

New Zealand Wildfire Summary

2019/20 Wildfire Season Update



Introduction

This report summarises the 2019/2020 wildfire season for New Zealand (1 October 2019 – 30 May 2020).

Monthly Seasonal Fire Danger Outlook reports were prepared and circulated during the period November 2019 to May 2020. The intention of these were to provide a heads-up to fire managers on potential fire danger conditions across the country based on historical and current fire weather and seasonal climate predictions.

The purpose of this document is to provide a summary of the past season, to aid discussions in each district around operational reduction and readiness measures, and opportunities for continual improvement. Trends in the number of wildfires, area burnt, and fire causes have been identified using data from the Fire and Emergency NZ fire incident reporting database. This report also summarises New Zealand's fire weather and climatology information from the Fire Weather System. The findings are broken down into national and regional/district analyses (found in the Appendix).

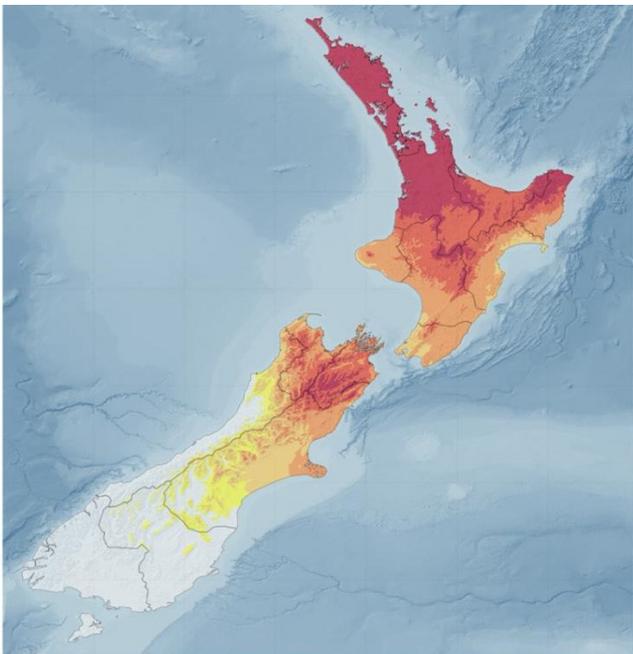


Figure 1. NIWA's New Zealand Drought Index (NZDI) map for 6 March 2020, which highlights locations experiencing drought or dry conditions during the height of the wildfire season. Red indicates severe drought conditions; orange indicates drought; light orange indicates very dry to extremely dry conditions; yellow indicates dry conditions.

Summary

This season, New Zealand's climate was largely driven by the influences of the Tasman Sea and the Southern Ocean. Sea surface temperatures were typically warmer than normal, and high-pressure systems dominated, especially during summer and into late autumn. These warm air masses resulted in unusually settled weather with warm days, light winds, and long spells of little to no rainfall. Wind direction was also generally from the west and resulted in a much wetter west coast and drier east coast. The warm air masses also reduced the sting of cold air coming up from the south typically experienced in autumn.

The 2019/20 wildfire season was significant, with many locations around the country experiencing drought which extended out into late autumn (Figure 1 & Appendix A4). The dry summer conditions were caused by a carry-over from below normal rainfall during the preceding 2019 winter, followed by the settled and warmer than normal weather. Summer months were also characterised by more frequent north-westerly winds. The climate during the 2019/20 season resulted in record fire dangers over many regions due to the prevailing drought conditions (Appendix A3). The highest ever Drought Code (DC) and Build-up Index (BUI) values were recorded this year at several locations (in Northland, Auckland, Waikato, Bay of Plenty, Hawkes Bay, Wairarapa, Whanganui/ Manawatu, Canterbury and Southland) (see Appendices)

This season, regions that appear to have had an increase of fire incidences and area burnt due to the drought were:

- Waikato, Bay of Plenty, Hawkes Bay and Wairarapa, Taranaki, North-Central Canterbury, and Mid-South Canterbury (Appendix A2).
- Otago experienced a ten-fold increase in the area burnt, but this was due to a very large fire occurring early in the season.

Regions that experienced an increase in the number of wildfires, but managed a reduction in the total area burnt were:

- Northland, Auckland, Central North Island, Gisborne, Wellington, Whanganui/Manawatu and Southland (Appendix A2).

Regions that experienced a decrease in both the number of wildfires and area burnt were:

- Nelson/Marlborough and the West Coast (Appendix A2).

Wildfire statistics

National number of wildfires and area burnt

At a national scale, the total number of wildfires and area burnt in 2019/20 fire season increased when comparing with the 2018/19 season and the 5- & 10- year historical averages (Figure 2). The combination of an improved fire reporting system, an exceptionally dry year and extended fire season this year are the likely contributors to this large increase.

At a national level, the total area burnt this season was considered one of the most significant for at least 12 years (since the 2007/08 season). However, the 1998/99 season remains the worst on record. The 2019/20 and 2018/19 seasons were also significant because two individual wildfires burnt the largest areas recorded within the last 70 years.

- There were 5,735 fires and 10,415 ha burnt between 1 October 2019 and 31 April 2020.
- This was well above the 2018/19 season, and well above the 5- and 10-year averages.
- The last 5-year average for total number of wildfires was 4,337 and the average area burnt was 5,685 ha.
- The last 10-year average for total number of wildfires was 4,100 and the average area burnt was 4,500 ha.

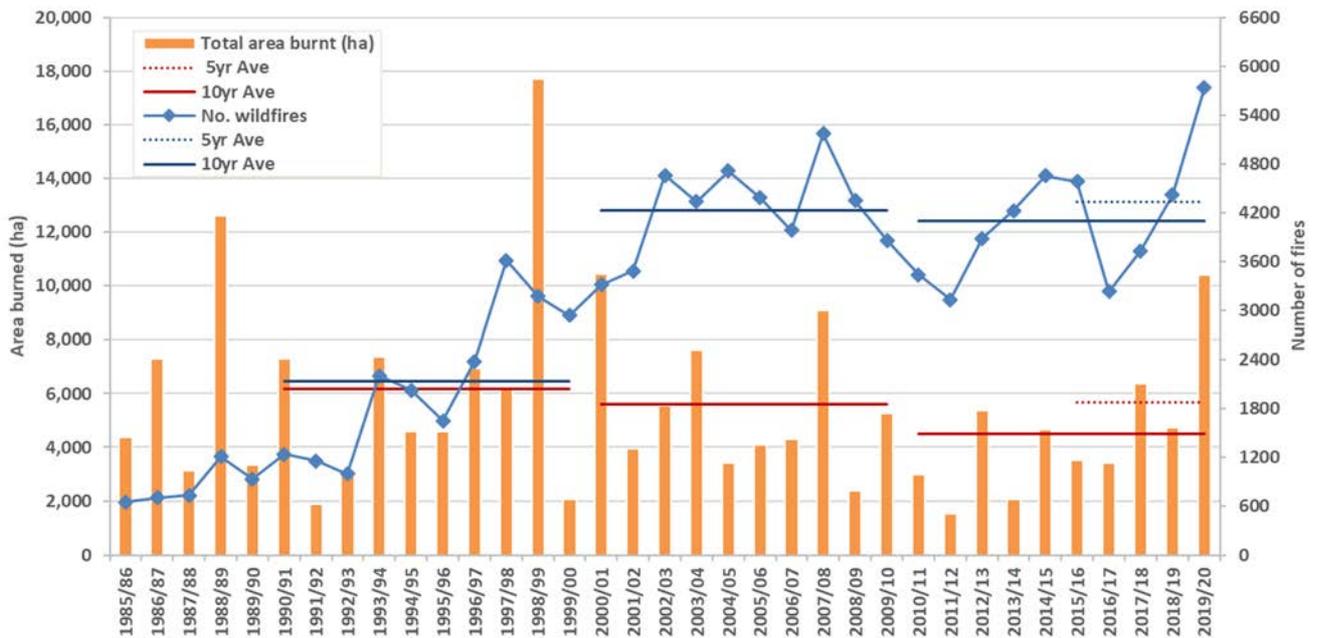


Figure 2. Total number of wildfires (blue line) and area burnt (orange bars) for the last 35 years of wildfire records.

Regional number of wildfires and area burnt

- This season, the North Island accounted for three quarters of the country's wildfires (74%) (Figure 3). This is above normal, compared to the 35-year historical average (where the North typically accounts for 60% of the total number of fires).
- The South Island accounted for a much greater portion of the area burnt (85%) (Figure 4). This is above normal, compared to the 35-year historical average (where the South typically accounts for 70% of the total number of fires).
- For the last two wildfire seasons, Auckland and Canterbury regions had the highest number of wildfires (Figure 3).

- Nelson/Tasman and Otago regions experienced the greatest area burnt in the country (Figure 4). This was mainly due to very large individual wildfire events occurring in each of these regions (Pigeon Valley wildfire, Tasman, February 2018; and the Deep Stream/Old Dunstan Road wildfire, Otago, November 2019).
- This season, regions that experienced an increase in the number of wildfires and managed a reduction in the total area burnt were: Northland, Auckland, Central North Island, Gisborne and Wellington.
- Regions that experienced an increase in both the number of wildfires and area burnt were Waikato, Bay of Plenty, Hawkes Bay and Wairarapa.
- Regional breakdowns for area burnt and the total number of wildfires are detailed in the Appendices.

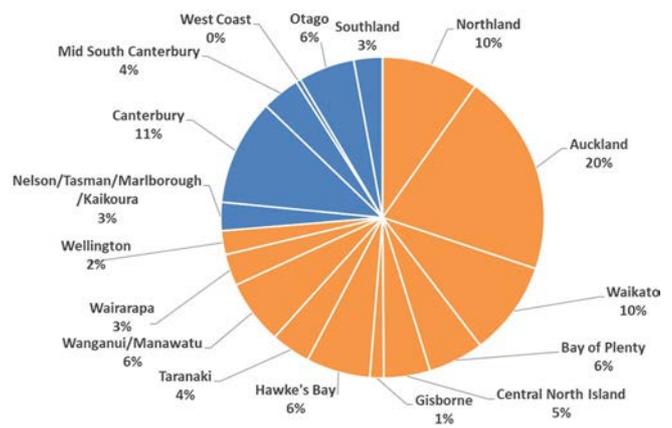
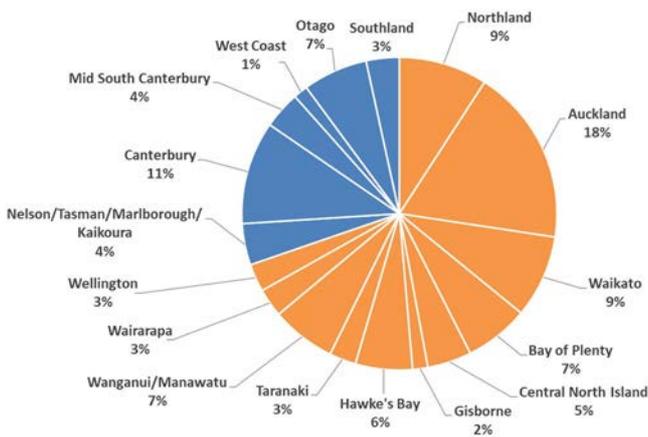


Figure 3. Total number of wildfires by region, for the 2018/19 fire season (left) and 2019/20 season (right).

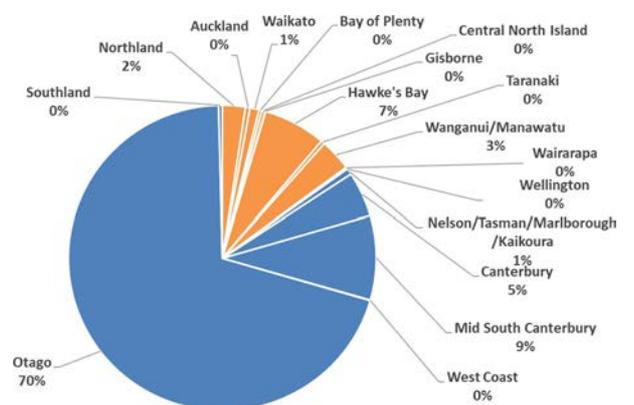
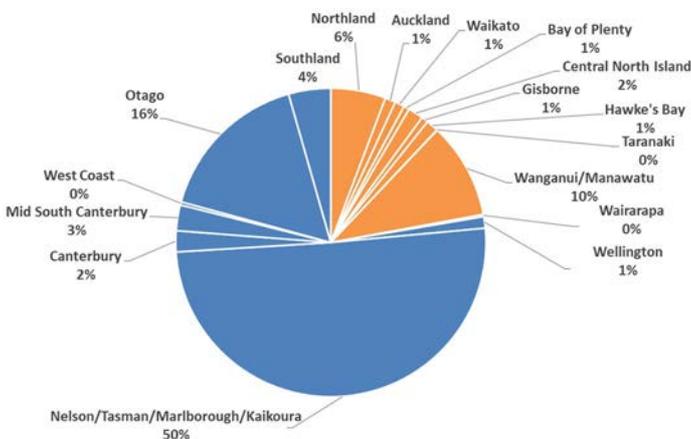


Figure 4. Total area burnt by region, for the 2018/19 fire season (left) and the 2019/20 fire season (right).

Wildfire impacts on land use classes

- During the 2018/19 wildfire season, forestry land was significantly impacted by wildfires (53% of the total area burnt across the country) followed by conservation land (17%) (Figure 5).
- During the 2019/20 season, conservation land followed by meat & wool lands were significantly affected (57% and 14%, respectively).

- This data has been skewed largely due to the two very large Tasman and Otago wildfires.
- Area burnt by land use categories has been broken down further for each of the regions (Table 1, and in the Appendices).

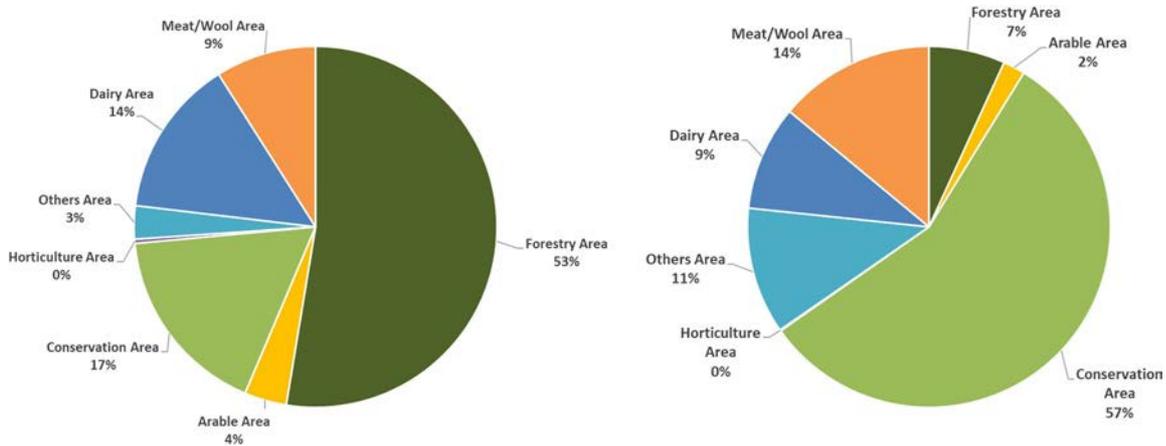


Figure 5. Area burnt by land use, for the 2018/19 fire season (left) and the 2019/20 fire season (right).

Region	Forestry Area		Arable Area		Conservation		Horticulture		Others		Dairy		Meat/Wool	
	18/19	19/20	18/19	19/20	18/19	19/20	18/19	19/20	18/19	19/20	18/19	19/20	18/19	19/20
Northland	203	21	0	0	29	137	0	0	8	29	30	56	1	7
Auckland	21	6	1	1	2	8	0	0	4	8	23	27	1	0
Waikato	23	29	0	0	5	17	0	0	3	6	16	42	1	5
Bay of Plenty	1	3	13	3	2	3	1	2	2	6	9	14	0	1
Central North Island	12	13	0	0	20	10	0	0	11	1	31	13	1	0
Gisborne	8	0	10	0	0	1	0	0	0	0	14	3	1	0
Hawke's Bay	23	454	1	6	5	22	0	1	2	11	23	150	8	42
Taranaki	0	3	0	0	1	4	0	0	1	7	0	26	0	2
Whanganui/Manawatu	8	54	2	19	419	89	7	1	19	2	14	185	7	0
Wairarapa	2	1	0	4	0	0	0	1	0	2	8	9	0	3
Wellington	2	1	0	0	19	0	0	0	11	1	17	0	7	0
Nelson//Marlborough	2049	0	4	0	147	9	3	4	23	2	168	54	1	0
Canterbury	7	28	66	37	4	171	0	1	5	79	17	129	6	52
Mid-South Canterbury	5	42	75	135	3	46	0	0	2	1	43	175	0	528
West Coast	0	0	0	0	7	4	0	0	2	1	6	0	0	0
Otago	33	46	1	2	145	5349	6	1	6	1027	201	74	384	808
Southland	97	5	6	0	8	10	0	0	42	0	48	21	8	4
Chatham Island														
Total	2493	707	178	205	815	5882	18	10	141	1181	671	977	425	1453

Table 1. Area burnt (ha) by region and by land use type for the 2018/19 fire season and 2019/20 fire season.

Cause categories

There are 46 individual heat source categories currently used in the fire incident reporting database for analysis. These were merged and grouped into 9 broad cause categories to simplify illustration of the data. Data were collated according to the following broad causes: matches/fireworks etc, cooking & heating, pile burns, prescribed burns, re-ignitions from previous fires, spontaneous combustion, equipment, natural causes and unclassified (Table 2).

- The numbers of wildfires by cause did not change much between the 2019/20 wildfire season and the 2018/19 season (Figure 6).
- The areas burnt by cause were significantly different between the two fire seasons (Figure 7).
- There was an increase in the area burnt in 2019/20 for prescribed burns, pile burns, and spontaneous combustion.
- A reduction in the area burnt in 2019/20 was observed for natural causes, cooking & heating, and re-ignitions from previous fires.
- The two large wildfires in the Tasman and Otago regions affected the area burnt significantly for fires caused by equipment (industrial and recreational) and the accidental or intended use of matches, ammunition or other incendiary devices.
- Cause statistics by regions are summarised in the Appendices.

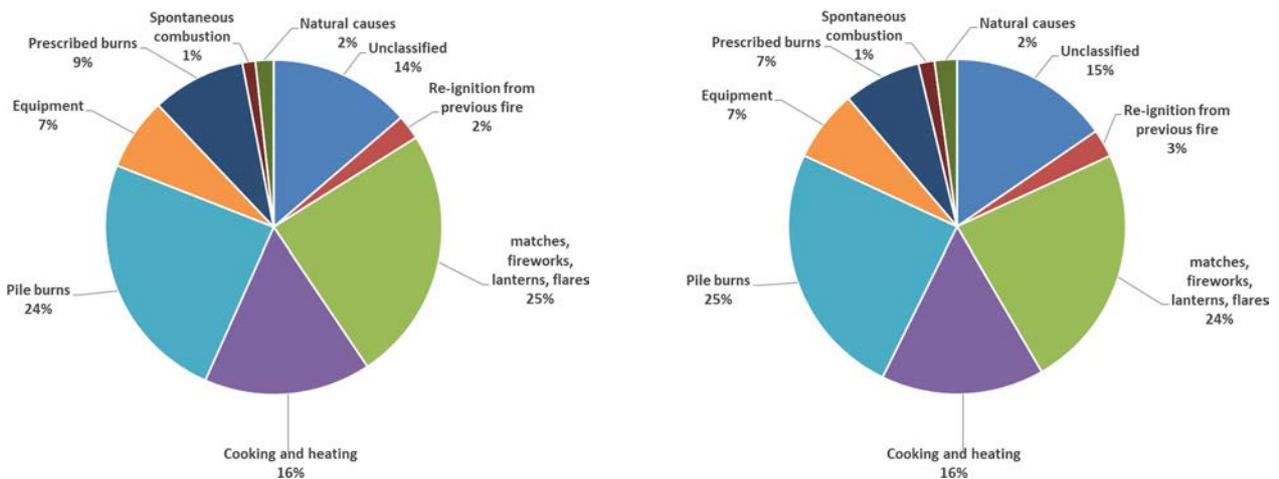


Figure 6. Number of fires by cause, for the 2018/19 fire season (left) and the 2019/20 fire season (right).

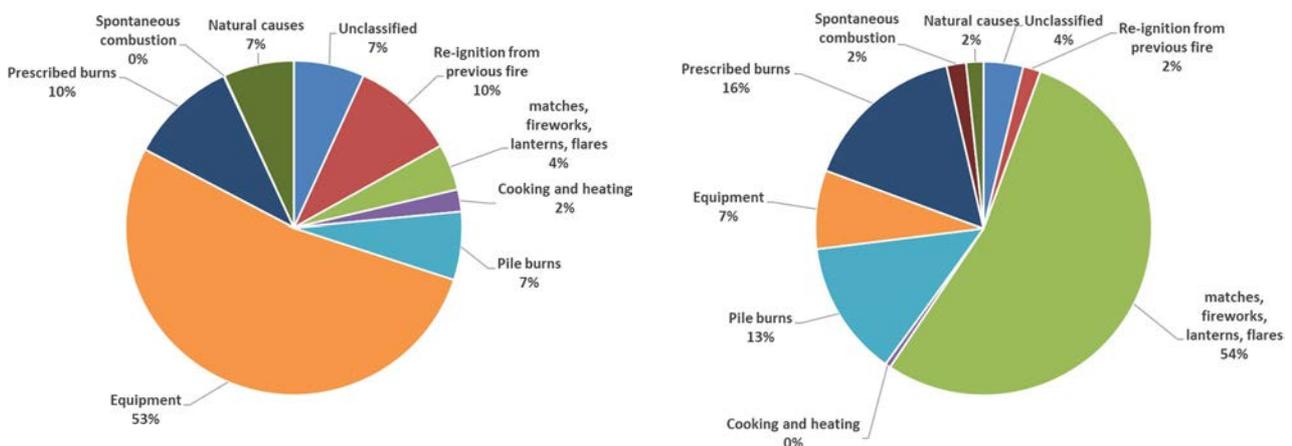


Figure 7. Area burnt by cause, for the 2018/19 fire season (left) and the 2019/20 fire season (right).

Table 2: List of broad wildfire cause categories and the underlying individual heat source categories used for analysis.

<p>Unclassified:</p> <ul style="list-style-type: none"> Information not recorded/Unknown Exposure Fire - unable to classify 	<p>Prescribed burns:</p> <ul style="list-style-type: none"> Scrub and tussock burn Crop burn Broadcast slash burn 	<p>Re-ignition from previous fire:</p> <ul style="list-style-type: none"> Re-ignition, Rekindle from previous fire
<p>Natural causes:</p> <ul style="list-style-type: none"> Lightning discharge Trees Solar heat: Sun (magnified through glass etc) Animals Geothermal Activity 	<p>Pile burns:</p> <ul style="list-style-type: none"> Refuse burning Debris burning Windrow / slash pile 	<p>Spontaneous combustion:</p> <ul style="list-style-type: none"> Hay/silage spontaneous ignition Bark or sawdust spontaneous ignition Spontaneous ignition; organic- hay, linseed oil etc Skid site spontaneous ignition
<p>Equipment:</p> <ul style="list-style-type: none"> Electrical Fence Clashing / Arching power lines Exhaust heat / Spark Welding, grinding, cutting Chainsaws Farm machinery Motorbike, Truck or Car Mowers and slashers Malfunction Earthwork or forestry machinery Maintenance crews Oil and gas exploration Ropes / binding 	<p>Cooking and heating:</p> <ul style="list-style-type: none"> Embers, Ashes Outside bonfire Outside fire for warmth / Campfire BBQ Wood-fired pizza ovens Umu / Hangi 	<p>Matches, fireworks, lanterns, flares:</p> <ul style="list-style-type: none"> Matchers or Lighters(Suspicious) Cigarette, Cigar or Smoking materials Fireworks / Pyrotechnics Incendiary devices, Molotov cocktail Lantern Flare: Warning, Safety, Boat Tracer ammunition Bee-Keeping smoking tool Frost pots

Climate and weather

Review of the 2019/20 season

Winter 2019

Winter of 2019 was warmer than average for many locations. The nationwide average temperature was 9.0°C and that makes it the seventh warmest winter on record. June was the driest winter month, with well below average rainfall for many areas of the country. July also experienced a lack of southerlies and frequent high pressures, that resulted in unseasonably warm temperatures. August experienced unsettled weather for the end of winter, this was due to low pressure systems and strong south-westerly winds.

Spring 2019

Temperature and rainfall were variable for spring 2019. This was due to warm subtropical winds mixing with south-westerly winds. Overall, average temperatures for spring were near average across the country. The nationwide average temperature was 12.0°C, making it the 12th warmest spring on record. In October, more westerly quarter winds were experienced, that brought cooler and drier south-westerlies. In November, the country experienced warm moist north-westerly winds. These north-westerlies resulted in November being New Zealand's warmest November on record. In September, rainfall was well below normal in southern areas of both islands. In November, the north-westerly winds resulted in below normal rainfall for the North Island.

Summer 2019-2020

The 2019-20 summer season was dominated by more westerly wind flows than normal. This was a result of lower than normal air pressure to the south and east of New Zealand and higher than normal pressure for the northwest of the country. We may see more of this type of weather pattern again in the future with climate change.

In the north, temperatures for the summer season were above average for many locations, and near average for parts of Gisborne and Waikato. During December and January, temperatures were near average. Prolonged dry conditions resulted in rainfall totals being well below normal (especially for Auckland, Northland, parts of Waikato and coastal Hawkes Bay). Parts of Taranaki, Gisborne and Greater Wellington received near normal summer rainfall totals. January was very dry, with most of the North Island receiving below normal rainfall. The upper North Island received less than 10% of their long-term average rainfall for the month. Meteorological drought was present in northern Auckland, Great Barrier Island, southern Northland and the Aupouri Peninsula. Dry conditions continued for the North Island in February, again with many locations experiencing near record dry spells.

Meteorological drought was still present in Northland, Auckland and Great Barrier Island.

In the South Island, temperatures for the summer season were near average for most locations. Canterbury and parts of Otago and Tasman observed higher than normal temperatures. December was wet for many western and

inland locations of the South Island. Above normal rainfall was recorded over Southland, Otago and the West Coast.

January, on the other hand, was very dry with most of the South Island receiving below normal rainfall. Eastern locations of the South Island received less than 10% of their long-term rainfall average for the month. Dry conditions continued for the upper South Island in February. Drought was observed in Tasman, much of Marlborough and northern Canterbury.

Heavy rainfall occurred at the end of February resulting in flooding for Fiordland, Otago and Southland.

Autumn 2020

Autumn 2020 again resulted in slightly more westerly airflows than normal over the country. Many locations across the country experienced settled weather which resulted in less rainfall than usual. It was the driest autumn on record for Auckland, Tauranga and parts of southern Otago. The meteorological drought receded in many locations during March, but remained in parts of Northland, Auckland, Coromandel Peninsula and Waikato into early April. Soils were also drier than normal for northern, central and eastern locations of the North Island, as well as eastern, inland and southern locations of the South Island. Near average temperatures for autumn were recorded across the country (13.4°C). The autumn season started off warm, with record high temperatures recorded in March. However, it cooled down by early May, with heavy frosts making an appearance.

Winter-Spring-Summer 2020/21 outlook

While this is a review of the last season to assist in discussions, it should also help with preparing for the coming season. We are currently sitting in ENSO-neutral conditions. Neutral conditions will likely persist over winter. The climate drivers that have contributed to summer and autumn dryness will likely influence our weather during winter. Over the next three months, dry conditions will likely return to New Zealand with a continuation of more westerly winds. Drier than normal conditions are expected along the east coast of the North and South Islands, and wetter than normal conditions for the west coast of both islands.

As we transition from late winter into spring, a change in the climate drivers is anticipated. The Indian Ocean Dipole (IOD) and an oceanic La Niña event are likely to affect temperature and rainfall patterns. There is a possibility that we will shift into a La Niña phase this September. Currently, there is a 50% chance of La Niña developing for spring 2020. During La Niña seasons, more north-easterly winds are expected than normal. These north-easterly air flows could bring wetter conditions for the north and east of the country, and potentially drier conditions for the lower and western locations of the South Island. Otherwise, neutral conditions are forecast to continue into summer 2020/21.

For areas already in soil moisture deficits, the next wildfire season could start earlier than normal depending on how regularly rainfalls occur and affect grass curing and fine fuel availabilities over the next few months.

Weather is the most powerful factor driving vegetation fire behaviour. Weather factors (temperature, humidity, windspeed and rainfall) directly affect vegetation fuel conditions and whether a fire will start and spread. Areas that experience below normal soil and fuel moisture dryness are likely to result in an increase in the number of fires and area burnt.

The Drought Code (DC) and Build-up Indices (BUI) are useful indicators of seasonal drought effects and the amount of fuel available for combustion. The higher the rating, the drier the medium and heavy fuels are, and therefore, the more difficult and extended control will be.

Regional summaries on how dry conditions were during this fire season are highlighted in the Appendices.

Graphs are also available on the Scion website for those who are interested in comparing how individual weather stations were tracking for BUI, DC and Cumulative Daily Severity Ratings (CDSR) over the current and previous fire season and against historical averages:
<https://www.scionresearch.com/rural-fire-research/tools/new-zealand-seasonal-fire-danger-outlooks>

North Island

Across the North Island, fuel and soil moisture conditions were exceptionally dry during this fire season and remained unusually dry for an extended period.

- Most stations across the North Island recorded significantly elevated BUI and DC values.
- This season, DC and BUI values typically began to elevate from January, peaking by mid-February, and only dropping to low levels by May (Figure 8).
- Many North Island stations were well above their historical trend lines during 2019/20, and broke historical records for maximum DC and BUI values.
- On average, many North Island regions had very high to extreme fire potential, especially during January and February (page A3).

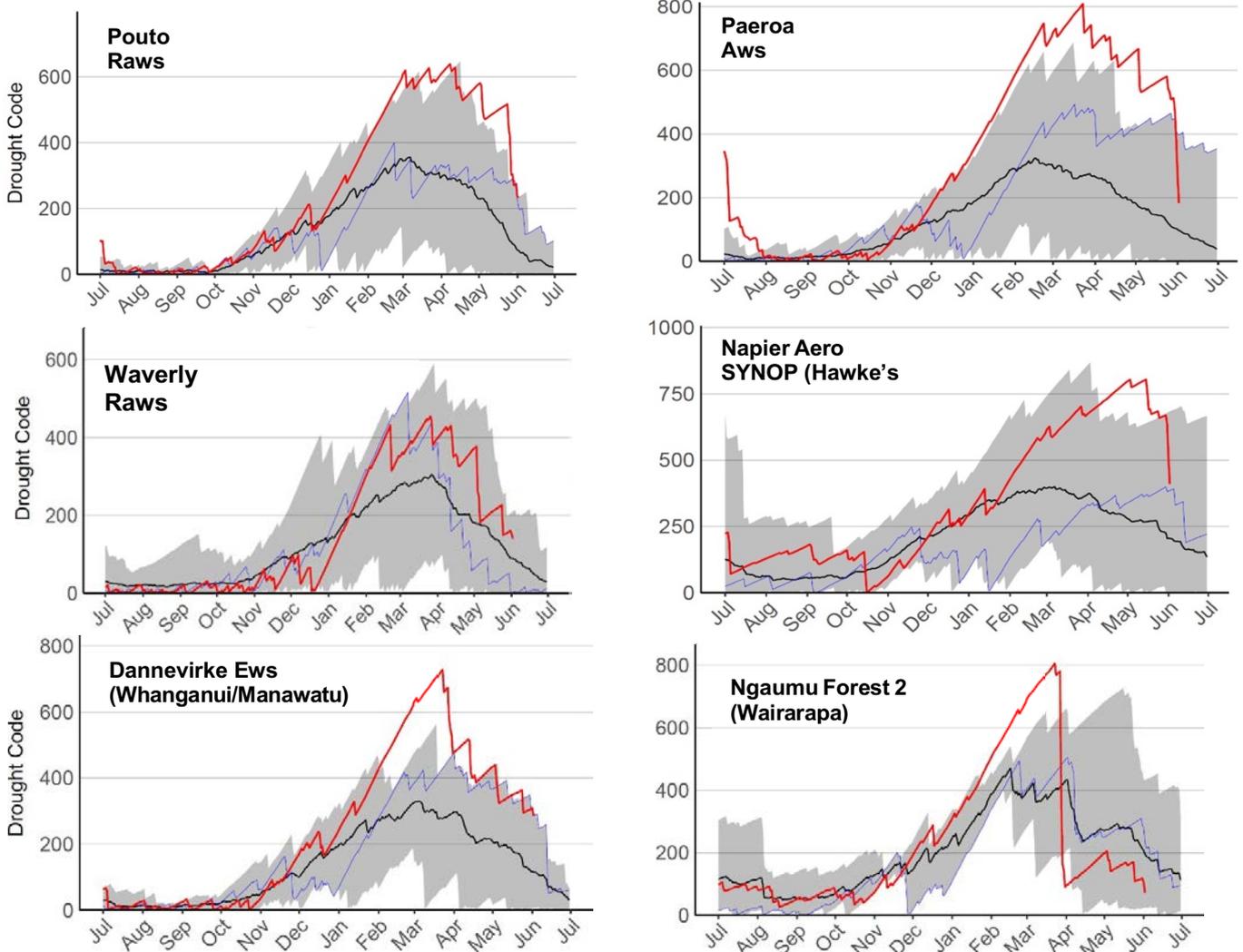


Figure 8. Daily Drought Code (DC) trends for a selection of stations across the North Island. The current fire season (2019/20) is represented by the red line, the previous fire season (2018/19) by the blue line, the historical average is represented by the black line, and the previous min/max values prior to the past season are represented by the grey shaded area.

South Island

Across the South Island, fuel and soil moisture conditions were exceptionally dry for northern and eastern locations. This dryness extended beyond late April. Exceptional locations include: Nelson/Tasman, Marlborough, and Canterbury.

- Most stations in Nelson/Tasman, Marlborough, and Canterbury regions had elevated DC and BUI values.
- This season, DC and BUI values typically began to elevate later in the season around late February and peaked by April, with values remaining high into June (Figure 9).

- On average, northern and eastern South Island regions had very high to extreme fire potential, especially during January, February and March (page A3).
- Many stations in the northern and eastern regions had DC and BUI values well above their long-term averages.
- New DC max values were recorded in North and Central Canterbury, and Southland.

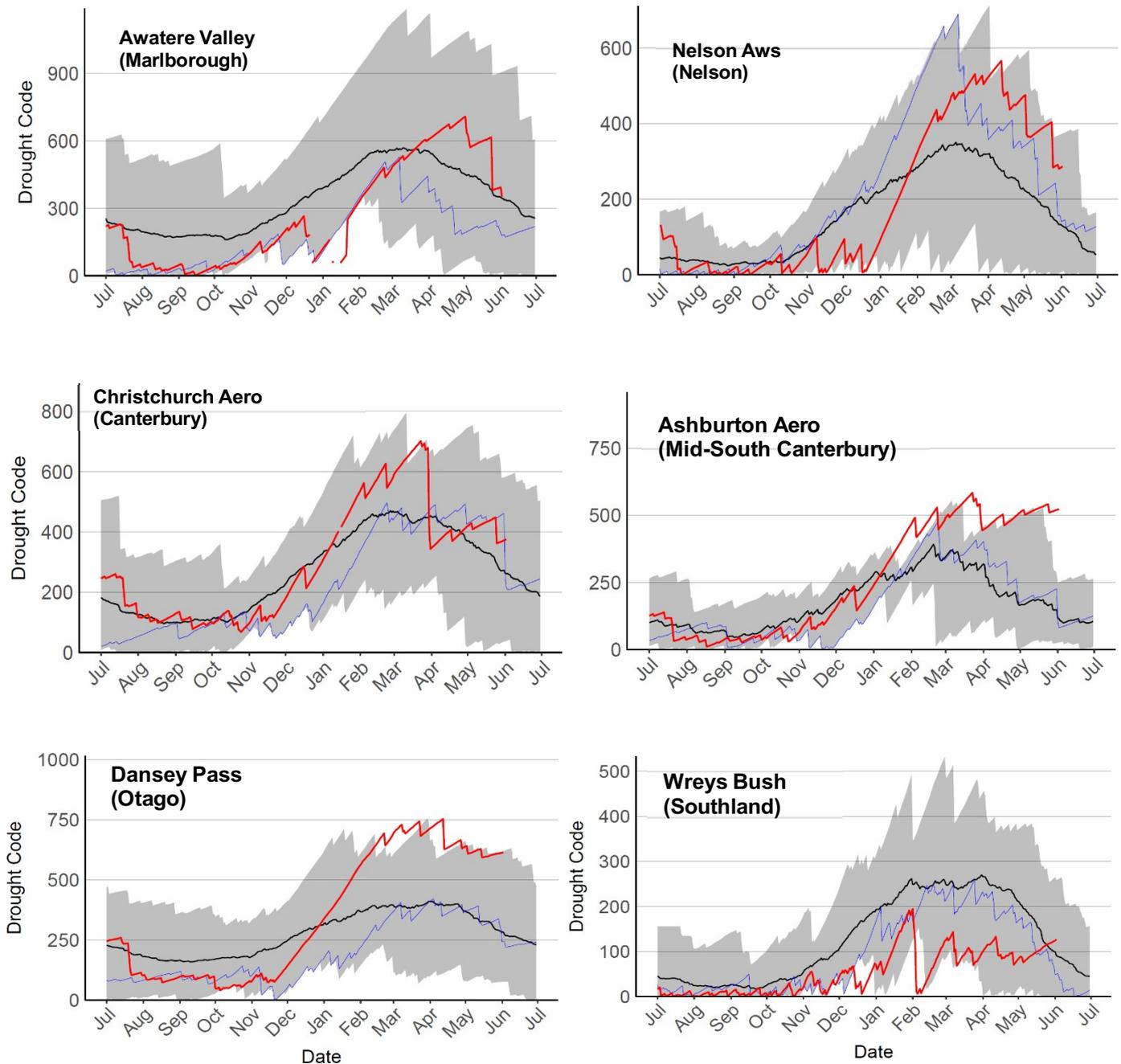


Figure 9. Daily Drought Code (DC) trends for a selection of stations across the South Island. The current fire season (2019/20) is represented by the red line, the previous fire season (2018/19) by the blue line, the historical average is represented by the black line, and the previous min/max values prior to the past season are represented by the grey shaded area.

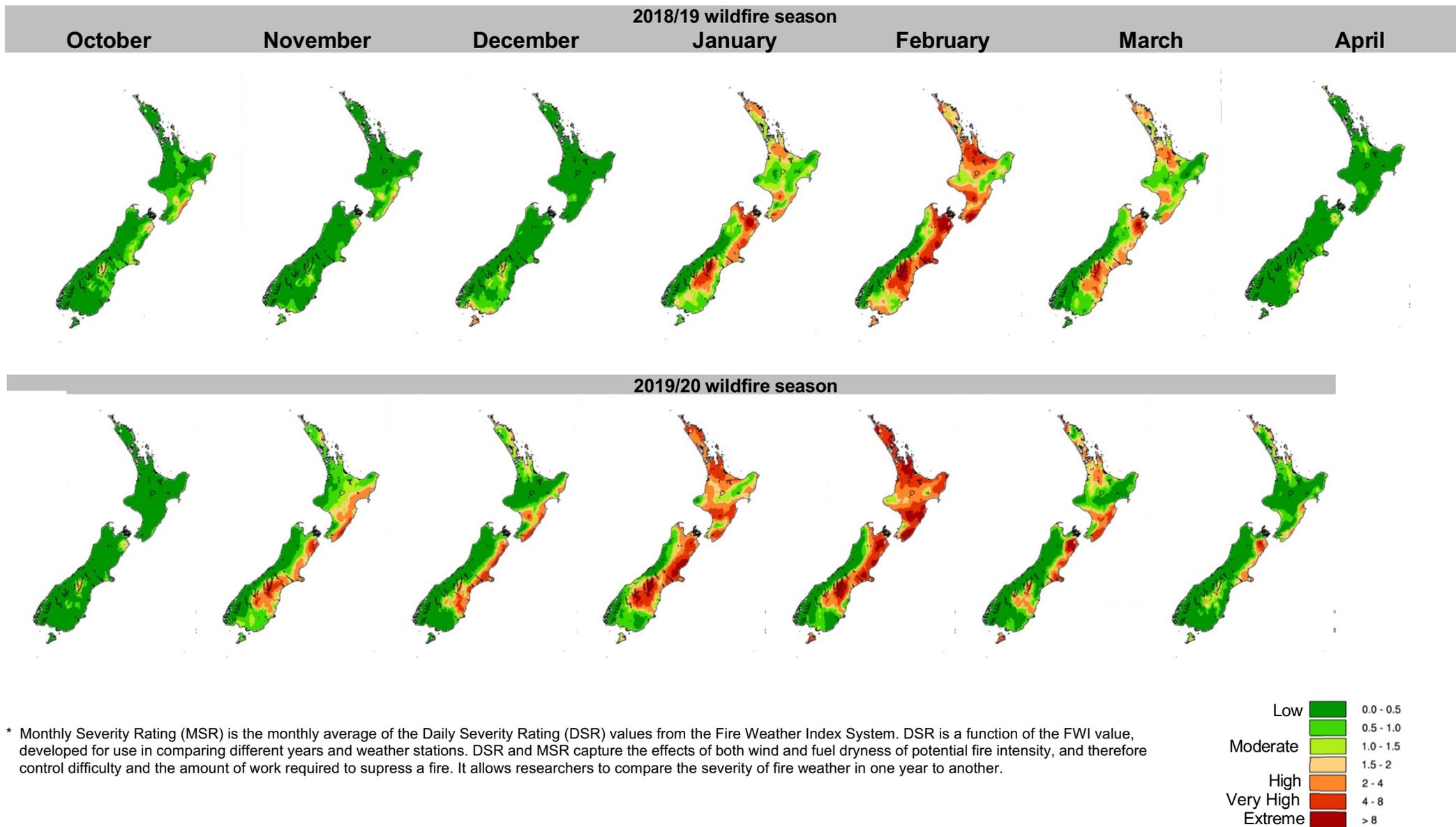
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Mid-South Canterbury	A18
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Table A2. Summary table of wildfire statistics and soil/fuel moisture status for individual regions. Orange cells indicate exceptional situations highlighted in the front cover of this report.

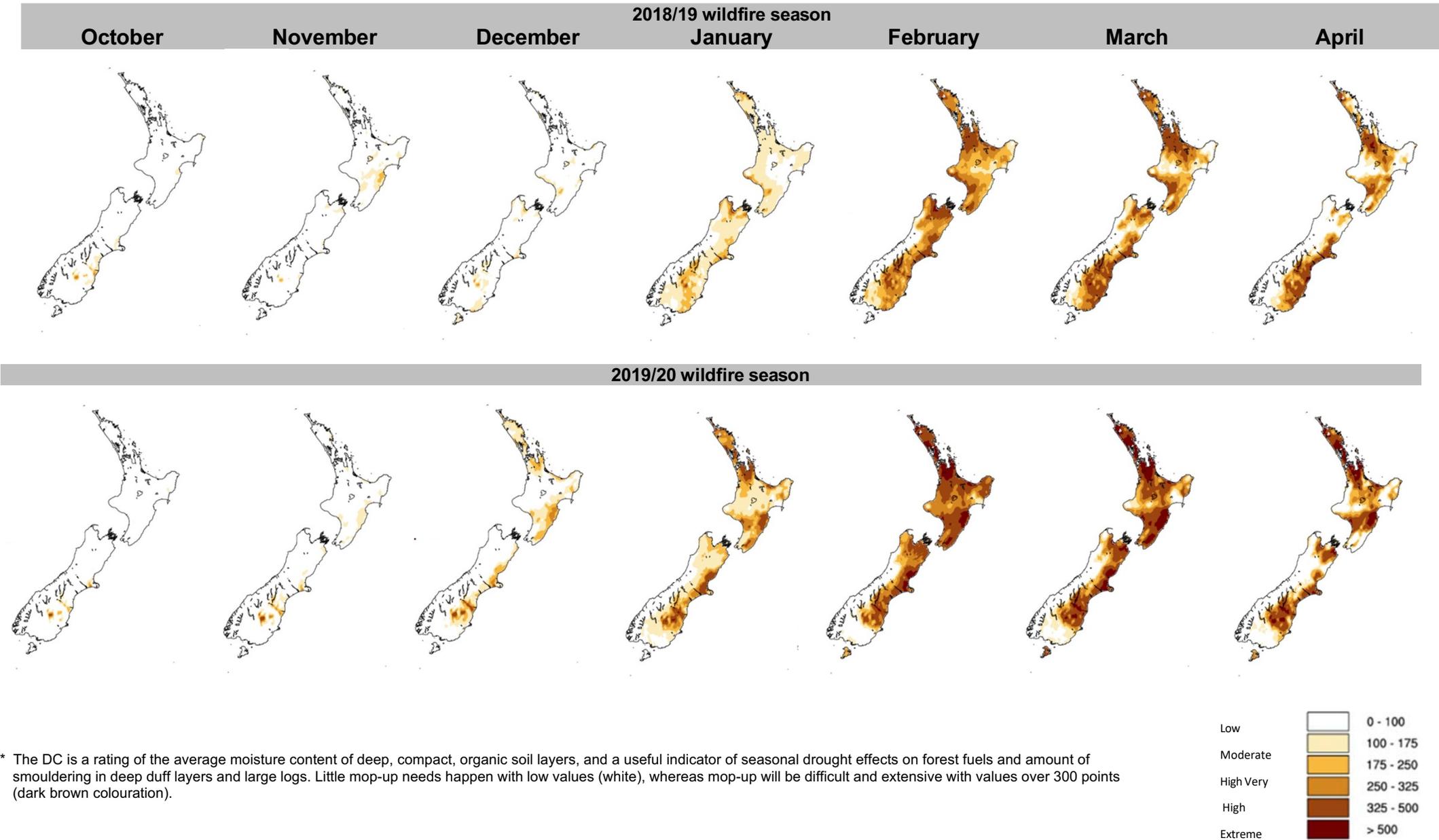
Region	No. wildfires	Area burnt	Increase/decrease in # of fires (compared to last season)	Increase/decrease in area burnt (compared to last season)	Land use impacted (this season)	Top 3 causes (this season)	Fire climate severity (above/below normal)	Experienced drought	DC (above/below normal)
Northland	10%	2%	Increased	Decreased	Conservation	Pile burn, Matches etc.	Well above	Yes	Well above (new max value in Feb)
Auckland	20%	1%	Increased	Decreased	Dairy	Matches etc. Pile burns	Well above	Yes	Well above (new max values)
Waikato	10%	1%	Increased	Increased	Dairy Forestry Conservation	Pile burn, Matches etc. S. combustion	Well above	Yes	Well above (new max values)
Bay of Plenty	6%	<1%	Increased	Increased	Arabl Dairy	Pile burns Matches etc. Cooking	Well above	Yes	Well above (new max values)
Central North Island	5%	<1%	Increased	Decreased	Forestry Conservation Dairy	Pile burns Matches etc.	Well above	Extremely Dry	Well above
Gisborne	1%	<1%	Increased	Decreased (6x)	Forestry Arable Dairy	Pile burns	Above	Yes	Above
Hawke's Bay	6%	7%	Increased	Increased (10x)	Forestry Dairy	Pile burns Cooking, Matches etc. Equipment	Well above	Yes	Well above (new max values)
Wairarapa	3%	<1%	Increased	Increased	Dairy	Matches etc. Pile burns, Cooking Equipment	Well above	Dry conditions	Well above (new max values)
Wellington	2%	1%	Increased	Decreased (10x)	Minimal	Matches, Pile burns, Cooking	On trend / well below	Dry conditions	Above
Whanganui/Manawatu	6%	3%	Increased	Decreased	Dairy Conservation	Pile burns, Matches etc., Cooking S. Combustion	Well above	Yes	Well above (new max values)
Taranaki	4%	1%	Increased	Increased	Dairy	Pile burns Cooking Matches etc.	Well above	Dry conditions	Well above
Nelson/Marlborough	3%	1%	Decreased	Decreased	Dairy	Matches etc. Cooking, Pile burns Equipment	Variable (Well above or well below).	Yes	Well above
North-Central Canterbury	11%	5%	Increased	Increased (5x)	Conservation Dairy Other	Matches etc. Pile burns, Cooking Equipment	On trend / well above	Yes	Well above (new max values)
Mid-South Canterbury	4%	9%	Increased	Increased (5x)	Meat/wool Dairy Arable	Pile burns Prescribed burns Natural causes	Variable (On trend, below & well above)	Dry conditions	Well above (peaked twice during the season)
West Coast	<1%	<1%	Decreased	Decreased	Conservation Dairy	Matches etc. Cooking Prescribed burns	Well below		Variable (On trend or well below)
Otago	6%	70%	Increased	Increased (10x)	Conservation Other Meat/wool	Matches etc. Pile burns, Prescribed burns	Variable (On trend, below & above)		Variable (On trend, below & well above)
Southland	3%	<1%	Increased	Decreased (5x)	Dairy Conservation	Pile burn, Matches etc. Cooking, Reignitions	Well below		Well below (new max values)
Chatham Island	-	-	-	-	-	-	Well below		On trend

Table A3. Average Monthly Fire Season Severity Ratings (MSR *) for the 2018/19 and 2019/20 wildfire seasons. Severity values of less than 1 (green) equate to low fire behaviour potential, 1-3 moderate fire potential (yellow), 3-7 high to very high fire potential (orange), and above 7 indicates extreme fire behaviour potential (red).



* Monthly Severity Rating (MSR) is the monthly average of the Daily Severity Rating (DSR) values from the Fire Weather Index System. DSR is a function of the FWI value, developed for use in comparing different years and weather stations. DSR and MSR capture the effects of both wind and fuel dryness of potential fire intensity, and therefore control difficulty and the amount of work required to suppress a fire. It allows researchers to compare the severity of fire weather in one year to another.

Table A4. Average Monthly Drought Code (DC *) values for the 2018/19 and 2019/20 wildfire seasons.



* The DC is 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. Little mop-up needs happen with low values (white), whereas mop-up will be difficult and extensive with values over 300 points (dark brown colouration).

A5. NORTHLAND REGION

Wildfire Statistics

- During the 2019/20 wildfire season, Northland accounted for 10% of the total number of wildfires in the country and 2% of the total area burnt (Table A2, page A2 (or Figures 3&4 on page 3)).
- Comparing last wildfire season (2018/19) with this season (2019/20), the total
 - number of vegetation fires increased for Northland,
 - area burnt (ha) decreased (Table A5.1).
- In the 2019/20 wildfire season, conservation land area experienced the largest impact, whereas forestry land experienced the greatest impact during the 2018/19 wildfire season (Table A5.2).
- Pile burns and matches/fireworks were the major causes contributing to the total number of wildfires and area burnt during the 2019/20 season (Table A5.3).

Soil and fuel moisture status

- Northland experienced very dry soils by early January 2020, and by the end of January was in drought. Severe drought was declared between early February until mid-March, then drought conditions began to recede. Dry conditions persisted into May 2020.
- Drought Code (DC) values were well above the historical average and the previous wildfire season (Table A5.4). DC values began to rise from January and dropped by mid-April. Values during 2019/20 generally peaked by mid-February or mid-April.
- Build-up Index (BUI) values for all stations were well above the historical average and compared with the previous wildfire season. BUIs values across the region generally peaked by mid-February or early March.
- Fire climate severity during 2019/20 was well above the historical average and the previous wildfire season (2018/19) for most stations (the only exception was Pouto Raws, which was well below).

Table A5.1. Total number of wildfires and area burnt in the Northland region for the 2018/19 and 2019/20 wildfire seasons.

Zones	2018/19		2019/20	
	Number of fires	Area burnt (ha)	Number of fires	Area burnt (ha)
Muri Whenua Area	188	154	234	182
Northern Whangarei Kaipara Rural Fire District	23	60	44	12
Whangarei-Kaipara Area	191	57	280	58
<i>Northland (total) *</i>	402	271	558	251

* On average, Northland experiences approximately 225 wildfires annually, and a total area burnt of approx. 400 ha (based on 25 years of historical records).

Table A5.2. Area burnt in Northland by land use category for all vegetation fires.

Fire season	Forestry Area (ha)	Arable Area (ha)	Conservation Area (ha)	Horticulture Area (ha)	Others Area (ha)	Dairy Area (ha)	Meat/Wool Area (ha)
2018/19	203	0	29	0	8	30	1
2019/20	21	0	137	0	29	56	7

Table A5.3. Number of wildfires and area burnt (ha) in Northland by broad cause categories.

Fire season	Unclassified	Re-ignitions	Matches, fireworks, etc	Cooking and heating	Pile burns	Equipment	Prescribed burns	Spontaneous combustion	Natural causes
Number 2018/19	47	9	77	43	131	27	56	4	8
Number 2019/20	90	12	108	56	189	36	55	6	6
Area 2018/19	55	2	92	5	71	3	44	1	0
Area 2019/20	152	4	30	7	29	14	15	1	0

Table A5.4. Drought Code (DC) values (max and mean) for the current fire season (2019/20) versus the historical average, based on values averaged across all Northland region weather stations.

		Spring					Summer			Autumn			
		July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Max DC	2019/20	244	119	94	96	209	340	547	718	768	764	581	346
Max DC	Historic	320	335	355	400	511	617	630	718	798	791	708	484
Mean DC	2019/20	51	19	19	32	103	190	328	508	572	507	342	139
Mean DC	Historic	16	13	18	39	99	166	235	274	262	229	142	48

A6. AUCKLAND REGION

Wildfire Statistics

- During the 2019/20 wildfire season, Auckland accounted for 20% of the total number of wildfires in the country and less than 1% of the total area burnt (Table A2, page A2 (or Figures 3&4 on page 3)).
- Comparing last wildfire season (2018/19) with this season (2019/20), the total
 - number of vegetation fires increased for Auckland,
 - area burnt (ha) decreased overall (zones experienced either an increase or decrease) (Table A6.1).
- Dairy land experienced the greatest impact from wildfires in both the 2018/19 and 2019/20 wildfire seasons (Table A6.2).
- Matches/fireworks, pile burns, and cooking/heating were the major causes contributing to the total number of wildfires and area burnt during the 2019/20 season (Table A6.3).

Soil and fuel moisture status

- By early-December, Auckland began to experience dry conditions; by early January extremely dry soils were widespread; by the end of January, Auckland and Great Barrier Island were in a meteorological drought.
- Drought Code (DC) values were well above the historical average and the previous wildfire season (Table A6.4). Values across the region typically peaked by early March.
- Build-up Index (BUI) values were well above the historical average and previous wildfire season. Values began to rise from January, peaked by mid-February, and dropped to low levels by March.
- Fire climate severity for 2019/20 was well above the historical average and the 2018/19 wildfire season.

Table A6.1. Total number of wildfires and area burnt in the Auckland region for the 2018/19 and 2019/20 wildfire seasons.

Zones	2018/19		2019/20	
	Number of fires	Area burnt (ha)	Number of fires	Area burnt (ha)
Auckland City Area	103	0	172	2
Auckland Rural Fire District	38	3	40	3
Counties-Manukau Area	380	45	493	29
Waitemata Area	287	4	467	16
<i>Auckland (total) *</i>	808	52	1172	49

* On average, Auckland experiences approximately 300 wildfires annually, and a total area burnt of approx. 50 ha (based on 25 years of historical records).

Table A6.2. Area burnt by land use category in the Auckland region for all vegetation fires.

Fire season	Forestry Area (ha)	Arable Area (ha)	Conservation Area (ha)	Horticulture Area (ha)	Others Area (ha)	Dairy Area (ha)	Meat/Wool Area (ha)
2018/19	21	1	2	0	4	23	1
2019/20	6	1	8	0	8	27	0

Table A6.3. Number of wildfires and area burnt (ha) in the Auckland region by broad cause categories.

Fire season	Unclassified	Re-ignitions	Matches, fireworks, etc	Cooking and heating	Pile burns	Equipment	Prescribed burns	Spontaneous combustion	Natural causes
Number 2018/19	103	4	338	107	156	37	50	7	6
Number 2019/20	163	10	465	176	211	44	75	13	15
Area 2018/19	20	0	5	0	8	17	2	0	0
Area 2019/20	8	0	9	5	12	9	6	0	0

Table A6.4. Drought Code values (max and mean) for the current fire season (2019/20) versus the historical average, based on values averaged across all Auckland region weather stations.

		Spring					Summer			Autumn			
		July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Max DC	2019/20	261	131	46	70	209	321	565	752	796	785	773	334
Max DC	Historic	555	601	550	307	310	410	599	752	796	812	773	707
Mean DC	2019/20	54	17	13	24	89	172	320	528	576	502	312	130
Mean DC	Historic	29	22	21	35	82	139	212	275	267	226	131	54

A7. WAIKATO REGION

Wildfire Statistics

- During the 2019/20 wildfire season, Waikato accounted for 10% of the total number of wildfires in the country and 1% of the total area burnt (Table A2, page A2 (or Figures 3&4 on page 3)).
- Comparing last wildfire season (2018/19) with this season (2019/20), the total
 - number of vegetation fires increased for Waikato,
 - area burnt (ha) also increased (Table A7.1).
- Dairy, forestry and conservation lands experienced the greatest impact from wildfires during the 2019/20 wildfire seasons (Table A7.2).
- Pile burns, and matches/fireworks were the major causes contributing to the total number of wildfires in 2019/20, however spontaneous combustion and unclassified contributed to the area burnt (Table A7.3).

Soil and fuel moisture status

- By the end of January, the region was in meteorological drought in the north with extremely dry conditions in the south. By mid-February, Waikato was experiencing severe drought conditions. The drought didn't recede until end of March. Dry conditions remained in pockets until early June.
- Drought Code (DC) values were well above the historical average and the previous wildfire season (2018/19) (Table A7.4). DCs began to rise by the end of December, peaked around the end of February or early March, then reduced to low levels by either May or June.
- Build-up Index (BUI) values were also well above the historical average and the previous fire season (2018/19). BUI values began to elevate by the end of December, peaked in late February, and reduced to low levels by mid-April.
- Fire climate severity for 2019/20 was well above the historical average and the previous wildfire season (2018/19).

Table A7.1. Total number of wildfires and area burnt in Waikato for the 2018/19 and 2019/20 wildfire seasons.

Zones	2018/19		2019/20	
	Number of fires	Total area burnt (ha)	Number of fires	Total area burnt (ha)
Eastern Waikato Area	106	11	177	12
Waikato Area	241	30	346	61
Waikato Rural Fire District	31	6	22	27
<i>Waikato (total) *</i>	378	47	545	99

* On average, Waikato experiences approximately 270 wildfires annually, and a total area burnt of approx. 50 ha (based on 25 years of historical records).

Table A7.2. Area burnt by land use category in the Waikato region for all vegetation fires.

Fire season	Forestry Area (ha)	Arable Area (ha)	Conservation Area (ha)	Horticulture Area (ha)	Others Area (ha)	Dairy Area (ha)	Meat/Wool Area (ha)
2018/19	23	0	5	0	3	16	1
2019/20	29	0	17	0	6	42	5

Table A7.3. Number of wildfires and area burnt (ha) in the Waikato region by broad cause categories.

Fire season	Unclassified	Re-ignitions	Matches, fireworks, etc	Cooking and heating	Pile burns	Equipment	Prescribed burns	Spontaneous combustion	Natural causes
Number 2018/19	56	6	70	78	88	26	42	7	5
Number 2019/20	72	13	101	98	170	34	35	12	10
Area 2018/19	3	1	1	6	11	17	8	0	0
Area 2019/20	40	1	1	3	15	6	6	26	0

Table A7.4. Drought Code (DC) values (max and mean) for the current fire season (2019/20) versus the historical average, based on values averaged across all Waikato region weather stations.

		July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Max DC	2019/20	347	89	34	61	191	340	579	747	809	711	667	276
Max DC	Historic	347	141	151	259	319	359	579	747	809	812	667	421
Mean DC	2019/20	37	8	9	17	75	130	273	476	478	367	245	100
Mean DC	Historic	12	11	15	29	66	108	176	238	235	183	103	34

A8. BAY OF PLENTY REGION

Wildfire Statistics

- During the 2019/20 wildfire season, the Bay of Plenty region accounted for 6% of the total number of wildfires in the country and less than 1% of the total area burnt (Table A2, page A2 (or Figures 3&4 on page 3)).
- Comparing last wildfire season (2018/19) with this season (2019/20) for the Bay of Plenty, the total
 - number of vegetation fires increased,
 - area burnt (ha) increased (Table A8.1).
- Arable and dairy lands experienced the greatest impacts by wildfires during both the 2018/19 and 2019/20 wildfire seasons (Table A8.2).
- During 2019/20 season, pile burns, matches/fireworks and cooking & heating were the major causes contributing to the total number of wildfires and area burnt (although rather minimal in size) (Table A8.3).

Soil and fuel moisture status

- By early February, conditions were very dry in the Bay of Plenty. The region was in a drought by early March, which didn't recede until late March. Pockets of dryness remained along the coast in June.
- Drought Code (DC) values were significantly above the average this season (Table A8.4).
- Build-up Index (BUI) values were also well above the average. Most stations reached a peak BUI (between 100 and 150 points) during mid-February.
- Fire climate severity was generally above the average for many stations (Galatea, Waihou Bay and Waimana Raws were the exceptions, and fell below the average).

Table A8.1. Total number of wildfires and area burnt in the Bay of Plenty region for the 2018/19 and 2019/20 wildfire seasons.

Zones	2018/19		2019/20	
	Number of fires	Total area burnt (ha)	Number of fires	Total area burnt (ha)
Bay of Plenty Coast Area	292	28	320	32
<i>Bay of Plenty (total) *</i>	292	28	320	32

* On average, the Central North Island experiences approximately 300 wildfires annually, and a total area burnt of approx. 100 ha (based on 25 years of historical records).

Table A8.2. Area burnt by land use category in the Bay of Plenty for all vegetation fires.

Fire season	Forestry Area (ha)	Arable Area (ha)	Conservation Area (ha)	Horticulture Area (ha)	Others Area (ha)	Dairy Area (ha)	Meat/Wool Area (ha)
2018/19	1	13	2	1	2	9	0
2019/20	3	3	3	2	6	14	1

Table A8.3. Number of wildfires and area burnt (ha) in the Bay of Plenty by broad cause categories.

Fire season	Unclassified	Re-ignitions	Matches, fireworks, etc	Cooking and heating	Pile burns	Equipment	Prescribed burns	Spontaneous combustion	Natural causes
Number 2018/19	49	2	66	48	58	23	37	2	7
Number 2019/20	51	5	58	50	98	18	29	7	4
Area 2018/19	2	0	8	0	1	0	0	0	15
Area 2019/20	2	0	9	1	12	4	4	0	0

Table A8.4. Drought code (DC) values (max and mean) for the current fire season (2019/20) versus the historical average, based on the average across all Bay of Plenty region weather stations.

		July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Max DC	2019/20	198	35	38	68	198	326	573	734	758	715	644	406
Max DC	Historic	412	168	87	156	259	391	573	734	758	762	644	406
Mean DC	2019/20	18	8	11	22	92	167	279	474	450	412	316	155
Mean DC	Historic	14	13	17	36	91	145	200	252	223	173	90	33

A9. CENTRAL NORTH ISLAND

Wildfire Statistics

- During the 2019/20 wildfire season, Central North Island accounted for 5% of the total number of wildfires in the country and less than 1% of the total area burnt (Table A2, page A2 (or Figures 3&4 on page 3)).
- Comparing last wildfire season (2018/19) with this season (2019/20), the total
 - number of vegetation fires increased across the Central North Island,
 - area burnt (ha) decreased (Table A9.1).
- Forestry, conservation and dairy lands experienced the greatest impacts by wildfires for both the 2018/19 and 2019/20 wildfire seasons (Table A9.2).
- During 2019/20 season, pile burns and matches/fireworks were the major causes contributing to the total number of wildfires and area burnt (although rather minimal in size) (Table A9.3).

Soil and fuel moisture status

- By early February, conditions were dry in the Central North Island. The region was in a drought by early March, which didn't recede until late March. Pockets of dryness remained until late April.
- Drought Code (DC) values were well above the historical average for all stations during January to May 2020 (Table A9.4).
- Build-up Index (BUI) values were also well above the average for all stations from January to March. BUIs peaked at values of 60 – 150 points during mid-February or early March.
- Fire climate severity was generally above the historical average for most stations (Taupo SYNOP, Ruatahuna Raws, Minginui Raws were on trend).

Table A9.1: Total number of wildfires and area burnt in the Central North Island region for the 2018/19 and 2019/20 wildfire seasons.

Zones	2018/19		2019/20	
	Number of fires	Total area burnt (ha)	Number of fires	Total area burnt (ha)
Central Lakes Area	171	44	235	35
Pumicelands Rural Fire District	29	31	30	3
<i>Central North Island (total) *</i>	200	75	265	38

* On average, the Central North Island experiences approximately 300 wildfires annually, and a total area burnt of approx. 100 ha (based on 25 years of historical records).

Table A9.2: Area burnt by land use category in the Central North island for all vegetation fires.

Fire season	Forestry Area (ha)	Arable Area (ha)	Conservation Area (ha)	Horticulture Area (ha)	Others Area (ha)	Dairy Area (ha)	Meat/Wool Area (ha)
2018/19	12	0	20	0	11	31	1
2019/20	13	0	10	0	1	13	0

Table A9.3. Number of wildfires and area burnt (ha) for the Central North Island by broad cause categories.

Fire season	Unclassified	Re-ignitions	Matches, fireworks, etc	Cooking and heating	Pile burns	Equipment	Prescribed burns	Spontaneous combustion	Natural causes
Number 2018/19	27	1	47	34	61	7	13	5	5
Number 2019/20	39	8	62	36	90	10	9	8	3
Area 2018/19	2	0	17	6	34	5	9	3	0
Area 2019/20	17	2	2	3	9	3	1	0	0

Table A9.4. Drought codes (Max and Mean) for the current fire season (2019/20) and the historical average, based on the average across all Central North Island region weather stations.

		July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Max DC	2019/20	337	149	66	81	173	276	429	579	578	422	372	245
Max DC	Historic	337	149	173	207	234	337	479	588	684	689	504	402
Mean DC	2019/20	49	20	14	16	70	107	202	381	394	308	174	123
Mean DC	Historic	15	11	14	28	69	114	170	220	232	192	108	39

A10. GISBORNE REGION

Wildfire Statistics

- During the 2019/20 wildfire season, Gisborne accounted for 1% of the total number of wildfires in the country and less than 1% of the total area burnt (Table A2, page A2 (or Figures 3&4 on page 3)).
- Comparing last wildfire season (2018/19) with this season (2019/20), the total
 - number of vegetation fires increased,
 - area burnt (ha) decreased significantly (Table A10.1).
- Forestry, arable and dairy lands experienced the greatest impact by wildfires during the 2018/19 wildfire seasons. The 2019/20 season was quiet in comparison (Table A10.2).
- During the 2019/20 season, unclassified and pile burns were the major causes contributing to the total number of wildfires, with pile burns having the greatest impact on area burnt (Table A10.3).

Soil and fuel moisture status

- By early February, conditions were dry in the Gisborne. Northern Gisborne was in a drought by early March, with extremely dry conditions in the south. The drought didn't recede until late March. Pockets of dryness remained until late April.
- Drought Code (DC) values were either on trend or above average for this fire season. Peak values were reached by mid- February (Table A10.4).
- Build-up Index (BUI) values were typically on trend with the average this fire season. BUIs peaked around mid-February at around 100 points for most stations.
- Fire climate severity was generally above the historical average for most stations (the exceptions being Gisborne Raws & SYNOP, that were slightly below average).

Table A10.1. Total number of wildfires and area burnt in the Gisborne region for the 2018/19 and 2019/20 wildfire seasons

Zones	2018/19		2019/20	
	Number of fires	Total area burnt (ha)	Number of fires	Total area burnt (ha)
Gisborne Rural Fire District	2	0	7	1
Tairāwhiti Area	67	33	73	4
<i>Gisborne (total)*</i>	69	33	80	5

* On average, Eastern North Island (Gisborne & Hawke's Bay) experiences approximately 400 wildfires annually, and a total area burnt of approx. 200 ha (based on 25 years of historical records).

Table A10.2. Area burnt by land use category in the Gisborne region for all vegetation fires.

Fire season	Forestry Area (ha)	Arable Area (ha)	Conservation Area (ha)	Horticulture Area (ha)	Others Area (ha)	Dairy Area (ha)	Meat/Wool Area (ha)
2018/19	8	10	0	0	0	14	1
2019/20	0	0	1	0	0	3	0

Table A10.3. Number of wildfires and area burnt (ha) in the Gisborne region by broad cause categories.

Fire season	Unclassified	Re-ignitions	Matches, fireworks, etc	Cooking and heating	Pile burns	Equipment	Prescribed burns	Spontaneous combustion	Natural causes
Number 2018/19	9	0	7	13	30	3	5	0	2
Number 2019/20	22	3	15	12	16	3	7	0	2
Area 2018/19	0	0	0	0	23	0	10	0	0
Area 2019/20	0	0	1	1	2	0	1	0	0

Table A10.4. Drought Code (DC) values (max and mean) for the current fire season (2019/20) versus the historical average, based on the average across all Gisborne region weather stations.

	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Max DC 2019/20	239	153	154	189	176	248	386	548	540	429	445	455
Max DC Historic	357	363	407	213	385	610	866	910	769	831	695	614
Mean DC 2019/20	38	36	35	38	79	138	220	386	331	249	181	99
Mean DC Historic	31	21	26	49	99	161	230	276	225	165	118	62

A11. HAWKE'S BAY REGION

Wildfire Statistics

- During the 2019/20 wildfire season, Hawke's Bay accounted for 6% of the total number of wildfires in the country and 7% of the total area burnt (Table A2, page A2 (or Figures 3&4 on page 3)).
- Comparing last wildfire season (2018/19) with this season (2019/20), the total
 - number of vegetation fires increased,
 - area burnt (ha) increased significantly (10-fold) (Table A11.1).
- Forestry and dairy lands experienced the greatest impact by wildfires during 2019/20 wildfire season (Table A11.2).
- During the 2019/20 season, pile burns, cooking & heating and matches/fireworks were the major causes contributing to the total number of wildfires, whereas equipment and natural causes had the greatest impact on area burnt (Table A11.3).

Soil and fuel moisture status

- By the end of February, conditions were dry in the south of the region. By the early March, the Hawke's Bay region was experiencing extremely dry conditions. Dry conditions receded in early April, however pockets of dryness remained along the coast by June.
- Drought Code (DC) values over the fire season tracked well above the average and the previous fire season for all stations (especially between January and June). DC values typically peaked either mid-March or mid-May (Table A11.4).
- Build-up Index (BUI) values were also above the average trend for many stations during January and March, reaching a peak by mid-February (ranging between 50 – 150 points).
- Fire climate severity across the fire season was generally well above or on trend with the long-term average (a few stations were considered slightly below average: Te Haroto Raws, Napier Aero, Mahia Aws and Kaiwaka Raws).

Table A11.1. Total number of wildfires and area burnt in the Hawke's Bay for the 2018/19 and 2019/20 wildfire seasons.

Zones	2018/19		2019/20	
	Number of fires	Total area burnt (ha)	Number of fires	Total area burnt (ha)
Hawke's Bay Area	247	59	347	681
Hawke's Bay Rural Fire District	11	2	20	4
<i>Hawke's Bay (total)*</i>	258	61	367	685

* On average, Eastern North Island (Gisborne & Hawke's Bay) experiences approximately 400 wildfires annually, and a total area burnt of approx. 200 ha (based on 25 years of historical records).

Table A11.2. Area burnt by land use category in the Hawke's Bay region for all vegetation fires.

Fire season	Forestry Area (ha)	Arable Area (ha)	Conservation Area (ha)	Horticulture Area (ha)	Others Area (ha)	Dairy Area (ha)	Meat/Wool Area (ha)
2018/19	23	1	5	0	2	23	8
2019/20	454	6	22	1	11	150	42

Table A11.3. Number of wildfires and area burnt (ha) in the Hawke's Bay region by broad cause categories.

Fire season	Unclassified	Re-ignitions	Matches, fireworks, etc	Cooking and heating	Pile burns	Equipment	Prescribed burns	Spontaneous combustion	Natural causes
Number 2018/19	30	16	57	58	72	15	7	0	3
Number 2019/20	55	13	60	77	78	47	19	1	17
Area 2018/19	1	11	1	2	25	5	15	0	1
Area 2019/20	14	3	6	2	41	545	1	0	75

Table A11.4. Drought Code (DC) values (max and mean) for the current fire season (2019/20) versus the historical average, based on the average across all Hawke's Bay region weather stations.

		July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Max DC	2019/20	375	422	429	267	291	445	592	807	931	891	900	563
Max DC	Historic	668	422	429	325	424	559	760	896	1005	892	900	813
Mean DC	2019/20	69	78	54	40	115	216	272	419	472	442	426	238
Mean DC	Historic	46	32	36	58	121	179	250	296	280	224	180	105

A12. WAIRARAPA REGION

Wildfire Statistics

- During the 2019/20 wildfire season, Wairarapa accounted for 3% of the total number of wildfires in the country and less than 1% of the total area burnt (Table A2, page A2 (or Figures 3&4 on page 3)).
- Comparing last wildfire season (2018/19) with this season (2019/20), the total
 - number of vegetation fires increased,
 - area burnt (ha) increased (Table A12.1).
- Dairy lands experienced the greatest impact by wildfires during 2019/20 wildfire season (Table A12.2).
- During the 2019/20 season, matches/fireworks, pile burns and cooking & heating were the major causes contributing to the total number of wildfires, whereas equipment-caused fires had the greatest impact on area burnt (Table A12.3).

Soil and fuel moisture status

- Coastal Wairarapa experienced drier than normal conditions early in the season (early November 2019). By early February, the region was very dry. Extremely dry conditions occurred by early March, which receded back to normal by mid-April.
- Drought Codes (DC) over the fire season were well above the historical average. DC values began to rise in late November, before dropping by April. Values typically peaked by late March, with new maximum values being recorded (Table A12.4).
- The Build-up Index (BUI) was generally on track with the historical average, and well above during the months of January to April. Values peaked twice in February and March (ranging between 100 and 175 points).
- Fire climate severity across the fire season was generally well above or on trend with the long-term average.

Table 12.1. Total number of wildfires and area burnt in the Wairarapa region for the 2018/19 and 2019/20 wildfire seasons.

Zones	2018/19		2019/20	
	Number of fires	Total area burnt (ha)	Number of fires	Total area burnt (ha)
Hutt-Wairarapa Area	120	9	172	17
Wairarapa Tararua Rural Fire District	10	2	11	4
<i>Wairarapa (total) *</i>	130	11	183	20

* On average, Greater Wellington experiences approximately 250 wildfires annually, and a total area burnt of approx. 150 ha (based on 25 years of historical records).

Table 12.2. Area burnt by land use category in the Wairarapa region for all vegetation fires.

Fire season	Forestry Area (ha)	Arable Area (ha)	Conservation Area (ha)	Horticulture Area (ha)	Others Area (ha)	Dairy Area (ha)	Meat/Wool Area (ha)
2018/19	2	0	0	0	0	8	0
2019/20	1	4	0	1	2	9	3

Table 12.3. Number of wildfires and area burnt (ha) for the Wairarapa region by broad cause categories.

Fire season	Unclassified	Re-ignitions	Matches, fireworks, etc	Cooking and heating	Pile burns	Equipment	Prescribed burns	Spontaneous combustion	Natural causes
Number 2018/19	14	4	24	17	44	11	14	0	2
Number 2019/20	24	8	43	31	34	26	10	3	4
Area 2018/19	0	4	2	0	1	2	2	0	1
Area 2019/20	0	0	1	3	0	15	1	0	1

Table 12.4. Drought Code (DC) values (max and mean) for the current fire season (2019/20) versus the historical average, based on the average across all Wairarapa region weather stations.

		July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Max DC	2019/20	180	102	89	106	204	311	498	681	805	260	270	148
Max DC	Historic	554	552	426	434	475	636	643	766	805	862	867	648
Mean DC	2019/20	38	18	27	25	94	175	284	460	504	128	113	57
Mean DC	Historic	39	26	30	39	88	161	240	314	305	223	154	78

A13. WELLINGTON REGION

Wildfire Statistics

- During the 2019/20 wildfire season, Wellington accounted for 2% of the total number of wildfires in the country and less than 1% of the total area burnt (Table A2, page A2 (or Figures 3&4 on page 3)).
- Comparing last wildfire season (2018/19) with this season (2019/20), the total
 - number of vegetation fires increased,
 - area burnt (ha) decreased in Wellington significantly (Table A13.1).
- Minimal land area was impacted by wildfires during the 2019/20 season. Conservation and dairy land experienced the greatest impact by wildfires in 2018/19 (Table A13.2).
- During the 2019/20 season, matches/fireworks, pile burns and cooking & heating were the major causes contributing to the total number of wildfires, with cooking and heating having the greatest impact on area burnt (Table A13.3).

Soil and fuel moisture status

- Wellington experienced dry conditions by early February. By early March, conditions had become very dry or extremely dry across the region. Dry conditions were no longer found by early April.
- Drought Codes (DC) over the fire season were well below the average until February. DC values peaked later than normal but were well above the average by March/April (Max values of 498 this season) (Table A13.4).
- The Build-up Index (BUI) was also generally well below the average this season, peaking well above by mid-February (75 – 100 points).
- Fire climate severity was either on trend or well below the long-term average this season.

Table A13.1. Total number of wildfires and area burnt in the Wellington region for the 2018/19 and 2019/20 wildfire seasons.

Zones	2018/19		2019/20	
	Number of fires	Total area burnt (ha)	Number of fires	Total area burnt (ha)
Wellington Area	121	56	134	1
Wellington Rural Fire District	6	0	4	0
<i>Wellington (total)*</i>	127	57	138	2

* On average, Greater Wellington experiences approximately 250 wildfires annually, and a total area burnt of approx. 150 ha (based on 25 years of historical records).

Table A13.2. Area burnt by land use category in the Wellington region for all vegetation fires.

Fire season	Forestry Area (ha)	Arable Area (ha)	Conservation Area (ha)	Horticulture Area (ha)	Others Area (ha)	Dairy Area (ha)	Meat/Wool Area (ha)
2018/19	2	0	19	0	11	17	7
2019/20	1	0	0	0	1	0	0

Table A13.3. Number of wildfires and area burnt (ha) for the Wellington region by broad cause categories.

Fire season	Unclassified	Re-ignitions	Matches, fireworks, etc	Cooking and heating	Pile burns	Equipment	Prescribed burns	Spontaneous combustion	Natural causes
Number 2018/19	8	1	47	26	27	6	10	2	0
Number 2019/20	23	0	53	21	32	3	3	2	1
Area 2018/19	0	0	3	50	3	0	0	0	0
Area 2019/20	1	0	1	0	0	0	0	0	0

Table A13.4. Drought Code (DC) values (max and mean) for the current fire season (2019/20) versus the historical average, based on the average across all Wellington region weather stations.

		July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Max DC	2019/20	110	34	43	46	112	155	296	438	498	326	324	134
Max DC	Historic	537	592	622	368	420	516	539	680	700	742	749	587
Mean DC	2019/20	15	8	15	15	47	61	173	324	337	195	104	64
Mean DC	Historic	33	25	29	34	81	151	213	281	289	238	146	70

A14. WHANGANUI/MANAWATU REGIONS

Wildfire Statistics

- During the 2019/20 wildfire season, Whanganui/Manawatu accounted for 6% of the total number of wildfires in the country and 3% of the total area burnt (Table A2, page A2 (or Figures 3&4 on page 3)).
- Comparing last fire season with this fire season, the total
 - number of vegetation fires increased across Whanganui/Manawatu,
 - area burnt (ha) decreased (Table A14.1).
- Dairy and conservation land experienced the greatest impact by wildfires in the 2019/20 season. Conservation areas were hardest hit during 2018/19 (Table A14.2).
- Pile burns, unclassified, matches/fireworks, and cooking & heating were the major causes contributing to the total number of wildfires in 2019/20. Whereas spontaneous combustion, matches/fireworks and prescribed burns had the greatest impact on area burnt (Table A14.3).

Soil and fuel moisture status

- By early February, conditions were dry across the Whanganui/Manawatu regions. By mid-February, these regions were experiencing meteorological drought. The drought receded by the end of March, but very dry conditions remained until early May.
- This season, Drought Codes (DC) were well above the historical average between the months of December and June. Values typically peaked by mid-March. New maximum values were recorded for several stations (Table A14.4).
- BUIs were generally on trend with the long-term average, but well above average during the months of January to March. BUIs typically peaked by mid-February (ranging between 80 and 140 points).
- Fire climate severity was generally well above the long-term average across this region.

Table A14.1. Total number of wildfires and area burnt in Whanganui/Manawatu for the 2018/19 and 2019/20 wildfire season.

Zones	2018/19		2019/20	
	Number of fires	Total area burnt (ha)	Number of fires	Total area burnt (ha)
Manawatu Area	142	23	154	26
Manawatu Horowhenua Rangitikei Rural Fire District	3	0	9	3
Ohakea Rural Fire District	0	0	2	0
Waiouru Rural Fire District	10	434	13	79
Whanganui Area	138	20	193	241
<i>Whanganui/Manawatu (total) *</i>	293	477	371	349

* On average, Whanganui/Manawatu experiences approximately 275 wildfires annually, and a total area burnt of approx. 250 ha (based on 25 years of historical records).

Table A14.2. Area burnt by land use category in the Whanganui/Manawatu region for all vegetation fires.

Fire season	Forestry Area (ha)	Arable Area (ha)	Conservation Area (ha)	Horticulture Area (ha)	Others Area (ha)	Dairy Area (ha)	Meat/Wool Area (ha)
2018/19	8	2	419	7	19	14	7
2019/20	54	19	89	1	2	185	0

Table A14.3. Number of wildfires and area burnt (ha) for Whanganui/Manawatu by broad cause categories.

Fire season	Unclassified	Re-ignitions	matches, fireworks, etc	Cooking and heating	Pile burns	Equipment	Prescribed burns	Spontaneous combustion	Natural causes
Number 2018/19	46	8	53	43	86	26	20	5	6
Number 2019/20	68	16	60	55	99	22	34	11	6
Area 2018/19	9	404	27	3	20	1	12	0	0
Area 2019/20	17	16	70	13	11	1	54	162	5

Table A14.4. Drought Code (DC) values (max and mean) for the current fire season (2019/20) versus the historical average, based on the average across all Whanganui/Manawatu region weather stations.

		July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Max DC	2019/20	201	256	315	390	502	620	765	951	1077	915	592	340
Max DC	Historic	433	284	315	390	502	620	765	951	1077	915	757	561
Mean DC	2019/20	25	23	30	37	81	142	258	422	461	350	233	164
Mean DC	Historic	30	21	25	34	77	132	202	268	287	231	153	70

A15. TARANAKI REGION

Wildfire Statistics

- During the 2019/20 wildfire season, Taranaki accounted for 4% of the total number of wildfires in the country and less than 1% of the total area burnt (Table A2, page A2 (or Figures 3&4 on page 3)).
- Comparing last fire season with this fire season, the total
 - number of vegetation fires in Taranaki increased (doubled),
 - area burnt (ha) also increased significantly (Table A15.1).
- In both 2018/19 and 2019/20 wildfire seasons, dairy lands experienced the greatest impact by wildfires (Table A15.2).
- Pile burns, cooking & heating and matches/fireworks were the major causes contributing to the total number of wildfires during the 2019/20 season. Pile burns also had the greatest impact on area burnt (Table A15.3).

Soil and fuel moisture status

- By early February, conditions were very dry in Taranaki. By early March, the region was experiencing extremely dry conditions and pockets of meteorological drought. The extremely dry conditions began to recede by the end of March. With dry conditions no longer found by mid-April.
- Drought Code (DC) values were well above the historical average between January and April. DC values peaked later in the season during Feb/March (between 400 – 500 points) (Table A15.4).
- Build-up Index (BUI) values were well above the historical average for the 2019/20 fire season.
- Fire climate severity was generally well above the long-term average this season (a few stations were below, including New Plymouth and Okato).

Table A15.1. Total number of wildfires and area burnt in the Taranaki region for the 2018/19 and 2019/20 wildfire seasons.

Zones	2018/19		2019/20	
	Number of fires	Total area burnt (ha)	Number of fires	Total area burnt (ha)
Taranaki Area	118	1	219	36
Taranaki Ruapehu Whanganui Rural Fire District	3	1	8	6
<i>Taranaki (total) *</i>	121	2	227	42

* On average, Taranaki experiences approximately 110 wildfires annually, and a total area burnt of approx. 50 ha (based on 25 years of historical records).

Table A15.2. Area burnt by land use category in the Taranaki region for all vegetation fires.

Fire season	Forestry Area (ha)	Arable Area (ha)	Conservation Area (ha)	Horticulture Area (ha)	Others Area (ha)	Dairy Area (ha)	Meat/Wool Area (ha)
2018/19	0	0	1	0	1	0	0
2019/20	3	0	4	0	7	26	2

Table A15.3. Number of wildfires and area burnt (ha) for the Taranaki region by broad cause categories.

Fire season	Unclassified	Re-ignitions	Matches, fireworks, etc	Cooking and heating	Pile burns	Equipment	Prescribed burns	Spontaneous combustion	Natural causes
Number 2018/19	19	3	18	29	27	6	9	9	1
Number 2019/20	21	10	41	49	63	12	27	1	3
Area 2018/19	0	0	0	0	1	0	0	0	0
Area 2019/20	1	0	6	1	27	1	7	0	0

Table A15.4. Drought Code (DC) values (max and mean) for the current fire season (2019/20) versus the historical average, based on the average across all Taranaki region weather stations.

		July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Max DC	2019/20	95	19	31	38	100	121	306	445	459	470	499	262
Max DC	Historic	125	134	152	107	222	425	536	589	689	692	527	269
Mean DC	2019/20	11	5	9	12	41	53	175	335	310	244	117	71
Mean DC	Historic	12	12	15	22	58	103	163	230	238	166	86	26

A16. NELSON/MARLBOROUGH REGIONS

Wildfire Statistics

- During the 2019/20 wildfire season, the Nelson/Tasman and Marlborough/Kaikoura regions combined accounted for 3% of the total number of wildfires in the country and 1% of the total area burnt (Table A2, page A2 (or Figures 3&4 on page 3)).
- Comparing last fire season with this fire season, the total number of vegetation fires has decreased. The area burnt (ha) has decreased significantly (due to the impact of the Pigeon Valley fire in 2018/19) (Table A16.1).
- Dairy lands experienced the greatest impact by wildfires in 2019/20. However, forestry, conservation and dairy lands were impacted in 2018/19 (Table A16.2).
- Matches/fireworks, cooking & heating and pile burns were the major causes contributing to the total number of wildfires in 2019/20. Matches/fireworks and equipment had the greatest impact on area burnt (Table A16.3).

Soil and fuel moisture status

- By early February, dry conditions were occurring in Nelson and Marlborough. By early March, Nelson/Tasman, and Marlborough were in severe Drought. By the end of March, the drought was beginning to recede. By the end of April, pockets of dry conditions remained in Nelson/Tasman and Marlborough.
- Drought Codes (DC) over the fire season were variable across the two regions. Marlborough stations were well above the historical average during February to May. DC values typically peaked later in the season (in mid-March). Nelson stations were well above the historical average between the months of mid-January to June. DC values peaked in either February or April (Table A16.4).
- BUIs in Nelson and Marlborough were well above the average, during the months of January to March, but were less than the 2018/19 wildfire season.
- Fire climate severity was variable across Nelson and Marlborough regions. Stations were either well below or well above the historical average.

Table A16.1. Total number of wildfires and area burnt in the Nelson/Marlborough regions for the 2018/19 and 2019/20 wildfire seasons.

Zones	2018/19		2019/20	
	Number of fires	Total area burnt (ha)	Number of fires	Total area burnt (ha)
Marlborough / Kaikoura Rural Fire District	19	1	17	36
Nelson Tasman Rural Fire District	23	6	10	1
Tasman-Marlborough Area	147	2387	137	31
<i>Nelson/Tasman/Marlborough/Kaikoura (total) *</i>	189	2394	164	68

** On average, Nelson/Marlborough experiences approximately 140 wildfires annually, and a total area burnt of approx. 620 ha (based on 25 years of historical records).*

Table A16.2: Area burnt by land use category in the Nelson/Marlborough regions for all vegetation fires.

Fire season	Forestry Area (ha)	Arable Area (ha)	Conservation Area (ha)	Horticulture Area (ha)	Others Area (ha)	Dairy Area (ha)	Meat/Wool Area (ha)
2018/19	2049	4	147	3	23	168	1
2019/20	0	0	9	4	2	54	0

Table A16.3. Number of wildfires and area burnt (ha) for the Nelson/Marlborough regions by broad cause categories.

Fire season	Unclassified	Re-ignitions	Matches, fireworks, etc	Cooking and heating	Pile burns	Equipment	Prescribed burns	Spontaneous combustion	Natural causes
Number 2018/19	29	10	41	33	31	16	15	6	8
Number 2019/20	32	5	19	36	34	14	6	5	13
Area 2018/19	22	0	19	2	3	2340	8	0	0
Area 2019/20	6	0	27	0	0	28	1	0	5

Table A16.4. Drought Code (DC) values (max and mean) for the current fire season (2019/20) versus the historical average, based on the average across all Nelson and Marlborough region weather stations.

Nelson		July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Max DC	2019/20	130	35	37	66	126	155	328	458	531	566	475	289
Max DC	Historic	301	187	138	169	314	501	575	658	703	711	594	467
Mean DC	2019/20	16	7	10	18	47	48	192	360	385	348	207	124
Mean DC	Historic	16	13	17	29	75	131	171	238	241	172	93	36

Marlborough		July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Max DC	2019/20	329	61	52	111	199	311	507	628	638	741	790	536
Max DC	Historic	628	541	562	590	521	708	922	1120	1186	1167	1089	933
Mean DC	2019/20	69	13	14	32	81	109	229	406	466	398	291	189
Mean DC	Historic	95	71	71	77	131	205	272	348	349	287	219	144

A17. NORTH-CENTRAL CANTERBURY REGION

Wildfire Statistics

- During the 2019/20 wildfire season, north and central Canterbury accounted for 11% of the total number of wildfires in the country and 5% of the total area burnt (Table A2, page A2 (or Figures 3&4 on page 3)).
- Comparing last fire season with this fire season, for North-Central Canterbury, the total
 - number of vegetation fires has increased,
 - area burnt (ha) has increased significantly (Table A17.1).
- Conservation, Dairy and other areas experienced the greatest impact by wildfires in 2019/20 (Table A17.2).
- During the 2019/20 season, matches/fireworks, pile burns and cooking & heating were the major causes contributing to the total number of wildfires. Matches/fireworks and equipment had the greatest impact on area burnt (Table A17.3).

Soil and fuel moisture status

- Dry conditions were building in Northern and Central Canterbury (along the coast) during January. Central and North Canterbury were extremely dry by early February. By mid-February, North Canterbury was in a drought. By the end of March, the drought receded, so that by late April, dry conditions were no longer found.
- Drought Codes (DC) over the fire season were typically well above the historical average, especially during the months of January to June. This season, DC values peaked around March, and was a month later than normal (Table A17.4).
- BUIs were generally on track with the historical average but were well above the average during the months of January to April. Several stations peaked over 100 points, some reaching new maximum values this season.
- Fire climate severity across the region was either on trend or well above the historical average.

Table A17.1. Total number of wildfires and area burnt in North-Central Canterbury for the 2018/19 and 2019/20 wildfire seasons.

Zones	2018/19		2019/20	
	Number of fires	Total area burnt (ha)	Number of fires	Total area burnt (ha)
Burnham Rural Fire District	3	0	6	1
Canterbury Area	231	92	323	476
Christchurch Metro Area	197	8	225	4
Christchurch Selwyn Rural Fire District	12	0	12	3
North Canterbury Rural Fire District	27	4	47	13
<i>Canterbury (total) *</i>	470	105	613	497

* On average, Canterbury experiences approximately 740 wildfires annually, and a total area burnt of approx. 720 ha (based on 25 years of historical records).

Table A17.2. Area burnt by land use category in the North-Central Canterbury region for all vegetation fires.

Fire season	Forestry Area (ha)	Arable Area (ha)	Conservation Area (ha)	Horticulture Area (ha)	Others Area (ha)	Dairy Area (ha)	Meat/Wool Area (ha)
2018/19	7	66	4	0	5	17	6
2019/20	28	37	171	1	79	129	52

Table A17.3. Number of wildfires and area burnt (ha) for North-Central Canterbury by broad cause categories.

Fire season	Unclassified	Re-ignitions	Matches, fireworks, etc	Cooking and heating	Pile burns	Equipment	Prescribed burns	Spontaneous combustion	Natural causes
Number 2018/19	73	17	134	82	83	42	30	2	7
Number 2019/20	103	25	174	94	105	60	38	5	9
Area 2018/19	20	8	10	19	4	4	40	0	0
Area 2019/20	7	4	309	7	2	122	45	1	1

Table A17.4. Drought Code (DC) values (max and mean) for the current fire season (2019/20) versus the historical average, based on the average across all North-Central Canterbury region weather stations.

		July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Max DC	2019/20	440	284	188	165	198	346	549	713	858	812	826	647
Max DC	Historic	622	425	453	479	536	640	781	862	891	853	826	704
Mean DC	2019/20	94	38	38	44	84	185	333	473	527	379	356	315
Mean DC	Historic	97	67	68	82	134	215	293	368	364	315	239	146

A18. MID-SOUTH CANTERBURY

Wildfire Statistics

- During the 2019/20 wildfire season, the Mid-South region accounted for 4% of the total number of wildfires in the country and 9% of the total area burnt (Table A2, page A2 (or Figures 3&4 on page 3)).
- Comparing last fire season with this fire season, the total
 - number of vegetation fires has increased for Mid-South Canterbury,
 - area burnt (ha) has also increased significantly (>5-fold) (Table A18.1).
- Meat/Wool, dairy and arable lands experienced the greatest impact by wildfires during 2019/20 (Table A18.2).
- Pile burns, prescribed burns and cooking & heating were the major causes contributing to the total number of wildfires during 2019/20. Prescribed burns and natural causes had the greatest impact on area burnt (Table A18.3).

Soil and fuel moisture status

- By early February, dry conditions were occurring in Mid-South Canterbury. By early February, dry conditions were occurring in Mid-South Canterbury. The dryness had receded by late March/early April.
- Drought Codes (DC) over the fire season were either on trend or well above the historical average. DC values were well above the average during January to June, typically peaking around mid-March (Table A18.4).
- BUIs were generally on trend with the historical average, peaking in late February (100 – 120 points, and well above the average).
- Fire climate severity was variable across the region, either on trend, below or well above the historical average.

Table A18.1. Total number of wildfires and area burnt in Mid-South Canterbury for the 2018/19 and 2019/20 wildfire seasons.

Zones	2018/19		2019/20	
	Number of fires	Total area burnt (ha)	Number of fires	Total area burnt (ha)
South Canterbury Area	139	101	173	343
Mid-South Canterbury Rural Fire District	31	27	45	584
<i>Mid-South Canterbury (total) *</i>	170	128	218	927

* On average, Canterbury experiences approximately 740 wildfires annually, and a total area burnt of approx. 720 ha (based on 25 years of historical records).

Table A18.2. Area burnt by land use category in the Mid-South Canterbury region for all vegetation fires.

Fire season	Forestry Area (ha)	Arable Area (ha)	Conservation Area (ha)	Horticulture Area (ha)	Others Area (ha)	Dairy Area (ha)	Meat/Wool Area (ha)
2018/19	5	75	3	0	2	43	0
2019/20	42	135	46	0	1	175	528

Table A18.3. Number of wildfires and area burnt (ha) for the Mid-South Canterbury region by broad cause categories.

Fire season	Unclassified	Re-ignitions	Matches, fireworks, etc	Cooking and heating	Pile burns	Equipment	Prescribed burns	Spontaneous combustion	Natural causes
Number 2018/19	24	6	23	19	42	24	29	2	1
Number 2019/20	32	14	22	30	51	19	34	4	12
Area 2018/19	4	0	1	0	13	14	96	0	0
Area 2019/20	54	4	1	5	10	6	766	0	82

Table A18.4. Drought Code (DC) values (max and mean) for the current fire season (2019/20) versus the historical average, based on the average across all Mid-South Canterbury region weather stations.

		July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Max DC	2019/20	387	303	214	234	288	328	502	530	584	527	574	582
Max DC	Historic	617	406	390	423	464	598	771	890	958	778	700	670
Mean DC	2019/20	124	61	66	68	101	130	248	297	316	270	270	279
Mean DC	Historic	122	90	91	104	140	196	253	300	307	284	223	160

A19. WEST COAST REGION

Wildfire Statistics

- During the 2019/20 wildfire season, the West Coast accounted for less than 1% of the total number of wildfires in the country and less than 1% of the total area burnt (Table A2, page A2 (or Figures 3&4 on page 3)).
- Comparing last fire season with this fire season, the total
 - number of vegetation fires has decreased for the West Coast region,
 - area burnt (ha) has decreased (Table A19.1).
- The area burnt by land use category is low in this region. Conservation and dairy lands during the 2018/19 and 2019/20 wildfire seasons experienced the greatest impact by wildfires (Table A19.2).
- Matches/fireworks, cooking & heating and prescribed burns were the major causes contributing to the total number of wildfires during the 2018/19 and 2019/20 seasons. Prescribed burns had the greatest impact on area burnt (Table A19.3).

Soil and fuel moisture status

- The West Coast region experienced dry conditions by early February (for the Buller and Grey districts). Extremely dry conditions were recorded by early March, which then receded by the end of the month. Dry conditions were no longer found by early April.
- Drought Codes (DC) over the fire season were generally on trend or below the historical average, with a few exceptions being well over during January and April (Reefton Ews and Westport Aero) (Table A19.4).
- BUIs were also well below the historical average this season. However, many stations peaked briefly during late January (which was well above the historical average for this time of the year).
- Fire climate severity was generally well below the historical average for most weather stations.

Table A19.1. Total number of wildfires and area burnt on the West Coast for the 2018/19 and 2019/20 wildfire seasons.

Zones	2018/19		2019/20	
	Number of fires	Total area burnt (ha)	Number of fires	Total area burnt (ha)
West Coast Area	63	15	27	5
West Coast Rural Fire District	2	0	1	0
<i>West Coast (total) *</i>	65	15	28	6

* On average, the West Coast experiences approximately 60 wildfires annually, and a total area burnt of approx. 190 ha (based on 25 years of historical records).

Table A19.2. Area burnt by land use category in the West Coast region for all vegetation fires.

Fire season	Forestry Area (ha)	Arable Area (ha)	Conservation Area (ha)	Horticulture Area (ha)	Others Area (ha)	Dairy Area (ha)	Meat/Wool Area (ha)
2018/19	0	0	7	0	2	6	0
2019/20	0	0	4	0	1	0	0

Table A19.3. Number of wildfires and area burnt (ha) for the West Coast region by broad cause categories.

Fire season	Unclassified	Re-ignitions	Matches, fireworks, etc	Cooking and heating	Pile burns	Equipment	Prescribed burns	Spontaneous combustion	Natural causes
Number 2018/19	8	0	21	15	7	0	11	1	2
Number 2019/20	6	0	5	6	5	0	4	1	1
Area 2018/19	0	0	4	0	1	0	10	0	0
Area 2019/20	2	0	0	0	0	0	3	0	0

Table A19.4. Drought Code (DC) values (max and mean) for the current fire season (2019/20) versus the historical average, based on the average across all West Coast region weather stations.

	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Max DC 2019/20	21	8	30	27	66	72	224	248	215	169	45	21
Max DC Historic	87	64	120	193	204	316	371	427	422	310	214	57
Mean DC 2019/20	5	2	7	7	17	23	86	101	56	28	10	12
Mean DC Historic	7	6	9	13	33	53	65	85	72	35	11	6

A20. OTAGO REGION

Wildfire Statistics

- During the 2019/20 wildfire season, Otago accounted for 6% of the total number of wildfires in the country and 70% of the total area burnt (Table A2, page A2 (or Figures 3&4 on page 3)).
- Comparing last fire season with this fire season, the total
 - number of vegetation fires has increased in the Otago region,
 - area burnt (ha) has significantly increased (10-fold, mainly due to the Deep Stream wildfire) (Table A20.1).
- Conservation, other and Meat/Wool lands experienced the greatest impact by wildfires (Table A20.2).
- Pile burns, unclassified and cooking & heating were the major causes contributing to the total number of wildfires during 2019/20. Matches/fireworks, pile burns and prescribed burns had the greatest impact on area burnt (Table A20.3).

Soil and fuel moisture status

- By early February, dry conditions were occurring in Central Otago. The dryness was short lived and receded by early March. Dry conditions were no longer found by early April.
- This season, Drought Codes (DC) were either below or on track with the long-term average. A few stations were exceptions where values were well above (during the months of January and June) included Dansey Pass, Macraes, Naseby Forest, Ranfurly and Windsor. DC values peaked later in the season than normal (Table A20.4).
- BUIs were either well below or on trend with the historical average. Values peaked briefly late January/early February (ranging between 75 and 200 points).
- Fire climate severity was variable across the region, most stations were below the long-term average. Some were either on trend or above.

Table A20.1. Total number of wildfires and area burnt in the Otago region for the 2018/19 and 2019/20 wildfire seasons.

Zones	2018/19		2019/20	
	Number of fires	Total area burnt (ha)	Number of fires	Total area burnt (ha)
Central-North Otago Area	127	276	160	2028
East Otago Area	148	183	128	5176
Otago Rural Fire District	19	316	34	102
<i>Otago (total) *</i>	294	776	322	7305

* On average, Otago experiences approximately 230 wildfires annually, and a total area burnt of approx. 1,860 ha (based on 25 years of historical records).

Table A20.2. Area burnt by land use category in the Otago region for all vegetation fires.

Fire season	Forestry Area (ha)	Arable Area (ha)	Conservation Area (ha)	Horticulture Area (ha)	Others Area (ha)	Dairy Area (ha)	Meat/Wool Area (ha)
2018/19	33	1	145	6	6	201	384
2019/20	46	2	5349	1	1027	74	808

Table A20.3. Number of wildfires and area burnt (ha) for the Otago region by broad cause categories.

Fire season	Unclassified	Re-ignitions	Matches, fireworks, etc	Cooking and heating	Pile burns	Equipment	Prescribed burns	Spontaneous combustion	Natural causes
Number 2018/19	38	13	38	47	89	29	30	2	8
Number 2019/20	57	7	37	46	89	39	27	7	13
Area 2018/19	122	13	22	0	35	90	189	0	304
Area 2019/20	73	114	5140	2	1193	41	733	5	5

Table A20.4. Drought Code (DC) values (max and mean) for the current fire season (2019/20) versus the historical average, based on the average across all Otago region weather stations.

		July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Max DC	2019/20	505	379	330	365	462	524	670	695	745	755	642	617
Max DC	Historic	573	571	591	611	665	810	1017	922	891	865	855	692
Mean DC	2019/20	167	116	129	118	146	200	280	260	343	358	358	373
Mean DC	Historic	158	127	129	141	180	252	308	343	358	356	281	201

A21. SOUTHLAND REGION

Wildfire Statistics

- During the 2019/20 wildfire season, Southland accounted for 3% of the total number of wildfires in the country and less than 1% of the total area burnt (Table A2, page A2 (or Figures 3&4 on page 3)).
- Comparing last fire season with this fire season, the total
 - number of vegetation fires has increased in the Southland region,
 - area burnt (ha) has decreased significantly (Table A21.1).
- Dairy and conservation lands experienced the greatest impact by wildfires in 2019/20, whereas forestry, dairy and other land areas were impacted in the 2018/19 wildfire season (Table A21.2).
- Pile burns, matches/fireworks and cooking & heating were the major causes contributing to the total number of wildfires during 2019/20. Re-ignitions from previous fires had the greatest impact on area burnt (Table A21.3).

Soil and fuel moisture status

- Drought or very dry conditions were not recorded in Southland or Stewart Island this season.
- This season, Drought Codes (DC) were well below the long-term average. Values typically peaked around late-January (ranging between 200 – 250 points). New historical maximum DC values were recorded for Stewart Island (Table A21.4).
- BUIs were also well below the long-term average.
- Fire climate severity was also well below the long-term average.

Table A21.1. Total number of wildfires and area burnt in Southland for the 2018/19 and 2019/20 wildfire seasons.

Zones	2018/19		2019/20	
	Number of fires	Total area burnt (ha)	Number of fires	Total area burnt (ha)
Southern Rural Fire District	4	6	7	0
Southland Area	146	203	157	39
<i>Southland (total) *</i>	150	208	164	40

* On average, Southland experiences approximately 140 wildfires annually, and a total area burnt of approx. 330 ha (based on 25 years of historical records).

Table A21.2. Area burnt by land use category in the Southland region for all vegetation fires.

Fire season	Forestry Area (ha)	Arable Area (ha)	Conservation Area (ha)	Horticulture Area (ha)	Others Area (ha)	Dairy Area (ha)	Meat/Wool Area (ha)
2018/19	97	6	8	0	42	48	8
2019/20	5	0	10	0	0	21	4

Table A21.3. Number of wildfires and area burnt (ha) for the Southland region by broad cause categories.

Fire season	Unclassified	Re-ignitions	Matches, fireworks, etc	Cooking and heating	Pile burns	Equipment	Prescribed burns	Spontaneous combustion	Natural causes
Number 2018/19	22	5	26	16	43	11	20	1	6
Number 2019/20	23	6	29	24	52	9	15	2	4
Area 2018/19	61	32	0	9	57	1	47	0	0
Area 2019/20	1	28	0	2	4	0	4	0	0

Table A21.4. Drought Code (DC) values (max and mean) for the current fire season (2019/20) versus the historical average, based on the average across all Southland region weather stations.

		July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Max DC	2019/20	40	14	25	45	108	162	250	337	471	488	157	159
Max DC	Historic	261	195	179	191	251	334	502	533	514	488	444	310
Mean DC	2019/20	8	4	8	10	26	50	105	89	134	113	75	85
Mean DC	Historic	15	13	15	24	55	110	158	183	179	156	87	33

A22. CHATHAM ISLANDS

Soil and fuel moisture status

- Drought Code (DC) values over the fire season generally followed the average trend (Chatham Island Aero was slightly below the average, whereas Kaiwhata and Waitangi Raws were slightly above). Values reached a peak by the end of March (Table A22.4).
- In general, Build-up Index ((BUI) values also followed the historical average trend.
- Fire climate severity was significantly below the historical average.

Soil and fuel moisture status

- Currently, in the new FENZ cause database, fire statistics for the Chatham Islands have not been separated out as their own separate location and are merged within the Wellington region statistics.

Table A22.1. Total number of wildfires and area burnt on the Chatham Islands for the 2018/19 and 2019/20 wildfire seasons.

Zones	2018/19		2019/20	
	Number of fires	Total area burnt (ha)	Number of fires	Total area burnt (ha)
	-	-	-	-
<i>Chatham Island (total)*</i>	-	-	-	-

*The Chatham Island experiences about 5 wildfires annually and approximately 100 ha is burnt (based on 25 years of historical records).

Table A22.2. Area burnt by land use category on the Chatham Islands for all vegetation fires.

Fire season	Forestry Area (ha)	Arable Area (ha)	Conservation Area (ha)	Horticulture Area (ha)	Others Area (ha)	Dairy Area (ha)	Meat/Wool Area (ha)
2018/19	-	-	-	-	-	-	-
2019/20	-	-	-	-	-	-	-

Table A22.3. Number of wildfires and area burnt (ha) on the Chatham Islands by broad cause categories.

Fire season	Unclassified	Re-ignitions	Matches, fireworks, etc	Cooking and heating	Pile burns	Equipment	Prescribed burns	Spontaneous combustion	Natural causes
Number 2018/19	-	-	-	-	-	-	-	-	-
Number 2019/20	-	-	-	-	-	-	-	-	-
Area 2018/19	-	-	-	-	-	-	-	-	-
Area 2019/20	-	-	-	-	-	-	-	-	-

Table A22.4. Drought Code (DC) values (max and mean) for the current fire season (2019/20) versus the historical average, based on the average across all Chatham Islands weather stations.

		July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Max DC	2019/20	177	62	26	38	128	231	367	506	533	383	380	292
Max DC	Historic	371	275	261	254	303	445	657	583	638	641	418	382
Mean DC	2019/20	55	18	10	17	71	157	267	388	398	336	282	233
Mean DC	Historic	74	36	30	59	126	217	311	372	381	297	232	127