

## A Warm Start to Autumn, Then Cooler and Unsettled at Times

<b>Temperature</b>	Nearly all of the North Island observed above average (0.51 to 1.20°C of average) temperatures during autumn, along with isolated pockets of near average (-0.50 to 0.50°C of average) and well above average (>1.20°C of average) temperatures. In the South Island, most locations recorded near average (-0.50 to 0.50°C of average) temperatures during autumn, with a handful of stations observing above average (0.51 to 1.20°C of average) temperatures.
<b>Rainfall</b>	Autumn rainfall in the North Island was generally near normal (80-119% of normal) or above normal (120-149% of normal), with a handful of locations also recording well above normal (>149% of normal) rainfall. In the South Island, above normal (120-149% of normal) or well above normal (>149% of normal) rainfall was observed in most locations, with a few spots also recording near normal (80-119% of normal) rainfall.
<b>Soil moisture</b>	As of 1 June, soil moisture was near normal in most of the North Island, along with the western and southern South Island. However, soils were wetter or even much wetter than normal in small portions of the lower North Island and nearly all of the eastern South Island.

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### Overview

Autumn 2018 began on a warm note, as March was characterised by significantly higher pressure than normal to the east of New Zealand. This pressure pattern, in concert with the decaying La Niña in the tropical Pacific, caused more northeasterly winds than usual over the country. Warm, humid air masses, combined with the remnants of the marine heatwave in the Tasman Sea, influenced higher than usual temperatures over New Zealand as well as some heavy rainfall events.

However, the pressure pattern for April resulted in more southwesterly winds than normal for much of the country. Several low pressure systems and cold fronts passed over New Zealand, bringing adverse weather to many locations. Storms occurring on the 10<sup>th</sup>-11<sup>th</sup> and 28<sup>th</sup>-29<sup>th</sup> days of the month were particularly damaging with the former bringing destructive winds to Auckland, while the latter brought heavy rain to parts of the country, resulting in flooding and the declaration of a state of emergency in Rotorua. *Refer to the highlights and extreme events section for further details.*

In May, mean sea level air pressures were much lower than normal over and to the south of New Zealand. The first half of the month was relatively warm and dry throughout the country. However, during the second half of May, a blocking anticyclone became established over the southeast of Australia, which delivered a prolonged period of disturbed westerly and southwesterly winds over the country. A ridge of high pressure covered the lower South Island during the final days of May, bringing heavy frosts and record cold temperatures to parts of Central Otago, Southland and the Mackenzie Basin.

#### **Further Highlights:**

- The highest temperature was 31.8°C, observed at Kawerau on 5 March.
- The lowest temperature was -8.8°C, observed at Mt Cook Airport on 31 May.
- The highest 1-day rainfall was 205 mm, recorded at Secretary Island on 19 March.
- The highest wind gust was 187 km/hr, observed at Akitio on 21 May.
- Of the six main centres in autumn 2018, Auckland was the warmest, Dunedin was the coolest and least sunny, Auckland and Wellington were the equal-wettest, Christchurch was the driest, and Tauranga was the sunniest.

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### **Temperature: A Warm March, But Cooler April and May**

The nationwide average temperature in autumn 2018 was 13.8°C (0.6°C warmer than the 1981-2010 autumn average, using NIWA's seven-station temperature series which begins in 1909). This makes the autumn of 2018 the 21<sup>st</sup>-warmest autumn on record. Mean temperatures for New Zealand were near average during April and May. However, the country observed its sixth-warmest March on record, with temperatures aided by a predominant northeasterly wind flow and well above average sea surface temperatures surrounding New Zealand.

Nearly all of the North Island observed above average (0.51 to 1.20°C of average) temperatures during autumn, along with isolated pockets of near average (-0.50 to 0.50°C of average) and well above average (>1.20°C of average) temperatures. In the South Island, most locations recorded near average (-0.50 to 0.50°C of average) temperatures during autumn, with a handful of stations observing above average (0.51 to 1.20°C of average) temperatures.

Despite the warm start to the season, notable cold snaps occurred during all three months, particularly in late-March, early-April, and finally in late-May. Below average temperatures were prevalent across much of the South Island in late-May, while the combination of low cloud and light winds allowed for several record cold maximum temperatures. Notably, on 31 May, Lauder only reached a maximum temperature of -2.6°C, which was a new May record with data going back to 1924. Tara Hills also set a new record on the same day, when the maximum temperature only reached -1.0°C. Records there date back to 1949.

**Record<sup>1</sup> or near-record mean air temperatures for autumn were recorded at:**

Location	Mean air temp. (°C)	Departure from normal (°C)	Year records began	Comments
<b>High records or near-records</b>				
Akaroa	15.0	2.0	1978	2nd-highest
Arapito	14.5	1.1	1978	2nd-highest
Mokohinau	18.5	1.0	1994	2nd-highest
Whitianga	16.8	1.5	1962	2nd-highest
Hastings	15.5	1.2	1965	3rd-highest
Motu	12.7	1.4	1990	3rd-highest
Te Kuiti	15.3	1.2	1959	3rd-highest
Wairoa	16.2	1.5	1964	3rd-highest
Cheviot	12.7	0.9	1982	4th-highest
Mahia	15.8	0.8	1990	4th-highest
Motueka	14.0	1.2	1956	4th-highest
Tauranga	16.9	1.2	1913	4th-highest
<b>Low records or near-records</b>				
Kaikoura	12.2	-0.9	1963	4th-lowest

**Record or near-record mean maximum air temperatures for autumn were recorded at:**

Location	Mean maximum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
<b>High records or near-records</b>				
Whitianga	22.0	1.8	1962	Highest
Mokohinau	20.5	1.0	1994	2nd-highest
Whangarei	21.8	1.1	1967	3rd-highest
Hamilton (Ruakura)	21.6	1.8	1906	4th-highest
Wairoa	21.5	1.7	1964	4th-highest
<b>Low records or near-records</b>				

<sup>1</sup> The rankings (1st, 2nd, 3rd etc.) in all Tables in this summary are relative to climate data from a group of nearby stations, some of which may no longer be operating. The current climate value is compared against all values from any member of the group, without any regard for homogeneity between one station's record, and another. This approach is used due to the practical limitations of performing homogeneity checks in real-time.

Te Anau	13.6	-1.3	1963	2nd-lowest
Manapouri (West Arm Jetty)	11.9	-1.2	1971	3rd-lowest

Record or near-record mean minimum air temperatures for autumn were recorded at:

Location	Mean minimum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
<b>High records or near-records</b>				
Cheviot	6.9	1.3	1982	Highest
Akaroa	10.8	2.7	1978	Highest
Hastings	10.3	1.4	1965	2nd-highest
Arapito	10.2	1.5	1978	2nd-highest
Motueka	8.8	1.8	1956	2nd-highest
Dargaville	13.8	1.4	1943	3rd-highest
Port Taharoa	14.1	1.5	1973	3rd-highest
Lower Retaruke	8.8	1.6	1966	3rd-highest
Ngawi	13.0	0.9	1972	3rd-highest
Paraparaumu	11.2	1.6	1953	3rd-highest
Farewell Spit	12.6	1.7	1971	3rd-highest
Culverden	7.1	1.8	1928	3rd-highest
Cape Reinga	15.3	1.0	1951	4th-highest
Whitianga	12.1	1.6	1962	4th-highest
Tauranga	12.9	1.4	1913	4th-highest
Taupo	9.1	2.0	1949	4th-highest
Motu	7.9	1.4	1990	4th-highest
<b>Low records or near-records</b>				
Kaikoura	6.9	-3.0	1963	2nd-lowest

## Rainfall: Variable Throughout the Season

Autumn rainfall in the North Island was generally near normal (80-119% of normal) or above normal (120-149% of normal), with a handful of locations also recording well above normal (>149% of normal) rainfall. In the South Island, above normal (120-149% of normal) or well above normal (>149% of normal) rainfall was observed in most locations, with a few spots also recording near normal (80-119% of normal) rainfall.

March rainfall was spatially patchy across New Zealand, with heavy rain leading to flooding in some areas, but stretches of dry weather for other locations. Notably, on 12 March, ex-Tropical Cyclone Hola affected the North Island. Heavy rain fell in eastern Northland, and around 100 mm of rain was recorded in parts of Coromandel and East Cape as the storm passed through.

In April, much of the South Island received above normal or well above normal rainfall for the time of year, with the highest rainfall anomalies (departure from normal levels) occurring over eastern parts of Canterbury and Otago. On 28 April through to 29 April, Rotorua received 167.8 mm of rainfall over a 36-hour period, which is almost 1.5 times its normal rainfall for April as a whole. Rotorua also recorded its wettest hour on record on 29 April with 51.8 mm recorded between 10-11 a.m. A local state of emergency was declared for Ngongotaha near Rotorua after Ngongotaha Stream burst its banks, forcing the evacuation of about 30 homes. Surface flooding was widespread in Rotorua and many vehicles were submerged. *Refer to the highlights and extreme events section for further details.*

May rainfall varied significantly across the country, with very dry conditions experienced in coastal south Canterbury and eastern Otago, along with Wairarapa and Hawke's Bay. In contrast, rainfall was well above normal for parts of the eastern Bay of Plenty, Taranaki, Manawatu, Marlborough and Kaikoura.

As of 1 June, soil moisture was near normal in most of the North Island, along with the western and southern South Island. However, soils were wetter or even much wetter than normal in small portions of the lower North Island and nearly all of the eastern South Island.

#### Record or near-record autumn rainfall totals were recorded at:

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
<b>High records or near-records</b>				
Lower Retaruke	603	187	1966	Highest
Ranfury	191	181	1897	3rd-highest
Ohakune	405	143	1961	4th-highest
<b>Low records or near-records</b>				
None observed				

#### Autumn climate in the six main centres

It was a warm autumn in the North Island, with all four main centres observing above average temperatures. Meanwhile, the South Island main centres experienced near average temperatures. Near normal rainfall was recorded in the North Island main centres, while Christchurch and Dunedin observed above normal rainfall during autumn. Of the six main centres in autumn 2018, Auckland was the warmest, Dunedin was the coolest and least sunny, Auckland and Wellington were the equal-wettest, Christchurch was the driest, and Tauranga was the sunniest.

#### Autumn 2018 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland <sup>a</sup>	17.2	+1.0	Above average
Tauranga <sup>b</sup>	16.9	+1.2	Above average

Hamilton <sup>c</sup>	15.2	+1.0	Above average
Wellington <sup>d</sup>	14.4	+0.7	Above average
Christchurch <sup>e</sup>	12.4	+0.4	Near average
Dunedin <sup>f</sup>	12.1	+0.5	Near average
<b>Rainfall</b>			
Location	Rainfall (mm)	% of normal	Comments
Auckland <sup>a</sup>	330	119%	Near normal
Tauranga <sup>b</sup>	275	84%	Near normal
Hamilton <sup>c</sup>	308	110%	Near normal
Wellington <sup>d</sup>	330 <sup>3</sup>	117%	Near normal
Christchurch <sup>e</sup>	209	141%	Above normal
Dunedin <sup>f</sup>	235	130%	Above normal
<b>Sunshine</b>			
Location <sup>2</sup>	Sunshine (hours)		
Auckland <sup>a</sup>	509		
Tauranga <sup>b</sup>	575		
Hamilton <sup>e</sup>	509		
Wellington <sup>d</sup>	454		
Christchurch <sup>e</sup>	467 <sup>3</sup>		
Dunedin <sup>f</sup>	452		

<sup>a</sup> Mangere <sup>b</sup> Tauranga Airport <sup>c</sup> Hamilton Airport <sup>d</sup> Kelburn <sup>e</sup> Christchurch Airport <sup>f</sup> Musselburgh <sup>g</sup> Ruakura

## Highlights and extreme events

This section contains information pertaining to some of the more significant highlights and extreme events that occurred during autumn 2018. Note that a more detailed list of significant weather events during autumn 2018 can be found in the *Highlights and extreme events* section of NIWA's monthly Climate Summaries. These monthly summaries are available online, and may be viewed at the following website: <http://www.niwa.co.nz/climate/summaries/monthly>

### Temperatures

On 22 March, a southerly front brought cold temperatures to the South Island. On 21 March, afternoon temperatures were in the mid-twenties for many locations but the next day a number of those same locations struggled to reach temperatures only in the lower teens. Some locations experienced record or near-record low maximum temperatures for March on the 22<sup>nd</sup>.

<sup>2</sup> Tauranga, Wellington and Christchurch record sunshine using Campbell-Stokes manual sunshine recorders, whereas Auckland, Hamilton and Dunedin record sunshine with high-precision electronic sensors.

<sup>3</sup> Missing 2 days of data

On 10 April, a low pressure system moved up the country bringing southerly winds and cold temperatures to much of the country. Many locations experienced record or near-record low maximum temperatures for April on the 10<sup>th</sup> and 11<sup>th</sup> days of the month.

At the end of May, an inversion and persistent low cloud trapped cold air at the earth surface throughout Central Otago, resulting in low daytime maximum temperatures for many locations. For example, Lauder's maximum temperature on 31 May was just -2.6°C, and in Tara Hills (Omarama) the maximum temperature on 31 May was -1.0°C.

**Record or near-record daily maximum air temperatures for autumn were recorded at:**

Location	Extreme maximum (°C)	Date of extreme temperature	Year records began	Comments
<b>High records or near-records</b>				
Whitianga	28.3	Mar-6th	1962	Highest
Thames	28.2	Mar-5th	1946	Highest
Rotorua	28.7	Mar-5th	1964	Highest
Motu	25.8	Mar-6th	1990	2nd-highest
Hawera	26.1	Mar-2nd	1977	2nd-highest
Whangaparaoa	26.8	Mar-5th	1982	3rd-highest
Auckland (Mangere)	27.9	Mar-6th	1959	3rd-highest
Westport	28.0	Mar-3rd	1937	3rd-highest
Haast	25.5	Mar-7th	1949	3rd-highest
Auckland (Whenuapai)	27.7	Mar-5th	1945	4th-highest
Hamilton (Ruakura)	29.6	Mar-5th	1906	4th-highest
Te Kuiti	29.0	Mar-5th	1959	4th-highest
Mokohinau	25.0	Mar-5th	1994	Equal 4th-highest
Paeroa	28.5	Mar-5th	1947	Equal 4th-highest
Arapito	27.0	Mar-1st	1978	Equal 4th-highest
<b>Low records or near-records</b>				
Whangaparaoa	11.2	May-28th	1982	Lowest
Stratford	4.9	May-28th	1972	Lowest
Tara Hills	-1.0	May-31st	1949	Lowest
Manapouri (West Arm Jetty)	0.4	May-30th	1972	Lowest
Lauder	-2.6	May-31st	1924	Lowest
Ohakune	4.1	May-28th	1972	2nd-lowest
Hanmer Forest	1.7	Apr-10th	1972	2nd-lowest
Clyde	1.2	May-31st	1978	2nd-lowest
Wanaka	3.1	May-31st	1972	Equal 2nd-lowest
Cape Reinga	13.3	May-29th	1971	3rd-lowest
Whakatane	10.5	Apr-11th	1975	3rd-lowest
Waiouru	2.2	May-28th	1972	3rd-lowest
Kaikoura	5.9	Apr-10th	1972	3rd-lowest
Waiiau	4.8	Apr-10th	1974	3rd-lowest
Waipara West	5.6	Apr-10th	1973	3rd-lowest
Lake Tekapo	0.1	May-31st	1928	3rd-lowest
Mokohinau	13.1	May-29th	1994	Equal 3rd-lowest

Dargaville	12.1	May-28th	1951	4th-lowest
Paeroa	11.3	May-30th	1971	4th-lowest
Motu	8.1	May-29th	1990	4th-lowest
Brothers Island	9.2	May-28th	1997	4th-lowest
Cheviot	6.2	Apr-10th	1982	4th-lowest
Gore	3.0	May-30th	1907	4th-lowest
Auckland (Whenuapai)	12.0	May-28th	1951	Equal 4th-lowest
Port Taharoa	12.2	May-28th	1974	Equal 4th-lowest

**Record or near-record daily minimum air temperatures for autumn were recorded at:**

Location	Extreme minimum (°C)	Date of extreme temperature	Year records began	Comments
<b>High records or near-records</b>				
Mahia	18.8	Mar-7th	1990	Highest
Brothers Island	18.8	Mar-3rd	1997	Highest
Five Rivers	17.0	Mar-20th	1982	Highest
Alexandra	17.6	Mar-3rd	1992	Highest
Cape Reinga	20.1	Mar-2nd	1971	2nd-highest
Haast	18.2	Mar-3rd	1949	2nd-highest
Wanaka	17.3	Mar-20th	1972	2nd-highest
Tapanui	18.5	Mar-20th	1900	2nd-highest
Tautuku	17.0	Mar-20th	1976	2nd-highest
Okarito	18.0	Mar-3rd	1983	Equal 2nd-highest
Secretary Island	17.7	Mar-3rd	1988	Equal 2nd-highest
Winton	17.8	Mar-20th	1972	Equal 2nd-highest
Arthurs Pass	14.0	Mar-5th	1978	3rd-highest
Orari Estate	15.9	Mar-2nd	1972	3rd-highest
Oamaru	16.1	Mar-5th	1972	3rd-highest
Manapouri (West Arm Jetty)	15.6	Mar-3rd	1972	3rd-highest
Mokohinau	20.3	Mar-2nd	1994	Equal 3rd-highest
Motu	16.1	Mar-6th	1990	Equal 3rd-highest
Wellington (Airport)	19.2	Mar-6th	1972	Equal 3rd-highest
Arapito	18.3	Mar-5th	1978	Equal 3rd-highest
Te Anau	16.5	Mar-3rd	1973	Equal 3rd-highest
Clyde	17.5	Mar-3rd	1978	Equal 3rd-highest
Whangaparaoa	19.6	Mar-3rd	1982	4th-highest
Te Puke	19.5	Mar-7th	1973	4th-highest
Port Taharoa	19.8	Mar-2nd	1974	4th-highest
Milford Sound	16.9	Mar-3rd	1935	4th-highest
Grassmere	20.0	Mar-3rd	1972	4th-highest
Lumsden	15.4	Mar-3rd	1982	4th-highest
Stewart Island	14.0	Mar-12th	1975	Equal 4th-highest
South West Cape	15.1	Mar-2nd	1991	Equal 4th-highest
<b>Low records or near-records</b>				
Five Rivers	-6.4	May-30th	1982	Lowest
Brothers Island	4.6	May-28th	1997	2nd-lowest



Kaikoura	-0.1	Apr-12th	1963	2nd-lowest
Dunedin (Musselburgh)	-2.2	May-31st	1947	2nd-lowest
Kaikohe	3.3	May-29th	1973	3rd-lowest
Whangarei	0.8	May-29th	1967	3rd-lowest
Mokohinau	8.0	Apr-12th	1994	3rd-lowest
Mt Cook (Airport)	-9.0	May-31st	1929	3rd-lowest
Alexandra	-7.1	May-30th	1929	Equal 3rd-lowest
Warkworth	0.0	May-30th	1966	4th-lowest
Puysegur Point	2.9	May-29th	1978	Equal 4th-lowest

### Rain and slips

On 8 March, heavy rain fell in the Esk Valley area of Hawke's Bay, causing flooding. About 200 people were evacuated from a school, a campground, and homes in the area after more than 300 mm of rain fell in a 24-hour period. More than 80 properties were affected by flooding. SH43 between Whangamomona and Taumurunui was closed for a time due to slips. More than 100 tourists were trapped at Blue Duck Station near Owhango on the Whanganui River due to heavy rainfall and slips. They were evacuated by helicopter the next day.

On 12 March, ex-tropical cyclone Hola affected the North Island. Heavy rain fell in eastern Northland, and around 100 mm of rain was recorded in parts of Coromandel and East Cape as the storm passed through. Three flights between Northland and Auckland were cancelled due to the bad weather.

On 23 March, the top of the North Island was cut off from the rest of the country when a washout occurred on State Highway 1, after a heavy deluge. The road was washed out between Whalers Road and Lamb Road near Pukenui, making a gap in the road about 20 m wide and four to five metres deep. The only way to get north or south of the washout was to use forestry roads or drive along Ninety Mile Beach.

On 28 April through to 29 April, Rotorua received 167.8 mm of rainfall over a 36 hour period, which is almost 1.5 times its normal rainfall for April as a whole. Rotorua also recorded its wettest hour on record on 29 April with 51.8 mm recorded between 10-11 a.m. A local state of emergency was declared for Ngongotaha near Rotorua after Ngongotaha Stream burst its banks, forcing the evacuation of about 30 homes. Surface flooding was widespread in Rotorua and many vehicles were submerged. A reported 200 people were trapped by rising waters at the Rotorua Agrodome. Parts of the sewage system were unable to cope with the volume of water trying to enter which caused diluted sewage to overflow the system, resulting in contaminated wastewater entering the stream and Lake Rotorua.

On 29 April, surface flooding on the Coromandel Peninsula forced the closure of several roads, including State Highway 25 between Waihi and Whangamatā. Flood waters were also lapping across the road on State Highway 2 through the Karangahake Gorge although this did not force the closure of the road. Some residents in Tairua had their homes and properties flooded. Oropi Road near Tauranga was closed between the intersection with State Highway 36 and Glue Pot Road overnight after water scoured out the road surface. Parts of Canterbury also observed surface flooding including State Highway 1 between Timaru and the Waimate Junction. Heavy rain had caused extensive surface flooding and closed several roads around Dunedin and Mosgiel. Highcliff Road on

the Otago Peninsula was closed overnight between Sandymount and Seaton Roads due to concerns about a potential landslip near Seven Sisters. Emergency services were also responding at 10.30 p.m. to reports that a tree had fallen on Portobello Road near Weller Street, blocking both lanes. On Norfolk Street, fire crews responded to reports that water was flooding into a home.

On 22 May, heavy rain caused surface flooding on SH6 between Cromwell and Makarora, SH8 from Cromwell to Omarama, and parts of Wanaka. Roads in and around Mossburn (Southland) were also affected by surface flooding. Minor surface flooding was reported in Wellington after a downpour of rain.

**Record or near record autumn extreme 1-day rainfall totals were recorded at:**

Location	Extreme 1-day rainfall (mm)	Date of extreme rainfall	Year records began	Comments
Lower Retaruke	160	Mar-7th	1967	Highest
Waiwhero Station	158	Mar-8th	1951	Highest
Flemington	178	Mar-8th	1958	Highest
Pongaroa	187	Mar-7th	1973	Highest
Pukehinau	176	Mar-7th	1979	Highest
Mahana Lodge	180	Mar-7th	1984	Highest
Waiawa	187	Mar-7th	1968	Highest
Waihau	151	Mar-12th	1985	Highest
Mahia	88	Apr-10th	1990	Highest
Secretary Island	205	Mar-19th	1985	Highest
Kakahu Bush	161	Apr-28th	1909	Highest
Orari	125	Apr-28th	1897	Highest
Glenledi	75	Apr-29th	1984	Highest
Wairere	124	Mar-7th	1952	2nd-highest
Bywell Station	168	Mar-8th	1949	2nd-highest
Te Kaihi	130	Mar-8th	1995	2nd-highest
Timaru	85	Apr-28th	1881	2nd-highest
Waierua	150	Mar-7th	1970	Equal 2nd-highest
Kiritaki	82	Mar-8th	1971	3rd-highest
Dannevirke	92	Mar-8th	1951	3rd-highest
Marangai Station	166	Mar-7th	1914	3rd-highest
Castlepoint	110	Mar-7th	1907	3rd-highest
Maud Island	67	Mar-27th	1997	3rd-highest
Coldstream	62	Apr-28th	1964	3rd-highest
Powder Creek	59	Apr-29th	1993	3rd-highest
Rotowai	107	Mar-8th	1967	4th-highest
Patiki	96	Mar-7th	1963	4th-highest
Hawera	67	Mar-7th	1977	4th-highest
Kokiri	94	Apr-15th	1980	4th-highest
Peel Forest	83	Apr-28th	1973	4th-highest
Motunau	65	Apr-10th	1992	4th-highest
Kimbell	69	Apr-28th	1971	4th-highest
Roxburgh	48	Mar-21st	1946	4th-highest

## Wind

On 10 March, a strong gust of wind lifted the roof from a west Auckland factory and threw it onto powerlines, cutting electricity in the area.

On 10 April, an active front from the west moved up the country, bringing adverse weather to the South Island and severe thunderstorms to parts of the North Island. Gale force winds and tornadoes damaged homes in Rahotū, Taranaki and National Park Village, Central Plateau. Auckland was severely affected and at least 19 schools around the country were closed. The impacts of this storm due to wind damage on **10<sup>th</sup>-11<sup>th</sup> April** are summarised below:

Auckland:

- Winds speeds of more than 120km/h caused heavy damage to Auckland on the evening of 10 April and early hours of 11 April leaving around 120,000 homes and businesses without power, some for multiple days. A Vector spokesperson said 129 lines were down across Auckland, mainly due to fallen trees. Several roofs were lifted and multiple homes and cars were severely damaged by fallen trees. Fire and Emergency New Zealand revealed it had answered more than 170 calls in the upper North Island as people reported damage caused by the storm.
- A 30km/h speed limit was imposed on Auckland's harbour bridge on the evening of the 10<sup>th</sup> due to the high winds.
- There were at least three separate incidents of fallen trees trapping people in their cars in Auckland suburbs. One, a woman in Kingsland, was reported to have suffered moderate injuries.
- Air operations were halted and flights diverted at Auckland Airport on the evening of the 10<sup>th</sup> as fierce winds and debris scattered across the runway were making it impossible to fly in or out. One flight from Christchurch to Auckland got just north of Raglan before being turned away, returning to Christchurch. On 11 April, flights in and out of Auckland Airport continued to be delayed or turned away.
- On 10 April, several public transport services in Auckland were cancelled including ferry sailings to West Harbour, as well as Half Moon Bay. Northcote Point wharf had also been closed until further notice. On 11 April, Auckland Transport had cancelled all ferry sailings until further notice.
- On 10 April, a wind gust of 146km/h was recorded at the Sky Tower.
- A tornado appeared to have hit the Swanson Railway Station in West Auckland where roofing iron and wood was blown for 100 metres.

Other North Island locations:

- Taranaki was hit by gusts of up to 110 km/h. A few homes were nearly destroyed and several had their roofs torn off. Power cuts affected about 12,000 properties in the region. At least nine schools in the area closed for the day due to the weather and at least 10 flights in and out of New Plymouth Airport were cancelled.

- A tornado swept through Taranaki town Rahotū, northwest of Ōpunake, downing trees and powerlines. Eleven homes were reportedly damaged, three severely, and seven families had to be relocated.
- Gale force winds and a tornado damaged homes in National Park Village, Central Plateau. The tornado carved a clear path around 500 metres wide through the village, downing trees and power lines, and destroying six homes. Trampolines and sheets of iron were flung through the air hitting cars and powerpoles.
- A group of students and staff were trapped for the day by bad weather on the National Park's Tongariro Crossing.
- Central North Island roads were affected by downed power lines, surface flooding and trees. State Highway 4 north of Taumarunui was scheduled to be closed to traffic on the morning of 12 April while work was carried out to repair fallen power lines.
- On 11 April, Metlink Wellington said adverse conditions had caused the cancellation of all ferry trips in the capital.
- On 10-11 April, heavy winds fanned a large fire at a Matatoki timber mill near Thames, making it difficult for fire services to bring under control. Twenty fire trucks were reportedly responding to that fire, including crews from Thames, Ngatea and the Bay of Plenty.

#### South Island locations:

- Several road closures and power outages occurred along the West Coast of the South Island after the wild weather caused trees to fall. Extremely high winds caused three campervans and one caravan to topple near Hokitika, Mount Hercules, Harihari and Westport.
- Roofs had reportedly been lifted from buildings in Westport and Greymouth. State Highway 67 between Westport and Karamea was closed due to a shed roof iron lifting near Garveys Road.
- A strong wind warning was in place for vehicles driving on the West Coast's SH6 from Ross to Haast. The highway was closed between the townships of Ross and Franz Josef Glacier due to trees which had been brought down at Pukekura.
- Several other roads were closed across the South Island due to the winter driving conditions, including SH1 near Kaikōura, SH77 and SH80 in Canterbury, SH8 in Otago and SH94 in Southland.
- Hundreds of power outages occurred in the Buller region of the South Island. Approximately 600 homes in the Karamea township on the West Coast were running off a generator after power was lost. Twenty-two homes in Dirty Mary's Creek between Westport and Charleston were also without power because of fallen pine trees. Flights out of the region were called off for the day.

The adverse weather also forced the cancellation of Cook Strait ferry sailings on 10 April, the 50<sup>th</sup> anniversary of the Wahine disaster.

On 28 April, a burst of gusty to gale force winds cut power to over 1000 Auckland homes and brought trees down, some even on to vehicles. Firefighters had been sent to clear debris from state highways in Auckland after high winds sent trees falling into the road.

On 20 May, flights to and from Dunedin Airport were disrupted due to strong winds. A bush fire near Taieri Mouth was fanned by the strong winds, and it required two helicopters and eight fire crews to bring under control.

On 21 May, strong winds brought down power lines in the Wairarapa, with about 300 residents losing power. A tree was also blown onto a car near Greytown.

**Record or near record autumn extreme wind gusts were recorded at:**

Location	Extreme wind gust (km/hr)	Date of extreme gust	Year records began	Comments
Auckland (Whenuapai)	113	Apr-10th	1972	Highest
Auckland (Western Springs)	95	Apr-10th	1994	Highest
Paeroa	102	Apr-28th	1991	Highest
Pukekohe	82	Apr-10th	1986	Highest
Westport	122	Apr-10th	1973	2nd-highest
Manapouri (Airport)	89	May-8th	1991	2nd-highest
Secretary Island	141	Mar-27th	1994	3rd-highest
Brothers Island	139	Apr-10th	1997	3rd-highest
Gore	107	May-8th	1987	Equal 3rd-highest
Auckland (Airport)	109	Apr-10th	1971	4th-highest
Puysegur Point	152	May-8th	1986	Equal 4th-highest

**Snow and ice**

On 22 March, Cardrona Alpine Resort, near Wanaka, was closed to summer activities due to 30 cm of snow falling. Snow covered the mountain tops around the Queenstown-Lakes District.

On 10 April, a storm brought snowfall down to 400m in several areas of the South Island, reaching 300 m in Otago. Significant accumulations occurred for the highest passes including Lewis Pass, Arthur's Pass, and Porters Pass.

On 11 April, traffic was backed up on roads out of Wellington after hail settled on the road, making driving conditions difficult, and resulting in several crashes. Icy driving conditions occurred in both directions between Tawa and Porirua.

On 23 May, snow fell to low elevations in Southland and Otago. The Milford Road (SH94) was closed due to snow, and school bus operations from Mossburn, Garston and Waikaia to Northern Southland College were cancelled.

On 24 May, further snowfall occurred to low elevations throughout much of the South Island, and parts of the North Island. SH6 was closed from Haast to Makarora (Haast Pass) due to snow, as was the Milford Road (SH94), SH73 at Arthur's Pass and the Desert Road (SH1) in the North Island. Caution was advised to motorists travelling on on SH6 from Gibbston to Cromwell (the Kawarau Gorge), and the Lindis Pass (SH8) due to snow.

### **Lightning and hail**

On 10 April, an active front from the west brought severe thunderstorms to parts of the North Island. More than 13,000 lightning strikes hit Taranaki in the morning, with close to 6000 occurring between 7-9 am.

On 14 May, hundreds of lightning strikes were recorded over Taranaki, with power cuts at more than 2000 properties in the region.

On 20 May, around 3500 lightning strikes were recorded about the western South Island and the Southern Alps. Two passenger aircraft bound for Queenstown were struck by lightning, and forced to divert to Christchurch.

On 22 May, a flight was struck by lightning as it attempted to land in Wellington. Heavy falls of hail occurred throughout the city during the evening hours. In the 24-hour period to 5 a.m. on 23 May, approximately 9500 lightning strikes were recorded across New Zealand.

### **Cloud and fog**

On 4 March, Otago Harbour was affected by fog. Six vessels were stationed off Taiaroa Head, unable to enter the harbour, and three vessels were unable to leave Port Chalmers until the fog lifted later in the evening.

On 6 March, heavy fog affected about 60 flights in and out of Auckland Airport in the morning. The fog had lifted by about 10.30 am.

Towards the end of May, settled weather under high pressure conditions saw inversions established over many inland valleys and basins in the South Island. This resulted in many consecutive days of persistent low cloud and freezing fog, particularly in Central Otago. Picturesque hoar frosts were observed in areas including Middlemarch and Lauder.

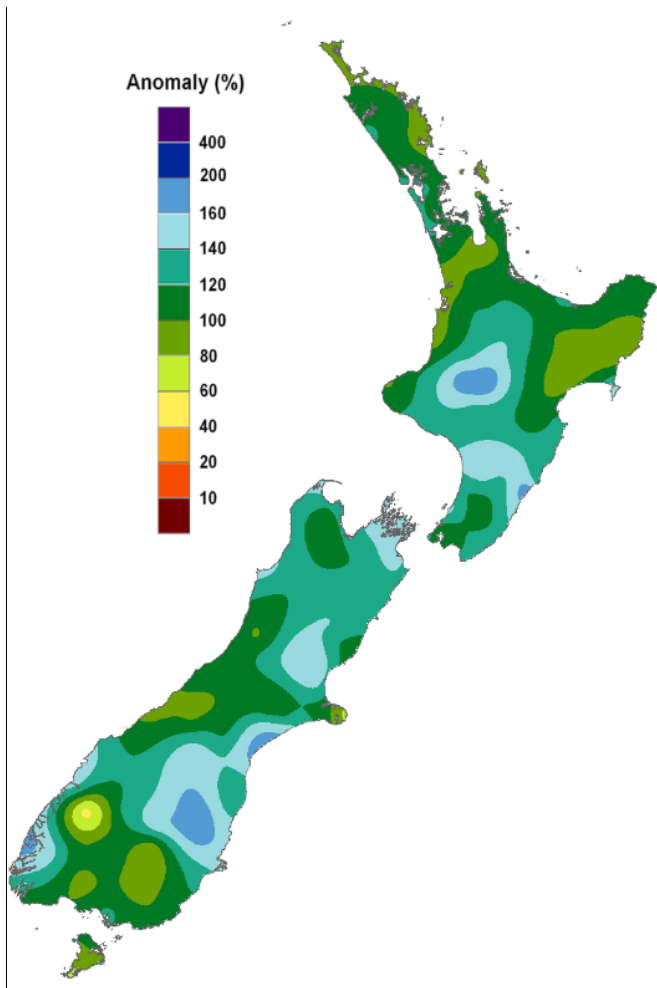
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*Autumn 2018 rainfall, expressed as a departure from the 1981-2010 average (%).*

*Despite large monthly variations, total rainfall during autumn 2018 was generally near normal to above normal across New Zealand.*

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