Aotearoa New Zealand National Monthly Fire Danger Outlook (2025/2026 season)

Issue: September 2025

Current fire danger situation

A majority of the fire indices are currently in the low range across the country, although Fine Fuel Moisture Code and Grass Fire Danger are showing some moderate values. In addition, Scrub Fire Danger values are high across large portions of New Zealand.

ENSO-neutral conditions are currently in place, but a weak La Niña is favoured to develop in the coming months.

Current fuel and soil moisture status

As of 16 September (see Figure 6, left), soil moisture levels were near normal across nearly all of New Zealand. Below normal soil moisture was observed around Napier, with an area of above normal soil moisture in northern Canterbury. The New Zealand Drought Index (NZDI) currently indicates no unusually dry conditions across the country.

These pockets of dryness are also evident in fire dangers across parts of the country, as shown in the Drought Code (Figure 1) and Duff Moisture Code (Figure 2) maps below.

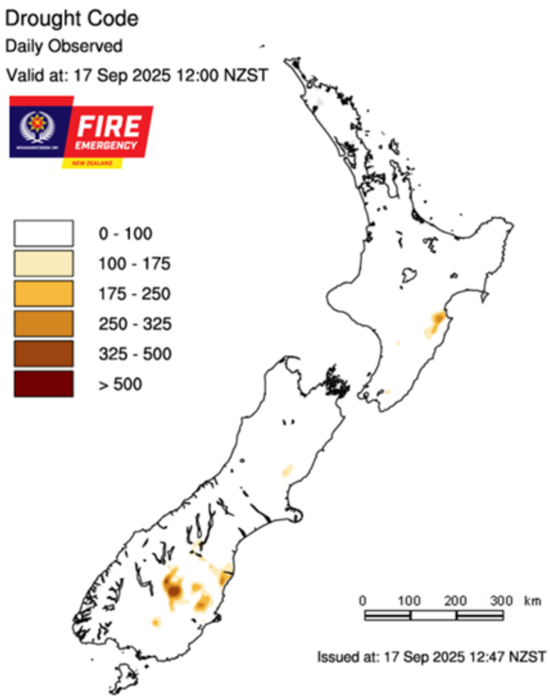


Figure 1: Map of the Drought Code (DC) from 17 September, indicating the dryness and availability to burn of deep soil organic layers and large woody fuels.

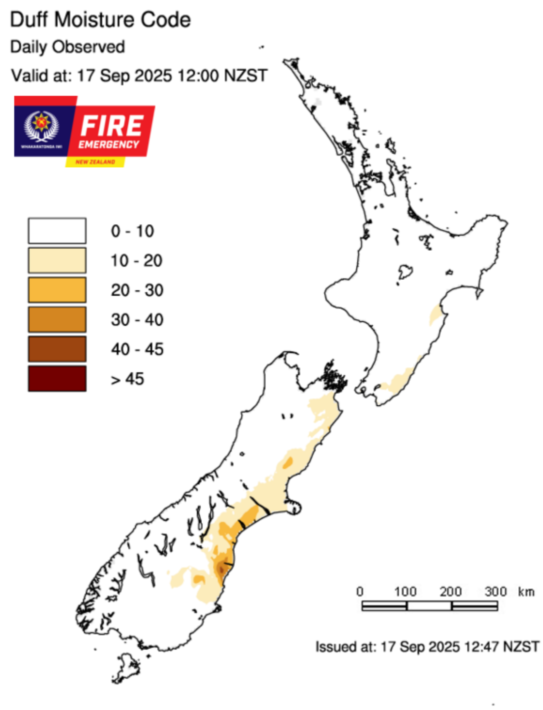


Figure 2: Map of the Duff Moisture Code (DMC) from 17 September, indicating the dryness and availability to burn of shallow soil organic layers and medium-sized fuels.

Although values are currently relatively low, fire danger levels are expected to rise over the coming months as the fire season progresses. Ongoing monitoring of these changing conditions is therefore critical to ensure timely response and risk management.

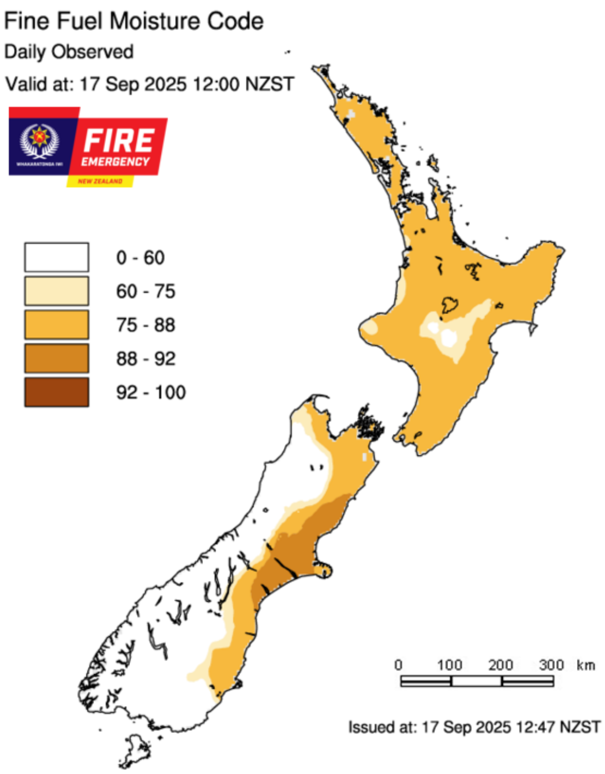


Figure 3: Map of the Fine Fuel Moisture Code (FFMC) from 17 September, indicating dryness and ease of ignition of fine dead fuels. The effect of recent rainfall can be seen in the west and south of the South Island. However, values will recover quickly, and periods of elevated FFMCs will continue throughout the fire season.

Forecast climate and weather

The remainder of September is expected to be quite wet, especially in the west of both islands, due to numerous moisture-rich fronts arriving on west-southwest air flows.

During October, however, high pressure is favoured to develop near or over New Zealand, likely resulting in a drier trend. More northeasterly air flows may occur, reflecting the influence of a developing La Niña. There are indications that late October could see rainmakers approach from the subtropics. Temperatures during October are likely to be near average or above average, reflecting increasing northeasterly-quarter air flows.

The October-December period is expected to see easterly-quarter air flows become dominant. Wetter than normal conditions are favoured for the upper and eastern North Island, while the western and lower South Island could move in a distinctly drier direction. Temperatures are forecast to be above average, especially in western New Zealand. Below normal wind speeds are also favoured.

For more information, see page 9.

The La Niña climate pattern

ENSO-neutral conditions are currently in place, but a weak La Niña is favoured to develop in the coming months. This will likely result in more easterly or north-easterly air flows developing over time.

No two La Niña events are the same, and each event can produce different effects on weather conditions and therefore fire dangers across New Zealand depending on its timing, strength, and duration. In general, however, La Niña events are historically associated with higher-than-normal pressures east of New Zealand, resulting in more northeasterly winds than normal. This typically leads to wetter than normal conditions being favoured for northern and eastern areas, while drier than normal conditions tend to prevail in the south and west.

The El Niño-Southern Oscillation (ENSO), which includes El Niño and La Niña phases, is often highlighted in seasonal forecasts, as it the most important source of intraseasonal variability for New Zealand. But while ENSO provides predictability over longer timescales, it doesn't fully explain all climate variability. Increasing global Sea Surface Temperatures (SSTs) due to climate change in recent years have also altered traditional impacts of ENSO phases and its associated weather patterns. It is therefore essential to continue monitoring the fire season through the Fire Weather System, with an understanding that even under normal or near-normal conditions, there will be periods of elevated fire danger.

What to watch for

<u>Holdover fires</u>

The use of fire during this time of year is common, particularly for larger burn-offs. These burns can smoulder or burn slowly when DMC and DC fire danger values are low, and medium to heavy fuels remain too damp to ignite effectively. However, as conditions dry over the coming days and weeks, these fuels will become more available to burn—potentially increasing fire activity and the risk of escape, especially during dry and windy periods.

In several parts of the country, recent winter storms have left communities managing recovery efforts. As these areas begin to stabilise and conditions become more suitable for burning, we are likely to see an increase in fire use, including the disposal of multiple large piles of debris. This increased activity may involve individuals who are not regular fire users, which heightens the need for careful planning and oversight to prevent unintended fire behaviour.

Complacency

There is a common belief that destructive wildfires only occur during the peak of summer when conditions are extremely dry. This misconception can lead to a sense of complacency among the public, landowners, and even firefighters during the spring months. In reality, some of the most significant wildfires in recent years have taken place in spring—often without drought conditions—when the weather is more variable.

Brief periods of drying, combined with strong winds and the presence of fine, fast-burning fuels, can still create ideal conditions for fires to ignite, spread quickly, and burn with moderate to high intensity. These factors can result in large-scale fire events, even outside the traditional summer fire season.

Light flashy fuels

Forest fuel types with dense canopy cover and substantial medium to heavy fuels tend to retain moisture longer following winter, making them a lower fire risk compared to the summer months. In contrast, fine fuels and those exposed to direct sunlight, such as scrub, logging slash, and young plantations (often interspersed with grass or scrub), are more reactive to atmospheric changes. These fuels can dry out rapidly, as reflected in the highly variable Fine Fuel Moisture Code (FFMC).

As a result, these fuel types pose an elevated fire risk, particularly during the sunny and windy conditions typical of spring and early summer. Vigilance is essential during this period, as fires in these areas can ignite and spread quickly under the right conditions.

Wind driven fires

Spring is typically a season characterized by windy conditions. As such, there will continue to be short periods of stronger winds, usually associated with passing weather systems, which can lead to wind-driven fires.

Wind poses a significant risk, particularly when combined with the Foehn effect, which brings strong, warm, dry winds over elevated terrain, such as with the north-westerlies experienced in the eastern regions of both islands.

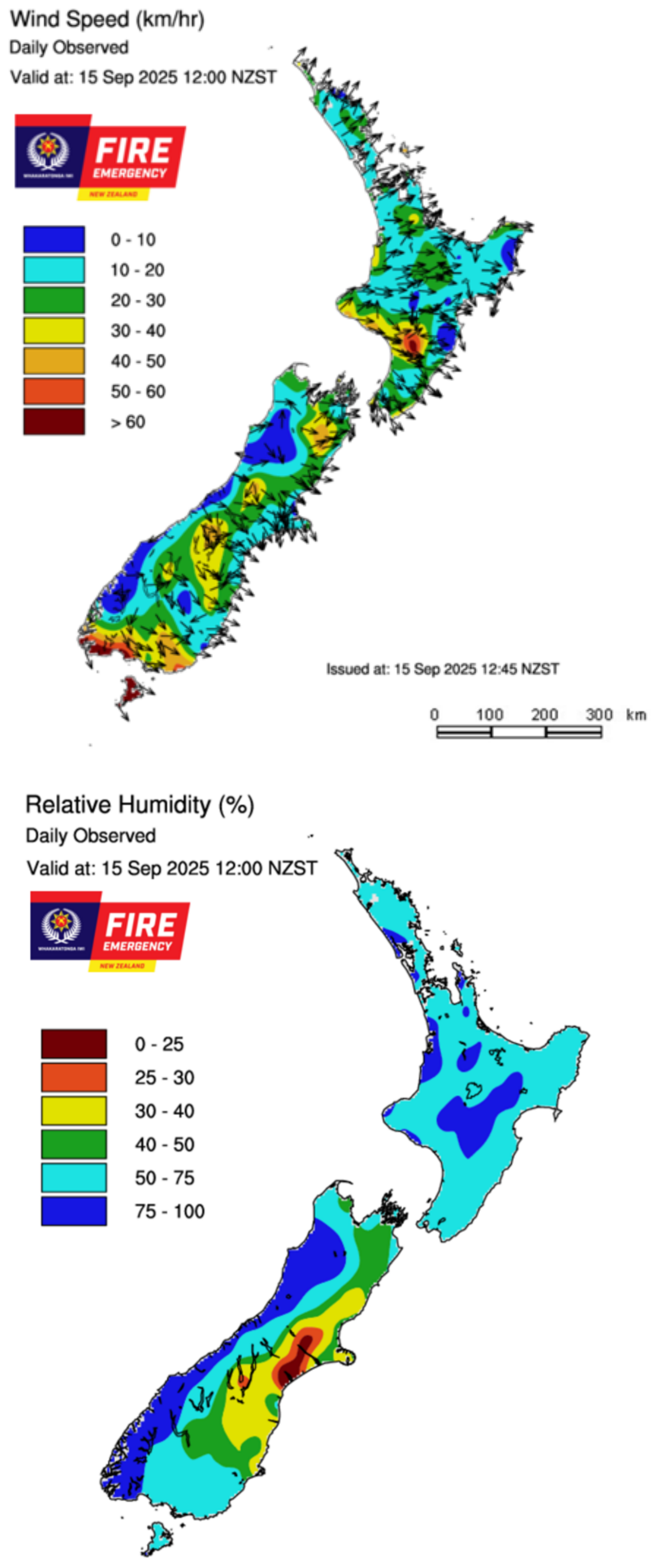


Figure 4. Maps of Wind Speed (top) and Relative Humidity (bottom) from 15 September illustrating an example of the Foehn effect, where strong northwesterly winds over the South Island resulted in low humidity values (and elevated temperatures) in eastern areas.

Grass curing

Grasses across much of the country remain green following average to above-average winter rainfall. However, as summer approaches, seasonal die-off—known as grass curing—is expected to occur. Although recent conditions may delay the onset of curing in some regions, it is inevitable and may have already begun in drier areas. In elevated zones, particularly where tussock grasses dominate, frost curing has already led to significant drying, increasing the amount of dead fuel present.

This accumulation of cured grass heightens the risk of ignition and fire spread. When combined with wind, these dry fuels can contribute to faster-moving fires, greater fire intensity, and potentially larger burn areas. Proactive management of grass fuels is essential now, before widespread curing intensifies over the summer months.

Photo 1. Residual smouldering of a fire in grass and scrub fuels near Mahia (March 2025).

Areas to watch:

In the short term, areas of concern for elevated fire potential include the currently dry regions of Hawke's Bay, Canterbury, and Otago. Persisting dry conditions in these areas may lead to increased fire danger levels over the coming weeks.

In the longer term, the onset of La Niña and the positioning of anticyclones, whether more centrally or further south across the country will influence how fire danger levels evolve.

North Island:

The positioning of anticyclones will play a key role in shaping fire danger conditions across the North Island. If anticyclones settle south of the country, northern and some central regions may be exposed to rain events from the north, helping to slow the development of fire danger levels. However, if anticyclones are positioned more centrally, this could reduce the likelihood of rainfall, resulting in more normal fire risk conditions.

In eastern areas, prevailing easterly wind flows may increase rainfall and relative humidity along coastal zones, which could help suppress fire danger levels. Central regions are expected to experience more normal seasonal fire danger conditions.

In western areas, a reverse foehn wind effect may lead to rising fire danger levels, particularly in parts of Taranaki, Whanganui/Manawatu and the Kapiti Coast, where warmer, drier conditions could result in slightly above normal fire risk.

South Island:

The South Island is expected to experience more frequent east to north-easterly flows in the coming months. These conditions will likely increase the likelihood of rain and higher relative humidity along the eastern coastal areas, helping to slow the development of fire danger levels in those locations. However, inland areas are expected to experience more normal seasonal fire danger conditions.

On the West Coast, the reverse foehn wind effect is again likely to result in reduced rainfall and elevated temperatures. This combination is expected to result in slightly above normal fire danger levels, particularly given the prevalence of high scrub fuels that can dry out rapidly. These warmer, drier conditions could also extend to parts of western Otago and Southland. Ongoing monitoring of fire danger conditions in these areas will be essential.

Photo 2. Fire in fine flashy grass and scrub fuels near Mahia (March 2025).

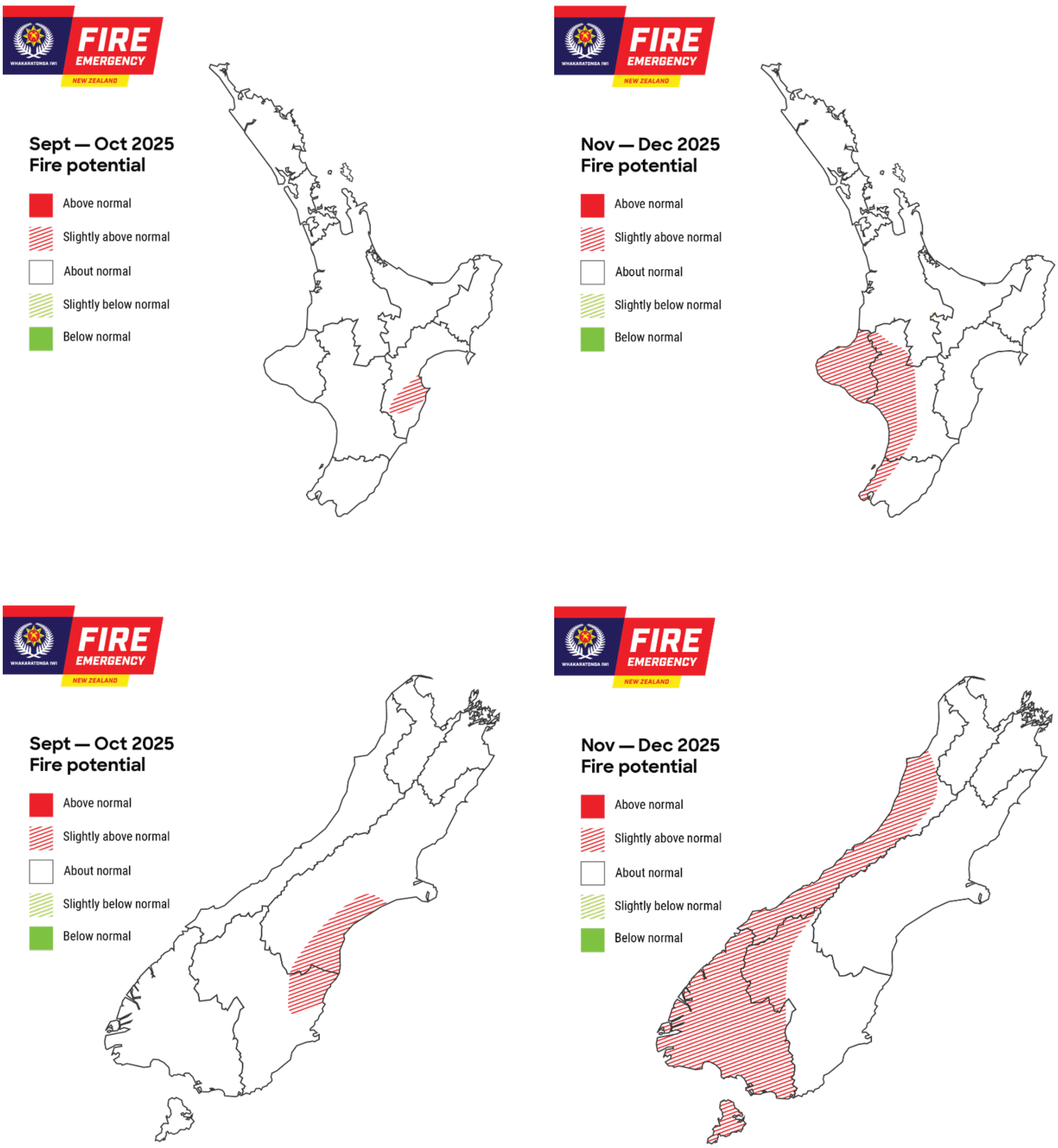


Figure 5. Fire potential over the next three months for the North and South Islands based on assessment of the current conditions as well as the effects of climate predictions for the September - October (left) and November - December (right) periods.

Current climate

In August, temperatures were below average (0.51-1.20°C below average) for southwestern Waikato, Taranaki, Manawatū-Whanganui, Kāpiti Coast, Nelson, much of Marlborough, northeastern Canterbury, and parts of Central Otago. Temperatures were near average (±0.50°C of average) for most remaining parts of the country. So far in September, temperatures have been near average across most of the country, with warmer than average temperatures in Northland and cooler than average temperatures in the West Coast (Figure 6, right).

August rainfall was below normal (50-79% of normal) or well below normal (<50% of normal) for parts of every region. Rainfall was near normal (89-119% of normal) for much of Southland, Queenstown, Christchurch, Wellington, coastal Wairarapa, Hamilton, and Tauranga. Rainfall was above normal (120-149% of normal) in northern parts of Northland, Wairoa, Castlepoint, and Balclutha. So far in September, rainfall has generally been below normal or well below normal in the east of both islands, with near normal or above normal rainfall mostly observed in western areas (Figure 6, middle).

As of 16 September (see Figure 6, left), soil moisture levels were near normal across nearly all of New Zealand. Below normal soil moisture was observed around Napier, with an area of above normal soil moisture in northern Canterbury. The New Zealand Drought Index (NZDI) currently indicates no unusually dry conditions across the country.

Climate drivers

Sea surface temperatures (SSTs) in the central equatorial Pacific (Niño 3.4 Index) have cooled significantly in recent weeks, reflecting a more definitive shift toward La Niña. As of 13 September, the 30-day traditional Niño index was on the La Niña side of neutral (-0.38˚C), while the 30-day relative Niño 3.4 Index[1] (RONI) was -0.71˚C, at the La Niña threshold, and reflective of the central equatorial Pacific being significantly cooler than the average of the global tropics.

The Southern Oscillation Index (SOI) value for August 2025 was +0.5, remaining on the La Niña side of neutral. Other atmospheric circulation anomalies recorded in August, such as stronger than average trade winds in the central equatorial Pacific and increased convection over the maritime continent, are also consistent with persistence of an anomalous Walker Circulation that resembles conditions typically found during La Niñas.

The Indian Ocean Dipole (IOD) is currently negative, and likely to become more negative over the next three-month period. A negative IOD during the Southern Hemisphere spring is often associated with La Niña conditions.

New Zealand’s coastal water temperatures remain above average off the west coasts of both the North and South Islands and anomalies intensified slightly during August 2025. Marine Heatwave (MHW) conditions also persist over these areas. In contrast, SSTs have cooled slightly compared to July off the east coast of the North Island. SST anomalies are forecast to remain generally above average around New Zealand over the next three-month period.

In summary, ENSO-neutral conditions persist across the tropical Pacific. Both the Niño 3.4 Index and the Southern Oscillation Index (SOI) remain within neutral thresholds. However, SSTs in the central and eastern Pacific have cooled significantly, and the RONI is at the La Niña threshold. Moreover, subsurface ocean temperature anomalies intensified and shifted eastward and towards the surface during August, a pattern consistent with increasing probability for La Niña conditions to emerge more definitively over the forecast period.

[1] The Relative Oceanic Niño 3.4 Index (RONI) is a modern way of measuring oceanic El Niño and La Niña that is complementary to oceanic traditional indices. While traditional oceanic indices like the Niño 3.4 Index monitor SSTs in one region, the RONI compares the average SST in the central equatorial Pacific with the average SST across the global tropics. Since tropical rainfall patterns respond to relative changes in ocean temperatures, this new relative index can help forecasters better determine if the equatorial Pacific is warmer or cooler than the rest of the global tropics, which has become more challenging to discern as seas warm because of climate change.

Figure 6: Maps showing the current soil moisture anomaly, as well as rainfall and temperature differences from normal since the start of the month.

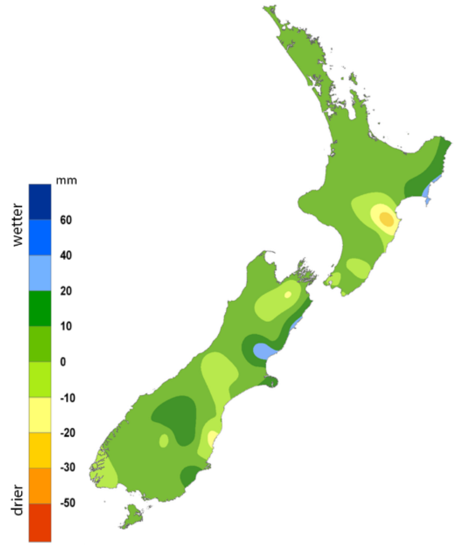
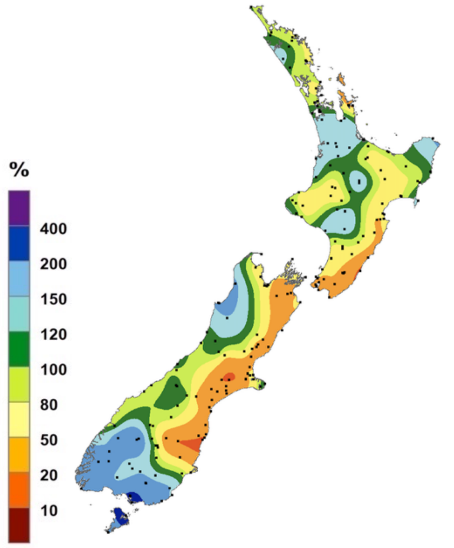
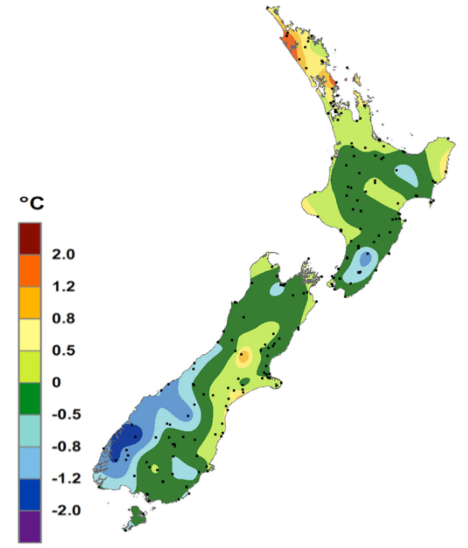
<table>
<tr><th>Soil moisture anomaly:
16/9/25</th><th>Rainfall anomaly:
1/9/25 – 16/9/25</th><th>Temperature anomaly:
1/9/25 – 16/9/25</th></tr>
<tr><td>
</td><td>
</td><td>
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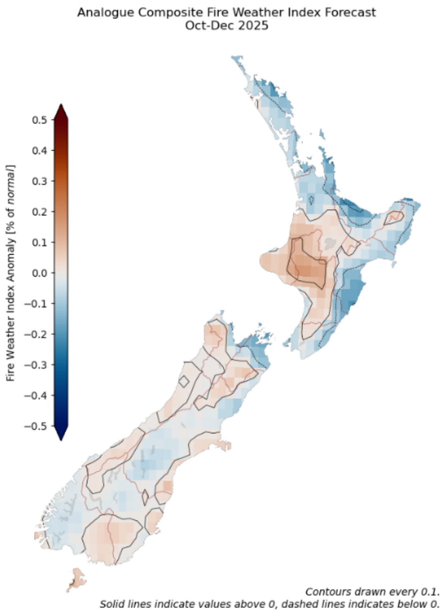
Photo 3. Fire in grass and scrub fuels near Panguru, Hokianga, Northland (March 2025).

Fire season analogues

To help understand what fire weather conditions may be like this summer, we can look at analogues. Analogues are historical years with similar climatic conditions to the current year.

This season's analogues feature historical years with summers influenced by La Niña conditions (Figure 7). The subjective analogue seasons are selected with expert interpretation from Earth Sciences New Zealand.

This month's analogues are in general agreement with what the dynamical models are indicating for the October-December period, with decreased fire danger in the upper and eastern North Island, but increased chances in the west of both islands. The analogues indicate seasonal temperatures generally near average to above average along with near normal wind speeds.



Forecaster-selected analogue season - Oct to Dec
2024-2025
2022-2023
2021-2022
2020-2021
2010-2011
2008-2009
1999-2000
1995-1996

Figure 7: Analogue fire seasons as selected with expert interpretation from ESNZ. The Fire Weather Index (FWI) is a combination of the Initial Spread Index and Buildup Index, and is a numerical rating of the potential frontal fire intensity. In effect, it indicates fire intensity by combining the rate of fire spread with the amount of fuel being consumed. Here, the Fire Weather Index anomaly is calculated by averaging historical analogue years together and comparing to the average FWI between 1991-2020 for the relevant season.

Climate outlook: October 2025

October’s air flows are expected to become more northeasterly over time as high pressure sets up near or over the country. Much of New Zealand may move in a drier direction during the month, although there are indications that late October could see rainmakers approach from the subtropics. Wind speeds will likely trend below normal during the month due to high pressure nearby. Near average to above average temperatures are generally favoured (Figure 8).

Climate outlook: October – December 2025

A developing easterly-quarter air flow anomaly will be favoured during the season. Temperatures for the next three months are expected to be above average overall, especially in the west of both islands (Figure 9). With ENSO-neutral conditions likely to transition to a weak La Niña during the season, the North Island, particularly northern and eastern parts, may experience occasional short and sharp rainfall events due to low pressure or moisture plumes moving out of the subtropics. However, the western and lower South Island may move in a distinctly drier direction. Above normal relative humidity is expected in most northern and eastern regions, with below normal relative humidity in the west. Wind speeds may be generally below normal for the season as a whole.

The tropical cyclone season for the Southwest Pacific runs from November through April. The official tropical cyclone outlook for 2025-2026 will be released in the coming weeks.

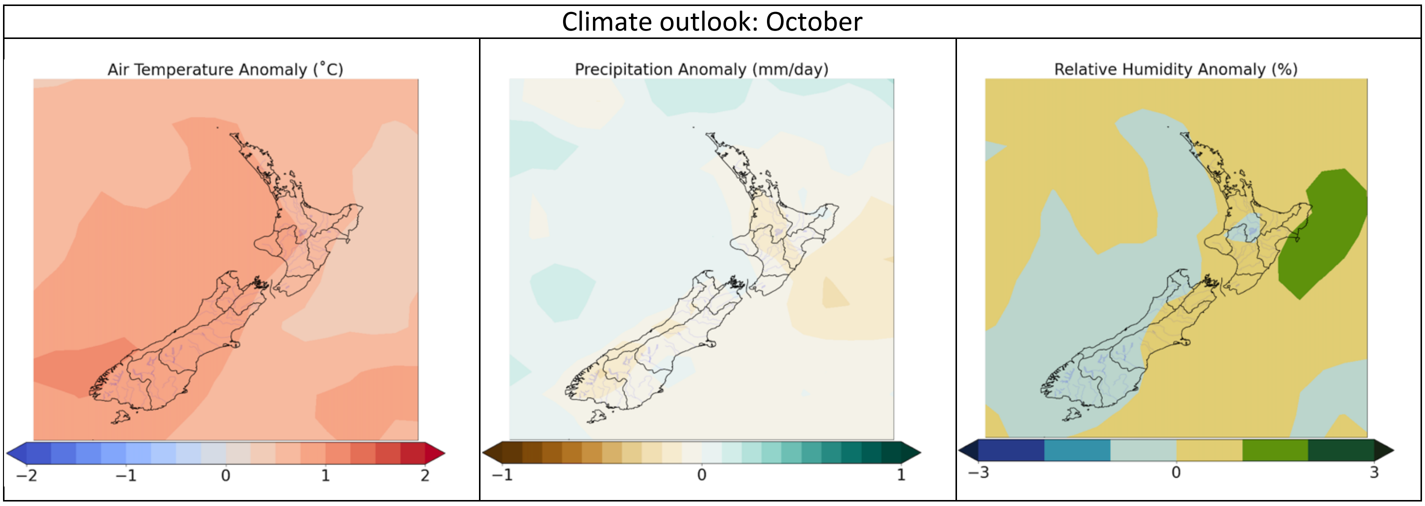


Figure 8: Climate outlook for October showing forecast temperature (left), rainfall (middle) and relative humidity (right) anomalies.

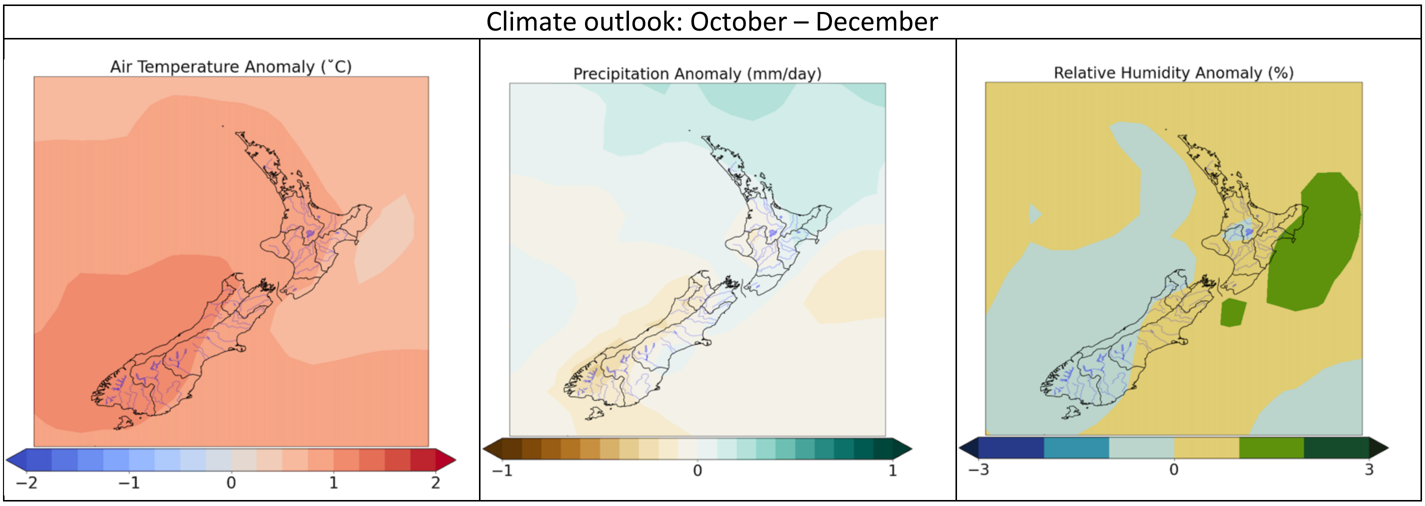


Figure 9: Climate outlook for October-December showing forecast temperature (left), rainfall (middle) and relative humidity (right) anomalies.

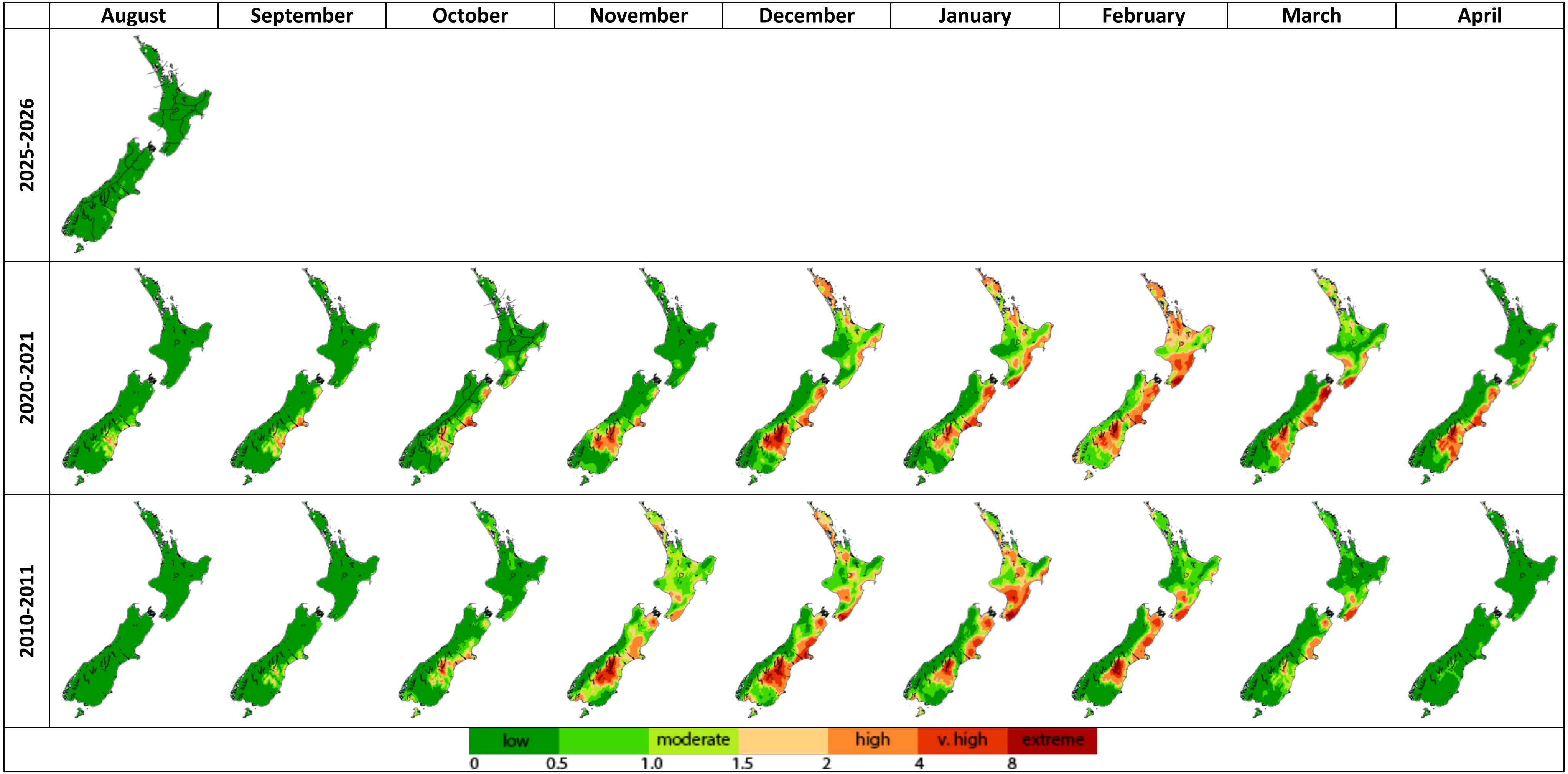


Figure 10: Monthly average severity rating for the current year 2025/2026 and the comparative years of 2020/2021 and 2010/2011. These are analogue years for the current season and give us an insight into what the upcoming season may be like.

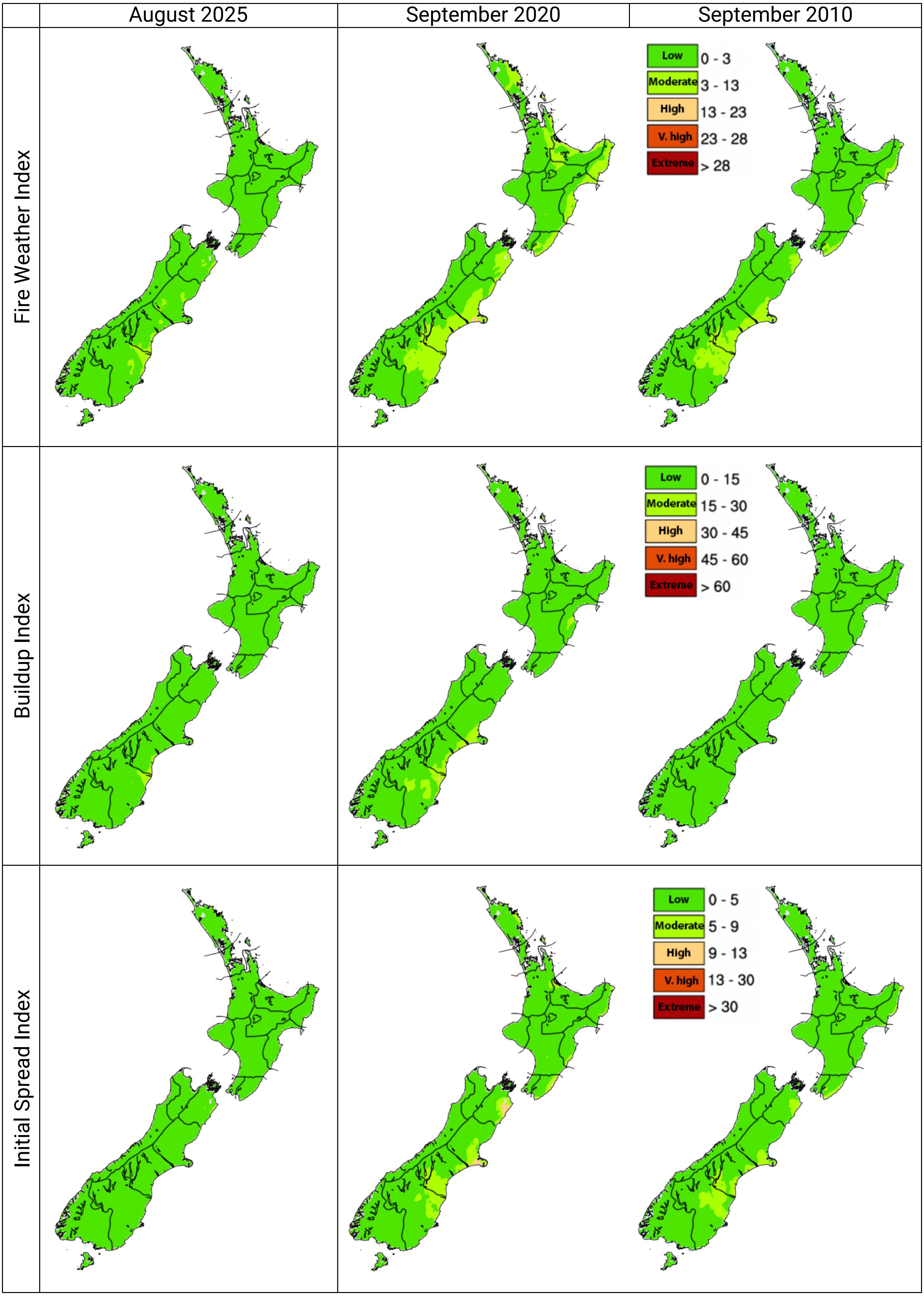


Figure 11: The most recent observed month (left column) and analogue months for September (middle and right columns); monthly average for the Fire Weather Index (top), Buildup Index (middle) and Initial Spread Index (bottom).

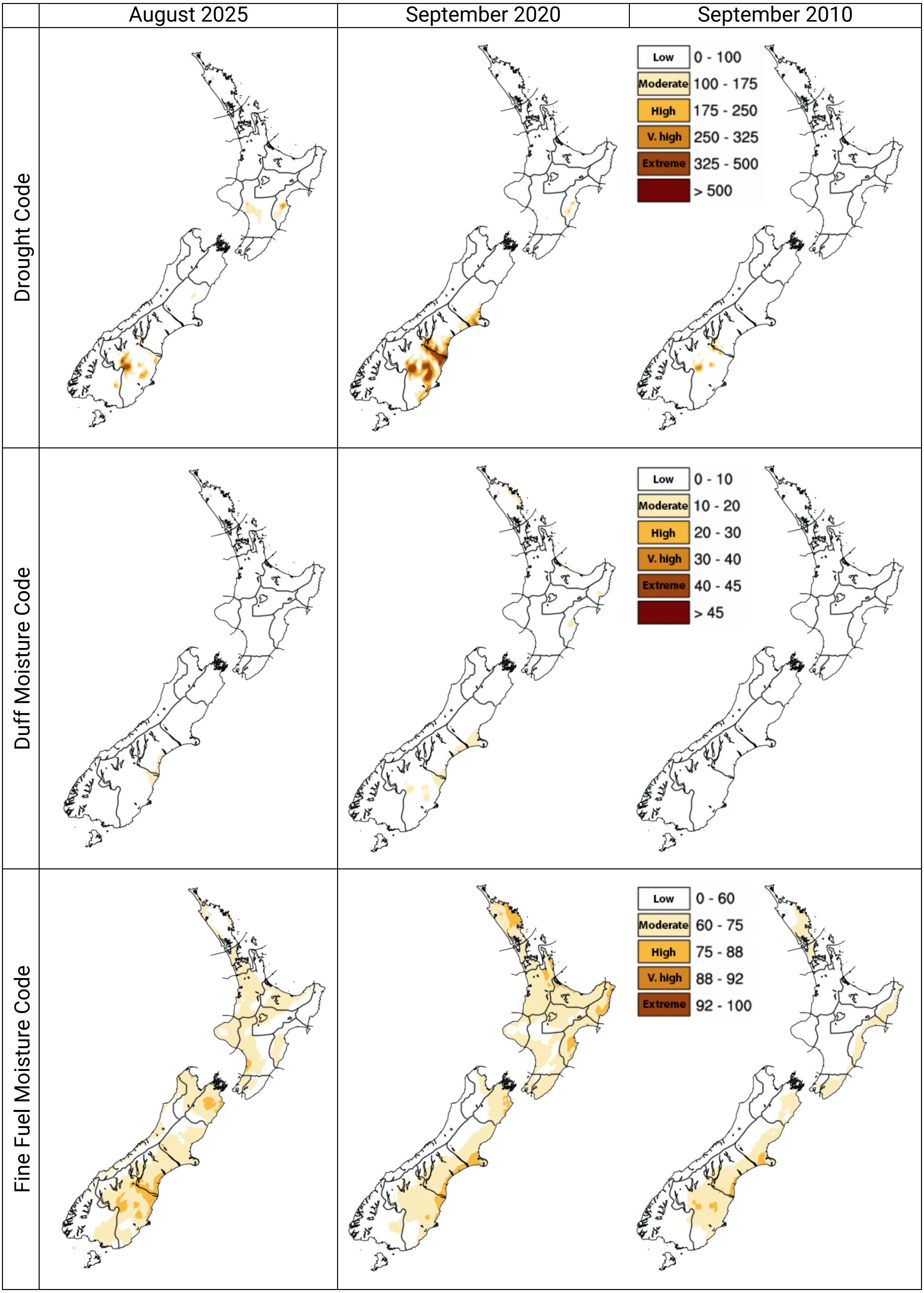


Figure 12: The most recent observed month (left column) and analogue months for September (middle and right columns); monthly average for the Drought Code (top), Duff Moisture Code (middle) and Fine Fuel Moisture Code (bottom).

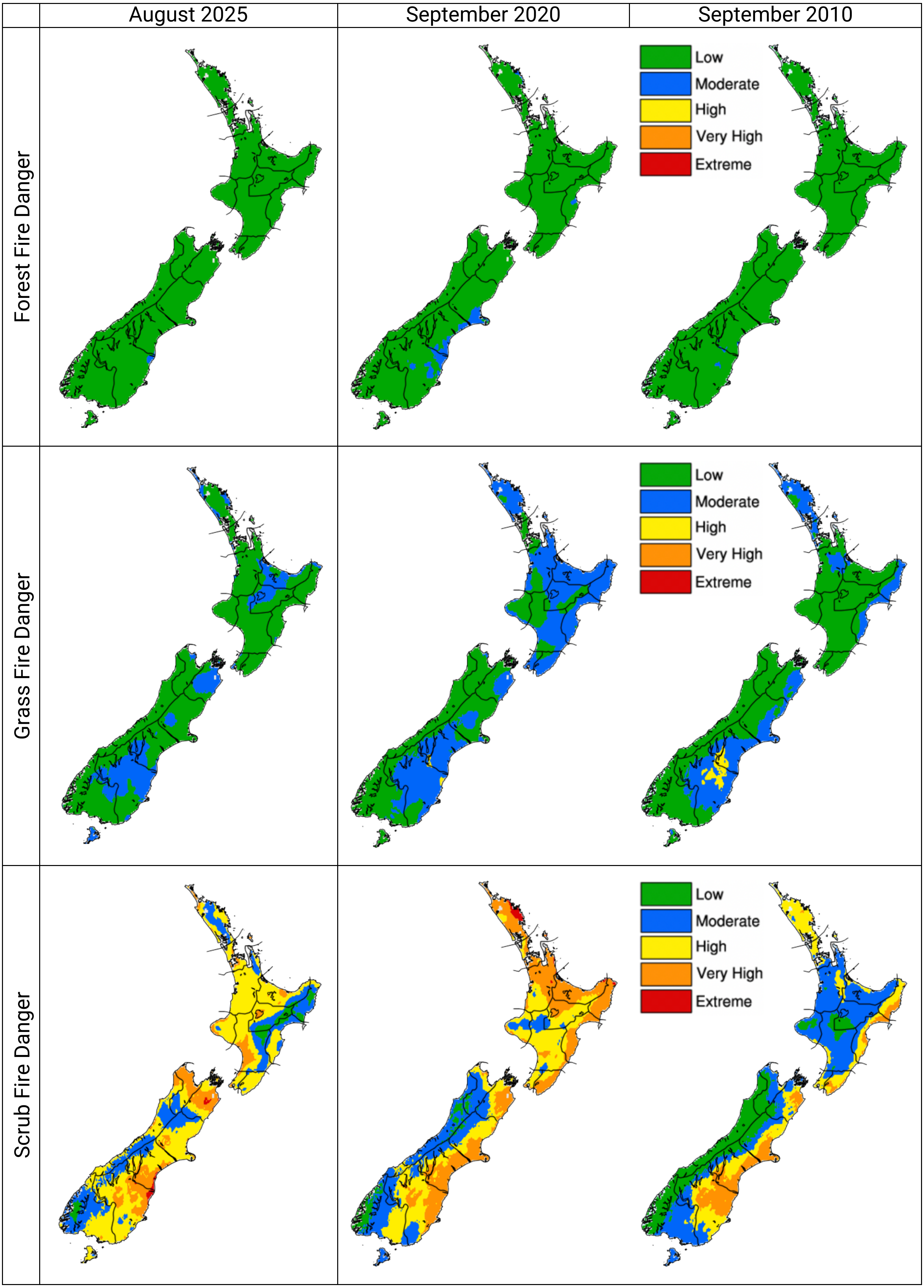


Figure 13: The most recent observed month (left column) and analogue months for September (middle and right columns); monthly average for the Forest Fire Danger (top), Grass Fire Danger (middle) and Scrub Fire Danger (bottom).

Background information on fire weather indices and codes

Fine Fuel Moisture Code: 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: 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 mop-up needs
11-20	Moderate
21-30	Difficult
31-40	Difficult & extended
41+	Extreme & extensive

Drought Code: 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 mop-up needs
101-175	Moderate
176-250	Difficult
251-300	Difficult & extended
301+	Extreme & extensive

Buildup Index: 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: 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: 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: 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: 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

This document was prepared by Earth Sciences New Zealand in collaboration with Fire and Emergency NZ