

## Warm start to winter for much of the country

<b>Temperature</b>	It was New Zealand's fifth-warmest June on record. Temperatures were above average (0.51-1.20°C above average) or well above average (>1.20°C above average) throughout the North Island, as well as northern, central and western parts of the South Island. Temperatures were typically near average ( $\pm 0.50^\circ\text{C}$ of average) for the remainder of the South Island.
<b>Rainfall</b>	Rainfall was above normal (120-149% of normal) or well above normal (>149% of normal) for parts of Northland, Auckland, Bay of Plenty, Gisborne, Hawke's Bay, western Taranaki, Wellington, eastern Canterbury, and inland parts of Otago. Rainfall was below normal (50-79% of normal) or well below normal (<50% of normal) for southern, western and northwestern parts of the South Island, inland parts of Manawatu and Whanganui, and western parts of Waikato.
<b>Soil Moisture</b>	At the end of the month, soil moisture levels were lower than normal for eastern and inland parts of Otago, south Canterbury, and inland parts of Manawatu and Whanganui. Near normal soil moisture levels were typical for the remainder of the country.

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### Overview

June 2020 mean sea level air pressure was above normal in the southwest Pacific region, including over New Zealand. This was associated with more northeasterly air flows than usual over New Zealand. The pattern was La Niña-like in nature, in response to cooling ocean temperatures in the east-central equatorial Pacific. The prevalence of northeasterly winds meant it was a warm start to winter for many parts of the country. Temperatures were above average (0.51-1.20°C above average) or well above average (>1.20°C above average) throughout the North Island, as well as in Nelson, Tasman, West Coast, northern Marlborough, most of Canterbury and western Southland. Temperatures were typically near average ( $\pm 0.50^\circ\text{C}$  of average) for inland, eastern and southern parts of Otago and Southland. Overall, the nationwide average temperature in June 2020 was 10.0°C. This was 1.4°C above the 1981-2010 June average, making it New Zealand's fifth-warmest June since NIWA's seven station temperature series began in 1909.

There were considerable spatial differences in monthly rainfall totals observed over the country in June. The heaviest rainfall events were associated with a subtropical low pressure system delivering rain from an easterly-quarter wind direction. In the North Island, rainfall was above normal (120-149% of normal) or well above normal (>149% of normal) for parts of Northland, Auckland, Bay of Plenty, Gisborne, Hawke's Bay, western Taranaki, the Kapiti Coast and Wellington. In contrast, rainfall was below normal (50-79% of normal) for inland parts of Manawatu and Whanganui, and western Waikato. For the South Island, rainfall was above normal or well above normal for eastern parts of Canterbury and inland parts of Otago. It was a dry month for Nelson, Tasman, West Coast, coastal Southland, as well as northern and southern parts of Otago, where rainfall was below normal (50-79% of normal) or well below normal (<50% of normal). By the end of June, soils were drier than normal in eastern and inland parts of Otago, south Canterbury, and inland parts of Manawatu and Whanganui. Soil moisture levels were typically near normal for remaining parts of the country.

**Further Highlights:**

- The highest temperature was 23.0°C, observed at Akaroa on 16 June.
- The lowest temperature was -12.3°C, observed at Middlemarch on 14 June.
- The highest 1-day rainfall was 98 mm, recorded at Paeroa on 24 June.
- The highest wind gust was 167 km/h, observed at Cape Turnagain on 12 June.
- Of the six main centres in June 2020, Auckland was the warmest and sunniest, Tauranga was the wettest, Christchurch was the coldest, Dunedin 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 (1424 hours), Taranaki (1383 hours), Greater Nelson (1358 hours) and Marlborough (1283 hours).

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## Temperature: A very warm month for much of the country

Winter got off to a very warm start in New Zealand – it was New Zealand's fifth-warmest June on record. For every ten locations monitored in the monthly climate summaries, nine observed either above or well above average mean temperatures. It was exceptionally warm in parts of Waikato, Bay of Plenty, Manawatu, Kapiti Coast, Nelson, Tasman and the Mackenzie Basin where mean temperatures were at least 2°C higher than usual. The nationwide average temperature in June 2020 was 10.0°C. This was 1.4°C above the 1981-2010 June average from NIWA's seven station temperature series which begins in 1909. It has now been 41 consecutive months since New Zealand experienced a nationwide temperature that was below average.

June mean temperatures were near average in several Otago and Southland locations – this was largely a result of cooler than usual night-time temperatures. Mean minimum temperatures at Middlemarch and Dunedin Airport were 2.3°C and 1.9°C below average, respectively.

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

Location	Mean air temp. (°C)	Departure from normal (°C)	Year records began	Comments
<b>High records or near-records</b>				
Whakatane	12.3	2.4	1974	Highest
Rotorua	10.7	2.2	1964	Highest
Waipawa	9.9	1.7	1945	Highest
Wairoa	12.5	2.5	1964	Highest
Palmerston North	11.7	2.4	1928	Highest
Takaka	10.7	2.3	1978	Highest
Farewell Spit	13.8	3.3	1971	Highest
Arapito	11.3	2.2	1978	Highest
Medbury	7.5	1.6	1927	Highest
Paeroa	13.0	2.5	1947	2nd-highest
Motu	8.7	2.2	1990	2nd-highest
Taumarunui	10.2	2.1	1947	2nd-highest
Martinborough	10.4	1.8	1986	2nd-highest
Hicks Bay	13.7	1.8	1969	2nd-highest
Hastings	10.9	2.1	1965	2nd-highest
Westport	11.2	1.9	1937	2nd-highest
Puysegur Point	9.9	1.3	1978	2nd-highest
Motueka	9.6	2.0	1956	2nd-highest
Appleby	9.6	1.5	1932	2nd-highest
Nelson	10.5	2.4	1862	2nd-highest
Whitianga	12.9	1.8	1962	3rd-highest
Te Puke	11.6	1.6	1973	3rd-highest
Hamilton (Ruakura)	11.7	2.1	1906	3rd-highest
Port Taharoa	13.7	1.8	1973	3rd-highest
Levin	11.3	2.0	1895	3rd-highest
Porirua	10.9	1.1	1968	3rd-highest
Leigh	14.7	1.3	1966	4th-highest
Auckland (Whenuapai)	12.5	1.3	1945	4th-highest
Tauranga	12.8	1.8	1913	4th-highest
Te Kuiti	11.1	1.8	1959	4th-highest
Turangi	9.0	1.6	1968	4th-highest
New Plymouth	12.1	1.5	1944	4th-highest
Lower Retaruke	9.7	1.6	1966	4th-highest
Dannevirke	10.2	1.7	1951	4th-highest
Gisborne	12.1	1.7	1905	4th-highest
Mahia	12.2	1.4	1990	4th-highest
Waiouru	6.9	2.0	1962	4th-highest
Waiau	7.1	1.4	1974	4th-highest

<sup>1</sup> 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.

Akaroa	9.7	1.6	1978	4th-highest
South West Cape	8.9	1.1	1991	4th-highest
<b>Low records or near-records</b>				
None observed				

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

Location	Mean maximum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
<b>High records or near-records</b>				
Whakatane	16.7	1.5	1974	Highest
Rotorua	14.6	2.0	1964	Highest
Hamilton (Ruakura)	16.8	2.5	1906	Highest
Te Kuiti	16.3	2.4	1959	Highest
Ohakune	12.5	2.5	1962	Highest
Farewell Spit	17.4	3.4	1971	Highest
Westport	15.3	2.2	1937	Highest
Arapito	15.8	2.3	1978	Highest
Reefton	12.9	2.8	1960	Highest
Greymouth	14.5	2.0	1947	Highest
Appleby	15.3	1.9	1932	Highest
Whangarei	17.7	1.4	1967	2nd-highest
Leigh	18.2	2.2	1966	2nd-highest
Taumarunui	14.8	2.0	1947	2nd-highest
Turangi	13.6	1.6	1968	2nd-highest
Waipawa	15.3	2.2	1945	2nd-highest
Levin	15.4	2.1	1895	2nd-highest
Takaka	16.1	2.0	1978	2nd-highest
Hokitika	14.3	2.0	1866	2nd-highest
Milford Sound	11.6	2.2	1934	2nd-highest
Puysegur Point	12.4	1.5	1978	2nd-highest
Motueka	15.1	1.8	1956	2nd-highest
Whangaparaoa	16.3	1.2	1982	3rd-highest
Whitianga	17.3	1.7	1962	3rd-highest
New Plymouth	15.5	1.4	1944	3rd-highest
Porirua	14.4	1.2	1968	3rd-highest
Haast	13.2	1.6	1949	3rd-highest
Medbury	12.7	1.1	1927	3rd-highest
Auckland (Whenuapai)	16.6	1.2	1945	4th-highest
Tauranga	16.6	1.5	1913	4th-highest
Auckland (Mangere)	16.8	1.6	1959	4th-highest
Martinborough	14.8	1.5	1986	4th-highest
Wairoa	17.1	2.2	1964	4th-highest
Palmerston North	15.0	1.8	1928	4th-highest
South West Cape	10.8	1.0	1991	4th-highest
<b>Low records or near-records</b>				
None observed				

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

Location	Mean minimum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
<b>High records or near-records</b>				
Whakatane	7.9	3.3	1974	Highest
Motu	4.9	2.9	1990	Highest
Hicks Bay	11.1	2.3	1969	Highest
Wairoa	7.8	2.7	1964	Highest
Palmerston North	8.4	3.1	1928	Highest
Farewell Spit	10.2	3.2	1971	Highest
Lincoln	4.3	2.5	1881	Equal highest
Whitianga	8.7	2.0	1962	2nd-highest
Paeroa	9.6	3.6	1947	2nd-highest
Te Puke	7.7	2.6	1973	2nd-highest
Taupo	6.0	2.9	1949	2nd-highest
Port Taharoa	11.3	2.5	1973	2nd-highest
Masterton	5.5	3.0	1906	2nd-highest
Martinborough	6.1	2.1	1986	2nd-highest
Gisborne	7.7	2.6	1905	2nd-highest
Hastings	6.0	2.9	1965	2nd-highest
Mahia	10.0	1.7	1990	2nd-highest
Waiouru	3.7	2.4	1962	2nd-highest
Medbury	2.4	2.3	1927	2nd-highest
Cheviot	3.0	2.1	1982	2nd-highest
Rotorua	6.8	2.5	1964	3rd-highest
Dannevirke	6.7	2.1	1951	3rd-highest
Porirua	7.4	1.1	1968	3rd-highest
Secretary Island	8.2	1.3	1985	3rd-highest
Puysegur Point	7.5	1.2	1978	3rd-highest
Motueka	4.2	2.4	1956	3rd-highest
Dargaville	10.3	1.4	1943	4th-highest
New Plymouth	8.8	1.7	1944	4th-highest
Lower Retaruke	5.4	1.9	1966	4th-highest
Nelson	6.2	2.8	1862	4th-highest
Blenheim	5.3	2.0	1932	4th-highest
Cape Campbell	9.2	1.3	1953	4th-highest
Waiau School	1.9	2.0	1974	4th-highest
Akaroa	6.4	2.9	1978	4th-highest
<b>Low records or near-records</b>				
Clyde	-2.7	-1.7	1978	3rd-lowest

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## Rainfall: A wet month for northern and eastern parts of the North Island

Northern and eastern parts of the North Island observed a relatively wet June, although it was notable that most of this rain fell during the latter stages of the month. The period of heavy rainfall was a welcome change after many consecutive dry months created drought and water storage concerns. Despite the ample June rainfall in and around Auckland, the city has only received half of its usual rainfall for the six-month period from January to June this year. It was a particularly wet month in Te Puke, which received 349 mm of rain during June. This was 50 mm higher than the total rain Te Puke received over the previous five months (299 mm from January to May 2020).

It was a dry month for many parts of the South Island, especially in West Coast where rainfall was typically less than half of normal for the time of year. Reefton received just 38% of normal rainfall, while rainfall in Hokitika was 42% of normal.

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

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
High records or near-records				
Te Puke	349	207	1973	3rd-highest
Wellington (Airport)	188	187	1958	4th-highest
Low records or near-records				
Arapito	99	45	1978	3rd-lowest

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## June climate in the six main centres

June was very warm and wet compared to usual in Tauranga, where the mean temperature was 1.8°C higher than average, and rainfall was 229% of normal. Christchurch's total sunshine of 76 hours was just 65% of normal for June, making it the city's fourth-lowest sunshine total since records began in 1930. It was also a gloomy month in Wellington, which received just 69 hours of sunshine – an average of barely more than two hours per day. Of the six main centres in June 2020, Auckland was the warmest and sunniest, Tauranga was the wettest, Christchurch was the coldest, Dunedin was the driest and Wellington was the least sunny.

### June 2020 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland <sup>a</sup>	13.2	+1.4	Well above average
Tauranga <sup>b</sup>	12.8	+1.8	Well above average
Hamilton <sup>c</sup>	11.1	+1.7	Well above average
Wellington <sup>d</sup>	10.6	+0.9	Above average
Christchurch <sup>e</sup>	7.4	+1.0	Above average
Dunedin <sup>f</sup>	7.6	+0.3	Near average
Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland <sup>a</sup>	140	118	Near normal
Tauranga <sup>b</sup>	262	229	Well above normal
Hamilton <sup>c</sup>	111	88	Near normal
Wellington <sup>d</sup>	167 <sup>2</sup>	121	Above normal
Christchurch <sup>e</sup>	106	183	Well above normal
Dunedin <sup>f</sup>	68	118	Near normal
Sunshine			
Location	Sunshine (hours)		
Auckland <sup>a</sup>	132		
Tauranga <sup>b</sup>	116		
Hamilton <sup>g</sup>	88		
Wellington <sup>d</sup>	69 <sup>3</sup>		
Christchurch <sup>e</sup>	76		
Dunedin <sup>f</sup>	98		

<sup>a</sup> Mangere <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

<sup>2</sup> Missing two days of data.

<sup>3</sup> Missing one day of data.

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## Highlights and extreme events

### Temperatures

On 14 June, a heavy frost was observed in many parts of the South Island with very low overnight minimum temperatures. Between 8-9 a.m., Middlemarch got as low as -12.3°C – New Zealand’s lowest June temperature since 2015. At the same time on 15 June (8-9 a.m.), the temperature got as high as 17.0°C in Middlemarch – a remarkable difference of 29.3°C. On 15 June, the temperature was as low as -8.0°C in Middlemarch between 1-2 a.m., but reached as high as 15.8°C between 4-5 a.m., a temperature change of 23.8°C in approximately three hours, which is all the more impressive given there isn’t any sunshine at that time of day to contribute to the warming.

On 16 and 17 June, parts of the eastern South Island observed near-record high June temperatures. The warmth was associated with warm northerly winds and clear skies bringing ample sunshine.

The highest temperature was 23.0°C, observed at Akaroa on 16 June.

The lowest temperature was -12.3°C, observed at Middlemarch on 14 June.

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

Location	Extreme maximum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Whakatane	20.9	2nd	1975	Highest
Motu	19.6	2nd	1990	Highest
Port Taharoa	20.5	22nd	1973	Highest
Porirua	19.4	27th	1968	Highest
Farewell Spit	19.4	2nd	1971	Highest
Puysegur Point	17.7	14th	1978	Highest
Akaroa	23.0	16th	1978	Equal highest
Rotorua	18.5	1st	1964	2nd-highest
Te Kuiti	20.7	22nd	1959	2nd-highest
Westport	18.4	24th	1937	2nd-highest
Arapito	19.4	19th	1978	2nd-highest
Motueka	21.0	2nd	1956	2nd-highest
Brothers Island	17.7	9th	1997	2nd-highest
Hanmer Forest	21.5	16th	1906	2nd-highest
Medbury	21.3	16th	1927	2nd-highest
Tara Hills	17.6	16th	1949	2nd-highest
Ranfurly	18.4	17th	1897	2nd-highest
Lumsden	18.3	16th	1982	2nd-highest
Cheviot	22.7	16th	1982	3rd-highest
Five Rivers	18.2	16th	1982	3rd-highest
South West Cape	16.4	15th	1991	3rd-highest
Turangi	18.0	2nd	1968	4th-highest
Waipawa	22.0	4th	1945	4th-highest
Appleby	19.6	2nd	1932	4th-highest
Waiau	21.6	17th	1974	4th-highest



Le Bons Bay	19.9	16th	1984	4th-highest
Milford Sound	16.6	14th	1934	Equal 3rd-highest
Rangiora	22.1	16th	1965	Equal 4th-highest
Lake Tekapo	17.3	16th	1925	Equal 4th-highest
Manapouri	16.2	15th	1963	Equal 4th-highest
<b>Low records or near-records</b>				
None observed				

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

Location	Extreme minimum (°C)	Date of extreme temperature	Year records began	Comments
<b>High records or near-records</b>				
Puysegur Point	13.3	16th	1978	Highest
South West Cape	12.2	16th	1991	Highest
Secretary Island	13.2	17th	1988	2nd-highest
Mt Cook (Airport)	10.3	17th	1929	2nd-highest
Te Anau	11.0	17th	1973	2nd-highest
Porirua	13.1	12th	1972	Equal 2nd-highest
Arthurs Pass	9.0	17th	1973	Equal 2nd-highest
Wanaka	10.8	17th	1972	Equal 2nd-highest
Arapito	13.1	27th	1978	3rd-highest
Waipara West	14.9	17th	1973	3rd-highest
Oamaru	9.9	17th	1972	3rd-highest
Manapouri (West Arm Jetty)	9.6	17th	1972	3rd-highest
Kaikoura	12.9	17th	1972	Equal 3rd-highest
Five Rivers	10.8	11th	1982	Equal 3rd-highest
Culverden	12.4	17th	1930	Equal 4th-highest
Cheviot	9.7	28th	1982	Equal 4th-highest
Le Bons Bay	12.8	17th	1984	Equal 4th-highest
<b>Low records or near-records</b>				
Clyde	-9.9	14th	1978	Lowest
Dunedin (Airport)	-8.2	14th	1962	4th-lowest

#### Rain and slips

On 18 June, heavy rain in Wellington caused surface flooding, and several roads were closed due to slips. Parts of Oakura (Taranaki) were flooded when the Oakura River burst its banks after heavy overnight rain.

On 21 June, heavy rain caused surface flooding in parts of the Coromandel Peninsula. The Tairua River Bridge (SH25) was closed due to flooding, and a small slip was reported on SH25A over the Coromandel Range. Farther south, SH2 was down to one lane at Waioeka Gorge (between Opotiki and Gisborne) due to a slip.

On 25 June, heavy rain fell across Auckland and the Coromandel Peninsula, causing surface flooding on many roads and farm properties. State Highway 25 in the Coromandel was closed in several places

due to flooding. The rainfall was welcomed after Auckland had observed many consecutive months without significant rain, resulting in depleted water storage levels in their dams. It was the first time Auckland had recorded 50 mm or more of rain in a day since October 2019.

The highest 1-day rainfall was 98 mm, recorded at Paeroa on 24 June.

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

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

**Wind**

On 25 June, strong winds brought trees down onto roads in eastern parts of the Coromandel Peninsula.

On 26 June, three separate small tornadoes were reported in Northland. In Whangarei, six boats were blown off their cradles in the *Norsand Boatyard*. In Mata (south of Whangarei), trees were toppled and iron from a farm shed strewn among a nearby stand of trees. Farther north in Oakura, trees were also toppled by a tornado. A tornado also struck Dairy Flat (north of Auckland), with one house suffering considerable damage including having the roof torn off. Nearby areas saw mature trees torn down with reports of miscellaneous property damage.

On 27 June, tornadoes were reported in Auckland and Papamoa. Multiple buildings and roofs were damaged in East Tamaki (south Auckland) and trees were brought down. In Papamoa a local reported seeing roof tiles, gutters and tv dishes ripped off houses.

The highest wind gust was 167 km/h, observed at Cape Turnagain on 12 June.

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

Location	Extreme wind gust (km/h)	Date of extreme gust	Year records began	Comments
Secretary Island	133	15th	1994	Highest
Puysegur Point	148	15th	1986	Equal 2nd-highest
Clyde	69	11th	1983	3rd-highest
Cape Campbell	106	19th	1963	Equal 4th-highest

**Snow and ice**

On 6 June, snow fell over inland parts of Canterbury particularly about the Mackenzie Country. The snowfall closed several roads including Burkes Pass (SH8), and SH80 between Aoraki/Mt Cook and Pukaki.

On 22 June, black ice contributed to several vehicle accidents in the Mackenzie Basin, although no injuries were reported.

On 23 June, motorists and pedestrians in Invercargill and other parts of Southland were warned by Police to take extra care due to black ice.

### Lightning and hail

On 4 June, approximately 20 lightning strikes were recorded about Nelson and Tasman. The lightning was associated with a thunderstorm that passed over during the evening hours.

On 25 June, approximately 20 lightning strikes were recorded over Auckland between 5-6 a.m.

### Cloud and fog

On 23 June, heavy fog in Wellington caused flight disruptions and prompted warnings for motorists to take extra care. The fog lasted until the early afternoon.

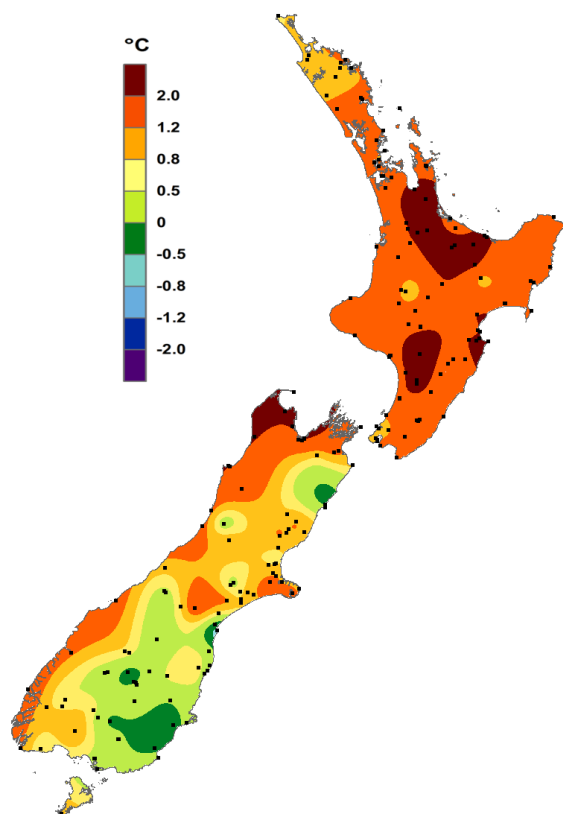
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June 2020 temperature expressed as a difference from average (1981-2010 June average).

It was a very warm month throughout the North Island, and for much of the South Island, as indicated by the orange and red colours.

The warm temperatures were partly due to higher than usual air pressure over the southwest Pacific region delivering more northeasterly winds than usual to New Zealand.

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

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