

## New Zealand's coldest March in 12 years

<b>Temperature</b>	Temperatures were below average (0.51-1.20°C below average) or well below average (>1.20°C below average) for most of the North Island and South Island, but near average temperatures ( $\pm 0.50^\circ\text{C}$ of average) were observed around Northland, East Cape, Tasman, Nelson, most of Marlborough, and north Canterbury.
<b>Rainfall</b>	Rainfall was below normal (50-79% of normal) or well below normal (<50% of normal) for the northern, eastern, and southern regions of the North Island, as well as much of the central and northern South Island. Above normal rainfall (120-149% of normal) was observed in parts of Waikato, Fiordland, and Southland, with near normal rainfall (80-119% of normal) also in parts of Waikato, Fiordland, and Southland.
<b>Soil Moisture</b>	At the end of March, soil moisture levels were lower than normal for much of the North Island excluding Waikato, along with the northern, central and eastern regions of the South Island. Soil moisture levels were above average in the southern South Island and a small area of Waikato. Elsewhere, soil moisture levels were near normal.

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

[Overview](#)

[Temperature](#)

[Rainfall](#)

[March 2024 climate in the six main centres](#)

[Highlights and extreme events](#)

### Overview

March 2024's nationwide mean temperature was  $14.8^\circ\text{C}$ ,  $0.99^\circ\text{C}$  below average and Aotearoa New Zealand's most unusually cold month in since January 2014, according to NIWA's seven station temperature series which begins in 1909. It was also the coldest March since 2012. Since the start of 2014, there have only been 8 months during which the nationwide mean temperature was below average (more than  $0.50^\circ\text{C}$  below the monthly average) – or 8 out of a possible 123 months.

The chilly month was driven by a double-barrel low pressure anomaly south and east of New Zealand working in tandem with a high pressure area in the Tasman Sea to produce a southwesterly wind flow anomaly across the country. The pattern was a result of a stronger-than-normal and northerly-displaced polar jet stream. The sub-tropical jet was also positioned north of its climatological position, which meant that tropical air masses were largely absent from New Zealand. The pattern was consistent with a waning El Niño event in the equatorial Pacific Ocean.

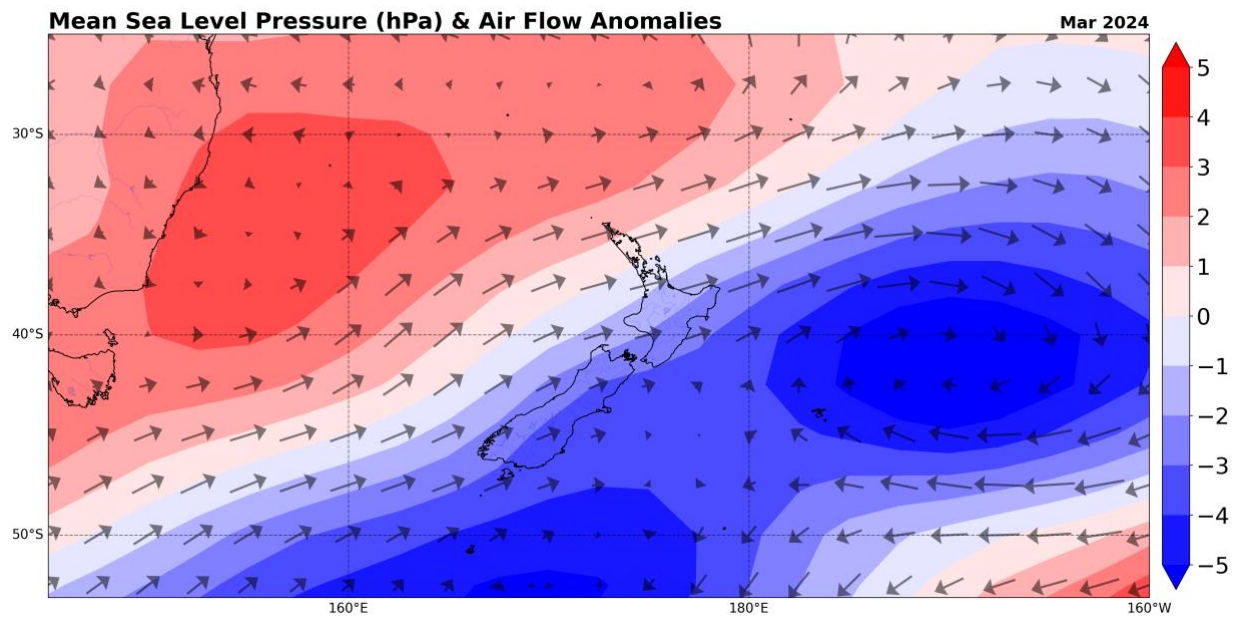


Figure 1: March 2024 mean sea level pressure and airflow as a difference from the 1991-2020 long-term normal (data: NOAA/NCEP)

#### Further Highlights:

- The highest temperature was 32.6°C, observed at Clyde on 2 March.
- The lowest temperature was -4.9°C, observed at Waipara North on 16 March.
- The highest 1-day rainfall was 117 mm, recorded at Milford Sound on 25 March.
- The highest wind gust was 178 km/h, observed at Cape Turnagain on 26 March.
- Of the six main centres in March 2024, Auckland was the warmest, Dunedin was the coolest and least sunny, Christchurch was the driest, Hamilton was the wettest, and Tauranga was the sunniest.
- Of the available, regularly reporting sunshine observation sites, the sunniest four locations so far in 2024 are wider Nelson (869 hours), Marlborough (867 hours), Tasman (851 hours), and Taranaki (843 hours).

#### For further information, please contact:

Tristan Meyers  
 Analytical Meteorologist, NIWA Wellington  
 Tel. 04 386 0906

---

## Temperature: The most unusually cold month in over 10 years

Frequent cold fronts during March sustained unusually cold and windy weather. More than 25 locations experienced record-breaking or near-record low mean temperatures for March, with 21 locations setting records or near records for daytime maximums, and 28 locations for overnight minimums.

### Record<sup>1</sup> or near-record mean air temperatures for March were recorded at:

Location	Mean air temp. (°C)	Departure from normal (°C)	Year records began	Comments
<b>High records or near-records</b>				
None observed				
<b>Low records or near-records</b>				
Pukekohe	14.4	-3.5	1969	Lowest
Lower Retaruke	13.0	-3.0	1966	Lowest
Taumarunui	13.8	-2.2	1947	Lowest
Te Kuiti	14.8	-2.2	1959	Lowest
Tūrangi	12.9	-1.9	1968	Lowest
Rotorua	14.0	-2.1	1964	2nd-lowest
Matamata	15.2	-1.6	1999	2nd-lowest
Secretary Island	12.5	-1.6	1985	2nd-lowest
Mt Ruapehu	9.6	-1.4	2000	2nd-lowest
South West Cape	11.1	-1.2	1991	2nd-lowest
Waikeria	14.7	-2.4	1957	3rd-lowest
Waiouru	10.3	-2.1	1962	3rd-lowest
Hamilton Airport	15.3	-1.8	1946	3rd-lowest
Manapouri (West Arm Jetty)	10.5	-1.8	1971	3rd-lowest
Te Anau	10.6	-1.7	1963	3rd-lowest
Port Taharoa	17.0	-1.4	1973	3rd-lowest
Warkworth	16.2	-1.3	1966	3rd-lowest
Windsor	12.3	-1.3	2000	3rd-lowest
Tautuku	11.6	-1.2	1976	3rd-lowest
Whakatu	15.3	-0.9	1965	3rd-lowest
Waipounamu	11.8	-0.7	1980	3rd-lowest
Ōkārīto	13.0	-1.7	1982	4th-lowest
Christchurch (Riccarton)	14.5	-1.1	2002	4th-lowest
Mokohinau Island	19.0	-0.6	1994	4th-lowest
Oamaru	12.4	-0.6	1967	4th-lowest

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

Location	Mean maximum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
<b>High records or near-records</b>				

<sup>1</sup> The rankings (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> 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.

Purerua	23.3	1.1	1983	4th-highest
<b>Low records or near-records</b>				
Pukekohe	19.0	-3.6	1969	Lowest
Te Anau	15.5	-2.9	1963	Lowest
Lower Retaruke	20.0	-2.1	1966	2nd-lowest
Port Taharoa	20.2	-2.0	1973	2nd-lowest
Secretary Island	15.6	-1.6	1985	2nd-lowest
South West Cape	13.6	-1.2	1991	2nd-lowest
Raoul Island	25.9	0.6	1991	3rd-highest
Hamilton Airport	20.8	-2.3	1946	3rd-lowest
Taumarunui	20.4	-2.3	1947	3rd-lowest
Waikeria	21.3	-2.3	1957	3rd-lowest
Waiouru	15.6	-2.3	1962	3rd-lowest
Manapouri (West Arm Jetty)	14.7	-2.1	1971	3rd-lowest
Ōkārīto	17.0	-2.0	1982	3rd-lowest
Matamata	21.3	-1.9	1999	3rd-lowest
Waipounamu	17.5	-1.0	1980	3rd-lowest
Campbell Island	10.0	-0.9	1991	3rd-lowest
Taupō	18.8	-1.9	1949	4th-lowest
Tūrangi	19.3	-1.9	1968	4th-lowest
Rotorua	19.4	-1.7	1964	4th-lowest
Mt Ruapehu	14.9	-1.3	2000	4th-lowest

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

Location	Mean minimum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
<b>High records or near-records</b>				
None observed				
<b>Low records or near-records</b>				
Lower Retaruke	5.9	-3.9	1966	Lowest
Whakatu	7.7	-2.9	1965	Lowest
Cromwell	5.3	-2.5	1949	Lowest
Te Kuiti	8.2	-2.5	1959	Lowest
Taumarunui	7.1	-2.2	1947	Lowest
Clyde	4.8	-2.0	1978	Lowest
Tūrangi	6.5	-1.9	1968	Lowest
Pukaki	3.8	-1.8	1972	Lowest
Orari	6.5	-2.1	1972	2nd-lowest
Appleby	7.6	-1.4	1932	2nd-lowest
Waiau	7.3	-1.1	1974	2nd-lowest
Pukekohe	9.9	-3.4	1969	3rd-lowest
Kawerau	10.2	-2.1	1954	3rd-lowest
Mt Cook Airport	4.2	-2.0	1929	3rd-lowest
Warkworth	10.8	-2.0	1966	3rd-lowest
Windsor	5.7	-2.0	2000	3rd-lowest
Medbury	6.2	-1.9	1927	3rd-lowest
Winchmore	6.7	-1.9	1949	3rd-lowest
Mt Ruapehu	4.3	-1.5	2000	3rd-lowest

Raoul Island	18.5	-1.5	1991	3rd-lowest
Purerua	13.7	-1.4	1983	3rd-lowest
Takapau Plains	8.1	-1.4	1962	3rd-lowest
Tautuku	7.0	-1.3	1976	3rd-lowest
South West Cape	8.6	-1.2	1991	3rd-lowest
Campbell Island	5.6	-1.1	1991	3rd-lowest
Hastings	9.2	-2.6	1965	4th-lowest
Rotorua	8.6	-2.5	1964	4th-lowest
Secretary Island	9.3	-1.8	1985	4th-lowest
Tākaka	8.2	-1.8	1978	4th-lowest
Waiouru	5.1	-1.8	1962	4th-lowest
Blenheim Airport	8.0	-1.5	1932	4th-lowest
Martinborough	8.7	-1.5	1986	4th-lowest
Whangārei	11.7	-1.5	1967	4th-lowest
Le Bons Bay	9.5	-1.4	1984	4th-lowest
Matamata	9.1	-1.4	1999	4th-lowest
Oamaru	7.7	-1.4	1967	4th-lowest
Mokohinau Island	16.8	-0.7	1994	4th-lowest
Waipounamu	6.1	-0.5	1980	4th-lowest

## Rainfall: An extended dry period for many areas

During March, there was a lack of moisture-laden low pressure systems. This was due to higher than normal air pressure to the northwest of New Zealand, effectively disrupting the atmospheric connection with the tropics and subtropics. Consequently, although there were frequent fronts, they brought less precipitation than usual.

As a result, many areas experienced significant dry spells. Napier and Hicks Bay observed 31 dry days, as they recorded their 2<sup>nd</sup> driest and driest March on record, respectively. Meanwhile, an astounding 32 locations observed over 25 dry days in March, including Kerikeri, Gisborne, Blenheim, Kaikoura, Christchurch, Nelson, and Masterton.

No locations on the New Zealand mainland observed a record wet March, and there were no locations that observed any record extreme 1-day rainfall totals.

### Record or near-record March rainfall totals were recorded at:

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
<b>High records or near-records</b>				
Campbell Island	198	160	1992	Equal 3rd-highest
<b>Low records or near-records</b>				
Hick's Bay	0	0	1916	Lowest
Christchurch (Riccarton)	17	38	2002	2nd-lowest
Napier	2	3	1870	2nd-lowest
Tākaka	24	18	1976	2nd-lowest
Purerua	18	19	1983	3rd-lowest
Waipara West	10	23	1973	3rd-lowest
Waipawa	11	19	1945	3rd-lowest

Mokohinau Island	18	21	1994	4th-lowest
Mt Ruapehu	75	46	2000	4th-lowest

---

## March climate in the six main centres

None of the main centres experienced a warmer than average March, while five of the six main centres were cooler than average or much cooler than average. Hamilton and Tauranga experienced its coldest March since 2004 and Auckland since 2012. Four of the six main centres also experienced a drier than normal or much drier than normal month. Meanwhile, Hamilton was much wetter than normal. Of the six main centres in March 2024, Auckland was the warmest, Dunedin was the coolest and least sunny, Christchurch was the driest, Hamilton was the wettest, and Tauranga was the sunniest.

### March 2024 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland <sup>a</sup>	17.6	-1.1	Below average
Tauranga <sup>b</sup>	17.5	-1.0	Below average
Hamilton <sup>c</sup>	15.3	-1.8	Well below average
Wellington <sup>d</sup>	17.4	+0.1	Near average
Christchurch <sup>e</sup>	13.7	-1.2	Below average
Dunedin <sup>f</sup>	13.0	-0.9	Below average
Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland <sup>a</sup>	67	75	Below normal
Tauranga <sup>b</sup>	53	56	Well below normal
Hamilton <sup>c</sup>	155	193	Well above normal
Wellington <sup>d</sup>	42	50	Below normal
Christchurch <sup>e</sup>	19	41	Well below normal
Dunedin <sup>f</sup>	52	96	Near normal
Sunshine			
Location	Sunshine (hours)		
Auckland <sup>a</sup>	210		
Tauranga <sup>b</sup>	236		
Hamilton <sup>g</sup>	207		
Wellington <sup>d</sup>	221		
Christchurch <sup>e</sup>	213		
Dunedin <sup>f</sup>	197		

<sup>a</sup> Māngere <sup>b</sup> Tauranga Airport <sup>c</sup> Hamilton Airport <sup>d</sup> Kelburn <sup>e</sup> Christchurch Airport <sup>f</sup> Musselburgh <sup>g</sup> Ruakura

---

## Highlights and extreme events

### Rain and slips

The highest 1-day rainfall was 117 mm, recorded at Milford Sound on 25 March.

Heavy showers and isolated thunderstorms caused bursts of heavy rainfall on 4 and 5 March. Hamilton Airport and Ohakune observed 21 mm within an hour, while Whanganui recorded 17 mm within an hour on the afternoon of 4 March. Blenheim also observed 21 mm on the morning of 4 March.

A strong cold front hit the South Island on 25 March, resulting in heavy rainfall rates for parts of the west. Milford Sound observed 30 mm in an hour, the heaviest hourly rainfall rate in Milford Sound since January, and the heaviest March hourly rainfall rate for Milford Sound in 5 years.

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

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

### Drought and dryness

On 14 March, Agriculture Minister Todd McClay classified the drought conditions in the Marlborough, Tasman, and Nelson districts as a medium-scale adverse event, following months of low rainfall and acknowledging the challenging conditions facing farmers and growers in the district.

Two weeks later on 28 March, the medium-scale adverse event was extended to parts of the North Island, including Northland, Taranaki, Horizons, Greater Wellington, and Wairarapa.

By the end of the month, meteorological drought had developed for parts of the Far North according to the New Zealand Drought Index. Dry and very dry conditions remained for parts of Nelson, Tasman, Marlborough, Canterbury, Wellington, and Hawke's Bay.

### Temperatures

The highest temperature was 32.6°C, observed at Clyde on 2 March.

The lowest temperature was -4.9°C, observed at Waipara North on 16 March.

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

Location	Extreme maximum (°C)	Date of extreme temperature	Year records began	Comments
<b>High records or near-records</b>				
Purerua	26.8	1st	1983	Highest
Pukaki	30.8	2nd	1972	2nd-highest
Middlemarch	31.8	2nd	2000	2nd-highest
Clyde	32.6	2nd	1978	Equal 2nd-highest
Waipounamu	27.9	2nd	1980	3rd-highest
Motu	27.0	13th	1990	3rd-highest
<b>Low records or near-records</b>				
Campbell Island	6.3	26th	1991	Equal lowest



Pukekohe	15.4	15th	1969	2nd-lowest
Māhia	13.6	29th	1990	2nd-lowest
Tūrangi	13.1	23rd	1968	3rd-lowest
Secretary Island	11.3	28th	1989	3rd-lowest
Waipounamu	9.7	5th	1980	3rd-lowest
Port Taharoa	17.4	15th	1974	Equal 4th-lowest

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

Location	Extreme minimum (°C)	Date of extreme temperature	Year records began	Comments
<b>High records or near-records</b>				
None observed				
<b>Low records or near-records</b>				
Appleby	0.1	16th	1932	Lowest
Whakatu	1.4	17th	1965	Lowest
Martinborough	0.6	21st	1986	Lowest
Whangārei	5.0	21st	1967	2nd-lowest
Māhia	7.4	30th	1990	2nd-lowest
Waiau	-0.5	20th	1974	Equal 2nd-lowest
Tūrangi	-2.0	21st	1968	Equal 2nd-lowest
Middlemarch	-2.6	10th	2000	3rd-lowest
Christchurch (Riccarton)	1.8	16th	2002	3rd-lowest
Pururu	9.2	17th	1983	3rd-lowest
Mt Ruapehu	-1.9	21st	2000	3rd-lowest
Rotorua	1.0	21st	1964	3rd-lowest
Christchurch Airport	-0.8	29th	1863	3rd-lowest
Franz Josef	1.3	29th	1953	3rd-lowest
Hicks Bay	6.9	30th	1969	3rd-lowest
Whakatāne	2.6	30th	1975	3rd-lowest
Oamaru	1.3	16th	1967	Equal 3rd-lowest
South West Cape	4.5	28th	1991	Equal 3rd-lowest
Kawerau	3.3	30th	1954	Equal 3rd-lowest
Pukaki	-3.8	16th	1972	4th-lowest
Reefton	0.1	16th	1960	4th-lowest
Waimate	1.0	16th	1908	4th-lowest
Kaikohe	7.5	17th	1973	4th-lowest
Taumarunui	-1.2	20th	1947	4th-lowest
Te Kuiti	1.2	20th	1959	4th-lowest
Warkworth	4.8	21st	1966	4th-lowest
Port Taharoa	7.4	30th	1973	4th-lowest
Mokohinau Island	14.3	31st	1994	4th-lowest
Whitianga	2.4	31st	1962	4th-lowest

**Wind**

The highest wind gust was 178 km/h, observed at Cape Turnagain on 26 March.

A series of powerful cold fronts crossed New Zealand in early March. Between 4 and 5 March, gusts reached as high as 111 km/h at Wellington Airport, 105 km/h at Kelburn, 107 km/h at Waipara West, 100 km/h at Le Bons Bay, as well as a 144 km/h wind gust at Mount Cook Airport. A truck's trailer was blown over due to the wind on Remutaka Hill. NZTA warned Auckland commuters to take care on the Harbour Bridge due to high winds.

On the same day, powerful straight-line winds associated with thunderstorms destroyed a roof, sent garbage cans flying, and damaged trees in Greymouth.

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

Location	Extreme wind gust (km/h)	Date of extreme gust	Year records began	Comments
Mt Cook Airport	145	4th	2000	Highest
South West Cape	176	10th	1991	2nd-highest
Alexandra	87	11th	2001	2nd-highest
Puysegur Point	152	25th	1986	2nd-highest
Port Taharoa	104	5th	1978	2nd-highest
Gore	107	10th	1987	3rd-highest
Kaikohe	78	4th	1986	3rd-highest
Whakatāne	82	4th	1974	3rd-highest
Clyde	70	10th	1983	4th-highest
Upper Hutt (Trentham)	81	25th	1999	4th-highest
Dannevirke	78	26th	1961	4th-highest
Whatawhata	72	4th	2003	4th-highest
Tara Hills	83	4th	1985	4th-highest

**Hail**

On the morning of 5 March, a band of heavy showers brought pea-sized hail to Christchurch around the time of the morning commute, seen in Photo 1.

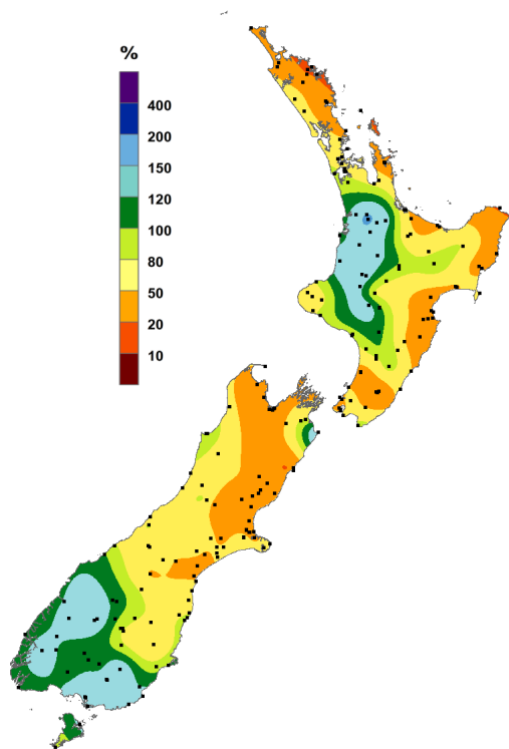


*Photo 1: Hail in Christchurch on 5 March.*

---

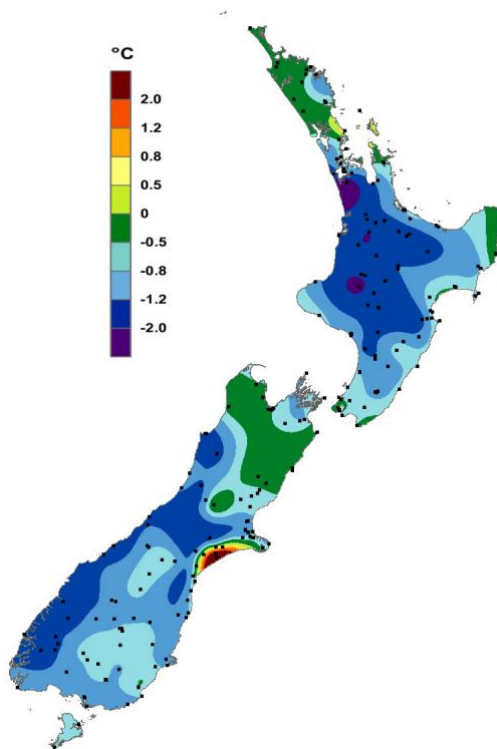
**For further information, please contact:**

**Tristan Meyers** | Analytical Meteorologist, NIWA Wellington | Tel. 04 386 0906



### March rainfall

Expressed as a percentage of the 1991-2020 normal.



### March temperature

Expressed as a departure from the 1991-2020 average in degrees Celsius. Note: there is a known issue with the climate station Wakanui 2 CWS, which has caused a "bullseye" of warmer than average conditions along the Canterbury Bight. This is being fixed and the erroneous observations have been removed from the National Climate Database.

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

© Copyright NIWA 2024

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.