

A mild winter for much of the country and dry in parts of the South Island

Temperature	Winter 2018 was New Zealand's 6th-warmest on record. Temperatures were above average (+0.51°C to +1.20°C of the winter average) or near average (-0.50°C to +0.50°C of the winter average) for most of the country. Winter temperatures were well above average (> +1.20°C of the winter average) for much of north Canterbury, and a few other isolated inland locations.
Rainfall	Below normal rainfall (50-79% of the winter normal) was observed in eastern and inland parts of Canterbury and Otago. Rainfall was above normal (120-149% of the winter normal) in isolated parts of Marlborough, Kapiti Coast, Manawatu and the Bay of Plenty.
Soil moisture	At the end of winter 2018, slightly drier than usual soils were present in southern Hawke's Bay, north Canterbury, and central Otago. Soil moisture levels were above normal for the time of year in parts of coastal Otago and Marlborough, as well as around coastal Gisborne. Soil moisture levels were generally near normal for the time of year across the rest of the country.

Click on the link to jump to the information you require:

[Overview](#)

[Temperature](#)

[Rainfall](#)

[Winter climate in the six main centres](#)

[Highlights and extreme events](#)

Overview

Winter 2018 got off to a relatively settled start for much of the South Island, with record or near-record low rainfall totals for June in several locations. In contrast, northern and eastern parts of the North Island bore the brunt of heavy rainfall events which resulted in significant flooding about East Cape (see *Highlights and extreme events* section for further details). During July, there were more northwesterly air flows than normal. This delivered relatively mild temperatures to the county, with abundant rainfall to the western South Island. However, July was very dry for eastern areas of New Zealand. August also saw more northwesterly airflows than normal, resulting in ongoing dryness for many parts of Canterbury and Otago. The variable airflow patterns through the season owed in part to ENSO-neutral conditions (neither El Niño nor La Niña) in the equatorial Pacific. During the winter season, the polar jet stream was weaker than normal to the south of New Zealand. This prevented long-lived cold periods and contributed to a lack of snowfall for some ski areas in the South Island.

Further Highlights:

- The highest temperature was 22.3°C, observed at Kaikoura on 21 July.
- The lowest temperature was -10.4°C, observed at Mt Cook Airport on 3 June.
- The highest 1-day rainfall was 246 mm, recorded at Milford Sound on 6 July.
- The highest wind gust was 209 km/hr, observed at White Island on 9 July.
- Of the six main centres in winter 2018, Tauranga was the warmest, wettest and sunniest, Dunedin was the driest, Christchurch was the coolest, and Wellington was the least sunny.

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Temperature: Above average or near average throughout the country

The nation-wide average temperature for winter 2017 was 9.0°C (0.6°C warmer than the 1981-2010 winter average, using NIWA's seven-station temperature series which begins in 1909). This makes the winter of 2018 the 6th-warmest winter on record. Mean temperatures for New Zealand were near average during June, and above average during July and August.

It was a particularly warm winter in North Canterbury, where Cheviot, Medbury and Waiau each observed their warmest winter on record. Well above average winter temperatures (> +1.20°C of the winter average) were also observed in Taupo, Arthur's Pass, and Roxburgh. Remaining locations throughout New Zealand observed winter temperatures that were either above average (+0.51°C to +1.20°C of the winter average) or near average (-0.50°C to +0.50°C of the winter average).

Record¹ or near-record mean air temperatures for winter were recorded at:

Location	Mean air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Medbury	7.1	1.3	1927	Highest
Waiau	7.5	1.7	1974	Highest
Cheviot	7.8	1.2	1982	Highest
Taupo	8.4	1.3	1949	2nd-highest
Ngawi	11.6	0.8	1972	2nd-highest
Orari Estate	6.7	0.9	1972	2nd-highest
South West Cape	8.9	1.2	1991	2nd-highest
Blenheim	9.3	0.9	1932	3rd-highest
Rangiora	7.5	1.0	1965	3rd-highest

¹ 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.

Akaroa	9.2	1.2	1978	3rd-highest
Oamaru	7.4	0.3	1967	3rd-highest
Wellington (Kelburn)	10.2	0.9	1927	Equal 3rd-highest
Kerikeri	12.5	0.7	1945	4th-highest
Motu	7.3	0.9	1990	4th-highest
Martinborough	9.2	0.8	1986	4th-highest
Wellington (Airport)	10.8	0.7	1962	4th-highest
Farewell Spit	11.3	1.1	1971	4th-highest
Roxburgh	6.7	1.4	1950	4th-highest
Low records or near-records				
None observed				

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

Location	Mean maximum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Kerikeri	17.8	1.5	1945	Highest
Whangarei	17.0	1.1	1967	Highest
Whitianga	16.6	1.3	1962	Highest
Waiau	13.5	1.8	1974	Highest
South West Cape	10.9	1.1	1991	Highest
Taupo	13.0	1.5	1949	2nd-highest
Hamilton (Ruakura)	15.6	1.4	1906	2nd-highest
Puysegur Point	11.7	0.9	1978	2nd-highest
Medbury	12.6	1.1	1927	2nd-highest
Waipawa	13.7	0.8	1945	3rd-highest
Cheviot	13.4	1.0	1982	3rd-highest
Motu	12.0	1.3	1990	4th-highest
Levin	14.3	1.1	1895	4th-highest
Blenheim	14.4	0.8	1932	4th-highest
Hanmer Forest	12.5	1.4	1906	4th-highest
Rangiora	13.0	1.1	1965	4th-highest
Oamaru	11.8	0.4	1967	4th-highest
Low records or near-records				
None observed				

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

Location	Mean minimum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Medbury	1.5	1.5	1927	Highest
Te Anau	2.5	1.8	1963	Highest

Wellington (Kelburn)	7.8	1.1	1927	2nd-highest
Cape Campbell	8.4	1.0	1953	2nd-highest
Culverden	1.5	1.7	1928	2nd-highest
Cheviot	2.3	1.3	1982	2nd-highest
Le Bons Bay	6.1	0.9	1984	2nd-highest
South West Cape	7.0	1.3	1991	2nd-highest
Ngawi	9.1	0.8	1972	3rd-highest
Blenheim	4.2	1.0	1932	3rd-highest
Akaroa	5.6	2.1	1978	3rd-highest
Roxburgh	2.9	2.4	1950	3rd-highest
Wellington (Airport)	8.3	0.9	1962	4th-highest
Haast	5.4	1.3	1949	4th-highest
Kaikoura	6.6	0.8	1963	4th-highest
Waiau	1.4	1.5	1974	4th-highest
Low records or near-records				
None observed				

Rainfall: A dry season for eastern and inland parts of the South Island

Rainfall was below normal (50-79% of the winter normal) in eastern and inland parts of Canterbury and Otago, especially south of and including Christchurch. Waipara West and Nugget Point observed near-record low winter rainfall totals, with just 54% and 55% of normal winter rainfall, respectively. In contrast to winter 2017, there was a relative lack of cold, rain-bearing southeasterly airflows over the country. Notably, Fox Peak ski area (inland South Canterbury) was unable to open during the winter months due to a lack of snow. Remaining areas of the country typically observed near normal rainfall (80-119% of the winter normal). The exception was Tauranga, Palmerston North, Paraparaumu, Hicks Bay and Cape Campbell where rainfall was above normal (120-149% of the winter normal).

At the end of winter 2018, slightly drier than usual soils were present in southern Hawke's Bay, north Canterbury, and central Otago. Soil moisture levels were above normal for the time of year in parts of coastal Otago and Marlborough, as well as around coastal Gisborne. Soil moisture levels were generally near normal for the time of year across the rest of the country.

Record or near-record winter rainfall totals were recorded at:

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
High records or near-records				
None observed				
Low records or near-records				
Nugget Point	110	55	1930	2nd-lowest
Waipara West	92	54	1973	3rd-lowest

Winter climate in the six main centres

Wellington observed its third-warmest winter on record. It was a very dry winter in Dunedin, with the city recording less than half of normal total rainfall for the season. Of the six main centres in winter 2018, Tauranga was the warmest, wettest and sunniest, Dunedin was the driest, Christchurch was the coolest, and Wellington was the least sunny.

Winter 2018 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland ^a	11.0	-0.4	Near average
Tauranga ^b	11.2	+0.5	Near average
Hamilton ^c	9.3	+0.1	Near average
Wellington ^d	10.2	+0.9	Above average. Equal 3rd-highest on record
Christchurch ^e	7.5	+1.0	Above average
Dunedin ^f	7.8	+0.6	Above average
Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland ^a	411	111%	Near normal
Tauranga ^b	436 ²	123%	Above normal
Hamilton ^c	406	109%	Near normal
Wellington ^d	381 ²	97%	Near normal
Christchurch ^e	134	72%	Below normal
Dunedin ^f	81 ²	47%	Well below normal
Sunshine			
Location	Sunshine (hours)		
Auckland ^a	409		
Tauranga ^b	463		
Hamilton ^g	394		
Wellington ^d	310		
Christchurch ^e	387 ²		
Dunedin ^f	323 ²		

^a Mangere ^b Tauranga Airport ^c Hamilton Airport ^d Kelburn ^e Christchurch Airport ^f Musselburgh ^g Ruakura

² Missing one day of data.

Highlights and extreme events

This section contains information pertaining to some of the more significant highlights and extreme events that occurred during winter 2018. Note that a more detailed list of significant weather events for winter 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>

Rain and slips

Heavy rain fell in the northern and eastern North Island during Queen's Birthday Weekend (1-3 June). The rain caused flooding and slips in the Bay of Plenty, Auckland and Coromandel. Numerous roads were closed due to flooding and slips, including SH2 at Katikati and SH25 in Coromandel.

On 4-5 June, torrential rain fell in the East Cape area, causing significant flooding and slips in the area. Many roads were closed, and some properties lost power. Tolaga Bay was particularly affected by debris flows caused by forestry slash (logs) that had been left on hillsides. The debris flowed onto paddocks and over roads, and even moved a house off its foundations. Sixty-one bridges in the Tolaga Bay catchment were closed due to flooding, and one bridge had twisted and moved at least 30 cm after the flash floods. A Tolaga Bay family was trapped on their roof and eventually airlifted to safety after their home became surrounded by floodwaters. Their woolshed, cars, and farm equipment had been swept away by the flood.

On 7 July, three large slips led to the closure of Glenorchy Road between Queenstown and Glenorchy. Tourists and locals were trapped at the head of Lake Wakatipu due to 1000 cubic metres of soil blocking the road. Queenstown Water Taxis ran trips between Queenstown and Glenorchy to transport those who were stuck. Heavy rain along the West Coast region of the South Island led to a large slip along SH6 in Upper Buller Gorge leading to its closure. SH6 from Murchison to Inangahua Junction was also closed due to flooding. Additional slip hazards were reported along SH6 from Westport to Greymouth and from Fox River to Lower Buller Gorge.

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

Location	Extreme 1-day rainfall (mm)	Date of extreme rainfall	Year records began	Comments
Morrinsville	98	Jun-4th	1978	Highest
Te Horo	97	Jul-7th	1969	Highest
Secretary Island	178	Jul-6th	1985	Highest
Monowai	110	Jul-8th	1920	Highest
Waikanae	90	Jul-7th	1969	2nd-highest
Reikorangi	105	Jul-7th	1969	2nd-highest
Mahia	82	Jun-3rd	1990	3rd-highest
Motu	139	Jun-11th	1920	4th-highest
Pongaroa	74	Jun-12th	1973	4th-highest
Brentwood	110	Jun-11th	1966	4th-highest

Manakau	60	Jul-7th	1974	4th-highest
Judgeford	55	Jul-8th	1978	4th-highest
Milford Sound	246	Jul-6th	1929	4th-highest
Pelorus Sound	91	Jul-7th	1982	4th-highest
Routeburn Station	88	Jul-6th	1971	4th-highest
Makarora Station	108	Jul-6th	1961	4th-highest

Temperatures

A cold snap hit the South Island during the first few days of winter 2018. Mt Cook Airport recorded a low temperature of -10.4°C on 3 June, -9.2°C was recorded at Ranfurly on 1 June, and -8.5°C was observed at Middlemarch on 2 June.

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

Location	Extreme maximum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Milford Sound	18.0	Aug-31st	1934	3rd-highest
Haast	18.3	Aug-31st	1949	4th-highest
Mokohinau	18.4	Jun-3rd	1994	Equal 4th-highest
Low records or near-records				
None observed				

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

Location	Extreme minimum (°C)	Date of extreme temperature	Year records began	Comments
Low records or near-records				
None observed				
High records or near-records				
Mokohinau	16.2	Jun-4th	1994	4th-highest

Wind

On 11-12 June, a subtropical low that brought heavy rain to the Hawke's Bay and Gisborne also brought strong winds. Thousands of homes were without power in the Gisborne-Hawke's Bay areas after a night of heavy rain. In particular, 1570 Eastland Network customers had no power after a trampoline blew into lines in the Te Araroa township. Trains between Upper Hutt and Masterton were delayed for a time due to a fallen tree on the tracks near Maymorn. Eleven flights into Auckland Airport were cancelled or delayed, and four flights from New Plymouth were cancelled.

On 20 August, a tornado hit coastal parts of New Plymouth, blowing out windows and tearing off roofs and branches. Up to 30 homes were damaged and power was cut to several properties.

Another tornado hit Ohope, which damaged the conference centre at the Top 10 Holiday Park as well as some houses. Power was also cut there.

Record or near record winter extreme wind gusts were recorded at:

Location	Extreme wind gust (km/hr)	Date of extreme gust	Year records began	Comments
Secretary Island	130	Jul-7th	1994	Equal highest
Waiouru	124	Jul-21st	1970	2nd-highest
Paeroa	96	Jul-15th	1991	3rd-highest
Whakatane	106	Jun-12th	1974	Equal 3rd-highest
Manapouri Airport	76	Aug-16th	1991	Equal 3rd-highest
Motu	102	Jul-08th	1991	Equal 4th-highest

Snow and ice

On 6 June, snow fell to low levels in the South Island. SH85 from Ranfurly to Omakau, SH93 from Mataura to Clinton, SH8 from Cromwell to Omarama (Lindis Pass), SH8 between Alexandra and Roxburgh, SH94 (Milford Road), the Crown Range Road and Dansey's Pass Road were closed due to snow. Local roads around Dunedin and Queenstown were closed or required motorists to use chains. Schools in Queenstown and Arrowtown were closed for the day and five primary schools on Dunedin's hills were also shut. Queenstown Airport delayed or cancelled many flights.

On 6 August, a large avalanche occurred on the upper slopes of Turoa skifield on Mt Ruapehu, damaging the *High Noon Express* chairlift. The damage was significant enough that the chairlift was unable to be used for the remainder of the ski season.

Lightning and hail

On 17 August, over 8000 lightning strikes were observed along the west coast of the North Island from Raglan to Kapiti. Most strikes were offshore. In Tokoroa, lightning struck a tree causing a fire and a gas leak. Surrounding roads were closed.

Cloud and fog

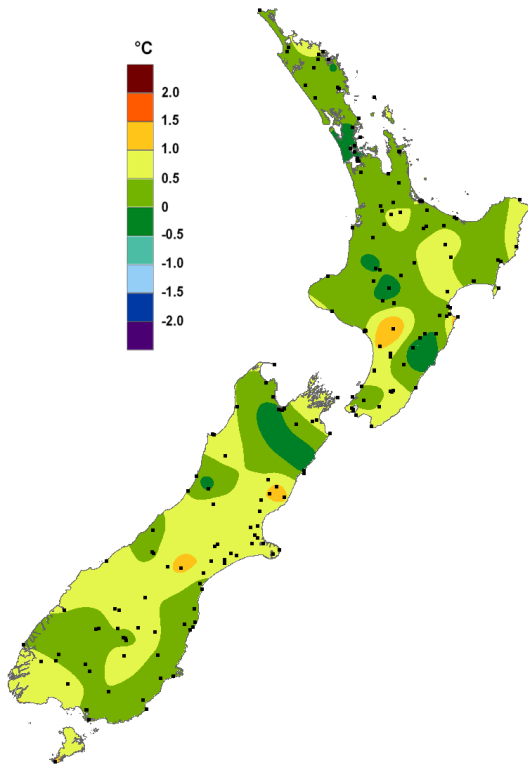
On 29 June, heavy fog shrouded Auckland Airport and caused the cancellation of 35 regional flights and the delay of another 30 regional flights. The fog lifted around 11.20 a.m.

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Winter 2018 mean temperature, expressed as a departure from the 1981-2010 average (°C).

Winter 2018 was New Zealand's 6th-warmest winter on record. Mean temperatures were typically above average (0.51-1.20°C above the winter average) or near average (within 0.50°C of the winter average) throughout the country.

<https://www.niwa.co.nz/our-science/climate>

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