

January - a month of two halves

| | |
|----------------------|---|
| Rainfall | It was a very dry January with much of the country observing rainfall below (50-79% of normal) to well below (<50%) normal. Parts of upper North Island and upper and eastern South Island received less than 10% of their long term January rainfall normal. Only small portions of western Fiordland and coastal Waitaki District observed near normal (80-119%) rainfall. |
| Temperature | Temperatures were well above average (>1.20°C above average) for parts of interior Mackenzie and Waimate Districts. Temperatures were above average (0.51-1.20°C above average) in much of interior central Canterbury and Otago, the Hurunui District and northern Tasman. Temperatures were mostly near average (-0.5 to +0.5°C of average) in the rest of the South Island but small portions of below average temperatures (0.51-1.20°C below average) were experienced in coastal Westland and coastal lower Canterbury. In the North Island, temperatures were mostly near average, but above average temperatures were observed in parts of eastern Northland, Coromandel, Bay of Plenty, Gisborne and Hawke's Bay. Small portions of below average temperatures were observed in western Waikato and lower Wellington Region. |
| Soil Moisture | By the end of January, soil moisture levels were below to well below normal for the entire North Island and meteorological drought was present in much of the upper North Island with severe meteorological drought in northern Auckland, Great Barrier Island, southern Northland, and the Aupouri Peninsula according to NIWA's New Zealand Drought Index. Soils were drier than normal for much of the South Island as well, the only exceptions being Fiordland, the lower West Coast, Dunedin and the Grey District where near normal or above normal soil moisture levels were observed. |

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Overview

January 2020 was characterised by above normal pressure over and west of New Zealand and below normal pressure east of the country. This pressure set up was associated with a southeast air flow anomaly for eastern areas and a southwest air flow anomaly for western areas.

Below or well below normal rainfall was widespread across New Zealand during January. This was a result of dry, southerly-quarter winds with an area of high pressure frequently near and west of New Zealand. As of 31 January, many locations across the South Island were experiencing record or near-

record long dry spells (see *Highlights and extreme events* for further details) and meteorological drought was present in much of the upper North Island with severe meteorological drought in northern Auckland, Great Barrier Island, southern Northland, and the Aupouri Peninsula according to NIWA's New Zealand Drought Index.

January temperatures were a tale of two halves; the month started out cooler than usual for much of the country, with many locations on track to observe near-record low mean temperatures for the month. During the second half of the month, the persistent area of high pressure near and west of New Zealand shifted slightly farther north, allowing the transport of warmer airmasses from Australia to New Zealand. This brought well above average temperatures, particularly during the last week of January. Overall, this meant New Zealand's January temperature ended near average; the nationwide average temperature in January 2020 was 17.2°C. This was 0.1°C above the 1981-2010 January average from NIWA's seven station temperature series which begins in 1909.

New Zealand has not had a month with below average temperatures in 36 months, or since January 2017.

Further Highlights:

- The highest temperature was 38.2°C, observed at Gisborne on 31 January. This was New Zealand's 5th-hottest January temperature on record as well as the 19th-equal hottest temperature on record for any month.
- The lowest temperature of the month was -0.7°C, observed at Hanmer Forest on 15, 16, and 17 January.
- The highest 1-day rainfall was 137 mm, recorded at Milford Sound on 1 January.
- The highest wind gust was 196 km/h, observed at Cape Turnagain on 5 January.
- Of the six main centres in January 2020, Tauranga was the warmest and sunniest, Dunedin was the coldest and wettest, Christchurch was the driest, and Wellington was the least sunny.
- Of the available, regularly reporting sunshine observation sites, the sunniest four locations in 2020 so far are Bay of Plenty (335 hours), Waikato (323 hours), Taranaki (318 hours) and Wider Nelson (308 hours).

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Rainfall: A very dry start to the year

Below or well below normal rainfall was widespread across New Zealand during January 2020. In fact, parts of upper North Island and upper and eastern South Island received less than 10% of their long term January rainfall normal. Only small portions of western Fiordland and coastal Waitaki District observed near normal (80-119%) rainfall. As of 31 January, many locations across the South Island were experiencing record or near-record long dry spells and meteorological drought was present in much of the upper North Island with severe meteorological drought in northern Auckland, Great Barrier Island, southern Northland, and the Aupouri Peninsula according to NIWA's New Zealand Drought Index.

Due to the widespread dryness, several low rainfall records were observed. Of note, Whenuapai (Auckland) had its driest January on record (dating back to 1943) with only 7 mm of rain observed.

By the end of January, soil moisture levels were below to well below normal for the entire North Island. Soils were drier than normal for much of the South Island as well, the only exceptions being Fiordland, the lower West Coast, Dunedin and the Grey District where near normal or above normal soil moisture levels were observed.

Record¹ or near-record January 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 | | | | |
| Auckland (Whenuapai) | 7 | 9 | 1943 | Lowest |
| Stratford | 18 | 15 | 1960 | Lowest |
| Takaka | 1 | 1 | 1976 | Lowest |
| Appleby | 2 | 2 | 1932 | Lowest |
| Hanmer Forest | 1 | 1 | 1905 | Lowest |
| Winchmore | 3 | 5 | 1909 | Lowest |
| Ashburton | 7 | 12 | 1909 | Lowest |
| Waipara West | 1 | 2 | 1973 | Lowest |
| Lincoln | 7 | 16 | 1881 | Lowest |
| Lake Tekapo | 1 | 3 | 1925 | Lowest |
| Orari Estate | 3 | 6 | 1897 | Lowest |
| Clyde | 10 | 20 | 1978 | Lowest |
| Leigh | 6 | 8 | 1966 | Equal lowest |
| Whitianga | 5 | 6 | 1961 | 2nd-lowest |
| Whatawhata | 14 | 14 | 1952 | 2nd-lowest |
| Motueka | 1 | 1 | 1943 | 2nd-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.

| | | | | |
|----------------------|----|----|------|------------------|
| Blenheim | 0 | 0 | 1927 | 2nd-lowest |
| Kaikoura | 5 | 12 | 1898 | 2nd-lowest |
| Christchurch Airport | 3 | 9 | 1863 | 2nd-lowest |
| Hamilton (Ruakura) | 6 | 8 | 1905 | Equal 2nd-lowest |
| Cape Reinga | 4 | 8 | 1919 | 3rd-lowest |
| Te Puke | 11 | 10 | 1973 | 3rd-lowest |
| Pukekohe | 5 | 7 | 1944 | 3rd-lowest |
| Martinborough | 5 | 12 | 1924 | 3rd-lowest |
| Hawera | 9 | 12 | 1977 | 3rd-lowest |
| Timaru | 7 | 14 | 1881 | 3rd-lowest |
| Dargaville | 9 | 13 | 1943 | 4th-lowest |
| Arapito | 69 | 37 | 1978 | 4th-lowest |
| Reefton | 45 | 31 | 1960 | 4th-lowest |

Temperature: A month of two halves

January temperatures were a tale of two halves; it was cooler than usual for much of the country during the first part of the month, with temperatures well above average returning during the latter part. Cooler than average coastal sea surface temperatures as well as cool, southerly-quarter air flows were prominent early, followed by warmer, trans-Tasman air flows later in the month.

Overall, temperatures were well above average (>1.20°C above average) for parts of interior Mackenzie and Waimate Districts, and above average (0.51-1.20°C above average) in much of interior central Canterbury and Otago, the Hurunui District and northern Tasman. Temperatures were mostly near average (-0.5 to 0.5°C of average) in the rest of the South Island but small portions of below average temperatures (0.51-1.20°C below average) were experienced in coastal Westland and coastal lower Canterbury. In the North Island, temperatures were mostly near average, but above average temperatures were recorded in parts of eastern Northland, Coromandel, Bay of Plenty, Gisborne and Hawke's Bay. Small portions of below average temperatures were observed in western Waikato and lower Wellington Region.

The nationwide average temperature in January 2020 was 17.2°C. This was 0.1°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 January were recorded at:

| Location | Mean 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 | | | | |

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

| Location | Mean maximum air temp. (°C) | Departure from normal (°C) | Year records began | Comments |
|-------------------------------------|-----------------------------|----------------------------|--------------------|-------------|
| High records or near-records | | | | |
| Farewell Spit | 24.7 | 3.0 | 1971 | Highest |
| Whangarei | 26.6 | 2.2 | 1967 | 2nd-highest |
| Whitianga | 26.5 | 2.6 | 1962 | 2nd-highest |
| Takaka | 25.9 | 2.9 | 1978 | 2nd-highest |
| Hanmer Forest | 27.3 | 3.9 | 1906 | 2nd-highest |
| Kerikeri | 26.1 | 1.8 | 1945 | 4th-highest |
| Whangaparaoa | 24.6 | 1.3 | 1982 | 4th-highest |
| Motu | 22.8 | 2.3 | 1990 | 4th-highest |
| Wairoa | 27.0 | 2.5 | 1964 | 4th-highest |
| Ohakune | 23.6 | 2.4 | 1962 | 4th-highest |
| Medbury | 25.9 | 1.8 | 1927 | 4th-highest |
| Low records or near-records | | | | |
| Brothers Island | 18.1 | -0.6 | 1997 | 3rd-lowest |
| Port Taharoa | 21.5 | -1.4 | 1973 | 4th-lowest |

Record or near-record mean minimum air temperatures for January 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 | | | | |
| Ohakune | 7.3 | -2.4 | 1962 | Lowest |
| Matamata | 10.9 | -1.0 | 1999 | 4th-lowest |
| Turangi | 8.6 | -2.6 | 1968 | 4th-lowest |

January climate in the six main centres

January was a dry month across New Zealand and all of the main centres observed well below normal rainfall. Temperatures were above average in Tauranga, while near average temperatures were observed elsewhere. Of the six main centres in January 2020, Tauranga was the warmest and sunniest, Dunedin was the coldest and wettest, Christchurch was the driest, and Wellington was the least sunny.

January 2020 main centre climate statistics:

| Temperature | | | |
|---------------------------|------------------|----------------------------|--|
| Location | Mean temp. (°C) | Departure from normal (°C) | Comments |
| Auckland ^a | 19.1 | +0.1 | Near average |
| Tauranga ^b | 20.2 | +0.7 | Above average |
| Hamilton ^c | 18.3 | 0.0 | Near average |
| Wellington ^d | 16.5 | -0.4 | Near average |
| Christchurch ^e | 17.4 | +0.2 | Near average |
| Dunedin ^f | 15.3 | 0.0 | Near average |
| Rainfall | | | |
| Location | Rainfall (mm) | % of normal | Comments |
| Auckland ^a | 8 | 12 | Well below normal |
| Tauranga ^b | 19 | 24 | Well below normal |
| Hamilton ^c | 9 | 11 | Well below normal |
| Wellington ^d | 24 | 40 | Well below normal |
| Christchurch ^e | 3 | 9 | Well below normal (2 nd lowest) |
| Dunedin ^f | 34 | 46 | Well below normal |
| Sunshine | | | |
| Location | Sunshine (hours) | | |
| Auckland ^a | 265 | | |
| Tauranga ^b | 295 | | |
| Hamilton ^g | 265 | | |
| Wellington ^d | 189 | | |
| Christchurch ^e | 239 | | |
| Dunedin ^f | 254 | | |

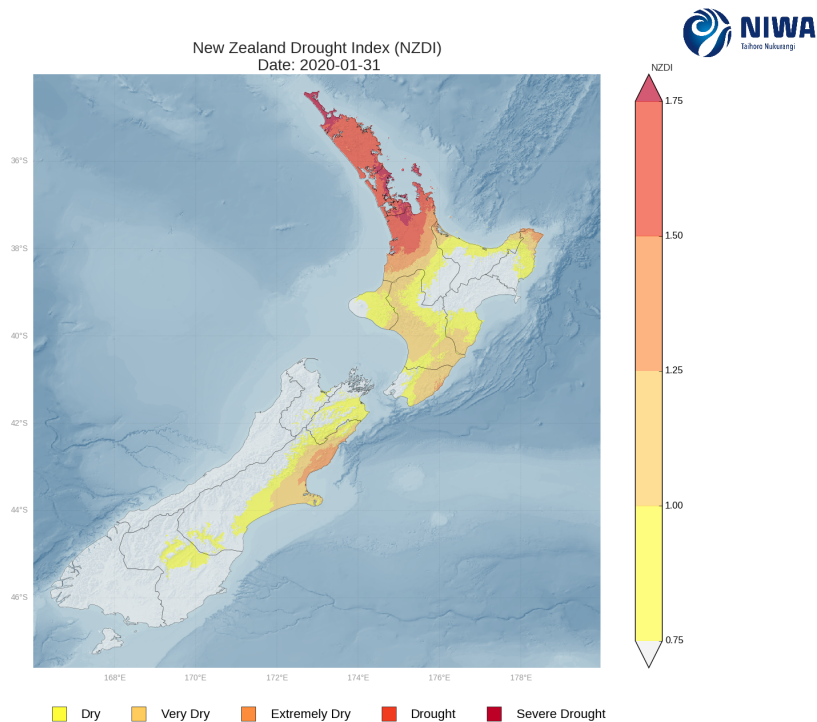
^a Mangere ^b Tauranga Airport ^c Hamilton Airport ^d Kelburn ^e Christchurch Airport ^f Musselburgh ^g Ruakura

Highlights and extreme events

Rain and slips

On 18 January, meteorological drought emerged in Northland, Auckland, and northern Waikato according to NIWA's New Zealand Drought Index.

On 27 January, severe meteorological drought emerged in northern Auckland, Great Barrier Island, southern Northland, and the Aupouri Peninsula according to NIWA's New Zealand Drought Index (see image below as of 31 January).



As of 31 January, many locations across the South Island were experiencing record or near-record long dry spells, including: Takaka (43 days, longest on record), Blenheim (43 days, 2nd-longest on record), Cheviot (42 days, longest on record), Culverden (42 days, 2nd-longest on record), Waiau (42 days, 2nd-longest on record), Rangiora (42 days, 3rd-longest on record), Hanmer Forest (37 days, longest on record).

Water restrictions and fire bans

On 14 January, Fire and Emergency New Zealand issued a total fire band across Northland and a warning for homeowners to protect their homes against wildfire.

On 16 January a total fire ban was issued for Wanaka, Lake Hawea, Omarama, Otematata, Kurow, Naseby, Ranfurly, Alexandra, Clyde, and Cromwell.

As of 17 January, a total watering ban was in place for parts of the Coromandel Peninsula due to extremely dry conditions.

As of 20 January, parts of central and northern Canterbury were on Level 1 and Level 2 water restrictions as a precautionary measure.

As of 23 January, water restrictions were in force across the Far North District and several other towns across Northland due to extremely dry conditions.

On 23 January, the Queenstown Lakes District Council issued a water restriction notice to the residents of Luggate, Otago.

On 23 January, Central Taranaki's continuous dry weather resulted in water restrictions being imposed in the Stratford District.

On 23 January, a sprinkler and irrigation system ban was issued in Tauranga by the Tauranga City Council.

On 27 January, water restrictions and a total fire ban went into place for several communities across the Tasman District due to dry conditions.

On 29 January, a water restriction notice was issued by the Timaru District Council.

On 30 January, a sprinkler restriction was introduced by the Gisborne District Council.

During the final week of January, a total ban on outside watering was put into place across the Wairarapa for the first time in the last decade. The Waingawa River, which feeds Masterton's water supply, dipped below 1100 litres per second, a significant reduction from normal flow. Masterton District Council begins looking at water conservation measures when the river drops below 1,900 litres per second.

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

| Location | Extreme 1-day rainfall (mm) | Date of extreme rainfall | Year records began | Comments |
|---------------|-----------------------------|--------------------------|--------------------|----------|
| None observed | | | | |

Temperatures

After a cool start to the month, many areas experienced well above average temperatures, particularly from 24 January onward. Several areas of high pressure moved from eastern Australia toward New Zealand, dragging hot and humid air across the Tasman Sea. The heat was amplified when a northwesterly foehn air flow descended the Southern Alps as well as the Hawke's Bay and Gisborne ranges.

The highest temperature of the month was 38.2°C, observed at Gisborne on 31 January. This was New Zealand's 5th-hottest January temperature on record as well as the 19th-equal hottest temperature on record for any month.

The lowest temperature of the month was -0.7°C, observed at Hanmer Forest on 15, 16, and 17 January.

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

| Location | Extreme maximum (°C) | Date of extreme temperature | Year records began | Comments |
|-------------------------------------|----------------------|-----------------------------|--------------------|-------------------|
| High records or near-records | | | | |
| Paeroa | 32.2 | 26th | 1947 | Highest |
| Matamata | 32.8 | 26th | 1999 | Highest |
| Taupo | 33.2 | 26th | 1949 | Highest |
| Motu | 31.1 | 31st | 1990 | Highest |
| Hicks Bay | 30.6 | 31st | 1969 | Highest |
| Gisborne | 38.2 | 31st | 1905 | Highest |
| Mahia | 32.6 | 31st | 1990 | Highest |
| Takaka | 34.6 | 28th | 1978 | Highest |
| Puysegur Point | 24.9 | 24th | 1978 | Highest |
| Whitianga | 31.3 | 30th | 1962 | 2nd-highest |
| Te Kuiti | 32.0 | 26th | 1959 | 2nd-highest |
| Wairoa | 36.3 | 31st | 1964 | 2nd-highest |
| Ohakune | 30.1 | 26th | 1962 | 2nd-highest |
| Motueka (Riwaka) | 33.1 | 23rd | 1956 | 2nd-highest |
| Le Bons Bay | 30.7 | 1st | 1984 | 2nd-highest |
| Five Rivers | 30.8 | 24th | 1982 | 2nd-highest |
| Whangaparaoa | 28.9 | 24th | 1982 | 3rd-highest |
| Rotorua | 30.0 | 26th | 1964 | 3rd-highest |
| Lower Retaruke | 31.2 | 26th | 1966 | 3rd-highest |
| Masterton | 34.9 | 28th | 1906 | 3rd-highest |
| Kaikoura | 32.2 | 12th | 1963 | 3rd-highest |
| Ranfurly | 33.2 | 24th | 1897 | 3rd-highest |
| South West Cape | 26.8 | 24th | 1991 | 3rd-highest |
| Whakatane | 32.9 | 31st | 1975 | Equal 3rd-highest |
| Appleby | 30.8 | 31st | 1932 | Equal 3rd-highest |
| Akaroa | 33.2 | 25th | 1978 | Equal 3rd-highest |
| Kerikeri | 31.0 | 31st | 1945 | 4th-highest |
| Kaikohe | 29.4 | 25th | 1973 | 4th-highest |
| Tauranga | 32.2 | 31st | 1913 | 4th-highest |
| Hamilton | 31.2 | 26th | 1946 | 4th-highest |
| Upper Hutt (Trentham) | 30.4 | 26th | 1939 | 4th-highest |
| Farewell Spit | 28.0 | 26th | 1971 | 4th-highest |
| Arapito | 26.9 | 26th | 1978 | 4th-highest |
| Cheviot | 35.1 | 1st | 1982 | 4th-highest |
| Lumsden | 30.6 | 24th | 1982 | 4th-highest |
| Low records or near-records | | | | |
| None observed | | | | |

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

| Location | Extreme minimum (°C) | Date of extreme temperature | Year records began | Comments |
|-------------------------------------|----------------------|-----------------------------|--------------------|------------------|
| High records or near-records | | | | |
| None observed | | | | |
| Low records or near-records | | | | |
| Whanganui | 5.4 | 15th | 1937 | Equal 2nd-lowest |
| Paraparaumu | 3.5 | 15th | 1953 | 3rd-lowest |

Wind

On 6 January, strong winds hit many parts of the country. In Dunedin, a woman was taken to hospital with serious injuries after a tree fell on her at Albany Street. Firefighters attended 45 weather-related incidents in the Dunedin area, with lifting roofs, downed trees and downed powerlines reported. More than 2500 homes had lost power.

On 6 January, a trampoline was blown into a fence and scaffolding blew over in Invercargill when heavy winds affected the region.

On 6 January, strong wind blew down a tree onto a powerline which started a small fire in Renwick (Marlborough).

On 6 January, powerlines were toppled by winds in Manawatu-Whanganui, with more than 7,100 homes suffering power outages particularly in the areas of Taihape, Rongotea, Kairanga, Marton, southern Fielding, Āpiti, Aokautere and Bunnythorpe.

The highest wind gust was 196 km/h, observed at Cape Turnagain on 5 January.

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

| Location | Extreme wind gust (km/h) | Date of extreme gust | Year records began | Comments |
|------------------|--------------------------|----------------------|--------------------|-------------------|
| Secretary Island | 161 | 11th | 1994 | Highest |
| Oamaru | 106 | 30th | 1984 | Highest |
| Gore | 130 | 30th | 1987 | Highest |
| Blenheim | 100 | 6th | 1972 | 2nd-highest |
| Invercargill | 120 | 30th | 1972 | 2nd-highest |
| Manapouri | 85 | 31st | 1991 | Equal 2nd-highest |
| Palmerston North | 95 | 6th | 1991 | 3rd-highest |
| Oamaru | 95 | 31st | 1984 | 3rd-highest |
| Tauranga | 85 | 6th | 1973 | Equal 3rd-highest |
| Clyde | 76 | 11th | 1983 | 4th-highest |
| Winchmore | 89 | 11th | 1970 | Equal 4th-highest |

Cloud and fog

Significant smoke and haze from Australian bushfires affected New Zealand for several days starting 1 January. This peaked in the North Island on 5 January before a southerly change pushed the particulates northward on 6 January.



Australian bushfire smoke as viewed looking beyond Lake Wakatipu to the Remarkables mountain range in Queenstown on 1 January 2020. Picture taken around 9 a.m. Credit – Gregor Macara

On 19-20 January, low cloud and fog disrupted flights at Wellington Airport. More than 30 flights were cancelled out of the capital on 19 January with several more cancellations reported on 20 January. The fog, which settled as low as 200 feet, was associated with a humid air mass and light winds.

Snow and Ice

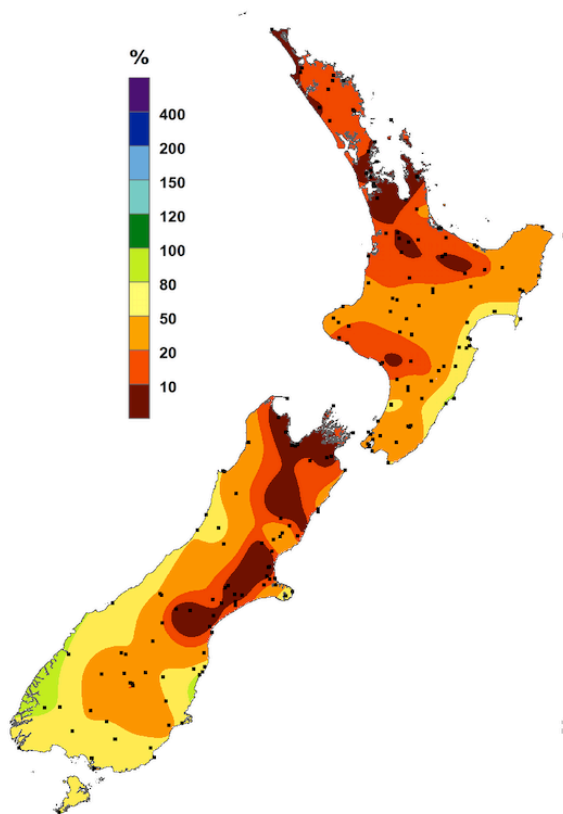
On the morning of 6 January, Southlanders woke to snow on the hilltops (to 1500m) as a January cold snap continued.

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January 2020 rainfall expressed as a percentage of normal (1981-2010 normal).

Below or well below normal rainfall was widespread across New Zealand during January 2020. This was a result of dry, southerly-quarter winds with an area of high pressure frequently near and west of New Zealand.

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

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