

7th-warmest winter on record and near normal rainfall

Temperature	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) about the Mackenzie District and parts of Otago and Southland.
Rainfall	Rainfall was near normal (80-119% of the winter normal) for the majority of the country. Small pockets of below normal rainfall (50-79% of the winter normal) were observed about Gisborne, Hawke's Bay and parts of Otago.
Soil moisture	At the end of winter 2019, soil moisture was near normal for most of New Zealand. Soils were drier than normal for isolated parts of inland north Otago and wetter than normal about Kaikoura.

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Overview

Winter 2019 began on a chilly note, with snow falling in the South Island and the Central Plateau on 1 June. The wintry start was however not indicative of the season as whole, with snow events infrequent throughout the season. June was the driest winter month with below or well below normal rainfall for the majority of New Zealand. Several locations in southern coastal Canterbury and northern coastal Otago observed one of their driest Junes on record. While July wasn't as dry as June, a distinct lack of southerlies and frequent rounds of high pressure during the month led to unseasonably warm temperatures and New Zealand's second-warmest July on record. August was unsettled, characterised by frequent low pressure systems and a strong southwesterly flow – a pattern driven by a strongly negative Southern Annular mode early in the month. Frequent fog events, thunderstorms and tornadoes occurred during winter (see [Highlights and extreme events](#) section for further details).

The winter climate pattern was influenced by a polar jet stream that remained south of New Zealand during June, was weaker than normal in July, but occasionally passed over the country during August while interacting with the sub-tropical jet stream. This contributed to an unsettled end to the winter season. In the tropical Pacific, a central Pacific (Modoki) El Niño persisted during June and July before fading to neutral in August. New Zealand coastal sea surface temperatures were above

average for the season. These two factors tipped the odds toward a warmer than average winter season for many locations.

Winter as a whole saw average to above average temperatures across the country. The nationwide average temperature for winter 2019 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 2019 the seventh-warmest winter on record.

Further Highlights:

- The highest temperature was 21.6°C, observed at Wakanui on 3 July.
- The lowest temperature was -9.2°C, observed at Lake Tekapo on 3 June.
- The highest 1-day rainfall was 126 mm, recorded at Milford Sound on 13 July.
- The highest wind gust was 182 km/hr, observed at Cape Turnagain on 13 August.
- Of the six main centres in winter 2019, Auckland was the warmest, wettest and sunniest, Dunedin was the driest and least sunny, while Christchurch was the coolest.

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Temperature: Above average or near average throughout the country

Mean temperatures for New Zealand were near average during June and August, and above average during July – it was the second-warmest July on record. For winter as a whole, temperatures were average (-0.50°C to +0.50°C of the winter average) to above average (+0.51°C to +1.20°C of the winter average) and it was New Zealand’s seventh-warmest winter on record.

Some of the warmest temperatures compared to the winter average occurred in Otago, Southland and the Mackenzie district. Many locations experienced record or near-record high mean, mean maximum and mean minimum temperatures. Lake Tekapo and Ranfurly each experienced their second-warmest winter on record, with records going back to 1927 and 1897 respectively.

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				
Stratford	9.5	1.5	1960	Highest
Brothers Island	11.5	0.8	1997	Highest
Medbury	7.2	1.4	1927	Highest
Le Bons Bay	8.7	0.9	1984	Highest
Manapouri (West Arm Jetty)	5.8	2.0	1971	Highest
Ngawi	11.7	1.0	1972	2nd-highest
Porirua	10.0	0.7	1968	2nd-highest
Hawera	10.0	1.0	1977	2nd-highest
Lake Tekapo	4.1	1.5	1927	2nd-highest
Ranfurly	4.5	1.4	1897	2nd-highest
Oamaru	7.9	0.9	1967	2nd-highest
Dunedin (Musselburgh)	8.1	0.9	1947	2nd-highest
Five Rivers	5.8	1.1	1982	2nd-highest
Alexandra	5.2	0.9	1929	2nd-highest
Taupo	8.4	1.3	1949	3rd-highest
Paraparaumu	10.2	0.9	1953	3rd-highest
Wellington (Kelburn)	10.2	0.9	1927	3rd-highest
Farewell Spit	11.3	1.1	1971	3rd-highest
Waiau School	7.4	1.6	1974	3rd-highest
Lumsden	5.8	1.0	1982	3rd-highest
Gore	6.5	1.2	1907	3rd-highest
Invercargill	7.0	1.1	1905	3rd-highest
Tiwai Point	7.9	1.1	1970	3rd-highest
Whitianga	11.7	1.0	1962	4th-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.

Whakatane	10.8	0.9	1974	4th-highest
Motu	7.5	1.1	1990	4th-highest
Hastings	9.9	1.3	1965	4th-highest
Wellington (Airport)	10.9	0.8	1962	4th-highest
Kaikoura	9.5	0.9	1963	4th-highest
Queenstown	6.0	1.5	1871	4th-highest
Roxburgh	6.9	1.6	1950	4th-highest
Nugget Point	7.3	0.6	1970	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				
Te Kuiti	15.4	1.5	1959	Highest
Ngawi	14.3	1.1	1972	Highest
Porirua	14.1	1.2	1968	Highest
Stratford	13.8	2.0	1960	Highest
Ohakune	11.7	1.8	1962	Highest
Medbury	13.1	1.6	1927	Highest
Lake Tekapo	9.5	2.2	1927	Highest
Tara Hills	10.3	2.0	1949	Highest
Oamaru	12.5	1.1	1967	Highest
Manapouri (West Arm Jetty)	8.3	1.8	1971	Highest
Kerikeri	17.1	0.9	1945	2nd-highest
Whangaparaoa	15.5	0.8	1982	2nd-highest
Gisborne	16.1	1.2	1905	2nd-highest
Upper Hutt (Trentham)	13.9	1.0	1939	2nd-highest
Blenheim	14.5	0.9	1932	2nd-highest
Brothers Island	13.3	0.9	1997	2nd-highest
Ranfurly	10.2	1.9	1897	2nd-highest
Whangarei	16.7	0.8	1967	3rd-highest
Whitianga	16.5	1.2	1962	3rd-highest
Taupo	12.8	1.3	1949	3rd-highest
Motu	12.2	1.5	1990	3rd-highest
Napier	15.7	1.5	1870	3rd-highest
Wairoa	15.8	1.2	1964	3rd-highest
Farewell Spit	14.5	0.7	1971	3rd-highest
Hanmer Forest	12.7	1.7	1906	3rd-highest
Waipara West	13.7	1.0	1973	3rd-highest
Le Bons Bay	11.3	0.9	1984	3rd-highest
Timaru	12.5	1.2	1885	3rd-highest
Dunedin (Musselburgh)	11.8	1.2	1947	3rd-highest
Cromwell	10.9	1.6	1949	3rd-highest

Whakatane	15.9	0.8	1974	4th-highest
New Plymouth	14.5	0.8	1944	4th-highest
Hastings	15.5	1.5	1965	4th-highest
Wellington (Kelburn)	12.9	0.9	1927	4th-highest
Kaikoura	12.6	1.0	1963	4th-highest
Waiau School	13.4	1.6	1974	4th-highest
Wanaka	10.2	1.4	1955	4th-highest
Manapouri (Airport)	10.0	1.2	1963	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				
Manapouri (West Arm Jetty)	3.2	2.1	1971	Highest
Ngawi	9.1	0.9	1972	2nd-highest
Hawera	6.5	1.1	1977	2nd-highest
Brothers Island	9.7	0.7	1997	2nd-highest
Medbury	1.3	1.3	1927	2nd-highest
Oamaru	3.3	0.7	1967	2nd-highest
Te Anau	2.5	1.8	1963	2nd-highest
Queenstown	1.9	1.8	1871	2nd-highest
Lumsden	1.5	1.4	1982	2nd-highest
Gore	2.8	1.2	1907	2nd-highest
Lower Retaruke	4.2	1.2	1966	3rd-highest
Puysegur Point	6.9	0.9	1978	3rd-highest
Le Bons Bay	6.1	0.9	1984	3rd-highest
Roxburgh	2.9	2.5	1950	3rd-highest
Tiwai Point	4.5	1.1	1970	3rd-highest
Whakatane	5.6	1.1	1974	4th-highest
Port Taharoa	9.2	1.0	1973	4th-highest
Wellington (Kelburn)	7.6	0.9	1927	4th-highest
Mt Cook Village	-0.1	1.2	1929	4th-highest
Five Rivers	1.3	1.2	1982	4th-highest
Invercargill	3.1	1.4	1905	4th-highest
Low records or near-records				
None observed				

Rainfall: Variability month to month – near normal as a whole

Winter began on a particularly dry note with below normal (50-79% of normal) or well below normal (<50% of normal) for the majority of New Zealand during June. The dryness lingered into early July and Watercare urged residents of Auckland to use water wisely as water storage was 25% less than normal for the time of year. Wetter and more active weather arrived during July and continued into August, with the latter recording 28 rain days², a tie for the most rain days in a calendar month on record.

When looking at the rainfall pattern for winter as a whole, rainfall was largely near normal. Small pockets of below normal rainfall were observed about Gisborne, Hawke’s Bay and parts of Otago. No locations experienced record or near-record high or low winter rainfall amounts however there were some 1-day rainfall records winter (see [Highlights and extreme events](#) section for further details).

At the end of winter 2019, soil moisture was near normal for most of New Zealand. Soils were drier than normal for isolated parts of inland north Otago, and wetter than normal about Kaikoura.

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				
None observed				

² A rain day is defined as having at least 0.1 mm of rain.

Winter climate in the six main centres

Temperatures were near or above average for all main centres. Dunedin observed its second-warmest winter on record while Wellington observed its third-warmest winter. Dunedin and Tauranga both observed below normal rainfall while the remaining main centres saw near normal rainfall. Of the six main centres in winter 2019, Auckland was the warmest, wettest and sunniest, Dunedin was the driest and least sunny, while Christchurch was the coolest.

Winter 2019 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland ^a	11.9	-0.5	Near average
Tauranga ^b	11.6	+0.9	Above average
Hamilton ^c	9.8	+0.6	Above average
Wellington ^d	10.2	+0.9	Above average. 3 rd -highest on record
Christchurch ^e	6.9	+0.4	Near average
Dunedin ^f	8.1	+0.9	Above average. 2 nd -highest on record
Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland ^a	374	101%	Near normal
Tauranga ^b	277	78%	Below normal
Hamilton ^c	329	88%	Near normal
Wellington ^d	352 ³	90%	Near normal
Christchurch ^e	168	91%	Near normal
Dunedin ^f	131 ⁴	76%	Below normal
Sunshine			
Location	Sunshine (hours)		
Auckland ^a	477		
Tauranga ^b	443		
Hamilton ^g	427		
Wellington ^d	402		
Christchurch ^e	453		
Dunedin ^f	361 ²		

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

³ 2 missing days of data

⁴ 1 missing 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 2019. Note that a more detailed list of significant weather events for winter 2019 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: <https://www.niwa.co.nz/climate/monthly>

Rain and slips

On 4 July, an active front preceded by a moist northerly flow brought heavy rain and high elevation snow to central and upper North Island and caused localised surface flooding and traffic delays. Parts of SH2 in Whakatāne closed due to flooding.

On 10 August, heavy rain fell in eastern parts of Otago and South Canterbury. Flooding forced the closure of SH1 between Oamaru and Timaru.

On 17 August, a period of heavy rain caused surface flooding in Levin.

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
Rainbow Point	74	Jul-4th	1978	Highest
Waiouru	61	Jul-4th	1950	2nd-highest
Tapawera	69	Jul-19th	1992	2nd-highest
Oamaru	78	Aug-10th	1950	2nd-highest
Taupo	84	Jul-4th	1949	3rd-highest
Lake Mangamahoe	116	Jul-4th	1971	3rd-highest
Hastings	95	Jul-5th	1983	3rd-highest
Leeston	47	Jun-1st	1986	3rd-highest
Mahana Lodge	80	Jun-23rd	1984	4th-highest
Huntermville	52	Jul-4th	1950	4th-highest

Temperatures

Several record or near-record high daily maximum and minimum temperatures were broken on 3-4 July as a mild air flow from the sub-tropics brought above average temperatures to most regions. Notably, Dunedin (Musselburgh) observed 20.3°C on 3 July which is the warmest July temperature since records began there in 1947. On the same day, a new July maximum temperature record of 17.6°C was set in Ranfurly, with records dating back all the way to 1897.

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				
Arapito	20.3	Jun-13th	1978	Highest
Manapouri (West Arm Jetty)	18.7	Jul-9th	1971	Equal highest
Masterton	21.9	Jul-13th	1906	2nd-highest
Porirua	19.0	Jun-14th	1968	2nd-highest
Stephens Island	16.4	Jun-8th	1973	2nd-highest
Appleby	20.5	Jun-14th	1932	2nd-highest
Farewell Spit	18.1	Jun-14th	1971	Equal 2nd-highest
Whitianga	20.8	Aug-11th	1962	4th-highest
Whakatu	22.6	Aug-6th	1965	4th-highest
Palmerston	21.4	Jul-3rd	1969	4th-highest
Low records or near-records				
Waiau School	0.0	Jun-26th	1974	Lowest
Balclutha	2.4	Aug-4th	1972	Lowest
Nugget Point	1.2	Aug-4th	1972	Lowest
Secretary Island	5.6	Aug-4th	1989	2nd-lowest
Auckland (Western Springs)	9.0	Aug-18th	1971	3rd-lowest
Haast	4.8	Aug-4th	1949	3rd-lowest

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				
Greymouth	-3.1	Aug-4th	1947	Lowest
Boyle River Lodge	-11.4	Jun-3rd	1983	Lowest
Peel Forest	-7.1	Jun-5th	1973	Equal 4th-lowest
High records or near-records				
Motu	11.7	Jul-4th	1990	Equal highest
Whangarei	16.7	Jul-4th	1967	2nd-highest
Whakatane	16.1	Jul-4th	1975	2nd-highest
Oamaru	11.2	Aug-29th	1972	2nd-highest
Kerikeri	16.9	Jul-4th	1952	3rd-highest
Whitianga	16.2	Jul-4th	1971	3rd-highest
Rotorua	13.6	Jul-4th	1972	3rd-highest
Hicks Bay	15.9	Jul-4th	1972	3rd-highest
Palmerston North	13.5	Jun-14th	1940	3rd-highest
Cape Reinga	16.0	Jul-4th	1971	Equal 3rd-highest
Te Puke	15.3	Jul-4th	1973	Equal 3rd-highest
Kaitiā	17.0	Jul-4th	1948	4th-highest
Whangaparaoa	15.3	Jul-4th	1982	4th-highest

Auckland (Whenuapai)	15.9	Jul-4th	1951	4th-highest
Tauranga	16.0	Jul-4th	1941	4th-highest
Kaikohe	15.6	Jul-4th	1973	Equal 4th-highest

Wind

On 5 June, 1000 households lost power in Bay of Plenty as strong winds and heavy rain moved through the region. Flights were delayed out of Auckland airport due to poor weather conditions.

On 12 July, a tornado near New Plymouth caused damage to trees, two buildings, and a trampoline.

On 3-4 August, a combination of a deep low pressure system and strong winds generated large swells along the western coasts of New Zealand. Coastal erosion of up to 10 m was reported in Cobden (Greymouth), where a make-shift sea wall had been erected. Residents of six properties in the coastal settlements of Hector and Ngakawau (north of Westport) self-evacuated, with one property inundated with seawater.

On 11 August, strong winds in Auckland tore part of the roof off *The Cloud* on Queen's Wharf. Ports of Auckland reported 20 shipping containers were knocked over by the wind.

On 12 August, several tornadoes were reported in Taranaki. A trampoline hit a car on Devon Rd (SH3) just north of New Plymouth. On nearby Paraitē Rd, 40-year old trees were brought down with roofs torn off several buildings, and a woman suffered a broken collarbone after being blown into a wall. A tornado was observed in south Taranaki, causing damage to a power pole on Oeo Rd near Opunake. Later in the evening, a thunderstorm struck central Auckland's waterfront, with reports of a tornado there. Trees were shredded of their branches and metal construction fencing had been brought down. A shipping container was blown onto a car at Jellicoe Wharf, trapping and injuring the driver. Several yachts lost their moorings at Westhaven Marina, and a catamaran was overturned, with significant damage reported to numerous recreational vessels.

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	161	Aug-2nd	1994	Highest
Puysegur Point	156	Aug-20th	1986	2nd-highest
South West Cape	163	Jun-29th	1991	4th-highest

Snow and ice

June 1st, the first day of meteorological winter, started on a chilly note with snow falling in the South Island and in the Central Plateau. Arthur's Pass to Springfield (SH73) and Lewis Pass between Hanmer Springs and Springs Junction (SH7) were closed due to heavy snow. Two people were temporarily stuck in their car on a remote section of SH8 between Burkes Pass and Kimbell as rockfalls and snow closed main thoroughfares. Another vehicle was stranded for more than four hours in a snow-filled ditch on the highway between Geraldine and Fairlie in Canterbury.

On 4 August, snow fell to sea level in southern and western parts of the South Island, and to approximately 300 metres above sea level in Dunedin inland parts of Otago. Snowfall was reported in Greymouth, Hokitika, Kumara, Moana, Runanga and Serpentine Beach, which is a particularly uncommon occurrence in those places. The prevailing southwesterly flow during this event meant southern parts of Southland and South Otago received the heaviest snowfalls. There were a raft of road closures due to snow throughout the country from 4-5 August, including the Desert Road (SH1), Takaka Hill road (SH60), SH7 between Reefton and Springs Junction, the Lewis (SH7) and Lindis (SH8) Passes, the Crown Range road between Queenstown and Wanaka, Dunedin to Waitati highway (SH1), SH1 between Clinton and Milton, SH93 between Clinton and Mataura, SH8 from Milton to Lawrence and about Raes Junction, and the Milford Road (SH94).

On 10 August, snowfall closed Burkes Pass (SH8) between Fairlie and Tekapo, and Arthur's Pass (SH73). Large accumulations of new snow were reported at several ski areas including Broken River and Craigieburn (50 cm), and Temple Basin (63 cm). Particularly heavy snowfalls were reported in Arthur's Pass and Mount Cook Villages

Lightning and hail

On 5 June, the Sky Tower in Auckland was hit by a lightning strike as thunderstorms battered the region. Northland recorded 3200 lightning strikes and a microburst caused damage in Coopers Beach in the Far North as roofs were ripped from buildings and caravans were flipped. One couple suffered minor injuries.

On 13 July, a family outside of Aranga, Northland was left shaken after their car windscreen was struck by a lightning strike. Fortunately the family was left unharmed.

On 14 July, over 5500 lightning strikes were recorded over central New Zealand and two Air New Zealand flights, one from Wellington to Dunedin and one from Hamilton to Wellington were struck by lightning.

On 11 August, thundery weather brought strong winds and heavy rain in parts of Auckland. Five homes in St Heliers had damaged roofs, while a home in Kumeu was struck by lightning. Over 700 lightning strikes were recorded over western and inland parts of the upper North Island during a one-hour period during the evening

Cloud and fog

On 13 June, fog caused domestic flight delays and cancellations out of Auckland and Queenstown Airports. Also, low visibility caused a multi-vehicle crash that blocked southbound lanes of the Southwestern Motorway, near the Dominion Rd on-ramp in Auckland.

On 14 June, for the second consecutive day, fog blanketed parts of Auckland city causing 59 flight cancellations and 40 delays out of Auckland Airport.

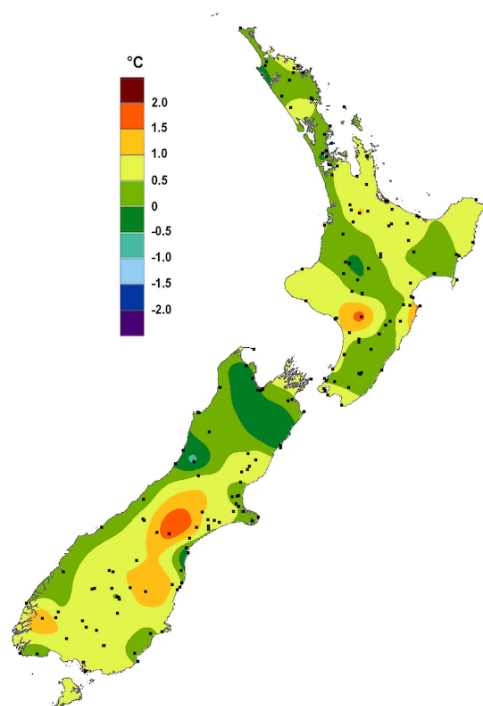
Fog caused disruptions at Auckland Airport on the 10th, 11th, 22-26th and 30th of July.

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Winter 2019 mean temperature, expressed as a departure from the 1981-2010 average (°C).

Winter 2019 was New Zealand's 7th-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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