

## A warm and dry winter for many parts of the country

|                      |  |
|----------------------|--|
| <b>Temperature</b>   | Temperatures were above average (+0.51°C to +1.20°C of average) for western parts of Southland, coastal Otago, eastern and inland parts of southern and central Canterbury, Nelson, Tasman, and coastal Hawke's Bay. Temperatures were generally near average ( $\pm 0.50^\circ\text{C}$ of average) for the remainder of the country.   |
| <b>Rainfall</b>      | Rainfall was below normal (50-79% of normal) in parts of Northland, Auckland, Taranaki, Whanganui, the Central Plateau, Wellington, Tasman, Nelson, West Coast, Marlborough, inland Canterbury, and inland Otago. In contrast, rainfall was above normal (120-149% of normal) or well above normal (>149% of normal) rainfall in southern parts of Southland, eastern Otago, eastern Canterbury, and southern parts of Gisborne. |
| <b>Soil moisture</b> | At the end of winter, soil moisture levels were near normal for most of the country. Above normal soil moisture was observed in isolated areas inland of Dunedin, with below normal soil moisture observed for southern parts of the Mackenzie Basin.  |

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### Overview

Winter 2023 began on a warm note, with Aotearoa New Zealand observing its 5th-warmest June on record. The unusual warmth continued into the middle part of the season, with the country registering its 4th-warmest July on record. In contrast, below average temperatures were observed for August. Overall, the nationwide average temperature for winter was 9.2°C, 0.6°C above the 1991-2020 average from NIWA's seven-station temperature series which begins in 1909. This ranked as New Zealand's 5th-warmest winter on record.

It was a relatively dry season for many parts of the country, with a considerable reduction in the number of rain-bearing storms arriving from the north of the country compared to earlier in the year. Mean sea level air pressure was lower than normal to the east of the North Island during winter overall, resulting in slightly more southerly airflows than usual, mainly in the North Island. These air pressure and wind patterns were influenced by a decaying La Niña at the start of winter, and a developing El Niño by the end of the season. Although winter was dry for many, several exceptional rainfall events occurred during June and July. Most notable was the 22-24 July rainfall event that primarily impacted Canterbury. During this event, Christchurch, Akaroa, Leeston and Woodend each observed their wettest winter day on record (see [Highlights and extreme events](#) section for further details).

The prevalence of early-winter warmth resulted in a slow start to the ski season across the country. Both Mount Hutt (Canterbury) and Coronet Peak (Otago) were forced to temporarily close in June, with a lack of suitable weather for either natural or artificial snow production. Regular snowfalls during August meant that conditions improved markedly across New Zealand’s ski areas.

**Further highlights for winter 2023:**

- The highest temperature was 24.0°C, observed at Whakatu on 2 June.
- The lowest temperature was -10.6°C, observed at Tara Hills on 10 June.
- The highest 1-day rainfall was 199 mm, recorded at Akaroa on 22 July.
- The highest wind gust was 180 km/h, observed at Cape Turnagain on 1 and 16 July.
- Of the available, regularly reporting sunshine observation sites, the sunniest four regions in 2023 so far are wider Nelson (1644 hours), Mackenzie Basin (1617 hours), Taranaki (1605 hours) and Tasman (1586 hours).
- Of the six main centres in winter 2023, Auckland was the warmest, Tauranga was the sunniest and wettest, Christchurch was the coolest, and Dunedin was the driest and least sunny.

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**Temperature: A very warm start, but cool finish**

By the end of July, many locations throughout New Zealand were tracking towards record or near-record high winter temperatures. However, a relatively cool August saw mean temperatures end up closer to normal by the end of the season. Nevertheless, 15 locations observed record or near-record high mean temperatures during winter 2023. Perhaps most notable was Dunedin, with the city observing its hottest winter since records began in 1947.

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

| Location                     | Mean air temp. (°C) | Departure from normal (°C) | Year records began | Comments    |
|------------------------------|---------------------|----------------------------|--------------------|-------------|
| High records or near-records |                     |                            |                    |             |
| Dunedin (Musselburgh)        | 8.5                 | 1.2                        | 1947               | Highest     |
| Campbell Island              | 6.3                 | 1.2                        | 1991               | Highest     |
| Waimate                      | 7.7                 | 1.4                        | 1908               | 2nd-highest |
| Chatham Island               | 10.1                | 1.2                        | 1878               | 2nd-highest |
| Le Bons Bay                  | 8.7                 | 0.7                        | 1984               | 3rd-highest |
| Oamaru                       | 7.7                 | 0.6                        | 1967               | 3rd-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.

|                             |     |     |      |             |
|-----------------------------|-----|-----|------|-------------|
| Oban (Stewart Island)       | 7.7 | 0.8 | 1975 | 3rd-highest |
| Nugget Point                | 7.4 | 0.7 | 1970 | 3rd-highest |
| Taupō                       | 8.9 | 1.6 | 1949 | 4th-highest |
| Motueka                     | 8.9 | 1.1 | 1956 | 4th-highest |
| Kaikōura                    | 9.8 | 0.9 | 1963 | 4th-highest |
| Lincoln                     | 8.0 | 1.0 | 1881 | 4th-highest |
| Windsor                     | 6.8 | 0.9 | 2000 | 4th-highest |
| Tautuku                     | 7.5 | 0.7 | 1976 | 4th-highest |
| South West Cape             | 8.6 | 0.7 | 1991 | 4th-highest |
| Low records or near-records |     |     |      |             |
| None observed               |     |     |      |             |

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

| Location                     | Mean maximum air temp. (°C) | Departure from normal (°C) | Year records began | Comments    |
|------------------------------|-----------------------------|----------------------------|--------------------|-------------|
| High records or near-records |                             |                            |                    |             |
| Appleby                      | 14.8                        | 1.2                        | 1932               | Highest     |
| Campbell Island              | 8.1                         | 0.9                        | 1991               | Highest     |
| Taupō                        | 13.8                        | 2.2                        | 1949               | 2nd-highest |
| Paraparaumu                  | 14.5                        | 1.2                        | 1953               | 2nd-highest |
| Five Rivers                  | 10.9                        | 1.3                        | 1982               | 2nd-highest |
| Napier                       | 15.8                        | 1.1                        | 1870               | 3rd-highest |
| Whakatu                      | 16.0                        | 1.6                        | 1965               | 3rd-highest |
| Waipawa                      | 14.0                        | 0.8                        | 1945               | 3rd-highest |
| Motueka                      | 15.0                        | 1.5                        | 1956               | 3rd-highest |
| Orari Estate                 | 12.6                        | 1.2                        | 1972               | 3rd-highest |
| Windsor                      | 12.9                        | 1.2                        | 2000               | 3rd-highest |
| Chatham Island               | 12.8                        | 1.0                        | 1878               | 3rd-highest |
| Whakatāne                    | 16.0                        | 0.7                        | 1974               | 4th-highest |
| Motu                         | 12.3                        | 1.1                        | 1990               | 4th-highest |
| Te Kuiti                     | 15.1                        | 0.9                        | 1959               | 4th-highest |
| Ngawi                        | 14.4                        | 0.9                        | 1972               | 4th-highest |
| Lake Tekapo                  | 9.1                         | 1.5                        | 1927               | 4th-highest |
| Dunedin (Musselburgh)        | 11.9                        | 1.0                        | 1947               | 4th-highest |
| Waipounamu                   | 10.3                        | 0.8                        | 1980               | 4th-highest |
| South West Cape              | 10.6                        | 0.8                        | 1991               | 4th-highest |
| Low records or near-records  |                             |                            |                    |             |
| None observed                |                             |                            |                    |             |

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

| Location                     | Mean minimum air temp. (°C) | Departure from normal (°C) | Year records began | Comments |
|------------------------------|-----------------------------|----------------------------|--------------------|----------|
| High records or near-records |                             |                            |                    |          |
| Le Bons Bay                  | 6.5                         | 1.1                        | 1984               | Highest  |

|                                    |     |      |      |             |
|------------------------------------|-----|------|------|-------------|
| Dunedin (Musselburgh)              | 5.2 | 1.5  | 1947 | Highest     |
| Campbell Island                    | 4.5 | 1.4  | 1991 | Highest     |
| Akaroa                             | 6.1 | 1.0  | 1978 | 2nd-highest |
| Waimate                            | 2.8 | 1.6  | 1908 | 2nd-highest |
| Oamaru                             | 3.5 | 0.9  | 1967 | 2nd-highest |
| Chatham Island                     | 7.5 | 1.4  | 1878 | 2nd-highest |
| Gisborne                           | 6.7 | 1.0  | 1905 | 3rd-highest |
| Kaikōura                           | 6.7 | 0.8  | 1963 | 4th-highest |
| Nugget Point                       | 4.8 | 0.7  | 1970 | 4th-highest |
| <b>Low records or near-records</b> |     |      |      |             |
| Purerua                            | 8.7 | -0.5 | 1983 | 4th-lowest  |

## Rainfall: Dry for many, but wet in some eastern parts

Fifteen locations observed record or near-record low winter rainfall totals. Tūrangi, Stratford, Ōkārīto and Franz Josef each observed their driest winter on record. The country's driest location relative to normal was Blenheim, where just 70 mm of rainfall was recorded (37% of its winter normal). It was also relatively dry at Mt Cook Airport, where winter rainfall was 39% of normal. This lack of precipitation was reflected in snow depths measured at the nearby Mueller Hut climate station (1,818 m above sea level). There, the snow depth at the end of August was only about 30% of average for the time of year.

### Record or near-record winter 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                     | 601                 | 178                  | 1992               | Highest     |
| Māhia                               | 614                 | 167                  | 1990               | 2nd-highest |
| <b>Low records or near-records</b>  |                     |                      |                    |             |
| Tūrangi                             | 221                 | 49                   | 1968               | Lowest      |
| Stratford                           | 256                 | 43                   | 1960               | Lowest      |
| Ōkārīto                             | 367                 | 50                   | 1981               | Lowest      |
| Franz Josef                         | 463                 | 50                   | 1926               | Lowest      |
| Tākaka                              | 300                 | 53                   | 1976               | 2nd-lowest  |
| Lake Moeraki                        | 613                 | 64                   | 1985               | 2nd-lowest  |
| Blenheim                            | 70                  | 37                   | 1927               | 2nd-lowest  |
| Mt Cook (Airport)                   | 333                 | 39                   | 1928               | 2nd-lowest  |
| Paraparaumu                         | 127                 | 45                   | 1945               | 3rd-lowest  |
| Taupō                               | 168                 | 60                   | 1949               | 4th-lowest  |
| Taumarunui                          | 225                 | 50                   | 1913               | 4th-lowest  |
| Lower Retaruke                      | 252                 | 56                   | 1966               | 4th-lowest  |
| Hāwera                              | 206                 | 61                   | 1977               | 4th-lowest  |
| Hokitika                            | 404                 | 56                   | 1866               | 4th-lowest  |
| Reefton                             | 330                 | 62                   | 1960               | 4th-lowest  |

## Winter in the six main centres

It was the warmest winter on record for Dunedin. Temperatures were near average for the remaining main centres except Tauranga, where temperatures were above average. It was a dry winter in Auckland and Wellington, where rainfall was below normal. Christchurch was the only main centre where rainfall was above normal. Of the six main centres in winter 2023, Auckland was the warmest, Tauranga was the sunniest and wettest, Christchurch was the coolest, and Dunedin was the driest and least sunny.

### Winter 2023 main centre climate statistics:

| Temperature               |                  |                            |                                   |
|---------------------------|------------------|----------------------------|-----------------------------------|
| Location                  | Mean temp. (°C)  | Departure from normal (°C) | Comments                          |
| Auckland <sup>a</sup>     | 11.9             | +0.2                       | Near average                      |
| Tauranga <sup>b</sup>     | 11.6             | +0.7                       | Above average                     |
| Hamilton <sup>c</sup>     | 9.6              | +0.2                       | Near average                      |
| Wellington <sup>d</sup>   | 9.8              | +0.2                       | Near average                      |
| Christchurch <sup>e</sup> | 7.0              | +0.4                       | Near average                      |
| Dunedin <sup>f</sup>      | 8.5              | +1.2                       | Above average (Warmest on record) |
| Rainfall                  |                  |                            |                                   |
| Location                  | Rainfall (mm)    | % of normal                | Comments                          |
| Auckland <sup>a</sup>     | 282              | 74                         | Below normal                      |
| Tauranga <sup>b</sup>     | 349 <sup>2</sup> | 95                         | Near normal                       |
| Hamilton <sup>c</sup>     | 308              | 80                         | Near normal                       |
| Wellington <sup>d</sup>   | 276              | 76                         | Below normal                      |
| Christchurch <sup>e</sup> | 251              | 131                        | Above normal                      |
| Dunedin <sup>f</sup>      | 172              | 104                        | Near normal                       |
| Sunshine                  |                  |                            |                                   |
| Location                  | Sunshine (hours) |                            |                                   |
| Auckland <sup>a</sup>     | 473              |                            |                                   |
| Tauranga <sup>b</sup>     | 547 <sup>3</sup> |                            |                                   |
| Hamilton <sup>g</sup>     | 476              |                            |                                   |
| Wellington <sup>d</sup>   | 407 <sup>4</sup> |                            |                                   |
| Christchurch <sup>e</sup> | 450              |                            |                                   |
| Dunedin <sup>f</sup>      | 336              |                            |                                   |

<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

<sup>2</sup> Missing 5 days of data.

<sup>3</sup> Missing 1 day of data.

<sup>4</sup> Missing 3 days of data.

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## Highlights and extreme events

This section contains information pertaining to some of the more significant highlights and extreme events that occurred during winter 2023. Note that a more detailed list of significant weather events for winter 2023 can be found in the *Highlights and extreme events* section of NIWA's monthly Climate Summaries. These monthly summaries are available online, and may be viewed [here](#).

### Temperatures

The highest temperature was 24.0°C, observed at Whakatu on 2 June.

The lowest temperature was -10.6°C, observed at Tara Hills on 10 June.

High pressure delivered frequent frosts for much of the South Island during June. In addition, an inversion became established over inland parts of the South Island from approximately 6-25 June, with cold air pooling in valleys and basins. This contributed to relatively low daily maximum and minimum temperatures in several locations. Particularly notable was Lauder, where the air temperature remained below freezing for 114 consecutive hours (nearly 5 days) – from 7 p.m. on 6 June to 1 p.m. on 11 June. On 10 June, Lauder's maximum temperature was only -2.7°C.

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

| Location                            | Extreme maximum (°C) | Date of extreme temperature | Year records began | Comments          |
|-------------------------------------|----------------------|-----------------------------|--------------------|-------------------|
| <b>High records or near-records</b> |                      |                             |                    |                   |
| Purerua                             | 20.7                 | Jun-2nd                     | 1983               | Highest           |
| Westport                            | 20.3                 | Jun-25th                    | 1937               | Highest           |
| Hokitika                            | 20.2                 | Jun-23rd                    | 1866               | 2nd-highest       |
| Brothers Island                     | 18.4                 | Jul-4th                     | 1997               | 2nd-highest       |
| Tūrangi                             | 19.2                 | Jun-23rd                    | 1968               | Equal 2nd-highest |
| Arapito                             | 19.6                 | Jun-25th                    | 1978               | Equal 2nd-highest |
| Paraparaumu                         | 19.8                 | Jun-23rd                    | 1953               | 3rd-highest       |
| Middlemarch                         | 21.1                 | Jun-1st                     | 2000               | 3rd-highest       |
| Chatham Island                      | 17.4                 | Jun-2nd                     | 1878               | 3rd-highest       |
| Whakatu                             | 24.0                 | Jun-2nd                     | 1965               | Equal 3rd-highest |
| Pelorus Sound                       | 18.3                 | Jul-18th                    | 1982               | Equal 3rd-highest |
| New Plymouth                        | 19.2                 | Jun-25th                    | 1944               | 4th-highest       |
| Wellington (Airport)                | 18.5                 | Jun-2nd                     | 1962               | 4th-highest       |
| Greymouth                           | 18.8                 | Jun-23rd                    | 1947               | 4th-highest       |
| Waipounamu                          | 18.9                 | Jun-1st                     | 1980               | 4th-highest       |
| Nugget Point                        | 17.8                 | Jun-1st                     | 1970               | 4th-highest       |
| Oban (Stewart Island)               | 16.0                 | Jul-15th                    | 1975               | Equal 4th-highest |
| <b>Low records or near-records</b>  |                      |                             |                    |                   |
| Castlepoint                         | 6.4                  | Aug-10th                    | 1972               | Equal 2nd-lowest  |
| Ōkārito                             | 7.7                  | Aug-15th                    | 1983               | 3rd-lowest        |
| Palmerston North                    | 6.0                  | Aug-10th                    | 1940               | Equal 4th-lowest  |

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

| Location                            | Extreme minimum (°C) | Date of extreme temperature | Year records began | Comments          |
|-------------------------------------|----------------------|-----------------------------|--------------------|-------------------|
| <b>Low records or near-records</b>  |                      |                             |                    |                   |
| None observed                       |                      |                             |                    |                   |
| <b>High records or near-records</b> |                      |                             |                    |                   |
| Ngawi                               | 16.3                 | Jun-2nd                     | 1972               | Highest           |
| Westport                            | 14.6                 | Jun-23rd                    | 1966               | Highest           |
| Motueka                             | 15.0                 | Jun-24th                    | 1972               | Highest           |
| Brothers Island                     | 14.9                 | Jun-2nd                     | 1997               | Highest           |
| Dannevirke                          | 14.2                 | Jun-2nd                     | 1951               | Equal highest     |
| Wellington (Airport)                | 15.7                 | Jun-2nd                     | 1972               | Equal highest     |
| Christchurch (Botanic Gardens)      | 12.6                 | Jun-24th                    | 1863               | Equal highest     |
| Nugget Point                        | 10.7                 | Jun-20th                    | 1972               | Equal highest     |
| Port Taharoa                        | 16.0                 | Jun-2nd                     | 1974               | 2nd-highest       |
| Paraparaumu                         | 15.8                 | Jun-2nd                     | 1972               | 2nd-highest       |
| Grassmere                           | 16.1                 | Jun-2nd                     | 1972               | 2nd-highest       |
| Cheviot                             | 12.4                 | Jun-24th                    | 1982               | 2nd-highest       |
| Rangiora                            | 12.6                 | Jun-24th                    | 1972               | 2nd-highest       |
| Waipounamu                          | 10.9                 | Jul-18th                    | 1980               | 2nd-highest       |
| Campbell Island                     | 9.4                  | Jun-21st                    | 1991               | 2nd-highest       |
| Palmerston North                    | 14.1                 | Jun-23rd                    | 1940               | 3rd-highest       |
| Upper Hutt (Trentham)               | 14.8                 | Jun-2nd                     | 1972               | 3rd-highest       |
| Waimate                             | 11.1                 | Jun-20th                    | 1908               | 3rd-highest       |
| Windsor                             | 10.4                 | Jun-1st                     | 2000               | 3rd-highest       |
| Oamaru                              | 12.1                 | Jun-20th                    | 1972               | 3rd-highest       |
| Levin                               | 15.1                 | Jun-2nd                     | 1950               | Equal 3rd-highest |
| Secretary Island                    | 13.1                 | Jun-1st                     | 1988               | Equal 3rd-highest |
| Peel Forest                         | 10.5                 | Jun-2nd                     | 1973               | Equal 3rd-highest |
| Takapau Plains                      | 13.1                 | Jun-2nd                     | 1972               | 4th-highest       |
| Haast                               | 12.9                 | Jul-24th                    | 1949               | 4th-highest       |
| Kaikōura                            | 13.4                 | Jun-2nd                     | 1972               | 4th-highest       |

**Rain and slips**

The highest 1-day rainfall was 199 mm, recorded at Akaroa on 22 July.

On 22 June, prolonged heavy rain brought areas of surface flooding and caused many slips in Gisborne and Hawke's Bay. A State of Emergency was declared in Gisborne, with residents Te Karaka evacuating due to rising levels of the Waipaoa River. Several State Highways were closed including SH2 between Ormond and Matawai, and between Wairoa to Napier, SH5 from Taupō to Eskdale, and SH35 from Okitu to Ruatoru. In total, 73 local roads were closed or significantly obstructed by slips. Farther north, heavy rain in Hamilton caused flooding in the suburb of Glenview.

From 22-24 July, persistent heavy rain caused flooding in eastern parts of Canterbury. The SH1 bridge over the Ashburton River was closed due to build-up of flood debris, with a number of other

roads around the region closed due to surface flooding. A man was rescued from the roof of his vehicle after being trapped in Hawkins River floodwaters.

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

| Location               | Extreme 1-day rainfall (mm) | Date of extreme rainfall | Year records began | Comments    |
|------------------------|-----------------------------|--------------------------|--------------------|-------------|
| Rings Beach            | 137                         | Jun-05th                 | 1986               | Highest     |
| Whakamārama            | 336                         | Jun-17th                 | 1950               | Highest     |
| Woodend                | 113                         | Jul-22nd                 | 1981               | Highest     |
| Christchurch (Airport) | 86                          | Jul-22nd                 | 1873               | Highest     |
| Leeston                | 64                          | Jul-22nd                 | 1986               | Highest     |
| Akaroa                 | 199                         | Jul-22nd                 | 1977               | Highest     |
| Campbell Island        | 69                          | Jun-28th                 | 1991               | Highest     |
| Brentwood              | 133                         | Jun-22nd                 | 1966               | 2nd-highest |
| Rakaia                 | 75                          | Jul-22nd                 | 1949               | 2nd-highest |
| Rangiora               | 94                          | Jul-22nd                 | 1965               | 2nd-highest |
| Living Springs         | 81                          | Jul-22nd                 | 1978               | 2nd-highest |
| Taumata                | 26                          | Jul-01st                 | 2001               | 2nd-highest |
| Hamilton (Ruakura)     | 87                          | Jun-22nd                 | 1907               | 3rd-highest |
| Mokairau               | 143                         | Jun-17th                 | 1947               | 3rd-highest |
| Hanmer Forest          | 119                         | Jul-23rd                 | 1905               | 3rd-highest |
| Winchmore              | 76                          | Jul-22nd                 | 1947               | 3rd-highest |
| Ashburton              | 87                          | Jul-22nd                 | 1927               | 3rd-highest |
| Prebbleton             | 73                          | Jul-22nd                 | 1969               | 3rd-highest |
| Mcqueens Valley        | 68                          | Jul-22nd                 | 1947               | 3rd-highest |
| Okuti                  | 163                         | Jul-22nd                 | 1915               | 3rd-highest |
| Le Bons Bay            | 60                          | Jul-22nd                 | 1984               | 3rd-highest |
| Waiharara              | 87                          | Jun-21st                 | 1956               | 4th-highest |
| Rose Hill              | 86                          | Jun-24th                 | 1954               | 4th-highest |
| Lincoln                | 66                          | Jul-22nd                 | 1881               | 4th-highest |

**Wind**

The highest wind gust was 180 km/h, observed at Cape Turnagain on 1 and 16 July.

The June mean wind speed at Wellington Airport was 4.3 m/s. This was its lowest mean wind speed for June, and second-lowest of any month, since the anemometer mast was moved to its existing location in 1993.

On 21 July, strong winds brought trees down on to power lines in Kāpiti, Horowhenua and Manawatū, causing power outages for approximately 10,000 customers. Power lines were brought down in Shannon, and both SH57 and SH57 in the Manawatū were closed after trucks were blown onto their side. At Kāpiti Airport, a small two-seater plane was flipped upside down. Farther north, several lanes of the Auckland Harbour Bridge were closed due to gusty winds.



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

| Location           | Extreme wind gust (km/h) | Date of extreme gust | Year records began | Comments          |
|--------------------|--------------------------|----------------------|--------------------|-------------------|
| Palmerston North   | 96                       | Aug-29th             | 1991               | Highest           |
| South West Cape    | 172                      | Aug-1st              | 1991               | Highest           |
| Secretary Island   | 145                      | Jul-1st              | 1994               | 2nd-highest       |
| Kaikohe            | 96                       | Jul-3rd              | 1986               | Equal 2nd-highest |
| Mt Cook (Airport)  | 146                      | Aug-1st              | 2000               | Equal 2nd-highest |
| Puysegur Point     | 161                      | Jun-1st              | 1986               | 3rd-highest       |
| Winchmore          | 113                      | Aug-1st              | 1970               | 3rd-highest       |
| Windsor            | 93                       | Aug-1st              | 2001               | 3rd-highest       |
| Ranfurlly          | 83                       | Aug-1st              | 2000               | 3rd-highest       |
| Whitianga          | 85                       | Jul-3rd              | 1991               | 4th-highest       |
| Waiouru            | 117                      | Aug-19th             | 1970               | 4th-highest       |
| Whakatāne          | 106                      | Aug-2nd              | 1974               | Equal 4th-highest |
| Hamilton (Airport) | 85                       | Jul-3rd              | 1978               | Equal 4th-highest |

**Snow and ice**

On 19 June, Mount Hutt ski area (Canterbury) was forced to close due to a lack of snow, after opening for the season on 10 June. The snowpack depth was relatively low to start the season, and warm temperatures combined with a period of rain meant the lower elevation runs became “unskiable”. Farther south, Coronet Peak (Otago) opened their learner area and Meadows Chair on 16 June, but the ski area was also forced to subsequently close on 26 June due to deteriorating conditions and a lack of snow.

From 2-3 July, snow fell to near sea level in parts of Southland and Otago. Several roads were closed due to snow including SH87 from Kyeburn to Outram, SH93 from Clinton to Mataura and SH94 from Te Anau to Milford Sound. Vehicles on the Manuka Gorge Highway (SH8) in Otago were temporarily stuck due to snow. Farther north, snow affected the Desert Road (SH1) and it was temporarily closed due to icy conditions. From 29 June to 4 July, the Remarkables ski area reported 67 cm of new snow.

From 9-10 August, a strong cold front and low pressure system brought low elevation snow to the South Island and parts of the North Island. Sea level snow was observed about Banks Peninsula.

**Lightning, hail, and tornadoes**

On 26 July, two waterspouts were spotted off the coast of Taranaki between Manaia and Opunake.

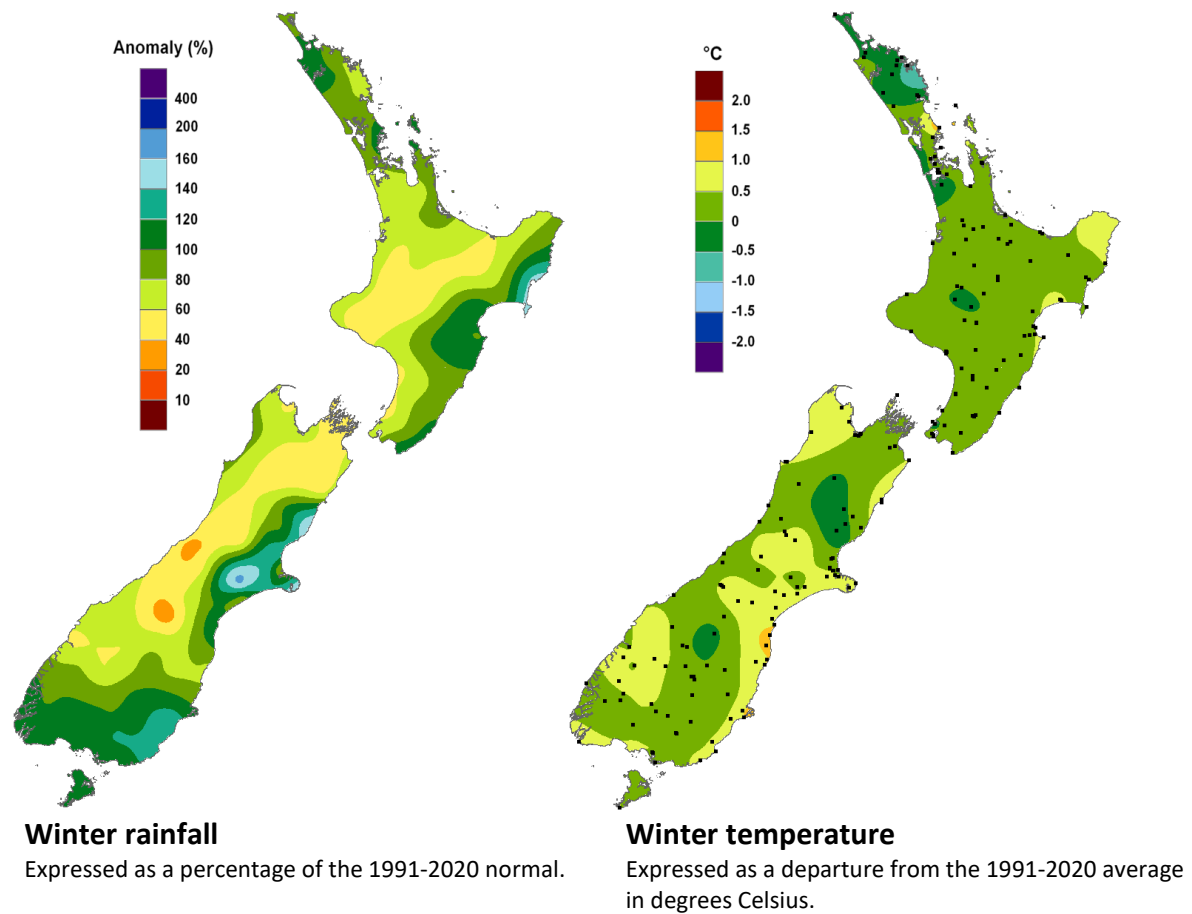
**Cloud and fog**

For much of June, a prolonged inversion saw low cloud and fog trapped in many inland valleys and basins of the South Island. Cromwell was one location subject to persistent low cloud cover, with the town receiving just 54 hours of sunshine for the month – its lowest sunshine total for June since records began in 1979.

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