

A warm month with variable rainfall patterns

Temperature	Temperatures were above average (0.51°C to 1.20°C above average) or well above average (>1.20°C above average) across nearly all of New Zealand. However, near average temperatures ($\pm 0.50^\circ\text{C}$ of average) were observed in small portions of coastal Wellington, Marlborough Sounds, and Southland.
Rainfall	Rainfall was above normal (120-149% of normal) or well above normal (>149% of normal) in western Northland, much of Auckland, western and interior Waikato, Gisborne, and much of the immediate West Coast. Below normal (50-79% of normal) or well below normal (<50% of normal) rainfall was observed in eastern Northland, parts of the Coromandel and Bay of Plenty, southern Hawke's Bay, Manawatū-Whanganui, Wairarapa, Nelson, Marlborough, northern and interior Canterbury, and interior Otago. Near normal rainfall (80-119% of normal) was observed elsewhere.
Soil Moisture	At the end of December, soil moisture levels were higher than normal across the Far North, Auckland, much of Waikato, Bay of Plenty, Gisborne, northern Hawke's Bay, and parts of Tasman and the West Coast. Below normal soil moisture was observed in coastal Manawatū-Whanganui, Wellington, Marlborough Sounds, northern Canterbury, and eastern Southland. Elsewhere, soil moisture levels were generally near normal.

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Overview

December 2023 was characterised by higher than normal mean sea level pressure (MSLP) located north and east of Aotearoa New Zealand. This produced more north-westerly airflows than normal, particularly over the North Island. This contributed to above average or well above average temperatures across nearly all of the country in December. A particularly moist and humid air mass from the subtropics affected the North Island in the last ten days of the month, resulting in periods of heavy rainfall across the upper portion of the island. Perhaps the most impactful event during the month was a large severe thunderstorm that tracked north across the eastern South Island and lower North Island on 12 December, bringing heavy rain, strong winds, and large hail. Wellington's Hutt Valley was particularly hard-hit, where multiple buildings were severely damaged by strong winds, localised flooding and hailstones up to 12 mm in diameter were observed, and more than 2,000 properties were left without power (see *Highlights and extreme events* section for more details).

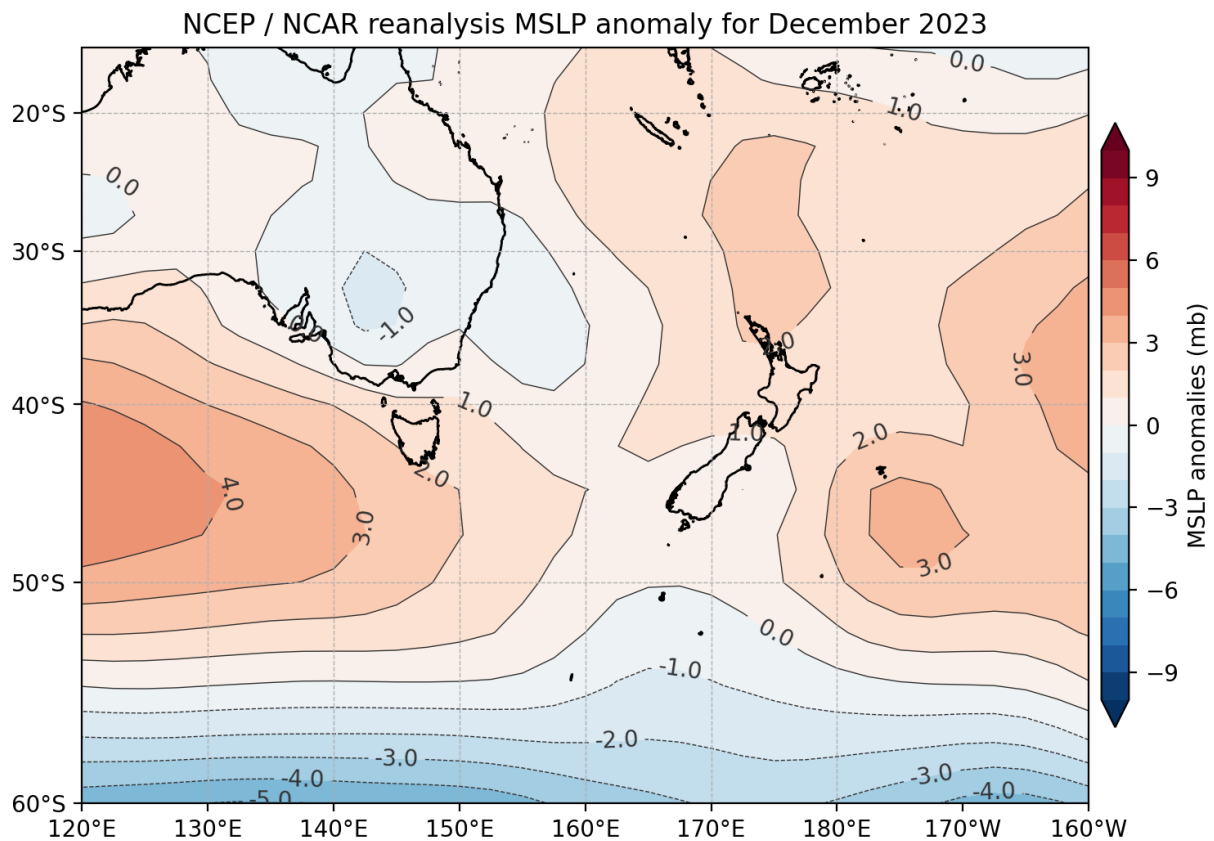


Figure 1: Mean Sea Level Pressure (MSLP) anomaly map for December 2023.

Temperatures were above average (0.51°C to 1.20°C above average) or well above average (>1.20°C above average) across nearly all of New Zealand. However, near average temperatures ($\pm 0.50^\circ\text{C}$ of average) were observed in small portions of coastal Wellington, Marlborough Sounds, and Southland.

The nationwide average temperature in December 2023 was 16.9°C. This was 1.1°C above the 1991-2020 December average from NIWA's seven station temperature series which begins in 1909, making it the 13th-warmest December on record.

Rainfall was above normal (120-149% of normal) or well above normal (>149% of normal) in western Northland, much of Auckland, western and interior Waikato, Gisborne, and much of the immediate West Coast. Below normal (50-79% of normal) or well below normal (<50% of normal) rainfall was observed in eastern Northland, parts of the Coromandel and Bay of Plenty, southern Hawke's Bay, Manawatū-Whanganui, Wairarapa, Nelson, Marlborough, northern and interior Canterbury, and interior Otago. Near normal rainfall (80-119% of normal) was observed elsewhere.

A strong oceanic El Niño was occurring during December. However, unusual ocean heat in the western Pacific and on a global scale contributed to air pressure and circulation patterns that are not historically associated with El Niño as well as variable rainfall patterns in New Zealand.

Further Highlights:

- The highest December temperature was 33.7°C, observed at Hanmer Forest on 20 December.
- The lowest December temperature was -0.6°C, observed at Manapouri on 1 December.
- The highest 1-day rainfall was 204 mm, recorded at Milford Sound on 20 December.
- The highest wind gust was 172 km/h, observed at South West Cape on 9 December.
- Of the six main centres in December 2023, Auckland was the warmest, Dunedin was the coolest, Tauranga was the wettest and sunniest, Christchurch was the driest, and Hamilton was the least sunny.
- Of the available, regularly reporting sunshine observation sites, the sunniest four regions in 2023 were Mackenzie Basin (2658 hours), wider Nelson (2639 hours), Tasman (2574 hours), and interior Otago (2531 hours).

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Temperature: A warm month across nearly all of New Zealand

Despite nearly all of the country experiencing a warmer than average or much warmer than average month, only one location (Waikeria) experienced its warmest December on record. However, multiple locations saw near-record warm temperatures for the month. 39 locations also experienced record or near-record warm mean minimum temperatures, including Napier which had its warmest mean minimum December temperature since records began there in 1870. In addition, the last several days of the month featured a subtropical air mass over the country, resulting in many locations setting records or near-records for daily minimum air temperature. This included Kaitaia and Kerikeri, which on the 31st saw their warmest December night-time temperature since 1948 and 1952, respectively.

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

Location	Mean air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Waikeria	20.1	2.8	1957	Highest
Kerikeri	19.6	1.6	1945	2nd-highest
Whitianga	19.4	1.3	1962	2nd-highest
Te Puke	19.0	1.6	1973	2nd-highest
Whakatāne	19.8	1.7	1974	2nd-highest
Kawerau	20.7	2.2	1954	2nd-highest
Pukaki	17.3	2.4	1972	2nd-highest
Leigh	20.3	3.0	1966	3rd-highest
Whangaparāoa	19.7	1.5	1982	3rd-highest
Motu	16.8	2.4	1990	3rd-highest
Mt Ruapehu (Chateau)	12.7	1.8	2000	3rd-highest
Wairoa	20.1	1.9	1964	3rd-highest
Ohakune	16.6	2.2	1962	3rd-highest
Motueka	18.4	1.8	1956	3rd-highest
Kaitaia	19.7	2.0	1948	4th-highest
Kaikohe	18.4	1.0	1973	4th-highest
Dargaville	19.5	1.6	1943	4th-highest
Whangārei	19.8	1.0	1967	4th-highest
Taupō	17.9	2.2	1949	4th-highest
Hicks Bay	18.4	1.1	1969	4th-highest
Napier	20.5	2.4	1870	4th-highest
Māhia	18.0	1.2	1990	4th-highest
Palmerston North	18.3	1.8	1928	4th-highest
Cheviot	16.7	1.3	1982	4th-highest
Tara Hills	16.8	2.1	1949	4th-highest
Low records or near-records				
None observed				

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.

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

Location	Mean maximum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Kawerau	26.8	2.8	1954	Highest
Ohakune	21.5	1.6	1962	2nd-highest
Pukaki	25.6	2.9	1972	2nd-highest
Whangaparāoa	23.5	1.7	1982	3rd-highest
Hastings	24.8	1.5	1965	3rd-highest
Clyde	25.5	2.1	1978	3rd-highest
Whakatāne	24.1	1.4	1974	4th-highest
Motu	21.7	2.4	1990	4th-highest
Waikeria	24.7	1.9	1957	4th-highest
Mt Ruapehu (Chateau)	17.2	1.3	2000	4th-highest
Wairoa	25.5	2.1	1964	4th-highest
Appleby	22.9	1.8	1932	4th-highest
Lake Tekapo/Takapō	23.6	3.5	1927	4th-highest
Wanaka	24.6	2.7	1955	4th-highest
Ranfurly	22.6	2.1	1897	4th-highest
Low records or near-records				
None observed				

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

Location	Mean minimum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Waikeria	15.5	3.6	1957	Highest
Napier	16.2	3.0	1870	Highest
Kaitaia	16.7	2.9	1948	2nd-highest
Dargaville	15.8	1.7	1943	2nd-highest
Whakatāne	15.6	2.1	1974	2nd-highest
Ohakune	11.6	2.8	1962	2nd-highest
Kerikeri	15.5	2.4	1945	3rd-highest
Kaikohe	15.1	1.7	1973	3rd-highest
Whangārei	16.3	1.8	1967	3rd-highest
Leigh	16.4	3.5	1966	3rd-highest
Auckland (Western Springs)	16.0	1.7	1948	3rd-highest
Whitianga	15.2	2.0	1962	3rd-highest
Te Puke	14.6	2.0	1973	3rd-highest
Kawerau	14.7	1.8	1954	3rd-highest
New Plymouth	14.7	2.2	1944	3rd-highest
Lower Retaruke	13.1	2.2	1966	3rd-highest
Masterton	12.6	1.6	1906	3rd-highest
Palmerston North	14.1	2.0	1928	3rd-highest
Stratford	11.9	1.5	1960	3rd-highest
Hāwera	13.4	1.7	1977	3rd-highest

Reefton	12.1	1.8	1960	3rd-highest
Motueka	13.0	2.0	1956	3rd-highest
Purerua	15.9	1.8	1983	4th-highest
Mokohinau Island	17.1	1.1	1994	4th-highest
Auckland (Whenuapai)	15.0	1.6	1945	4th-highest
Taupō	12.5	1.9	1949	4th-highest
Motu	11.9	2.4	1990	4th-highest
Hamilton (Ruakura)	14.3	2.4	1906	4th-highest
Mt Ruapehu (Chateau)	8.1	2.3	2000	4th-highest
Māhia	14.8	1.3	1990	4th-highest
Tara Hills	9.7	1.9	1949	4th-highest
Low records or near-records				
Waipounamu	8.5	0.1	1980	4th-lowest

Rainfall: Dry in many regions, but generally wet in the upper North Island

Rainfall amounts varied widely across the country in December, but heavy rain late in the month brought above normal totals to parts of the upper North Island. While no location observed its wettest December on record, Tūrangi experienced its 2nd-wettest December since records began there in 1968. Conversely, it was a very dry month in the interior South Island, where Hanmer Forest had its driest December since records began in 1905. Both Pukaki and Lake Tekapo/Takapō received only 8 mm of rainfall in December, marking near-record dry months in both locations.

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

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
High records or near-records				
Campbell Island	215	188	1992	Equal highest
Tūrangi	243	185	1968	2nd-highest
Low records or near-records				
Hanmer Forest	16	22	1905	Lowest
Mt Ruapehu (Chateau)	101	41	2000	2nd-lowest
Pukaki	8	12	1972	2nd-lowest
Lake Tekapo/Takapō	8	20	1925	4th-lowest

December climate in the six main centres

December temperatures were above average or well above average in all main centres except for Wellington, where the temperature was near average. Rainfall was near normal in Hamilton, Wellington, and Dunedin, below normal in Christchurch, above normal in Tauranga, and well above normal in Auckland. Of the six main centres in December 2023, Auckland was the warmest, Dunedin was the coolest, Tauranga was the wettest and sunniest, Christchurch was the driest, and Hamilton was the least sunny.

December 2023 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland ^a	19.6	+1.2	Above average
Tauranga ^b	19.5	+1.2	Above average
Hamilton ^c	18.5	+1.4	Well above average
Wellington ^d	16.0	+0.4	Near average
Christchurch ^e	16.7	+1.0	Above average
Dunedin ^f	14.8	+0.8	Above average
Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland ^a	111	155	Well above normal
Tauranga ^b	127	124	Above normal
Hamilton ^c	90	90	Near normal
Wellington ^d	85	93	Near normal
Christchurch ^e	34	71	Below normal
Dunedin ^f	61	87	Near normal
Sunshine			
Location	Sunshine (hours)		
Auckland ^a	165		
Tauranga ^b	225		
Hamilton ^g	155		
Wellington ^d	196		
Christchurch ^e	188		
Dunedin ^f	205		

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

Highlights and extreme events

Temperatures

The highest December temperature was 33.7°C, observed at Hanmer Forest on 20 December.

The lowest December temperature was -0.6°C, observed at Manapouri on 1 December.

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

Location	Extreme maximum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Hāwera	25.8	23rd	1977	Highest
Westport	27.7	30th	1937	Highest
Auckland (Airport)	28.3	31st	1959	Equal highest
Whangārei	30.8	30th	1967	2nd-highest
Whatawhata	29.3	21st	1952	2nd-highest
Hastings	33.2	30th	1965	2nd-highest
Lake Tekapo/Takapō	30.5	20th	1925	2nd-highest
Hanmer Forest	33.7	20th	1906	3rd-highest
Pukaki	32.5	21st	1972	3rd-highest
Port Taharoa	27.8	23rd	1973	4th-highest
Waikeria	29.9	27th	1957	4th-highest
Whakatu	32.3	25th	1965	4th-highest
Arapito	27.0	24th	1978	4th-highest
Waiau	33.6	20th	1974	4th-highest
Chatham Island	24.8	17th	1878	4th-highest
Leigh	28.4	20th	1966	Equal 4th-highest
Whangaparāoa	26.9	27th	1982	Equal 4th-highest
Low records or near-records				
None observed				

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

Location	Extreme minimum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Cape Reinga	18.7	29th	1971	Highest
Kaitaia	21.7	31st	1948	Highest
Kerikeri	21.2	31st	1952	Highest
Kaikohe	20.1	31st	1973	Highest
Whangārei	21.4	31st	1967	Highest
Whitianga	20.4	26th	1971	Highest
Whakatāne	21.5	31st	1975	Highest
Waikeria	22.0	31st	1972	Highest
Martinborough	20.6	25th	1986	Highest

Hicks Bay	19.8	31st	1972	Highest
Māhia	19.4	31st	1990	Highest
Hāwera	19.2	25th	1977	Highest
Tara Hills	18.0	21st	1949	Highest
Wānaka	18.3	21st	1972	Highest
Leigh	19.9	31st	1966	Equal highest
Mt Ruapehu (Chateau)	14.2	25th	2000	Equal highest
Palmerston North	19.4	24th	1940	Equal highest
Mokohinau Island	19.8	25th	1994	2nd-highest
Whangaparāoa	19.4	31st	1982	2nd-highest
Te Puke	19.4	31st	1973	2nd-highest
Motu	17.9	31st	1990	2nd-highest
Lower Retaruke	18.4	25th	1972	2nd-highest
Masterton	20.3	25th	1943	2nd-highest
Takapau Plains	18.4	25th	1972	2nd-highest
Dannevirke	20.2	25th	1951	2nd-highest
Napier	23.1	31st	1940	2nd-highest
Levin	19.3	24th	1950	2nd-highest
Franz Josef	16.7	24th	1953	2nd-highest
Auckland (Whenuapai)	20.1	24th	1951	Equal 2nd-highest
Hamilton (Ruakura)	19.6	26th	1940	Equal 2nd-highest
Taumarunui	19.0	25th	1947	Equal 2nd-highest
Dargaville	20.0	24th	1951	3rd-highest
Purerua	19.7	31st	1983	3rd-highest
Matamata	19.3	31st	1999	3rd-highest
Tauranga	20.2	24th	1941	3rd-highest
Kawerau	19.9	31st	1954	3rd-highest
Hamilton (Airport)	19.5	25th	1946	3rd-highest
Te Kuiti	19.3	26th	1959	3rd-highest
Upper Hutt	18.4	30th	1972	3rd-highest
Ranfurly	17.3	21st	1897	3rd-highest
Auckland (Western Springs)	20.6	30th	1971	Equal 3rd-highest
Ohakune	16.9	25th	1972	Equal 3rd-highest
Christchurch (Riccarton)	19.2	31st	2002	Equal 3rd-highest
Waimate	17.8	21st	1908	Equal 3rd-highest
Port Taharoa	19.9	25th	1974	4th-highest
Gisborne	21.5	31st	1940	4th-highest
Whakatu	20.9	31st	1972	4th-highest
Waipawa	18.7	25th	1945	4th-highest
Waiouru	15.4	25th	1972	4th-highest
Mt Cook (Village)	18.0	21st	1929	4th-highest
Taupō	17.6	25th	1950	Equal 4th-highest
Ōkārito	16.6	24th	1983	Equal 4th-highest
Low records or near-records				
Waiau	0.0	16th	1974	2nd-lowest

Rain and slips

The highest 1-day rainfall was 204 mm, recorded at Milford Sound on 20 December.

On 3 December, heavy rain led to a slip on SH2 between Pūtōrino and Kotemaori, which initially blocked both lanes of the road.

On 12 December, a severe thunderstorm moving across Canterbury flooded houses in the suburbs of Belfast and Middleton. The same storm then brought flooding to parts of Wellington later in the day.

A subtropical air mass moved south across New Zealand during late December, bringing very humid conditions to the North Island. On 29 December, the dew point temperature (a measure of humidity) in parts of Northland and Auckland was as high as it was in Fiji.

As of 21 December, Wellington residents were being urged to store emergency water supplies over the holiday period as Wellington Water was preparing for the possibility of level four water restrictions.

On 29 December, heavy rain in the upper North Island resulted in the cancellation of the Love Your Ways music festival in Auckland, while the Northern Bass music festival saw multiple cars stuck in the mud and shortages of food and water.

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

Location	Extreme 1-day rainfall (mm)	Date of extreme rainfall	Year records began	Comments
Auckland (Airport)	62	29th	1959	4th-highest

Wind

The highest wind gust was 172 km/h, observed at South West Cape on 9 December.

On 10 December, strong winds gusting over 100 km/h affected the lower North Island, including Wellington. In Kelburn, a large tree branch landed on the roof of a parked car.

On 12 December, the Wellington area was hit by a severe thunderstorm that caused significant damage. More than 2000 properties were left without power and multiple roads in the Hutt Valley were blocked by fallen trees. Multiple buildings were severely damaged by strong winds, including large windows that were blown out at the New World and Salvation Army locations in Lower Hutt, while the roof of MP Christopher Bishop's electorate office was blown off. All flights through Wellington Airport were stopped for a time.

On 31 December, strong winds resulted in over 30 flights in and out of Wellington being either diverted or cancelled.

Record or near-record December extreme wind gusts were recorded at:

Location	Extreme wind gust (km/h)	Date of extreme gust	Year records began	Comments
Mt Cook (Airport)	133	9th	2000	Equal highest
Baring Head	137	12th	1991	2nd-highest
Tara Hills	102	9th	1985	2nd-highest
Clyde	80	31st	1983	Equal 2nd-highest
Whitianga	72	12th	1991	3rd-highest
Puysegur Point	148	9th	1986	3rd-highest
Brothers Island	130	12th	1997	3rd-highest

Middlemarch	96	9th	2000	3rd-highest
South West Cape	172	9th	1991	3rd-highest
Te Puke	54	12th	1987	4th-highest
Stratford	80	12th	2002	4th-highest
Diamond Harbour	82	31st	1980	Equal 4th-highest

Lightning, hail, and tornadoes

On 12 December, a severe thunderstorm produced hailstones measuring up to 12 mm in the Wellington area (Photo 1). Earlier that day, the same system moved across Canterbury, producing large hail in places such as Timaru and Methven. A lightning strike caused a brush fire in Yaldhurst, while lightning impacted lighting and navigation systems at Christchurch Airport. Lightning strikes also caused power cuts in Halswell, Dallington, Harewood, and Waddington.



Photo 1: Hail in Wellington on 12 December. Widespread hail was reported across the hill suburbs, while wind damage occurred in the Hutt Valley.

On 20 December, a waterspout was observed off the coast of Orewa, north of Auckland.

Cloud and fog

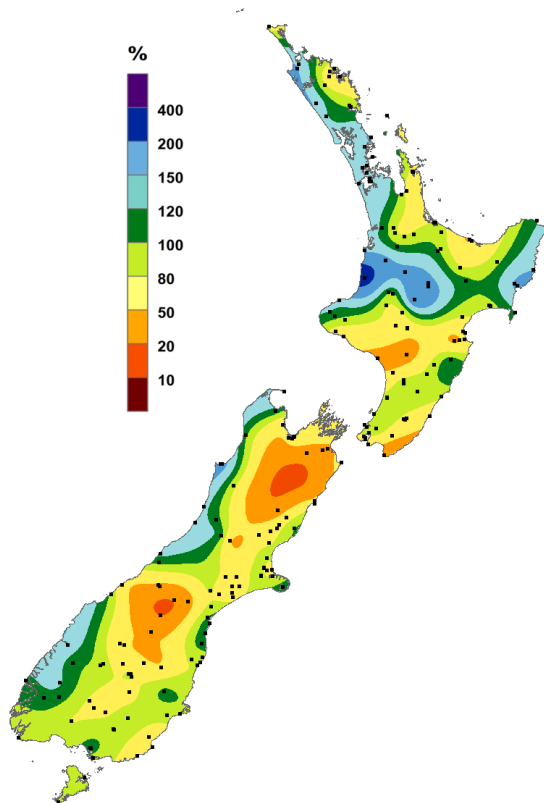
On 10 December, wind and low cloud led to flight delays and cancellations between Wellington, New Plymouth, and Napier.

Beginning around 20 December, smoke from bushfires in New South Wales crossed the Tasman Sea to bring hazy skies to parts of the South Island.

On both 24 and 29 December, low cloud and fog resulted in a number of flights being cancelled or diverted at Nelson Airport.

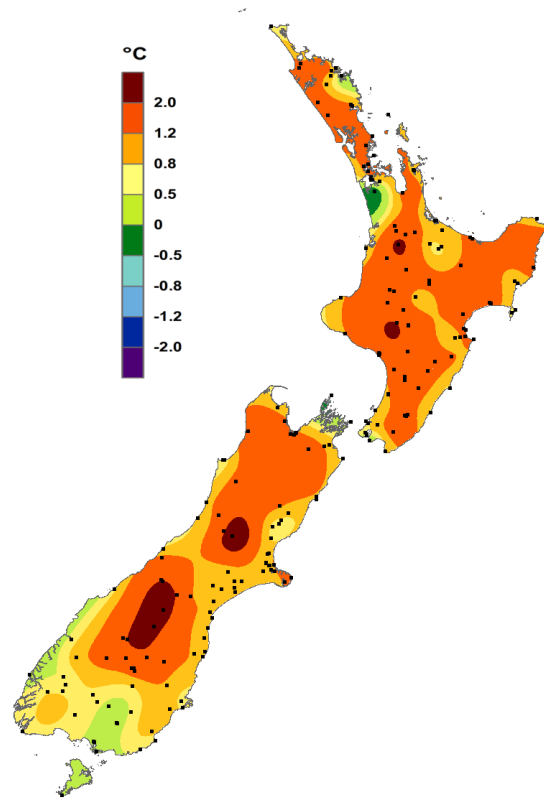
For further information, please contact:

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December rainfall

Expressed as a percentage of the 1991-2020 normal.



December temperature

Expressed as a departure from the 1991-2020 average in degrees Celsius.

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

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