, and was particularly intense during the first half of the month. However, during the second half of the month, fronts started to move up the country bringing some welcome showers or rain, but these were not generally yielding large rainfall totals. Whanganui experienced its longest summer dry spell.

Extended hot spells saw temperatures in many North Island spots peak between 27C and 33C. It was the warmest December at Auckland Airport since records began in 1962, while it was the second warmest December for Hamilton (1970) and Wellington (1927).

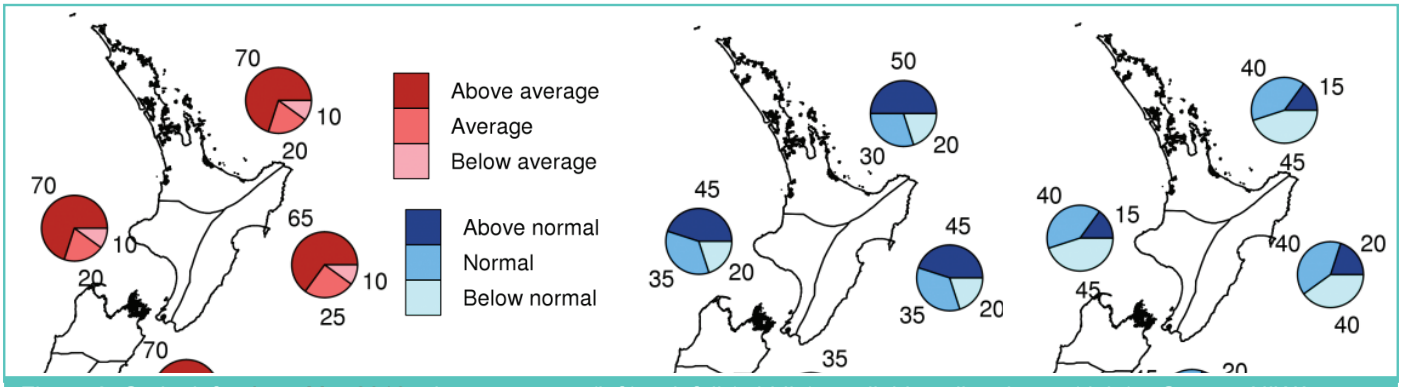


Figure 2. Outlook for Jan - Mar 2018: air temperature (left), rainfall (middle), available soil moisture (right). Source: NIWA.

The combination of hot temperatures and lack of rainfall resulted in a sharp plummet in soil moisture levels across the country. Severe soil moisture deficits were recorded by mid-month for many regions. A medium-scale drought was declared for Taranaki, Manawatu-Whanganui and Wellington.

Grass growth:

With temperatures rising, strong winds and grasslands drying out, there is an increased risk of grass fires for some areas. Grass fires in cured fuels can start easily and travel fast. Some areas would have experienced abundant grass growth over the last month, increasing the fuel loading.

As summer progresses, grasses continue to dry out and will eventually die or become dormant. Grass will start appearing straw coloured and this will progress until there is no green (chlorophyll) left in the grass and the yellow hue becomes bleached, at this point, the grass is considered 100% cured. Heavy and prolonged rains can delay the curing process until the onset of hot dry weather conditions, when curing will proceed rapidly. Rainfall before 60% curing will prolong grass life and slow the curing process, while rainfall after 60% will not delay the curing of mature grass.

Some landscapes may already appear 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. Grass curing over a landscape is most likely to be patchy over a series of paddocks/area, especially during the 40-80% curing period. Curing can also be patchier with variations to topography and species type. Above 80% curing, fuel moisture content begins to be significantly influenced by environmental factors (humidity and temperature and wind speed). The moisture content of fine grass fuels (but not limited to pine litter and other fine fuels) dramatically affects the ignition potential and spread characteristics of a wildfire.

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 lush green 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.

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. During a La Niña summer, anticyclones are more frequent, bringing dry weather. 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.

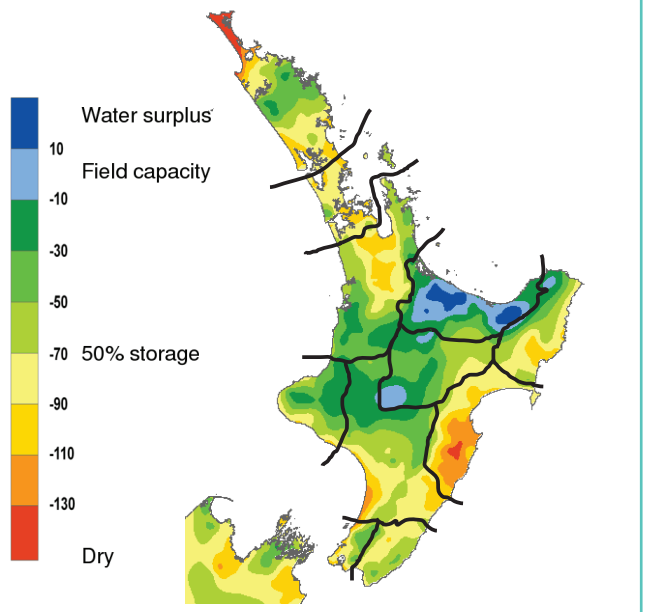


Figure 3. Soil moisture deficits as of 08/01/2018.
Source: NIWA.

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.

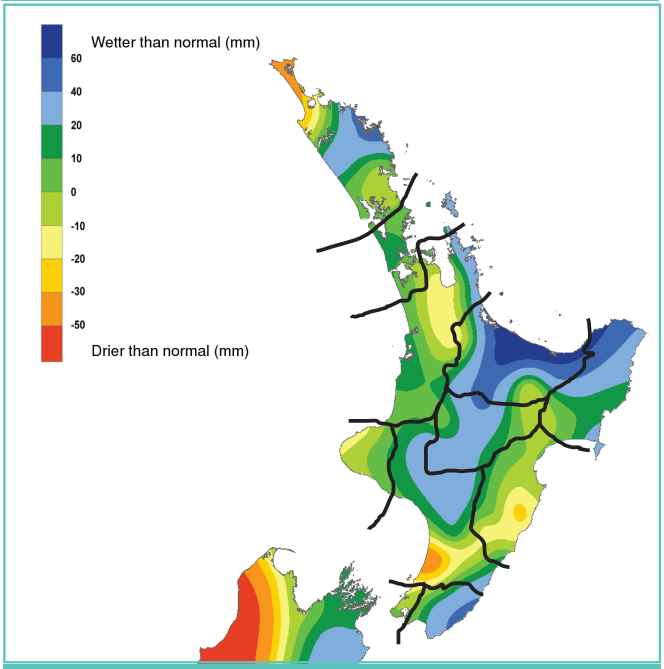


Figure 4. Soil moisture anomaly as of 08/01/2018.
Source: NIWA.

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.

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.

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

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 Prescribed burn, Kaukapakapa, Rodney district (Scott Marchant, Auckland DPRFO).

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

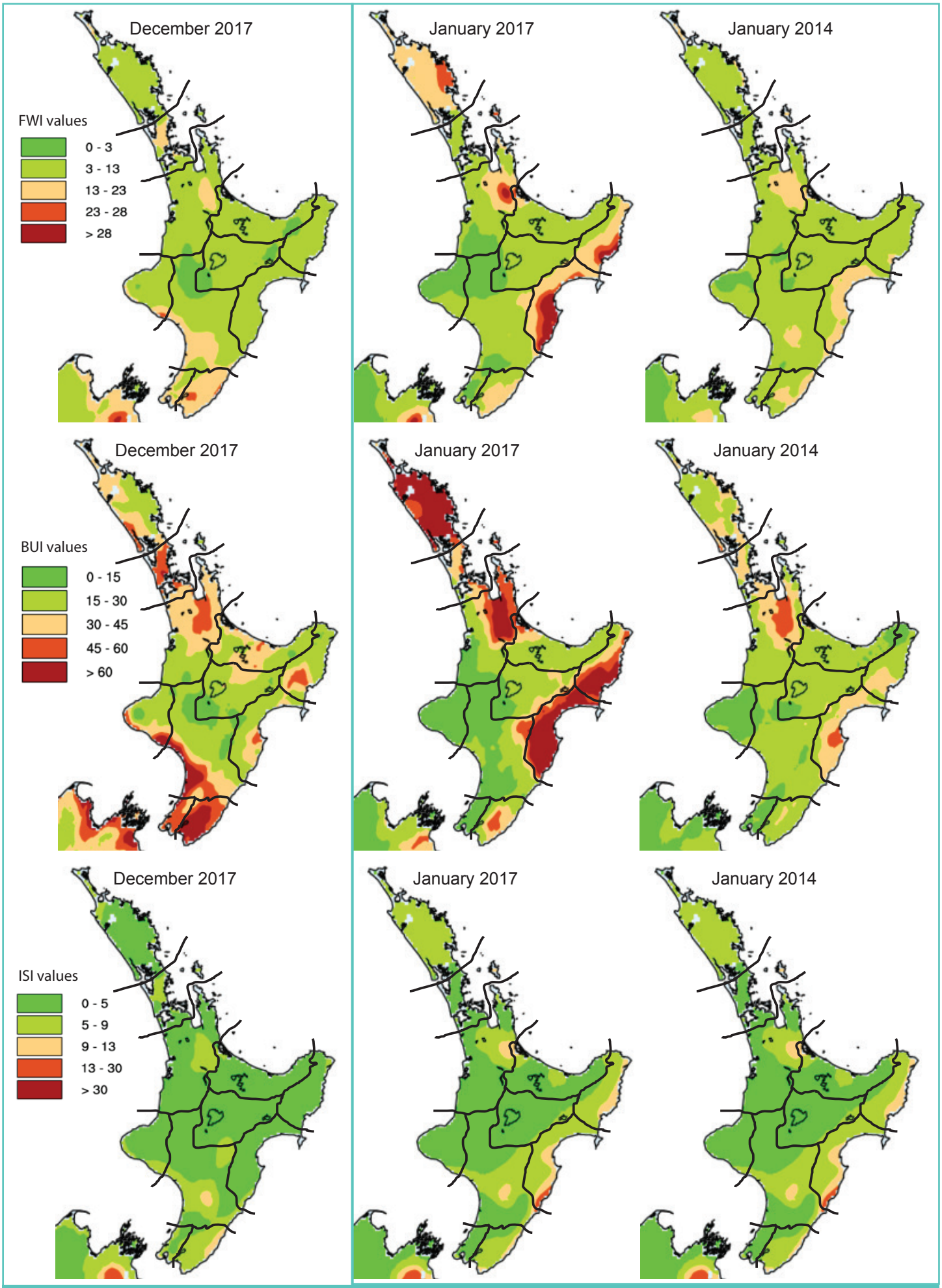


Figure 5. Current Monthly Average for the: Fire Weather Index (top), Buildup Index (middle) and Initial Spread Index (below).

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).

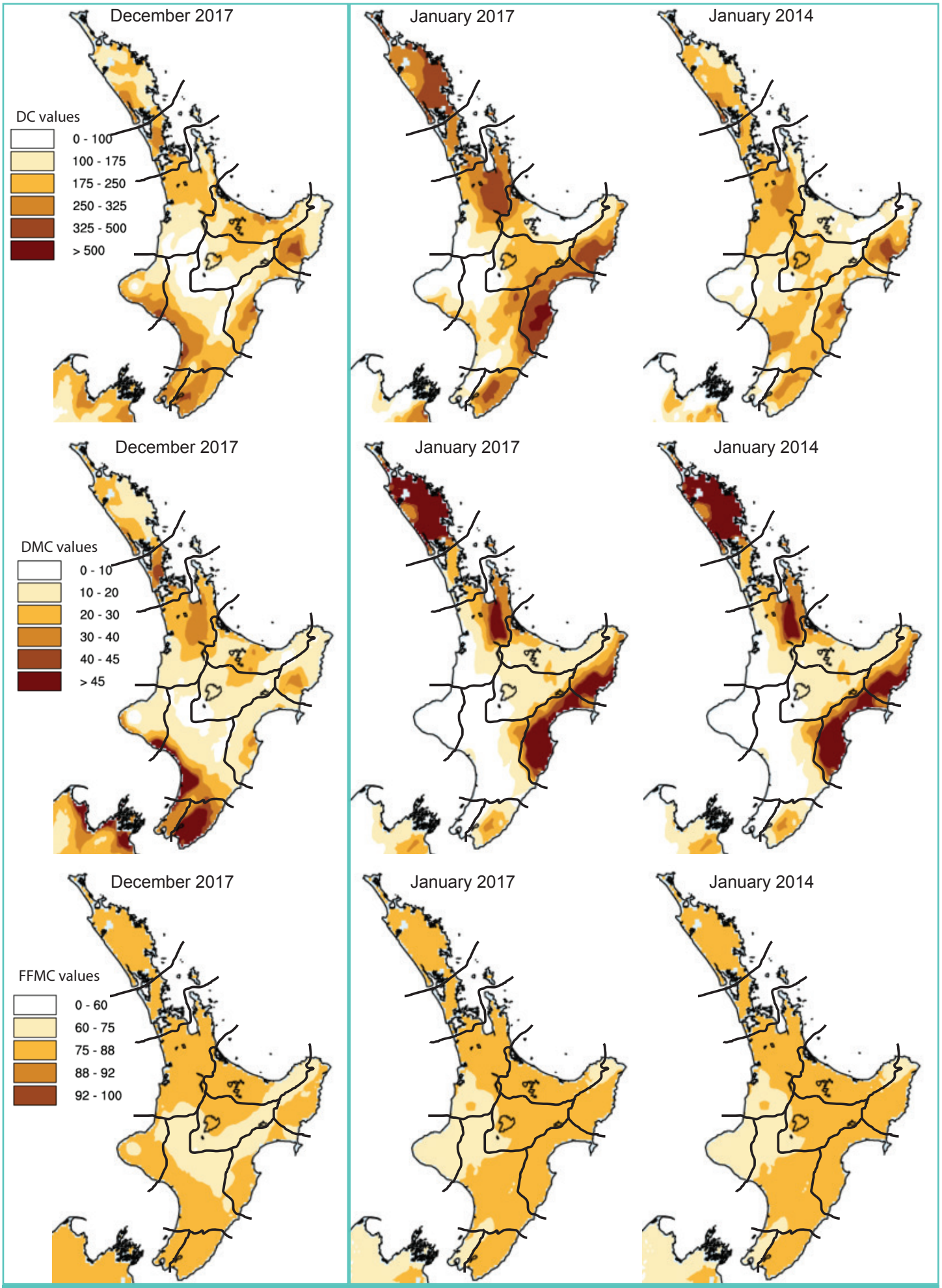


Figure 7. Current monthly average for the: Drought Code (top), Duff Moisture Code (middle) and the Fine Fuel Moisture Code (below). Average monthly values of: Drought Code (top), Duff Moisture Code (middle) and Fine Fuel Moisture Code (below); for the previous year and during the 2011/12 weak La Niña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

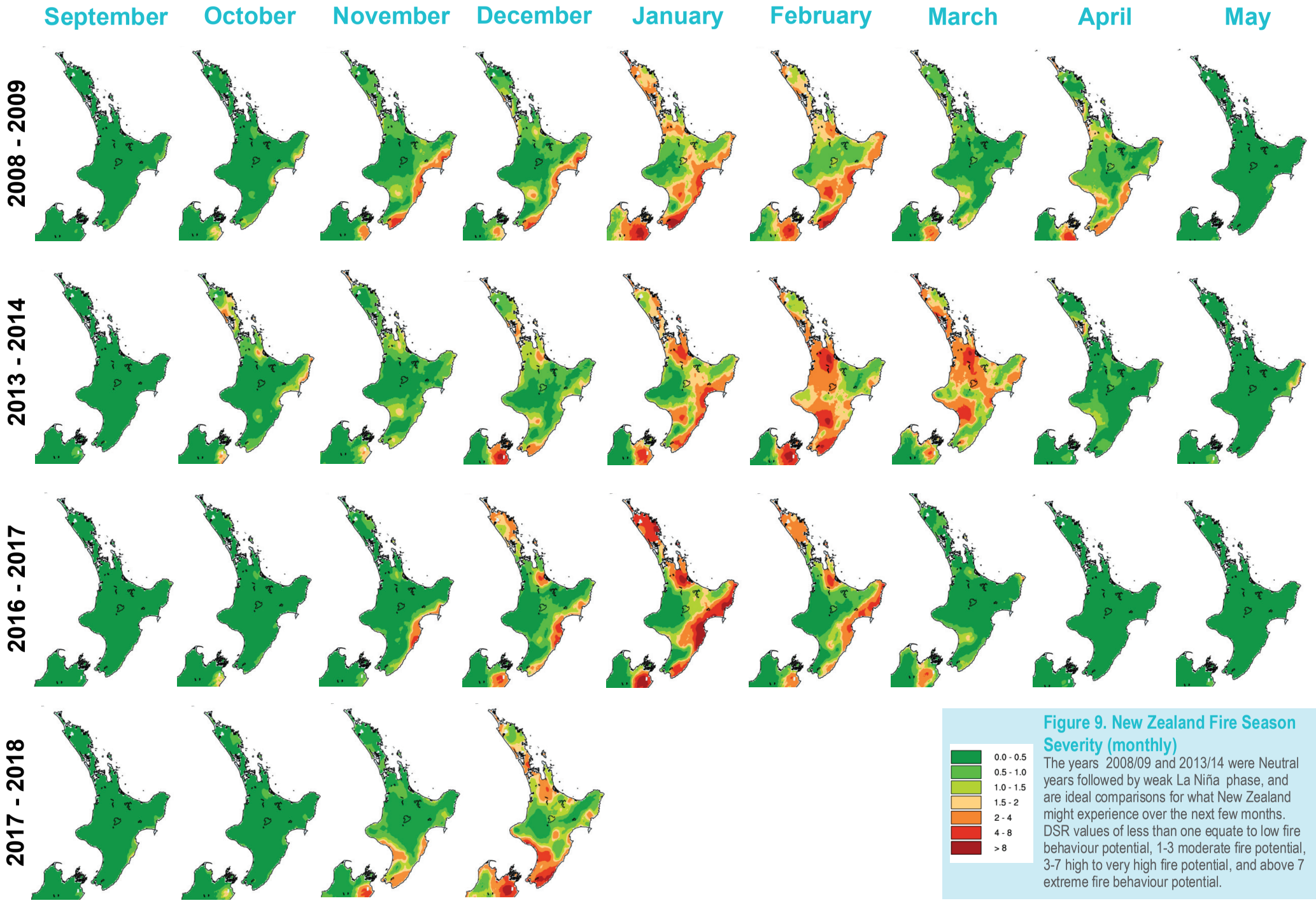


Figure 9. New Zealand Fire Season Severity (monthly)

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 very dry in the far north (Figure 3).
- This is reflected in the soil moisture anomaly map (Figure 4), where the Far North has been drier than normal. Conversely, Kaipara and Whangarei districts have been wetter than normal.

Fire weather codes and indices:

- Stations to watch are: None. The major rain event in early January has provided some relief; before that, Opouteke, Dargaville & Pouto were stations to watch due to exceptional fire indices values for this time of the year.

- Current BUIs across the region range from 10 to 25, indicating that the difficulty of control will generally not be difficult.
- BUIs across the region are now below average for this time of the year.
- Maximum BUIs typically peak during February, and can range between 110 and 200.

- Current DC values are generally 80 to 250, except Aupouri Peninsula (10) and Pouto (300). This indicates that there is a risk of extended mop up needs in heavy fuels for some locations.
- DCs are now generally below, or at, the historical average across the region, except Pouto which is above the average.
- Maximum DC values typically peak during February or March.

- CDSR values across the region are mixed, with most stations below but some above the historical average.
- Current fire severity and danger for this region are, on average, Low to Moderate (Figure 1 & 5).
- With forecast warm temperatures and above normal rainfall, expect fire dangers and fire climate severity to begin to increase over January as we approach the peak summer season. But with further major rain events, this would keep the fire danger Low.

Station Name	BUI trends		DC trends		CDSR trends	
	vs. average	vs. 2011/12	**vs. average**	vs. 2011/12	**vs. average**	vs. 2011/12
Far North						
Aupouri Peninsula raws	below	below	well below	well below	below	below
Waitangi Forest raws	below	below	below	below	below	below
Kaikohe aws	below	below	below	below	below	below
Kaikohe raws	below	below	below	slightly below	on trend	below
Hokianga raws	below	below	below	below	on trend	slightly above
Whangarei / Kaipara						
Opouteke raws	below	below	below	below	above	on trend
Mangakahia raws	below	below	on trend	on trend	below	below
Whangarei raws	below	below	on trend	on trend	below	below
Whangarei Aero aws	below	below	on trend	on trend	slightly below	below
Dargaville raws	below	below	on trend	below	slightly above	on trend
Pouto raws	slightly below	on trend	above	above	above	above

Auckland

Soil moisture:

- Soil moisture levels across the Auckland region are at half storage capacity and showing signs of drying (Figure 3).
- The soil moisture anomaly map (Figure 4) shows that the soils have been about normal, leaning towards wetter than normal for this time of the year.

Fire weather codes and indices:

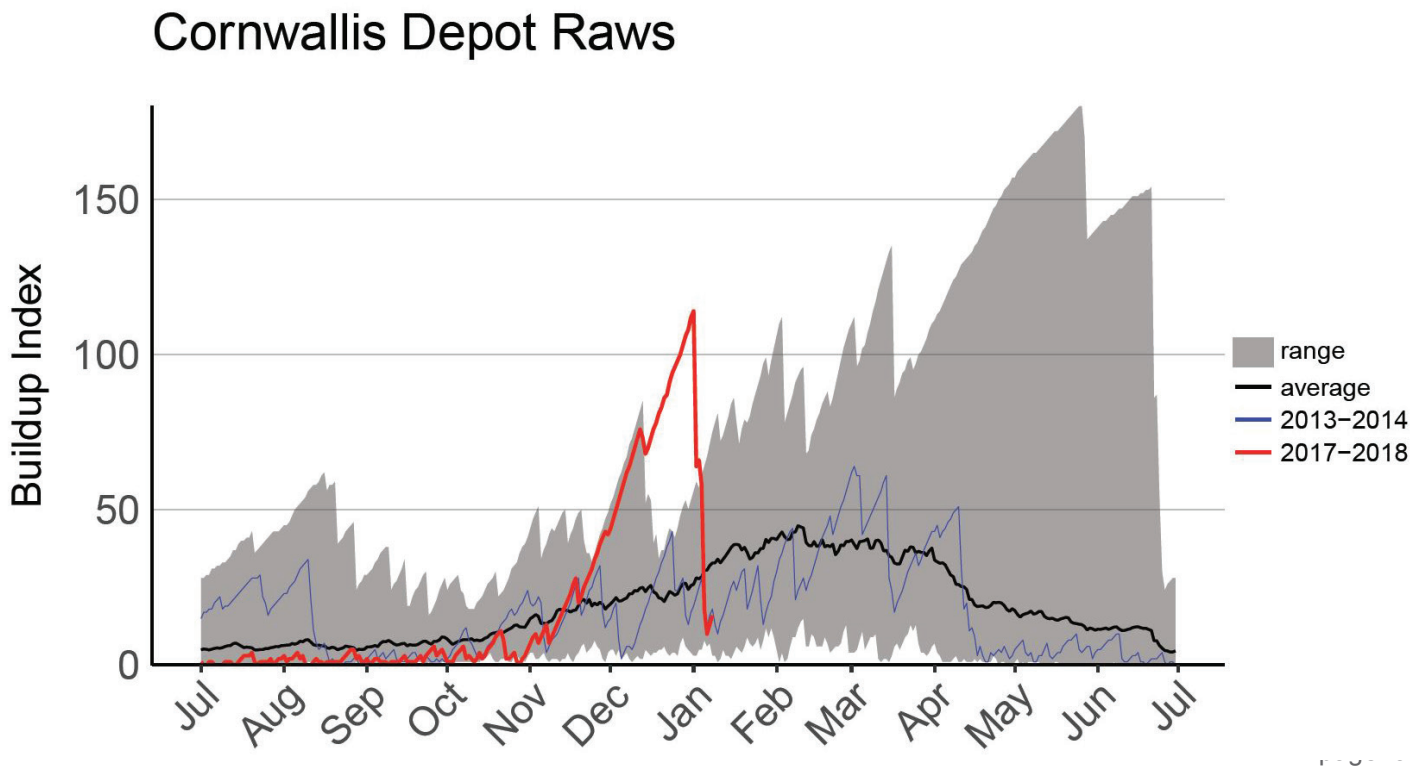
- Stations to watch are: None. The major rain event in early January has provided some relief; before that, Kaipara, Woodhill, Clevedon Coast & Cornwallis Depot were stations to watch due to exceptional values.

- BUIs across the region range from 10 to 20, indicating that the difficulty of control will generally not be difficult.
- BUIs across the region are now below average for this time of the year, and during the 2013/14 fire season.
- Maximum BUIs typically peak during February, and can range between 100 and 180.

- Current DCs range between 100 to 160, except Kaipara (300) and Clevedon Coast (265), indicating the heavy and deep organic fuels are becoming readily available, and there is a risk of more difficult and extended mop up needs in heavy fuels in some areas.
- DCs across the region are now generally slightly below average for this time of the year, with many stations previously at record highs for this time of year. Kaipara and Clevedon Coast are both above the historical average.
- DC values typically peak around late February, where maximum values can range between 500 and 800.

- CDSR values across the region are above to well above the historical average.
- Current fire severity and danger for this region are, on average, Moderate to High (Figure 1 & 5).
- With forecast warm temperatures and above normal rainfall, expect fire dangers and fire climate severity to increase over January as we approach the peak summer season. But with further major rain this would keep fire dangers Low.

Station Name	BUI trends		DC trends		CDSR trends	
	vs. average	vs. 2011/12	**vs. average**	vs. 2011/12	**vs. average**	vs. 2011/12
Great Barrier Island						
Great Barrier Island raws	below	below	slightly below	on trend	above	above
Northern						
Mahurangi Forest raws	below	slightly below	slightly below	slightly below	slightly above	below
Kaipara raws	slightly below	below	above	on trend	above	above
Woodhill raws	below	below	slightly below	slightly below	above	slightly above
Southern						
Clevedon Coast raws	below	on trend	slightly above	above	well above	well above
Cornwallis Depot raws	below	on trend	below	slightly below	well above	well above
Waharau raws	below	on trend	slightly below	on trend	well above	well above
Patumahoe raws	below	below	slightly below	on trend	on trend	slightly above



Waikato

Soil moisture:

- Soil moisture levels were currently drying in northern Waikato and leaning towards field capacity in the south of the region (Figure 3).
- This is reflected in the soil moisture anomaly map (Figure 4), which shows slightly dry conditions around inland Waikato, and in the Matamata and Waipa districts. Wetter than normal soils for the Thames-Coromandel and Hauraki districts.

Fire weather codes and indices:

- Stations to watch are: None
- The major rain event in early January has provided some relief; before that, Paeroa & Hamilton were stations to watch due to exceptional fire indices values for this time of the year.

- Currently BUIs across the region now range from 5 to 20, indicating generally easy fire control.
- BUIs are now below the average for this time of the year.
- Maximum BUI values usually peak around late February, at around 100 and 160.

- Current DCs range between 20 to 220, indicating that there is a risk of moderate to difficult mop-up needs in heavy fuels in some areas.
- DCs are now generally below, or at, average levels for this time of the year; however Waikawau Bay is above the average.
- Maximum DC values typically peak during March, and can range between 450 and 800.

- CDSR values across the region are split between below, at, or above the historical average.
- Current fire severity and danger for this region are, on average, Moderate to High (Figure 1 & 5).
- Both above average temperatures and rainfall are forecast for January. Expect fire dangers and fire climate severity to increase over this region as the summer season progresses. But with further major rain events, this would keep the fire danger Low.

Station Name	BUI trends		DC trends		CDSR trends	
	vs. average	vs. 2011/12	**vs. average**	vs. 2011/12	**vs. average**	vs. 2011/12
Thames Valley						
Waikawau Bay raws	below	slightly below	slightly above	slightly above	below	below
Whangamata raws	below	below	below	below	slightly below	slightly below
Paeroa raws	below	slightly below	on trend	on trend	well above	well above
Paeroa aws	below	below	slightly below	slightly below	above	above
Waeranga raws	NA	NA	NA	NA	NA	NA
Waihi Gold raws	below	below	below	below	below	below
Waihi raws	below	below	below	below	on trend	below
Waikato / Waitomo						
Hamilton raws	below	below	on trend	slightly below	above	above
Hamilton Aero Aws	below	below	on trend	slightly below	above	above
Taharoa raws	below	well below	below	below	well below	well below
Port Taharoa aws	below	below	below	below	above	below
Athol raws	below	below	on trend	on trend	on trend	slightly below
Waitomo raws	below	below	below	below	on trend	on trend
Piopio raws	NA	NA	NA	NA	NA	NA

Central & Eastern North Island:

Bay of Plenty

Soil moisture:

- Soil moistures across the region are at field capacity or surplus (Figure 3).
- The soil moisture anomaly map (Figure 4) reflects this, and shows soils are much wetter than normal for this time of the year.

Fire weather codes and indices:

- Stations to watch are: Minden & Waimana
- The major rain event in early January has provided some relief; before that, Galatea was another station to watch due to exceptional fire indices values for this time of the year.

- BUIs across the region now generally range from 5 to 15. This indicates that the difficulty of control will generally be easy. The exception being Minden (85) & Waimana (75), where control would be more difficult.
- BUIs are generally now well below average for this time of the year, and the levels recorded during the 2013/14 fire season, except Waimana which is above average levels.
- BUIs typically peak in late February, and maximum values can be expected to range between 120 and 160.

- Current DCs now range between 10 to 140, although most stations are around 10. These values indicate a low to moderate risk of extended mop-up needs in heavy fuels. The exceptions to this are: Minden (390) & Waimana (385), where there is a risk of difficult and extensive mop-up needs.
- DCs are generally now well below to slightly below the average for this time of the year, and also the levels recorded during the 2013/14 fire season.
- Values typically peak during February or late March, and reach maximum values between 550 and 700.

- CDSR values are split between below, at, or above the historical average, although most stations are below.
- Current fire severity and danger for this region are, on average, Low to Moderate (Figure 1 & 5).
- With forecast warm temperatures and above normal rainfall, expect fire dangers and fire climate severity to increase over January as we approach the peak summer season. But with further major rain events, this would keep the fire danger Low.

Station Name	BUI trends		DC trends		CDSR trends	
	vs. average	vs. 2011/12	**vs. average**	vs. 2011/12	**vs. average**	vs. 2011/12
Coastal						
Waihi Beach raws	NA	NA	NA	NA	NA	NA
Waihau Bay raws	below	below	slightly below	on trend	on trend	on trend
Tauranga Aero SYNOP	below	below	below	below	below	slightly below
Tauranga raws	below	below	below	slightly below	below	below
Minden raws	NA	NA	NA	NA	NA	NA
Te Puke ews	below	below	below	below	on trend	on trend
Whakatane raws	well below	well below	well below	well below	below	on trend
Whakatane Aero aws	well below	well below	well below	well below	below	on trend
TECT All Terrain Park raws	NA	NA	NA	NA	NA	NA
Rotoehu raws	below	below	below	on trend	below	on trend
Opotiki raws	below	below	on trend	slightly below	slightly above	on trend
Rotorua / Kawerau / Whakatane						
Kawerau raws	well below	well below	well below	below	below	below
Rotorua raws	below	below	well below	below	slightly above	above
Rotorua Aero aws	well below	well below	well below	below	on trend	slightly above
Waimana raws	NA	NA	NA	NA	NA	NA
Galatea raws	well below	well below	well below	well below	below	below

Central North Island

Soil moisture:

- Soil moisture levels across the region are leaning towards field capacity, the exception being the Te Urewera area that are closer to 50% storage (Figure 3). This is reflected in the soil moisture anomaly map (Figure 4) shows soils have been wetter than normal for this time of the year, and about normal for the Te Urewera ranges.

Fire weather codes and indices:

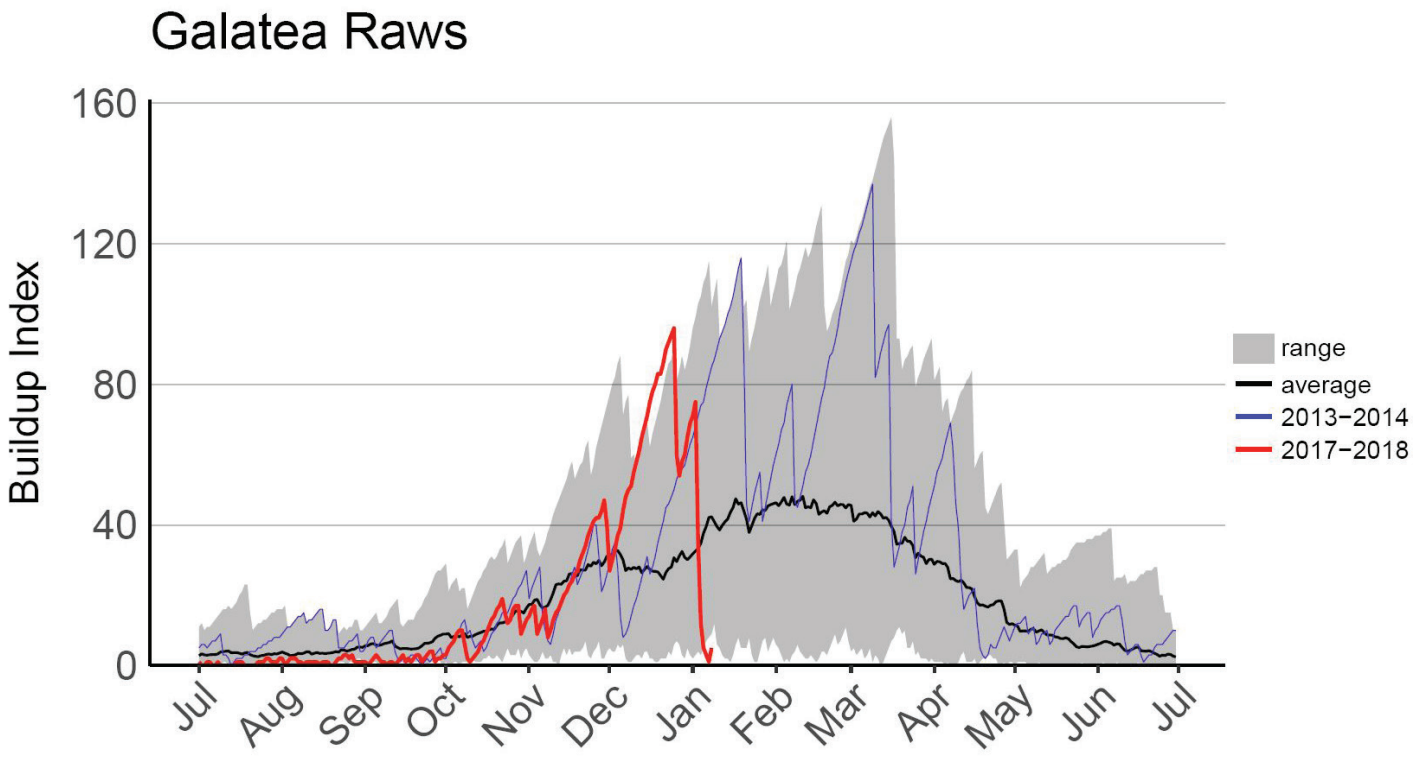
- Stations to watch are: None. The major rain event in early January has provided some relief; before that, Tihoi & Minginui were stations to watch due to exceptional fire indices values for this time of the year.

- Currently BUIs across the region now range from 5 to 15. This indicates that heavy and medium fuels are not readily available for combustion and the difficulty of control will generally be easy.
- BUIs are now below the average for this time of the year and the levels observed during the 2013/14 fire season.
- BUIs typically peak in late February, when maximum values can reach between 120 and 150.

- Current DCs range between 10 to 190. These indicate that there is a risk of moderate difficulty in mop-up needs in heavy fuels for some locations.
- DCs are generally now below the average for this time of the year.
- Values typically peak during February or late March, with maximum DC values reaching between 450 and 650.

- CDSR values are generally below the historical average.
- Current fire severity and danger for this region are, on average, Low to Moderate (Figure 1 & 5).
- With forecast warm temperatures and above normal rainfall, expect fire dangers and fire climate severity to increase over January as we approach the peak summer season. But with further major rain, this would keep dangers Low.

Station Name	BUI trends		DC trends		CDSR trends	
	vs. average	vs. 2011/12	**vs. average**	vs. 2011/12	**vs. average**	vs. 2011/12
Taupo / Whakatane						
Goudies raws	well below	well below	well below	well below	well below	well below
Tahorakuri raws	below	below	on trend	on trend	below	on trend
Tihoi raws	NA	NA	NA	NA	NA	NA
Ruatahuna raws	NA	NA	NA	NA	NA	NA
Minginui raws	below	below	slightly below	on trend	below	on trend
Taupo raws	below	below	below	below	slightly below	slightly above
Taupo Aero SYNOP	below	below	below	below	below	on trend
Matea raws	below	well below	below	below	below	below
Rotoaira raws	NA	NA	NA	NA	NA	NA
Hautu raws	NA	NA	NA	NA	NA	NA



Gisborne

Soil moisture:

- Soil moistures are showing signs of drying along the coast, with soil moisture closer to field capacity inland along the ranges (Figure 3).
- The soil moisture anomaly map (Figure 4) shows soils have been wetter than normal across the region.

Fire weather codes and indices:

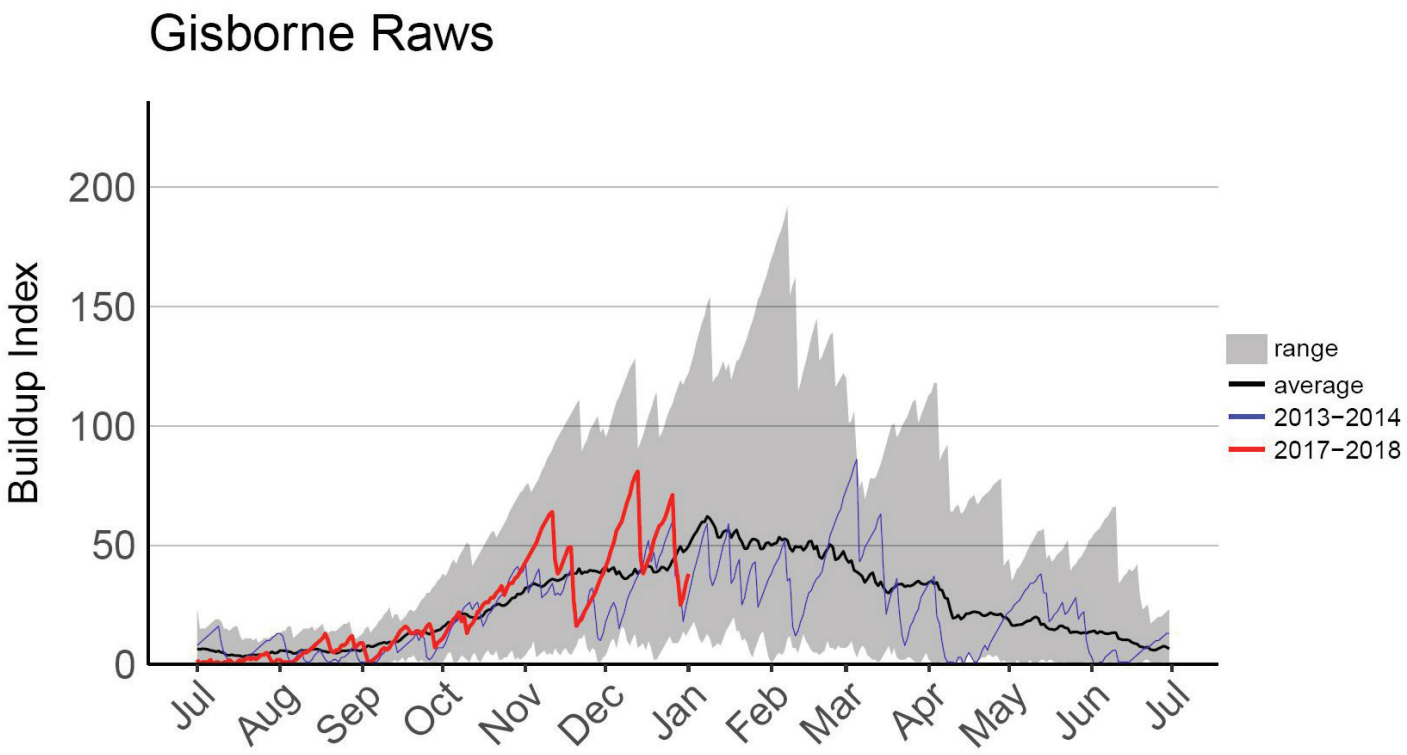
- Stations to watch are: None. The major rain event in early January has provided some relief, so there are no stations exhibiting exceptional FWI System values this time of the year.

- Currently BUIs across the region range from 5 to 15. This indicates that heavy and medium fuels are not readily available for combustion and the difficulty of control will generally be easy.
- BUIs are currently well below the historical average for this time of the year.
- They typically peak during February, with maximum values reaching between 80 and 160.

- Currently DC values are ranging between 10 and 150, except Gisborne (275), indicating moderately difficult mop-up requirements in some places.
- DCs across the region are generally below the historical average, and values seen in the 2013/14 fire season, except Gisborne which is on trend with the historical average.
- 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 generally below both the historical average and 2013/14 fire season.
- Current fire severity and danger for this region are, on average, Moderate (Figure 1 & 5).
- Temperatures are forecast to be above average but normal rainfall over January. Expect fire dangers and fire climate severity to increase over this region as we approach the peak summer season. 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. 2011/12	**vs. average**	vs. 2011/12	**vs. average**	vs. 2011/12
Gisborne						
Hicks Bay SYNOP	well below	well below	well below	well below	below	below
Poroporo raws	well below	well below	well below	well below	well below	well below
Raparapaririki Raws	NA	NA	NA	NA	NA	NA
Wharekopae raws	well below	NA	well below	NA	well below	NA
Pouawa raws	below	below	slightly below	below	below	below
Gisborne raws	below	below	on trend	slightly below	below	on trend
Gisborne Aero SYNOP	below	below	slightly below	below	below	on trend



Hawkes Bay

Soil moisture:

- Soil moisture levels across the region are dry, especially for Hastings and Central Hawkes Bay districts (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: None
- The major rain event in early January has provided some relief, so there are no stations exhibiting exceptional FWI System values this time of the year.

- Currently BUIs across the region range from 5 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: Wairoa (50), Bridge Pa (40) & Napier (35), where the fuels are more readily available and difficulty of control moderately difficult.
- BUIs are generally below the historical average for this time of the year and that seen in 2013/14 fire season.
- BUIs typically peak around February, where maximum levels can range between 70 and 225.

- DC values are currently ranging between 15 and 320, indicating moderate to difficult mop-up requirements in some places. The exceptions are: Bridge Pa (375), where you would expect difficult and extensive mop-up.
- DCs for stations north of Napier are generally below or well below the historical average for this time of the year, except Kaiwaka, which is above average. The remaining stations in the southern half are generally on trend with the historical average.
- The DC is expected to peak around late February or March, when maximum values can reach between 350 and 850.

- CDSR values are generally below the historical average.
- Current fire severity and danger for this region are, on average, Low to Moderate inland, and High along the coast of Central Hawkes Bay and Hastings districts (Figure 1 & 5).
- Temperatures are forecast to be above average but normal rainfall over January. Expect fire dangers and fire climate severity to elevate as we approach the peak summer season. 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. 2011/12	**vs. average**	vs. 2011/12	**vs. average**	vs. 2011/12
Wairoa						
Kaitawa raws	well below	well below	well below	well below	well below	well below
Tuai raws	well below	well below	below	below	well below	well below
Wharerata raws	well below	well below	below	below	well below	NA
Cricklewood raws	well below	well below	below	below	well below	well below
Wairoa raws	NA	NA	NA	NA	NA	NA
Mahia raws	below	below	slightly below	on trend	below	below
Mahia aws	below	below	below	slightly below	below	below
Hastings						
Te Haroto raws	below	below	below	below	well below	well below
Te Pohue raws	below	below	below	below	below	below
Kaiwaka raws	below	below	slightly above	slightly above	well below	well below
Waihau raws	below	below	below	below	well below	well below
Napier Aero SYNOP	below	below	slightly above	on trend	on trend	slightly above
Napier raws	below	below	on trend	slightly below	slightly below	on trend
Crownthorpe raws	below	below	on trend	on trend	below	on trend
Bridge Pa raws	below	below	on trend	on trend	below	below
Te Apiti Road raws	well below	NA	slightly above	NA	well above	NA
Central Hawke's Bay						
Gwavas raws	below	below	slightly below	slightly below	below	below
Ongaonga raws	below	below	on trend	on trend	well below	well below
Waipukurau raws	below	below	on trend	slightly above	below	slightly above
Porangahau raws	NA	NA	NA	NA	NA	NA

Lower North Island:

Taranaki

Soil moisture:

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

Fire weather codes and indices:

- Stations to watch are: None.
- The major rain event in early January has provided some relief, so there are no stations exhibiting exceptional FWI System values this time of the year. However, before that, Marco, Okato & Opunake were the ones to watch.

- BUIs now range between 5 – 20. This indicates that heavy and medium fuels are not readily available for combustion and the difficulty of control will generally be easy.
- BUIs are generally now below the average for this time of the year, and similar to the 2013/14 fire season.
- BUIs typically peak around 70 – 120 in late February or early March.

- DCs across the region now range between 100 and 240, indicating a risk of moderately difficult mop-up requirements. The exception is Marco, where the DC is much lower (25).
- DCs are generally above the historical average and the 2013/14 fire season for this time of the year, except Marco & Eltham, which are now below the average. All stations were previously at record highs for this time of year, prior to the major rain event.
- DC levels can increase to a peak of 350 – 700 in early March.

- CDSR values are all above, to well above, the historical average and the 2013/14 season.
- Current fire severity and danger for this region are, on average, Low to Moderate, but High to Very High along the coast (Figure 1 & 5).
- Both above average temperatures and rainfall are forecast for January. Expect fire dangers and fire climate severity to increase over this region as the summer season progresses. But with further major rain events, this would keep the fire danger Low.

Station Name	BUI trends		DC trends		CDSR trends	
	vs. average	vs. 2011/12	**vs. average**	vs. 2011/12	**vs. average**	vs. 2011/12
Taranaki						
New Plymouth SYNOP	slightly below	on trend	above	above	well above	well above
Tikorangi raws	NA	NA	NA	NA	NA	NA
Marco raws	below	on trend	below	on trend	slightly above	slightly above
Okato raws	on trend	slightly above	well above	well above	well above	well above
Opunake raws	NA	NA	NA	NA	NA	NA
Eltham raws	below	below	below	below	on trend	slightly above
Ngamatapouri raws	NA	NA	NA	NA	NA	NA
Whareroa raws	on trend	slightly above	above	above	NA	NA
Hawera aws	slightly below	on trend	slightly above	slightly above	well above	well above
Waverly raws	on trend	slightly above	above	above	NA	NA

Manawatu-Wanganui

Soil moisture:

- Soils are drying across this region, being driest along coastal areas and leaning towards storage capacity inland (Figure 3). The soil moisture anomaly map (Figure 4) shows soils were wetter than normal across the region for this time of the year, the exception being Manawatu & Horowhenua districts where it was drier than normal.

Fire weather codes and indices:

- Stations to watch are: Levin. The major rain event in early January has provided some relief; before that, Matarawa, Palmerston North, Waitarere Forest and Pahiatua were stations to watch due to exceptional fire indices values for this time of the year.

- BUIs generally range between 5 to 15 for the Ruapehu, and inland Whanganui, Rangitikei and Manawatu areas, indicating that heavy and medium fuels are not readily available for combustion and the difficulty of control will generally be easy. However, BUIs now range from 15 to 35 across the coastal Whanganui, Rangitikei and Manawatu, Palmerston North, Horowhenua & Tararua areas, indicating fuels are becoming more readily available and any fires will be more difficult to control.
- BUIs for this time of the year are generally below, or at, the historical average levels, and values observed during the 2013/14 fire season. The exception is Levin, which is still above the average and 2013/14 fire season values.
- BUIs typically peak in March, where maximum ranges can be between 80 and 170.

- DCs are generally ranging between 20 to 110 for the Ruapehu, and inland Whanganui, Rangitikei and Manawatu areas, between 150 to 290 for the coastal Whanganui, Rangitikei and Manawatu, Palmerston North & Tararua areas, and 350 to 390 in the Horowhenua area. These values indicate that heavy fuels are becoming available and mop-up needs could be difficult and extensive.
- DCs are generally below average levels in the inland areas, and either on trend or above average levels for the coastal and southern areas for this time of the year. Many stations were at record highs for this time of year, prior to the rainfall, although Levin is still at a record high.
- 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.

- CDSR values are generally on average in inland areas, and above average in coastal and southern areas.
- Current fire severity and danger for this region are, on average, High along the coast, but Low to Moderate inland (Figure 1 & 5).
- Above average temperatures and near normal rainfall are forecast for January. Expect fire danger and fire climate severity levels 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. 2011/12	**vs. average**	vs. 2011/12	**vs. average**	vs. 2011/12
Ruapehu						
Kirikau Raws	NA	NA	NA	NA	NA	NA
National Park raws	below	below	below	below	below	below
Paradise Valley raws	below	on trend	below	below	below	on trend
Desert Road Summit raws	below	below	below	below	below	on trend
Three Kings raws	below	below	well below	well below	on trend	slightly above
Waimarino Forest raws	below	on trend	on trend	above	on trend	on trend
Waiouru Airstrip aws	well below	well below	below	slightly above	on trend	above
Westlawn raws	below	below	below	below	below	below
Tarn Track Raws	NA	NA	NA	NA	NA	NA
Rangitikei						
Ngamatea raws	well below	well below	well below	well below	on trend	slightly above
Whangaehu raws	below	below	below	below	below	below
Raumai raws	slightly below	slightly above	above	above	well above	well above
Whangaehu						
Ranana raws	NA	NA	NA	NA	NA	NA
Wanganui Spri. Park ews	slightly below	on trend	slightly above	slightly above	well above	well above
Matarawa raws	below	NA	above	NA	well above	NA
Wanganui aws	slightly below	on trend	above	above	well above	well above
Whanganui raws	below	on trend	above	above	above	above
Manawatu						
Tapuae raws	below	on trend	below	below	below	on trend
Feilding raws	NA	NA	NA	NA	NA	NA

Manawatu-Wanganui continues

Station Name	BUI trends		DC trends		CDSR trends	
Palmerston North City						
Palmerston North SYNOP	below	below	slightly below	below	well above	well above
Ngahere Park raws	below	below	on trend	on trend	above	above
Horowhenua						
Waitarere Forest raws	on trend	slightly above	above	above	slightly above	slightly above
Levin aws	above	above	well above	well above	well above	well above
Tararua						
Dannevirke ews	below	on trend	on trend	on trend	on trend	below
Waione East raws	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Pahiatua ews	below	slightly below	above	above	well above	well above
Akitio ews	below	below	below	below	slightly above	slightly above
Alfredton South raws	below	below	on trend	on trend	well above	well above

Wairarapa

Soil moisture:

- Soils are close to 50% storage capacity for this time of the year (Figure 3).
- The soil moisture anomaly map shows soils have been wetter than normal for this time of the year (Figure 4).

Fire weather codes and indices:

- Stations to watch are: None. The major rain event in early January has provided some relief; before that, Stoney Creek, Haurangi, Ngaumu & Masterton were the stations to watch due to exceptional values for this time of the year.

- BUIs are now ranging between 10 to 25. This indicates that heavy and medium fuels are not readily available for combustion and the difficulty of control will generally be easy.
- BUIs are now well below average for this time of the year, but similar to the levels seen during the 2013/14 season.
- BUI values typically peak at most stations in the region in late January to mid-February (100 – 180).

- DCs across the region are now ranging between 90 to 280, except Featherston (15), indicating the heavy and deep organic fuels are becoming readily available, and there is a risk of moderate to difficult mop-up needs in heavy fuels.
- DCs are now generally below, or at, average levels for this time of the year.
- DC values usually peak in late February, reaching between 500 and 800, and can remain high until early May.

- CDSR values are generally on trend with, or above, the historical average.
- Fire severity and fire danger levels for the region, are on average, High to Very High (Figure 1 & 5).
- Above average temperatures and near normal rainfall are forecast for January. Expect fire dangers and fire climate severity in this region to increase further 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. 2011/12	**vs. average**	vs. 2011/12	**vs. average**	vs. 2011/12
Masterton / Carterton						
Castlepoint SYNOP #	below	below	below	below	slightly above	above
Crofoot raws #	below	below	slightly below	slightly below	on trend	slightly above
Holdsworth Station raws	slightly below	slightly above	above	above	above	above
Masterton Aero aws *	below	below	slightly above	on trend	above	above
Homebush raws *	below	below	below	below	above	slightly above
Ngaumu Forest raws	below	below	slightly below	on trend	slightly above	slightly above
South Wairarapa						
Featherston Raws	NA	NA	NA	NA	NA	NA
Haurangi raws	below	on trend	on trend	slightly above	above	above
Stony Creek raws	below	slightly below	on trend	slightly above	on trend	slightly above
Ngawi aws ^	below	below	below	on trend	on trend	slightly above
Palliser raws ^	below	below	slightly above	above	below	on trend

Wellington

Soil moisture:

- Soils are showing signs of dryness along the coast, at 50% storage (Figure 3). The soil moisture anomaly map shows soils are about normal for this time of the year across the region (Figure 4).

Fire weather codes and indices:

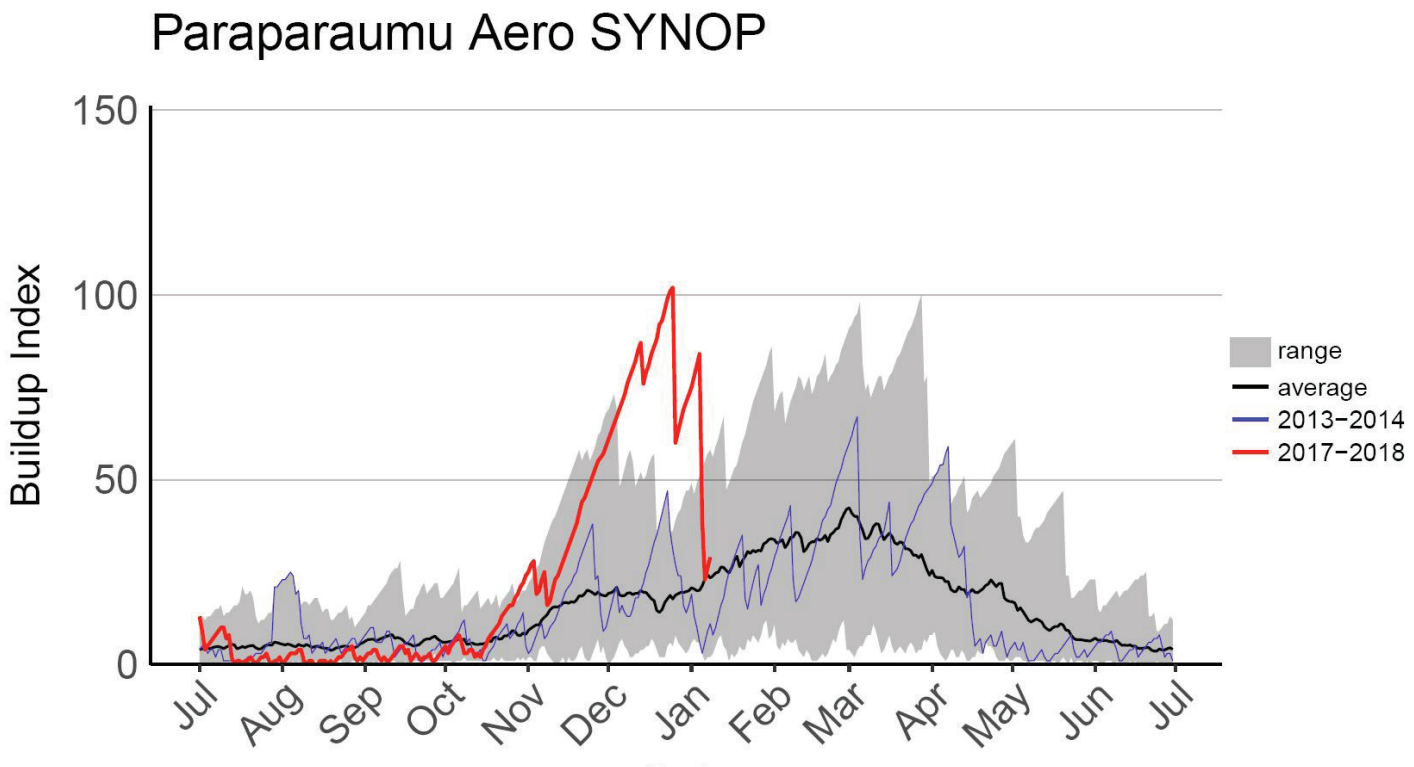
- Stations to watch are: None. The major rain event in early January has provided some relief; before that, Paraparaumu was the station to watch due to exceptional fire indices values for this time of the year.

- BUIs are now ranging between 10 to 25, indicating that heavy and medium fuels are not readily available for combustion and the difficulty of control should not be difficult.
- BUIs are now generally below average for this time of the year, but above the levels seen during the 2013/14 season.
- BUIs typically peak up to 100 around late February.

- DCs values are currently ranging between 150 – 320, indicating that heavy fuels and deep organic layers are available, and mop-up requirements could be difficult and extensive.
- DCs are above average for this time of the year, and levels seen during the 2013/14 fire season.
- DCs typically peak in late February (600 -700) and remain high until late April.

- CDSR values across the region are generally above average and also levels seen during the 2013/14 fire season.
- Current fire severity and danger for this region are, on average, High (Figure 1 & 5).
- Above average temperatures and near normal rainfall are forecast for January. Expect fire dangers and fire climate severities to increase further 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. 2011/12	**vs. average**	vs. 2011/12	**vs. average**	vs. 2011/12
Kapiti Coast						
Te Horo Raws	NA	NA	NA	NA	NA	NA
Paraparaumu Aero	NA	NA	NA	NA	NA	NA
Titahi Bay Raws	NA	NA	NA	NA	NA	NA
Porirua Elsdon Park aws	NA	NA	slightly above	above	slightly above	above
City						
Belmont raws	slightly below	below	slightly above	below	on trend	on trend
Long Gully Raws	NA	NA	NA	NA	NA	NA
Wellington Aero SYNOP	slightly below	slightly above	slightly above	above	above	above
Rimutaka Forest raws	slightly below	slightly above	slightly above	above	above	above



Pacific Islands:

Chatham Island

- 12 noon monthly average temperatures experienced over December rapidly climbed and were above average.
- Total rainfall for the month of December remained similar to November and well below normal.

- Note: The historical averages are based on a 17-year average from stations at the Chatham Island Aero (Chatham Island Aero SYNOP and Chatham Island Ews stations) and a 19-year average from stations at Waitangi (Waitangi Raws and Chatham Islands Aws (Waitangi) stations).

Fire weather codes and indices:

- Stations to watch are: Kaiwhata

- BUI values range from 20 to 65. This indicates that heavy and medium fuels are becoming available for combustion and the difficulty of control could be difficult in some locations.
- BUI values are currently trending above to well above average for this time of the year.
- Historically the values tend to peak from early February until March (up to 80).

- DCs are ranging between 390 to 510, indicating that heavy fuels and deep organic layers are available, and likely present difficult and extensive mop-up requirements.
- The drought indices are generally trending above the historical average for this time of the year.
- Maximum DCs typically peak (around 300 – 600) during February.

- The CDSR is split either slight below or above the historical average for this time of the year.
- Currently, the Chatham's are experiencing Moderate to High fire severity and Moderate to Very High fire danger.
- As we near the peak summer season, expect fire dangers to increase further over the next few months especially if conditions dry out. Fire severity and danger levels are expected to remain similar (Moderate to High) throughout the first half of January.

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	NA	NA	well above	NA	slightly below	NA
Chatham Islands Aero	slightly above	above	well above	well above	well above	well above
Waitangi raws	well above	NA	well above	NA	NA	NA