

Wet end to the year for much of New Zealand

Rainfall	It was a wet December for much of the South Island, with well above normal rainfall (>149% of normal) in parts of every region. Rainfall was also well above normal in Wellington, Kapiti Coast, northern Hawke's Bay and Gisborne. Above normal rainfall (120-149% of normal) was observed in parts of Taranaki, Manawatu and south-eastern Waikato. Rainfall was below normal (50-79% of normal) in Northland, Auckland, northern Waikato and Bay of Plenty, Coromandel, Wairarapa, eastern parts of Central Otago, and coastal Canterbury north of Ashburton.
Temperature	Temperatures were well above average (> 1.20°C above average) for Bay of Plenty, and parts of Waikato and Hawke's Bay. Temperatures were mostly above average (0.51-1.20°C above average) for remaining parts of the North Island. Below average (0.51-1.20°C below average) or well below average (> 1.20°C below average) temperatures were experienced in western and inland parts of Southland, Otago, and along many additional areas about the Southern Alps.
Soil Moisture	As of 1 January 2020, soils were wetter than normal for the time of year across parts of Southland, Otago, Nelson, Marlborough Sounds and Wellington. Soil moisture levels were much lower than normal for the time of year in Northland, Auckland, northern Waikato and eastern parts of Wairarapa.

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

[Overview](#)

[Rainfall](#)

[Temperature](#)

[December 2019 climate in the six main centres](#)

[Highlights and extreme events](#)

Overview

December 2019 was characterised by lower than normal pressure over the country, and much lower than normal pressure to the southwest of the South Island. This pressure set up was associated with more westerly and south-westerly winds than normal. The prevalence of these winds (and the associated orographic effect) contributed to considerable rainfalls in the headwaters of the South Island lakes and rivers, with several notable flooding events (see *Highlights and extreme events* for further details). Conversely, parts of Northland, Auckland, Waikato and Bay of Plenty experienced many dry and sunny days throughout the month resulting in below normal rainfall totals, and soils becoming much drier than normal for the time of year. Overall, the nationwide average temperature in December 2019 was 16.0°C. This was 0.3°C above the 1981-2010 December average from NIWA's seven station temperature series which begins in 1909.

Further Highlights:

- The highest temperature was 33.2°C, observed at Clyde on 31 December.
- The lowest temperature was -0.5°C, observed at Hanmer Forest on 10 December.
- The highest 1-day rainfall was 271 mm, recorded at Milford Sound on 2 December.
- The highest wind gust was 174 km/h, observed at Cape Turnagain on 8 December.
- Of the six main centres in December 2019, Tauranga was the warmest, Auckland was the sunniest, Christchurch was the driest, Dunedin was the coldest and least sunny, and Wellington was the wettest.
- Of the available, regularly reporting sunshine observation sites, the sunniest four locations in 2019 are Wider Nelson (2859 hours), Marlborough (2799 hours), Hawke's Bay (2709 hours) and Bay of Plenty (2690 hours).
- Of the available, regularly reporting low elevation rainfall sites, the two wettest locations in 2019 are Milford Sound (8,417 mm) and Mount Cook Village (5,446 mm). The two driest locations in 2019 are Clyde and Cromwell (417 mm).

For further information, please contact:

Gregor Macara
Climate Scientist
Tel. 04 386 0509

Rainfall: Wet for much of New Zealand, but dry for northern and eastern parts

December rainfall was abundant in many parts of New Zealand. Well above normal rainfall (>149% of normal) was observed in parts of every South Island region. Manapouri, Queenstown and Wanaka each observed their second-highest December rainfall total on record. Mount Cook Village received 1202 mm of rainfall (242% of the December normal), which is approximately equivalent to Auckland's annual rainfall. Rainfall was well above normal in Wellington, Kapiti Coast, northern Hawke's Bay and Gisborne. Above normal rainfall (120-149% of normal) was observed in parts of Taranaki, Manawatu and south-eastern Waikato.

In contrast, rainfall was below normal (50-79% of normal) in Northland, Auckland, northern Waikato and Bay of Plenty, Coromandel, Wairarapa, eastern parts of Central Otago, and coastal Canterbury north of Ashburton. As of 1 January 2020, soil moisture levels were much lower than normal for the time of year in Northland, Auckland and northern Waikato.

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				
Wanaka	185	254	1927	2nd-highest
Manapouri (Airport)	204	196	1961	2nd-highest
Queenstown	169	225	1871	2nd-highest
Campbell Island	188	168	1992	2nd-highest
Mt Cook Village	1202	242	1928	3rd-highest
Manapouri (West Arm Jetty)	641	169	1971	3rd-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.

Temperature: Warm in the North Island, cool in the South Island

December temperatures were a tale of two islands; it was warmer than usual for much of the North Island while many parts of the South Island were cooler than usual for the time of year. Temperatures were well above average (> 1.20°C above average) for Bay of Plenty, and parts of Waikato and Hawke's Bay. The warmth was particularly notable in the Bay of Plenty, with Whakatane and Tauranga observing their second- and third- warmest Decembers on record respectively. Temperatures were mostly above average (0.51-1.20°C above average) for remaining parts of the North Island. The exception was Wellington, coastal Wairarapa, Ruapehu District and western parts of Northland where temperatures were near average (-0.50°C to +0.50°C of average).

In the South Island, temperatures were below average (0.51-1.20°C below average) or well below average (> 1.20°C below average) in western and inland parts of Southland, Otago, and many additional areas about the Southern Alps. Remaining parts of the South Island typically observed near average temperatures (-0.50°C to +0.50°C of average). The notable exception was Farewell Spit, where the mean temperature was 18.0°C (1.7°C above average). Sea surface temperatures in the Tasman Sea were higher than usual during December, and this may have contributed to the relatively warm air temperatures observed at Farewell Spit. Farther south in Te Anau, the average daily maximum temperature was 16.5°C; 2.5°C lower than its December average. During late December, marine heatwave conditions occurred near and particularly east of Chatham Island. This was caused by a favourable pressure setup that yielded more northerly quarter winds than normal in this area.

The nationwide average temperature in December 2019 was 16.0°C. This was 0.3°C above the 1981-2010 December average from NIWA's seven station temperature series which begins in 1909.

Record 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				
Whakatane	19.4	1.9	1974	2nd-highest
Tauranga	19.6	1.6	1913	3rd-highest
Hicks Bay	18.4	1.2	1969	3rd-highest
Farewell Spit	18.0	1.7	1971	Equal 4th-highest
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. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Whangarei	24.9	2.0	1967	2nd-highest
Whangaparaoa	23.0	1.5	1982	2nd-highest

Whitianga	24.9	2.6	1962	2nd-highest
Whakatane	24.3	2.0	1974	2nd-highest
Te Kuiti	24.5	2.4	1959	2nd-highest
Tauranga	24.1	1.9	1913	3rd-highest
Te Puke	23.3	1.3	1973	3rd-highest
Farewell Spit	22.4	2.4	1971	3rd-highest
Rotorua	22.4	2.0	1964	4th-highest
Low records or near-records				
Te Anau	16.5	-2.5	1963	3rd-lowest

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				
None observed				
Low records or near-records				
None observed				

December climate in the six main centres

December was a dry month in Auckland, Tauranga, and Hamilton with December rainfall between 57-65% of normal for the time of year in these centres. Conversely, Wellington received 154% of normal December rainfall. Temperatures were well above average in Tauranga; the city observed its third-highest December mean temperature on record. Of the six main centres in December 2019, Tauranga was the warmest, Auckland was the sunniest, Christchurch was the driest, Dunedin was the coldest and least sunny, and Wellington was the wettest.

December 2019 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland ^a	19.2	+1.0	Above average
Tauranga ^b	19.6	+1.6	Well above average – 3rd-highest on record
Hamilton ^c	17.9	+1.0	Above average
Wellington ^d	15.8	+0.4	Near average
Christchurch ^e	16.0	+0.2	Near average
Dunedin ^f	14.1	+0.2	Near average
Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland ^a	56	65	Below normal
Tauranga ^b	57	61	Below normal
Hamilton ^c	59	57	Below normal
Wellington ^d	128 ²	154	Well above normal
Christchurch ^e	35	74	Below normal
Dunedin ^f	116	144	Above normal
Sunshine			
Location	Sunshine (hours)		
Auckland ^a	259		
Tauranga ^b	255		
Hamilton ^g	245		
Wellington ^d	241		
Christchurch ^e	258		
Dunedin ^f	192		

^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

Rain and slips

During the first eight days of December, a stationary high to the northeast of New Zealand and low pressure to the southwest brought a prolonged period of north-westerly airflows over the country. These delivered persistent rainfall to the headwaters of the South Island lakes and rivers. Lake Wanaka and Lake Wakatipu rose considerably, inundating lakeside roads, tracks and reserves. Many Wanaka businesses sand-bagged their properties as floodwaters threatened buildings in the central business district. The Central Otago District Council placed Alexandra, Roxburgh and Lake Roxburgh Village on boil water notice, due to elevated turbidity in the Clutha River affecting the water treatment plant.

On 7-8 December, heavy rain caused significant issues for many parts of the South Island and lower North Island:

- Numerous landslides forced the closure of a 280 km stretch of SH6 between Hokitika and Haast. The worst-affected area was about Mt Hercules, with an estimated 20-30 slips forcing the prolonged closure of SH6 between Harihari and Haast. Approximately 970 tourists were stuck in Franz Josef township due to the road closures.
- The Rangitata River rose rapidly due to heavy rain in the headwaters, causing extensive flooding in areas along the lower reaches of the river. A local state of emergency was declared in the Timaru District due to flooding, and residents were evacuated from several areas including Rangitata Island and Rangitata Huts. The Rangitata Bridge at SH1 and the bridge at Arundel on Route 72 were closed for several days. Nine Transpower pylons crossing the Rangitata River were damaged, with one of these towers swept away by the floodwaters.
- Heavy rain caused flooding and road closures in and around Wellington. The worst-affected areas were Porirua, Pāuatahanui and Hutt Valley suburbs including Manor Park, Silverstream and Stokes Valley, with reports of vehicles written off due to water damage. A slip near Silverstream blocked northbound lanes on SH2, SH58 was closed due to a slip and SH1 through Mana and Plimmerton Roundabout was closed due to flooding.

The Karangahake Gorge (SH2) was closed for several hours overnight from 8-9 December due to flooding.

On 17 December, heavy rain caused flooding which closed SH63 between the Branch River and Wairau River bridges (Wairau Valley in Marlborough).

On 18 December, a period of heavy rain caused surface flooding in parts of Wellington, including Khandallah, Churton Park and Hutt Road. Slips were reported in Makara and Evans Bay.

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
Reefton	89	2nd	1960	2nd-highest
Waimate	61	16th	1898	2nd-highest
Tiwai Point	46	19th	1970	2nd-highest

Campbell Island	39	13th	1991	2nd-highest
Appleby	58	16th	1932	3rd-highest
Invercargill	48	19th	1939	3rd-highest
Whatawhata	52	17th	1952	4th-highest

Temperatures

Several locations across Southland and Otago observed one of their warmest December days on record on 31 December. In Ranfurly, the temperature reached 32.3°C, making it Ranfurly's highest December temperature since records began in 1897.

The highest temperature of the month was 33.2°C, observed at Clyde on 31 December.

The lowest temperature was -0.5°C, observed at Hanmer Forest on 10 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				
Ranfurly	32.3	31st	1897	Highest
Five Rivers	30.3	31st	1982	Highest
Whitianga	29.2	5th	1962	2nd-highest
Invercargill	30.2	31st	1905	3rd-highest
Lumsden	29.1	31st	1982	4th-highest
Whangarei	29.2	7th	1967	Equal 4th-highest
Low records or near-records				
Clyde	10.3	17th	1978	2nd-lowest
Alexandra	10.0	17th	1930	3rd-lowest
Cromwell	10.6	17th	1949	4th-lowest
Wanaka	10.8	17th	1972	Equal 4th-lowest
Roxburgh	10.5	17th	1950	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				
Waipawa	18.8	3rd	1945	2nd-highest
Whakatane	19.7	8th	1975	3rd-highest
Whitianga	19.7	17th	1971	4th-highest
Hastings	20.7	3rd	1972	4th-highest
Paeroa	20.0	17th	1971	Equal 4th-highest
Low records or near-records				
Turangi	-0.3	11th	1968	3rd-lowest

Wind

On 3 December, strong winds forced the cancellation of approximately 40 flights to and from Wellington Airport.

On 17 December, severe thunderstorms produced two tornadoes in Waikato. The first struck near Waihou shortly after midday, damaging a farm shed and snapping trees. The second occurred south of Te Awamutu around 6 p.m., with one local reporting roofs off buildings, windows and wall cladding damage to two sheds, approximately 40 large trees downed and damage to neighbouring properties.

The highest wind gust of the month was 174 km/h, observed at Cape Turnagain on 8 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
Te Puke	69	18th	1987	Highest
Napier	104	3rd	1973	Highest
Levin	93	8th	1971	Highest
Winchmore	100	4th	1970	Equal highest
Rotorua	89	3rd	1972	2nd-highest
Hamilton (Airport)	83	3rd	1978	2nd-highest
Dannevirke	93	20th	1961	2nd-highest
Baring Head	124	20th	1991	2nd-highest
Mt Kaukau (Wellington)	145	3rd	1969	2nd-highest
Secretary Island	137	1st	1994	2nd-highest
Brothers Island	133	20th	1997	2nd-highest
Cape Campbell	115	20th	1963	2nd-highest
Whakatane	87	17th	1974	3rd-highest
Hawera	87	3rd	1986	3rd-highest
Clyde	78	1st	1983	3rd-highest
Dargaville	78	18th	1997	Equal 3rd-highest
Mokohinau	96	17th	1994	4th-highest
Motu	85	3rd	1991	4th-highest
Hamilton (Ruakura)	72	8th	1991	4th-highest
Oamaru	85	6th	1984	4th-highest
Pukekohe	61	3rd	1986	Equal 4th-highest

Lightning and hail

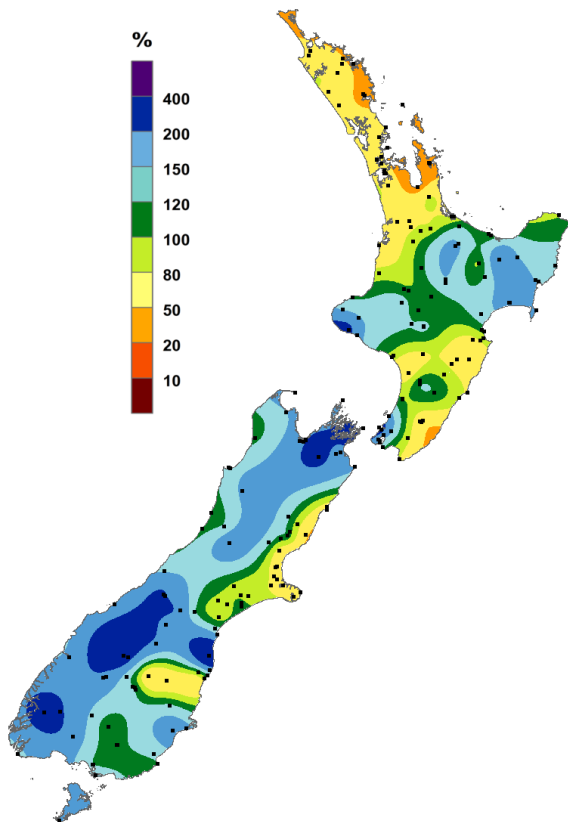
On 8 December, over 300,000 lightning strikes occurred around New Zealand and offshore waters associated with the passage of an active front. Lightning set trees on fire in Akatarawa (near Upper Hutt) and Martinborough. Farther south, lightning and hail struck Dunedin during the afternoon. Fire crews were called to fires in Green Island and Outram, which were believed to have been caused by lightning strikes. Lightning struck the Dunedin Airport power centre, knocking out the airfield lighting system temporarily.

For further information, please contact:

Gregor Macara

Climate Scientist, NIWA Wellington

Tel. 04 386 0509



December 2019 rainfall expressed as a percentage of normal (1981-2010 normal).

It was a very wet month for many western and inland parts of the South Island, which contributed to high lake levels and flooding events during the month. Manapouri, Queenstown and Wanaka each observed their second-highest December rainfall total on record.

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

© Copyright NIWA 2020.

All rights reserved. Information presented in this summary is based on data available at the time of publication, which is subject to ongoing quality assurance procedures.