

A dry and mild end to the year

Rainfall	A dry month for much of the country. Well below normal rainfall (<50% of normal) was experienced in much of the upper and eastern North Island while coastal Taranaki and Manawatu-Whanganui saw near normal (80-119% of normal) or above normal (120-149% of normal) rainfall. In the South Island, rainfall was largely well below or below normal (50-79% of normal), with the exception of a few locations in coastal Canterbury and Stewart Island that saw above normal rainfall.
Temperature	Temperatures were near average ($\pm 0.50^{\circ}\text{C}$ of average) for much of the country. The exceptions were small pockets of above average temperatures ($>1.20^{\circ}\text{C}$ above average) in Northland, Coromandel, the Bay of Plenty and Tasman.
Soil Moisture	At the end of the month, soil moisture levels were lower than normal for the upper North Island and higher than normal for coastal areas from Taranaki through to Wellington, for the Nelson-Tasman region and for northern Otago. Soil moisture levels were near normal elsewhere.

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Overview

December 2020 was characterised by settled and dry weather with mild temperatures. Mean sea level pressure was higher than normal in the Tasman Sea and extended over the country frequently. This resulted in more westerly to southwesterly winds than normal, keeping temperatures near average despite plentiful sunshine. Moderate La Niña conditions continued in the tropical Pacific.

The majority of Aotearoa experienced a drier than normal month with dryness most pronounced in the upper and eastern North Island, atypical for La Niña, where rainfall totals were well below normal rainfall (<50% of normal). Several locations observed one of their driest Decembers on record, record driest in the case of Whangārei, where just 6 mm of rain fell (records extend back to 1937). The dry weather resulted in locations such as the Far North and Tauranga introducing water restrictions near the end of the month.

Despite the overall dry weather, thunderstorms and hail occurred in the Tasman region on Boxing Day. The hail caused power outages, shredded vineyards, smashed greenhouses, dented and bruised

apples, kiwifruit and hops and severely damaged buildings in Motueka. The cost of the damage is thought to be in the tens of millions of dollars.

Further Highlights:

- The highest temperature was 33.1°C, observed at Christchurch (Riccarton) on 19 December.
- The lowest temperature was -2.3°C, observed at Lake Tekapo on 27 December.
- The highest 1-day rainfall was 89 mm, recorded at Milford Sound on 19 December.
- The highest wind gust was 180 km/h, observed at Cape Turnagain on 12 December.
- Of the six main centres in December 2020, Tauranga was the warmest, driest and sunniest, Dunedin was the coolest and Wellington was the wettest and least sunny.
- Of the available, regularly reporting sunshine observation sites, the sunniest four locations in 2020 were Bay of Plenty (2704 hours), Greater Nelson (2632 hours), Marlborough (2603 hours), and Taranaki (2600 hours).

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Rainfall: Widespread dry weather

December was persistently dry for many parts of the country but in particular for the upper and eastern North Island where rainfall totals for the month as a whole were well below normal (<50% of normal). Several locations observed one of their driest December's on record. In Whangārei just 6 mm of rain was recorded while 4 mm was recorded at Leigh. This was the driest December on record for these two locations with records extending back to 1937 (Whangārei) and 1966 (Leigh).

The majority of the South Island also saw well below or below normal (50-79% of normal) rainfall with the exception of a few locations in coastal Canterbury such as Christchurch and Oamaru where rainfall was above normal (120-149% of normal).

Record¹ 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				
None observed				
Low records or near-records				
Whangārei	6	6	1937	Lowest
Leigh	4	5	1966	Lowest
Kerikeri	9	8	1935	Equal lowest
Whangaparaoa	14	18	1946	2nd-lowest
Auckland (North Shore)	14	15	1966	2nd-lowest
Warkworth	11	10	1966	3rd-lowest
Taupo	29	31	1949	3rd-lowest
Hamilton (Ruakura)	19	19	1905	3rd-lowest
Rotorua (Airport)	38	32	1963	Equal 3rd-lowest
Kaitaia (Airport)	19	19	1948	4th-lowest
Kaikohe	24	22	1956	4th-lowest
Auckland (Western Springs)	27	29	1948	4th-lowest
Whitianga	25	20	1961	4th-lowest
Whakatane	24	21	1952	4th-lowest

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.

Temperature: Near average temperatures for most

Temperatures were largely near average ($\pm 0.50^{\circ}\text{C}$ of average) across the country. The exceptions were small pockets of above average temperatures ($>1.20^{\circ}\text{C}$ above average) in Northland, Coromandel, the Bay of Plenty and Tasman. No locations observed record high or low mean air temperatures however several locations saw near record high mean-maximum temperatures.

The nationwide average temperature in December 2020 was 15.8°C . This was 0.1°C above the 1981-2010 November average (and considered to be near average) from NIWA's seven station temperature series which begins in 1909. It has now been 47 consecutive months since New Zealand experienced a nationwide temperature that was below average (more than 0.5°C below the monthly average).

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

Location	Mean air temp. ($^{\circ}\text{C}$)	Departure from normal ($^{\circ}\text{C}$)	Year records began	Comments
High records or near-records				
None observed				
Low records or near-records				
None observed				

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

Location	Mean maximum air temp. ($^{\circ}\text{C}$)	Departure from normal ($^{\circ}\text{C}$)	Year records began	Comments
High records or near-records				
Whangaparaoa	23.1	1.6	1982	2nd-highest
Te Puke	23.5	1.5	1973	2nd-highest
Whitianga	24.3	2.0	1962	3rd-highest
Rotorua	22.5	2.1	1964	3rd-highest
Matamata	24.1	2.1	1999	4th-highest
Oamaru	19.7	1.8	1967	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. ($^{\circ}\text{C}$)	Departure from normal ($^{\circ}\text{C}$)	Year records began	Comments
High records or near-records				
None observed				
Low records or near-records				
None observed				

December climate in the six main centres

December rainfall was well below normal in Auckland, Tauranga and Hamilton while Wellington and Christchurch experienced above normal rainfall and Dunedin had near normal rainfall. Temperatures were above average in Tauranga and Dunedin while the other main centres saw near average temperatures. Notably, it was Tauranga's sunniest December since records began in 1932. Of the six main centres in December 2020, Tauranga was the warmest, driest and sunniest, Dunedin was the coolest and Wellington was the wettest and least sunny.

December 2020 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland ^a	18.6	+0.4	Near average
Tauranga ^b	18.8	+0.8	Above average
Hamilton ^c	16.6	-0.3	Near average
Wellington ^d	15.2	-0.2	Near average
Christchurch ^e	15.6	-0.2	Near average
Dunedin ^f	14.5	+0.7	Above average
Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland ^a	26	30	Well below normal
Tauranga ^b	19	20	Well below normal
Hamilton ^c	35	33	Well below normal
Wellington ^d	101	122	Above normal
Christchurch ^e	62	133	Above normal
Dunedin ^f	67	84	Near normal
Sunshine			
Location	Sunshine (hours)		
Auckland ^a	255		
Tauranga ^b	311		
Hamilton ^g	244		
Wellington ^d	199		
Christchurch ^e	236		
Dunedin ^f	241		

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

Highlights and extreme events

Rain and slips

On 9 December, heavy rain caused a slip which closed SH3 in northern Taranaki until 10 December, when one lane was reopened. In South Taranaki, Tangahoe Valley Road was closed due to several significant slips.

On 10 December, heavy rainfall brought flooding and multiple slips to Porirua and the Kapiti area. Porirua City Council advised that surface flooding had occurred around the city, often caused by blocked drains. Paekākāriki Hill Rd had been closed due to a slip blocking both directions, and Akatarawa Rd was also closed due to multiple slips. NZTA advised a car had been hit by falling rocks on SH1 near Paekākāriki, causing the southbound traffic to be blocked for a few minutes.

On 23 December, the Far North District Council introduced Level 2 water restrictions for the towns of Kaitaia, Kawakawa and Moerewa due to low river flows and little prospect of significant rainfall over the next two weeks. Meanwhile, Tauranga introduced a sprinkler ban on 23 December due to low river flows and high water demand. Level 2 restrictions were also in place in Akaroa, Duvauchelle and Takamatua on Banks Peninsula as dry conditions put pressure on water supplies

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
Arapito	78	23rd	1978	4th-highest

Temperatures

Between 8-10 December a northerly subtropical flow of air brought widespread hot and humid conditions to the North Island and upper South Island. Many locations experienced one of their warmest nights on record with temperatures not dropping below 20°C for some.

The highest temperature was 33.1°C, observed at Christchurch (Riccarton) on 19 December.

The lowest temperature was -2.3°C, observed at Lake Tekapo on 27 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				
Cape Reinga	25.1	22nd	1951	2nd-highest
Whangaparaoa	27.3	8th	1982	2nd-highest
Whangarei	29.8	8th	1967	3rd-highest
Oamaru	30.7	19th	1967	3rd-highest
Leigh	28.4	8th	1966	Equal 3rd-highest
Whakatu	32.0	10th	1965	Equal 3rd-highest
Wairoa (North Clyde)	32.5	16th	1964	4th-highest
Low records or near-records				
Whakatu	13.5	1st	1972	3rd-lowest

Hastings	13.8	1st	1972	4th-lowest
Porirua	14.4	27th	1972	4th-lowest
Napier	13.9	1st	1940	Equal 4th-lowest

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				
Takapau Plains	18.7	8th	1972	Highest
Whitianga	19.9	10th	1971	Equal highest
Waipawa	19.0	8th	1945	Equal highest
Blenheim	20.5	8th	1947	2nd-highest
Whangarei	20.4	10th	1967	3rd-highest
Motu	16.2	10th	1990	3rd-highest
Dannevirke	19.2	8th	1951	3rd-highest
Gisborne	21.6	9th	1940	3rd-highest
Puysegur Point	16.6	19th	1978	Equal 3rd-highest
Lower Retaruke	17.6	10th	1972	4th-highest
Mahia	18.6	9th	1990	4th-highest
Wairoa	21.1	9th	1972	Equal 4th-highest
Low records or near-records				
Whanganui	3.7	2nd	1937	2nd-lowest
Clyde	0.4	1st	1978	Equal 2nd-lowest
Motu	0.1	29th	1990	Equal 3rd-lowest
Rotorua	1.9	2nd	1964	4th-lowest
Turangi	0.2	2nd	1968	Equal 4th-lowest
Blenheim	0.9	28th	1932	Equal 4th-lowest

Wind

The highest wind gust was 180 km/h, observed at Cape Turnagain on 12 December.

On 1 December, Paekakariki Hill Road to the Kapiti Coast was closed after strong wind brought down a tree on the road. Strong wind caused delays to some flights in and out of Wellington, and ferry sailings across Wellington harbour were cancelled. Two Interislander ferry sailings were also cancelled on the morning of 1 December.

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
Hawera	96	1st	1986	Highest
Secretary Island	143	2nd	1994	Equal highest
Baring Head	135	1st	1991	2nd-highest
Kaukau Top	146	1st	1969	2nd-highest
Tara Hills	96	2nd	1985	2nd-highest
New Plymouth	96	1st	1972	Equal 2nd-highest

Dargaville	82	1st	1997	3rd-highest
Whanganui	95	1st	1977	3rd-highest
Oamaru	89	2nd	1984	Equal 3rd-highest
Te Puke	52	1st	1987	4th-highest
Clyde	74	2nd	1983	4th-highest
Upper Hutt	80	7th	1999	Equal 4th-highest

Snow and ice

On 11 December, light snow fell in parts of northern Southland, including on SH6 between Lumsden and Kingston and on Gorge Hill between Te Anau and Mossburn. A dusting of snow also accumulated in the Remarkables mountain range.

On 26 December light snow fell above 1000 metres elevation in Central Otago and Southland.

Lightning and hail

On 3 December, a flight from Invercargill to Wellington was struck by lightning in mid-air, causing the pilots to return to Invercargill.

On 26 December, thunderstorms and hail brought widespread damage to the Tasman region. The hail caused power outages, shredded vineyards, smashed greenhouses, dented and bruised apples, kiwifruit and hops and severely damaged buildings in Motueka. The cost of the damage is thought to be in the tens of millions of dollars.

Cloud and fog

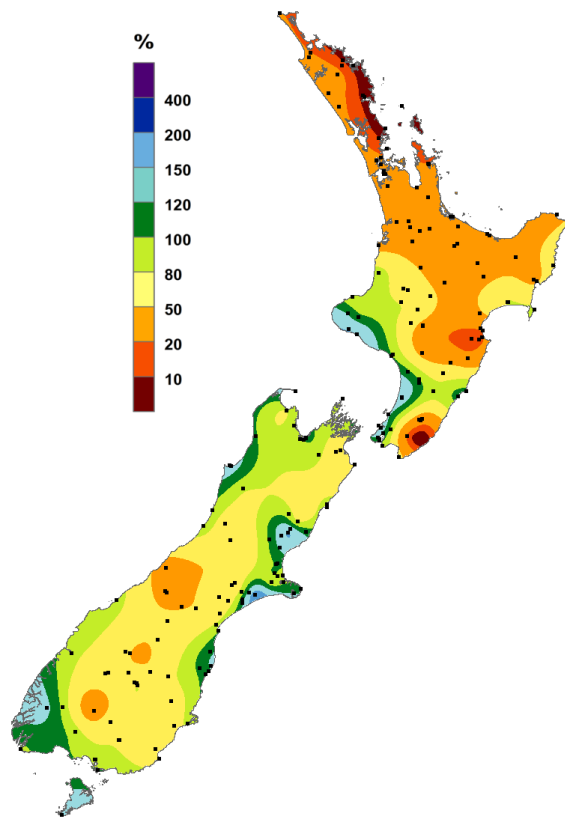
On 8 December, several flights in and out of New Plymouth airport were cancelled due to low cloud and fog.

For further information, please contact:

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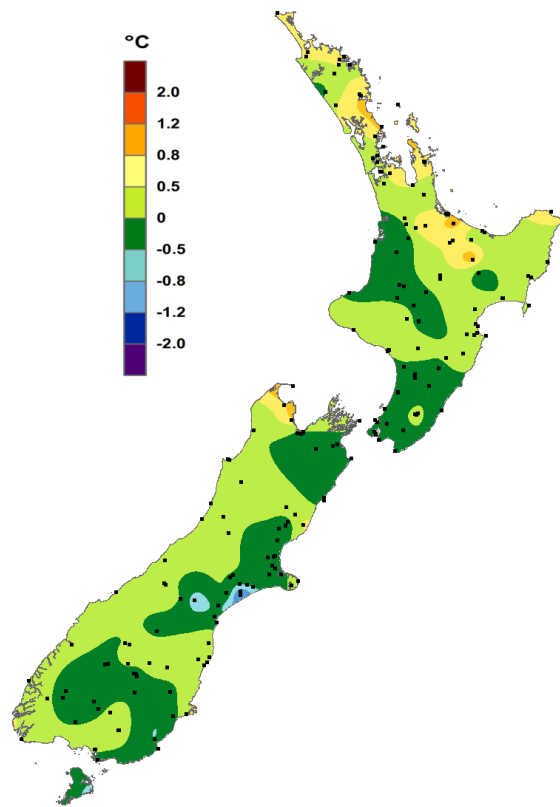
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December rainfall

Expressed as a percentage of the 1981-2010 normal.



December temperature

Expressed as a departure from the 1981-2010 average in degrees Celsius.

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

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