

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.

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

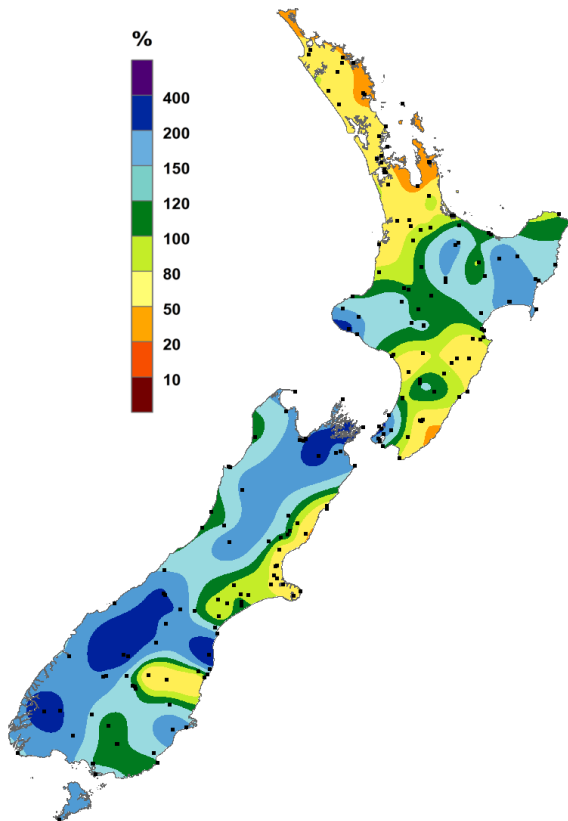
On 8 December, over 300,000 lightning strikes occurred around New Zealand and offshore waters associated with the passage of an active front. Lightning set trees on fire in Akatarawa (near Upper Hutt) and Martinborough. Farther south, lightning and hail struck Dunedin during the afternoon. Fire crews 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.