

New Zealand's wettest and 4th-warmest July on record

Temperature	It was New Zealand's 4 th -warmest July on record, with the nationwide average temperature 1.3°C above average. Well above average (>1.20°C above average) temperatures were observed in the majority of the North Island and many locations experienced a record or near-record warm July. In the South Island, temperatures were generally above average (0.51-1.20°C above average). Some areas along the West Coast experienced well above average temperatures. Pockets of near average temperatures ($\pm 0.50^\circ\text{C}$ of average) were observed in Canterbury, Otago and Southland.
Rainfall	It was an extraordinarily wet month and nationally it was the wettest July on record. The vast majority of the country observed well above normal (>149% of normal) rainfall. The exceptions were coastal parts of Gisborne, Hawke's Bay and northern Wairarapa which experienced below normal rainfall (50-79% of normal). Western Fiordland experienced near normal rainfall (80-119% of normal).
Soil Moisture	At the end of the month, soil moisture levels were near normal for the majority of the country. Above normal soil moisture was observed in coastal parts of Otago, Canterbury and Marlborough.

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Overview

Record breaking rain, temperatures and wind were all part of the weather story for July 2022 in Aotearoa New Zealand. The rain was perhaps the most memorable feature of the month. From 11 July through to 31 July, five separate weather events brought flooding rain to the country (see [Highlights and extreme events](#) section). The culmination of these frequent rain events led to 20 locations experiencing their wettest July on record and near-record wet months for a further 25 locations. In Christchurch, it was the wettest month (of any month) on record. The 310 mm of rain recorded there was the first time that more than 300 mm of rain was observed in one month since records began in 1863. This represents around half of the rain that Christchurch typically receives over the course of one year. An analysis of rainfall anomalies from NIWA's Virtual Climate Station Network (which extends back to 1971) shows that it was New Zealand's wettest July on record (Figure 1).

July was also a warm month, particularly in the North Island where temperatures were well above average (>1.20°C above average) and many locations experienced record or near-record warmth. Frequent wet weather meant that it was a cloudy month and this was reflected in warmer than usual overnight temperatures with many locations in both the North and South Island experiencing record or near-record high mean minimum (overnight) temperatures. In the South Island, temperatures were generally above average (0.51-1.20°C above average). Some areas along the West Coast experienced well above average temperatures, while pockets of near average temperatures ($\pm 0.50^\circ\text{C}$ of average) were observed in Canterbury, Otago and Southland. These were generally associated with areas that received frequent snowfall throughout the month. Some high elevation weather stations such as Mueller Hut (Aoraki/Mt Cook National park) in NIWA’s [snow and ice network](#) experienced snow depths during July that were the largest for the time of year since record keeping began in 2010. Overall, the nationwide average temperature in July 2022 was 9.1°C. This was 1.3°C above the 1981-2010 July average, making it New Zealand’s 4th-warmest July since NIWA’s seven station temperature series began in 1909.

There was a multitude of drivers behind the wet and warm weather during July. The overall air pressure pattern saw higher than usual pressures to the northeast and southwest of the country and was associated with more northerly quarter air flows (warm and wet airmass origin). This dominant pressure set up allowed for consecutive low-pressure systems to approach from the northwest which were supplied with flows of tropical moisture from the Coral Sea. The high pressure to the northeast of the country blocked the lows from moving away quickly and prolonged rainfall. This pattern was quite different from the southerly and south-westerly systems which are more characteristic of NZ winters.

The atmospheric blocking pattern can be partly attributed to a major pulse of the Madden-Julian Oscillation – a tropical climate phenomenon that influences rain and thunderstorm patterns in the mid-latitudes, taking 30-60 days to encircle the planet. La Niña also influenced the climate system during July. This climate driver continued to bring more northerly quarter air flows and contributed to warm sea surface temperatures which can help energise incoming storms. Another influential climate driver was a developing negative phase of the Indian Ocean Dipole. This is also a key climate driver in Australia which continued to experience a series of devastating rainfall events. This all occurred against the backdrop of warmer seas and a warmer atmosphere under climate change which has been shown to make more moisture available during rain events.

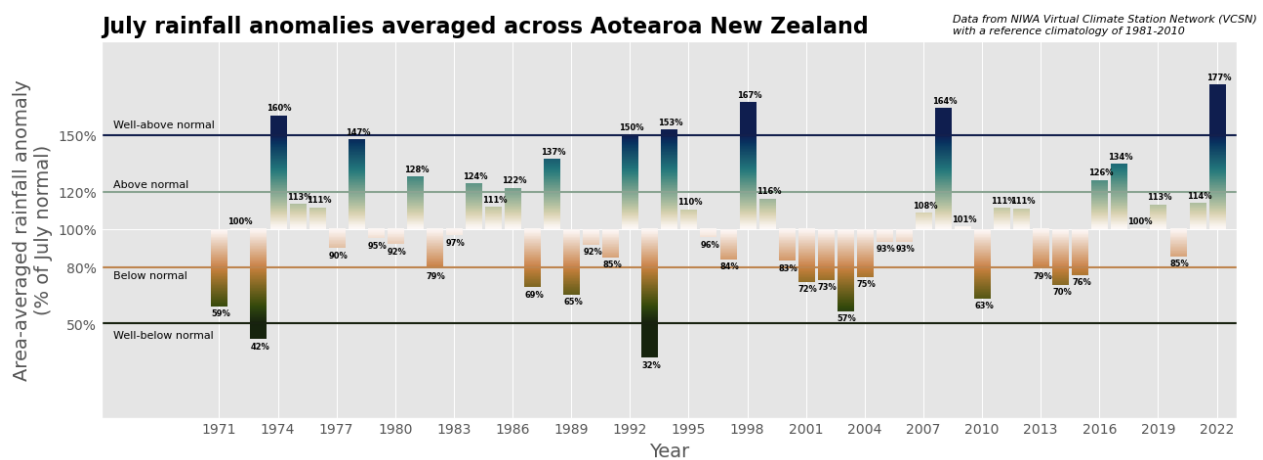


Figure 1: July rainfall anomalies for the month of July average across Aotearoa New Zealand based on the NIWA Virtual Climate Station Network (VCSN).

Figure 1: July rainfall anomalies for the month of July average across Aotearoa New Zealand based on the NIWA Virtual Climate Station Network.

Further Highlights:

- The highest temperature was 22.6°C, observed at Bromley on 14 July.
- The lowest temperature was -11.6°C, observed at Aoraki/Mt Cook Airport on 17 July .
- The highest 1-day rainfall was 371 mm, recorded at Aoraki/Mt Cook village on 18 July.
- The highest wind gust was 198 km/h, observed at Cape Turnagain on 9 July.
- Of the six main centres in July 2022, Auckland was the warmest, Christchurch was the wettest, Hamilton was the driest, Tauranga was the sunniest and Dunedin was the coldest and least sunny.
- Of the available, regularly reporting sunshine observation sites, the sunniest four regions in 2021 so far are Taranaki (1539 hours), Bay of Plenty (1478 hours), Greater Nelson (1462 hours) and Kāpiti Coast (1409 hours).

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Rainfall: Unprecedented rain for many

It was an exceptionally wet month with the vast majority of the country observing well above normal (>149% of normal) rainfall. Large parts of Canterbury received more than three-times their usual July rainfall – equivalent to a season’s worth of rain in one month. The exceptions to the wet conditions were coastal parts of Gisborne, Hawke’s Bay and northern Wairarapa, which experienced below normal rainfall (50-79% of normal). Western Fiordland experienced near normal rainfall (80-119% of normal).

The wet month was the result of multiple extreme weather events which are expanded upon in the *Highlights and extreme events* section. Twenty locations experienced their wettest July on record and a further 25 locations experienced a near-record wet month. In Christchurch, it was the wettest month (of any month) on record. For the first time since records began in 1863, over 300 mm of rain falling within one month was observed - about half the annual normal. Other notable wettest July records include Lincoln and Timaru which both have records extending back to 1881, respectively.

Record¹ or near-record July rainfall totals were recorded at:

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
High records or near-records				
Auckland (Whenuapai)	293	199	1943	Highest
Te Puke	409	250	1973	Highest
Whatawhata	351	199	1952	Highest
Wellington (Kelburn)	294	214	1928	Highest
Motueka	364	278	1943	Highest
Appleby	237	236	1932	Highest
Blenheim	269	357	1927	Highest
Aoraki/Mt Cook Village	725	273	1928	Highest
Waipara West	177	329	1973	Highest
Christchurch (Airport)	310	479	1863	Highest
Lincoln (Broadfield)	230	398	1881	Highest
Akaroa	469	357	1977	Highest
Timaru (Airport)	199	432	1881	Highest
Tara Hills	162	418	1949	Highest
Windsor	207	475	2000	Highest
Dunedin (Airport)	143	310	1962	Highest
Dunedin (Musselburgh)	235	412	1918	Highest

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.

Lauder	76	324	1924	Highest
Clyde	80	321	1978	Highest
Kerikeri	572	279	1935	2nd-highest
Warkworth	360	200	1966	2nd-highest
Auckland (Albany)	271	183	1966	2nd-highest
Whitianga	402	166	1961	2nd-highest
Motu	426	197	1920	2nd-highest
Auckland (Airport)	257	193	1959	2nd-highest
Auckland (Pukekohe)	254	169	1944	2nd-highest
Palmerston North	209	236	1928	2nd-highest
Levin	240	242	1895	2nd-highest
Tākaka	365	186	1976	2nd-highest
Greymouth	346	174	1947	2nd-highest
Winchmore	193	287	1947	2nd-highest
Oamaru	193	474	1941	2nd-highest
Cromwell	76	259	1949	2nd-highest
Nugget Point	156	234	1930	2nd-highest
Kaitaia	301	193	1948	3rd-highest
Hamilton (Airport)	229	177	1935	3rd-highest
Mt Ruapehu (Chateau)	414	157	2000	3rd-highest
Wellington (Airport)	228	202	1958	3rd-highest
Methven	222	284	1888	3rd-highest
Orari Estate	201	355	1897	3rd-highest
Balclutha	121	246	1964	3rd-highest
Rotorua	317	235	1963	4th-highest
Turangi	279	186	1968	4th-highest
Lake Tekapo	152	306	1925	4th-highest
Low records or near-records				
None observed				

Temperature: Exceptionally warm in the North Island

Nationally, July 2022 was the 4th-warmest July on record. Despite several cold spells, this was largely driven by exceptional warmth in the North Island where temperatures were well above average (>1.20°C above average) and many locations experienced a record or near-record warm July. In the South Island, temperatures were generally above average (0.51-1.20°C above average). Some areas along the West Coast experienced well above average temperatures and Westport had their 4th-warmest July on record with records extending back to 1937. Pockets of near average temperatures (±0.50°C of average) were observed in Canterbury, Otago and Southland. These were generally associated with areas that received frequent snowfall throughout the month.

It was a particularly cloudy month around the country which was reflected in warmer than usual overnight temperatures. There were many more locations that experienced record or near-record high mean minimum temperatures (overnight) than near-record high mean maximum temperatures (daytime).

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

Location	Mean air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Kaitaia	14.0	2.0	1948	Highest
Auckland (Whenuapai)	12.5	2.3	1945	Highest
Whitianga	13.0	2.7	1962	Highest
Matamata	11.0	2.7	1999	Highest
Taupō	9.3	2.8	1949	Highest
Motu	8.4	2.3	1990	Highest
Mt Ruapehu (Chateau)	4.8	1.7	2000	Highest
Gisborne	12.1	2.6	1905	Highest
Kerikeri	13.3	1.9	1945	2nd-highest
Dargaville	13.2	2.1	1943	2nd-highest
Leigh	14.3	1.8	1966	2nd-highest
Auckland (Whangaparāoa)	13.4	1.8	1982	2nd-highest
Auckland (Western Springs)	13.1	2.3	1948	2nd-highest
Tauranga	12.5	2.2	1913	2nd-highest
Auckland (Māngere)	13.2	2.4	1959	2nd-highest
Hamilton (Ruakura)	10.9	2.0	1906	2nd-highest
Te Kuiti	10.3	1.6	1959	2nd-highest
Taumarunui	9.6	2.2	1947	2nd-highest
Tūrangi	8.8	2.2	1968	2nd-highest
New Plymouth	11.4	1.7	1944	2nd-highest
Lower Retaruke	9.6	2.3	1966	2nd-highest
Dannevirke	9.5	1.6	1951	2nd-highest
Hicks Bay	13.1	1.9	1969	2nd-highest
Waipawa	9.0	1.3	1945	2nd-highest
Wairoa	11.3	2.0	1964	2nd-highest
Palmerston North	10.4	1.7	1928	2nd-highest
Porirua	10.1	1.2	1968	2nd-highest
Hāwera	10.6	2.2	1977	2nd-highest
Ohakune	7.5	2.0	1962	2nd-highest
Whangārei (Airport)	13.4	1.8	1967	3rd-highest
Paeroa	12.2	2.5	1947	3rd-highest
Te Puke	11.4	1.9	1973	3rd-highest
Rotorua	9.7	1.8	1964	3rd-highest
Auckland (Pukekohe)	11.7	1.5	1969	3rd-highest
Whatawhata	11.6	2.3	1952	3rd-highest
Hamilton (Airport)	10.9	2.2	1946	3rd-highest
Port Taharoa	12.8	1.8	1973	3rd-highest
Waikeria	10.7	2.2	1957	3rd-highest
Māhia	11.6	1.6	1990	3rd-highest
Paraparaumu	10.6	2.0	1953	3rd-highest
Levin	10.4	1.9	1895	3rd-highest
Stratford	9.5	1.9	1960	3rd-highest
Waiouru	6.5	2.3	1962	3rd-highest

Whanganui	11.4	1.9	1937	3rd-highest
Whakatāne	11.4	2.5	1974	4th-highest
Whakatu	10.0	1.8	1965	4th-highest
Westport	10.0	1.3	1937	4th-highest
Reefton	7.2	2.0	1960	4th-highest
Ōkārīto	8.8	1.3	1982	4th-highest
Windsor	5.8	0.9	2000	4th-highest
Middlemarch	4.9	1.4	2000	4th-highest
Low records or near-records				
None observed				

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

Location	Mean maximum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Whangārei	17.2	1.7	1967	Highest
Auckland (Whangaparāoa)	15.9	1.8	1982	Highest
Auckland (Whenuapai)	16.1	1.5	1945	Highest
Whitianga	16.9	2.1	1962	Highest
Matamata	15.6	2.1	1999	Highest
Tauranga	16.0	1.5	1913	Highest
Rotorua	13.6	1.8	1964	Highest
Taupō	13.6	2.6	1949	Highest
New Plymouth	14.9	1.6	1944	Highest
Gisborne	16.6	2.4	1905	Highest
Milford Sound	10.9	2.0	1934	Highest
Leigh	17.1	2.0	1966	2nd-highest
Paeroa	16.1	1.8	1947	2nd-highest
Auckland (Māngere)	16.3	2.0	1959	2nd-highest
Tūrangi	13.2	1.7	1968	2nd-highest
Mt Ruapehu (Chateau)	8.3	1.5	2000	2nd-highest
Waipawa	14.6	2.2	1945	2nd-highest
Stratford	13.3	1.9	1960	2nd-highest
Hāwera	13.9	1.9	1977	2nd-highest
Waiouru	10.1	2.2	1962	2nd-highest
Kerikeri	17.2	1.3	1945	3rd-highest
Motu	12.4	2.4	1990	3rd-highest
Whatawhata	15.2	1.5	1952	3rd-highest
Hamilton (Airport)	15.2	1.4	1946	3rd-highest
Waikeria	15.3	1.6	1957	3rd-highest
Te Kuiti	15.0	1.5	1959	3rd-highest
Taumarunui	13.9	1.4	1947	3rd-highest
Lower Retaruke	13.4	1.2	1966	3rd-highest
Hicks Bay	15.9	1.7	1969	3rd-highest
Māhia	14.0	1.5	1990	3rd-highest
Paraparaumu	14.3	1.7	1953	3rd-highest
Whakatāne	15.9	1.7	1974	4th-highest

Whakatu	15.6	2.2	1965	4th-highest
Wairoa (North Clyde)	15.7	1.8	1964	4th-highest
Palmerston North	14.3	1.6	1928	4th-highest
Levin	14.4	1.7	1895	4th-highest
Porirua	13.8	1.4	1968	4th-highest
Franz Josef	12.9	1.1	1953	4th-highest
Low records or near-records				
None observed				

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

Location	Mean minimum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Kaitiāia	11.4	2.9	1948	Highest
Auckland (Whenuapai)	8.8	3.0	1945	Highest
Matamata	6.3	3.2	1999	Highest
Motu	4.4	2.2	1990	Highest
Taumarunui	5.3	2.9	1947	Highest
Gisborne	8.1	2.9	1905	Highest
Reefton	3.2	2.7	1960	Highest
Rangiora	2.7	2.1	1965	Highest
Tiwai Point	4.7	1.9	1970	Highest
Dargaville	10.1	2.3	1943	2nd-highest
Auckland (Western Springs)	9.5	2.7	1948	2nd-highest
Whitianga	9.1	3.2	1962	2nd-highest
Tauranga	9.0	2.9	1913	2nd-highest
Taupō	5.0	2.9	1949	2nd-highest
Port Taharoa	10.4	2.8	1973	2nd-highest
Tūrangi	4.4	2.6	1968	2nd-highest
Lower Retaruke	5.7	3.3	1966	2nd-highest
Mt Ruapehu (Chateau)	1.4	2.0	2000	2nd-highest
Martinborough	5.0	1.7	1986	2nd-highest
Wairoa	6.8	2.1	1964	2nd-highest
Hāwera	7.4	2.7	1977	2nd-highest
Medbury	1.5	2.4	1927	2nd-highest
Dunedin (Musselburgh)	4.4	1.3	1947	2nd-highest
Kerikeri	9.5	2.6	1945	3rd-highest
Whangārei (Airport)	10.0	2.2	1967	3rd-highest
Leigh	11.6	1.6	1966	3rd-highest
Auckland (Whangaparāoa)	10.9	1.8	1982	3rd-highest
Paeroa	8.4	3.4	1947	3rd-highest
Te Puke	7.6	2.9	1973	3rd-highest
Whakatāne	6.8	3.2	1974	3rd-highest
Rotorua	5.8	1.8	1964	3rd-highest
Auckland (Airport)	10.1	2.6	1959	3rd-highest
Whatawhata	8.0	3.0	1952	3rd-highest
Hamilton (Ruakura)	6.6	2.6	1906	3rd-highest

Dannevirke	5.9	1.8	1951	3rd-highest
Hicks Bay	10.3	2.0	1969	3rd-highest
Māhia	9.1	1.5	1990	3rd-highest
Palmerston North	6.7	2.4	1928	3rd-highest
Stratford	5.8	2.0	1960	3rd-highest
Ohakune	3.6	1.9	1962	3rd-highest
Waioru	2.8	2.3	1962	3rd-highest
Waiau	1.9	2.8	1974	3rd-highest
Lumsden	1.1	1.8	1982	3rd-highest
Pukekohe	8.2	1.8	1969	4th-highest
Hamilton (Airport)	6.5	2.9	1946	4th-highest
Waikeria	6.1	2.7	1957	4th-highest
New Plymouth	7.8	1.7	1944	4th-highest
Paraparaumu	7.0	2.3	1953	4th-highest
Whanganui	8.0	2.2	1937	4th-highest
Westport	6.6	1.8	1937	4th-highest
Arapito	5.6	1.8	1978	4th-highest
Ōkārīto	4.6	2.0	1982	4th-highest
Haast	5.4	1.6	1949	4th-highest
Windsor	0.7	1.4	2000	4th-highest
Middlemarch	-0.3	1.6	2000	4th-highest
Five Rivers	1.0	1.7	1982	4th-highest
Gore	2.6	1.8	1907	4th-highest
Nugget Point	4.7	1.3	1970	4th-highest
Low records or near-records				
None observed				

July climate in the six main centres

It was a wet and warm month for all of the main centres. Wellington, Christchurch and Dunedin experienced their wettest July on record while Auckland and Hamilton experienced their 2nd- and 3rd-wettest Julys, respectively. Temperatures in the main centres were all above-to-well above average. Both Auckland and Tauranga had their 2nd-warmest July on record while Hamilton experienced its 3rd-warmest July on record.

July 2022 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland ^a	13.2	+2.4	Well above average - 2 nd highest on record
Tauranga ^b	12.5	+2.2	Well above average - 2 nd highest on record
Hamilton ^c	10.9	+2.2	Well above average - 3 rd highest on record
Wellington ^d	9.8	+0.9	Above average
Christchurch ^e	6.4	+0.6	Above average
Dunedin ^f	7.5	+1.0	Above average
Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland ^a	257	193	Well above normal - 2 nd highest on record
Tauranga ^b	241 ²	187	Well above normal
Hamilton ^c	229	177	Well above normal – 3 rd highest on record
Wellington ^d	294	217	Well above normal – highest on record
Christchurch ^e	310	479	Well above normal – highest on record
Dunedin ^f	235	412	Well above normal – highest on record
Sunshine			
Location	Sunshine (hours)		
Auckland ^a	123		
Tauranga ^b	127		
Hamilton ^g	111 ³		
Wellington ^d	106		
Christchurch ^e	108		
Dunedin ^f	91		

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

² Missing 1 day of data

³ 1.5 days of missing data

Highlights and extreme events

Temperatures

On 8-9 July a warm and humid airmass resulted in several North Island locations experiencing a record or near-record warm July day and night. Whanganui reached 21.1°C which was the warmest July temperature on record, which extend back to 1937.

The highest temperature was 22.6°C, observed at Bromley on 14 July.

The lowest temperature was -11.6°C, observed at Aoraki/Mt Cook Airport on 17 July .

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

Location	Extreme maximum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Auckland (Whenuapai)	20.8	8th	1945	Highest
Taupō	17.2	26th	1949	Highest
Auckland (Airport)	19.6	8th	1959	Highest
Paraparaumu	19.5	26th	1953	Highest
Porirua	19.2	26th	1968	Highest
Hāwera	19.0	8th	1977	Highest
Whanganui	21.1	8th	1937	Highest
Palmerston North	19.6	8th & 26th	1918	Highest
Arapito	19.4	26th	1978	Highest
Hanmer Forest	20.5	19th	1906	Highest
Gisborne	21.2	26th	1905	Equal highest
Westport	17.8	26th	1937	Equal highest
Wellington (Kelburn)	17.5	26th	1928	2nd-highest
Waiouru	16.2	8th	1962	2nd-highest
Hamilton (Airport)	18.8	8th	1946	Equal 2nd-highest
Whangārei	20.4	9th	1967	3rd-highest
Auckland (Western Springs)	20.3	8th	1948	3rd-highest
Paeroa	20.5	8th	1947	3rd-highest
Mt Ruapehu (Chateau)	12.5	12th	2000	3rd-highest
Levin	19.1	19th	1895	3rd-highest
Upper Hutt	18.7	26th	1939	3rd-highest
Waiau School	21.0	19th	1974	3rd-highest
Whangārei (Airport)	20.2	8th	1967	4th-highest
Wellington (Airport)	17.2	9th	1962	4th-highest
Ohakune	16.6	12th	1962	4th-highest
Kerikeri	20.1	9th	1945	Equal 4th-highest
Rotorua	16.4	8th	1964	Equal 4th-highest
Whatawhata	18.5	8th	1952	Equal 4th-highest
Hamilton (Ruakura)	19.0	8th	1906	Equal 4th-highest
Whakatu	21.4	13th	1965	Equal 4th-highest
Low records or near-records				
None observed				

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

Location	Extreme minimum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Medbury	14.0	19th	1927	Highest
Waipara West	14.5	19th	1973	Highest
Cape Reinga	15.9	8th	1971	2nd-highest
Kaitaia	15.7	9th	1948	2nd-highest
Dargaville	15.2	9th	1951	2nd-highest
Auckland (Whangaparāoa)	14.2	9th	1982	2nd-highest
Auckland (Whenuapai)	15.2	9th	1951	2nd-highest
Whitianga	16.1	9th	1971	2nd-highest
Tauranga	15.1	9th	1941	2nd-highest
Motu	11.1	9th	1990	2nd-highest
Reefton	10.6	19th	1972	2nd-highest
Waiau	14.7	19th	1974	2nd-highest
Rangiora	10.8	19th	1972	2nd-highest
Christchurch (Airport)	11.6	19th	1863	2nd-highest
Orari Estate	8.2	19th	1972	2nd-highest
Whanganui	13.9	9th	1972	Equal 2nd-highest
Le Bons Bay	11.6	19th	1984	Equal 2nd-highest
Whangārei	15.3	8th	1967	3rd-highest
Taupō	11.6	9th	1950	3rd-highest
Whatawhata	13.4	9th	1952	3rd-highest
Arapito	12.0	9th	1978	3rd-highest
Ōkārīto	12.1	9th	1983	3rd-highest
Blenheim	13.4	19th	1947	3rd-highest
Kaikōura	11.5	19th	1972	3rd-highest
Cheviot	11.4	19th	1982	3rd-highest
Waimate	9.0	14th	1908	3rd-highest
Middlemarch	9.7	18th	2000	3rd-highest
Kerikeri	15.0	8th	1952	Equal 3rd-highest
Waikeria	13.7	9th	1972	Equal 3rd-highest
Porirua	12.2	13th	1972	Equal 3rd-highest
Westport	12.7	9th	1966	Equal 3rd-highest
Leigh	14.8	9th	1966	4th-highest
Mt Ruapehu (Chateau)	5.8	27th	2000	4th-highest
Windsor	7.4	27th	2000	4th-highest
Low records or near-records				
Manapouri	-7.8	11 th	1963	2nd-lowest

Rain and slips

On 11-12 July an atmospheric river of moisture brought heavy rain and strong winds large parts of the North Island and northern and eastern parts of the South Island. On the Coromandel Peninsula, State Highway 25 (SH25) was closed north of Whitianga due to a large slip. In Auckland, commuters were slowed by surface flooding and SH1 was blocked between Pūhoi and Warkworth. Several Auckland ferries were cancelled on Tuesday morning. In Palmerston North, firefighters attended two incidents for roofs lifting off houses. Power had been down in multiple parts of Horowhenua, with *Powerco* clearing trees from lines north of Foxton, which cut power to 26 properties.

In the South Island, SH1 between Blenheim and Seddon was closed for a time due to flooding. The heavy rain also meant the sewerage systems in Blenheim and Seddon were at full capacity and residents were being asked not to flush toilets. In the Tasman District the Riuwaka River was swollen by heavy rain causing surface flooding at Cooks Corner. Tasman District Council reported that slips and trees had affected roads across the region, including around St Arnaud, Motueka Valley Highway, and Moutere. There had also been power cuts in Motueka that had affected 1000 connections in Kaiteriteri and Riwaka. In the West Coast, Buller Electricity reported multiple power outages.

On 18-19 July an active front brought persistent rain to the West Coast with large amounts of spillover into Otago as well as southern Canterbury and the high country. Flooding and a slip cut off the villages of Aoraki/Mount Cook and Lake Ōhau from SH8 Omarama to Tarras (Lindis Pass) and the section between Omarama and Twizel was also closed overnight due to slips. *Environment Canterbury* reported that some rivers and streams originating from the main divide - Ahuriri, Omarama and Otematata had caused localised flooding issues. Aoraki/Mt Cook Village experienced its wettest July day on record with records extending back to 1928. It was also the wettest July day on record at Tara Hills and Clyde with records beginning in 1949 and 1978, respectively.

On 21 July a deep low brought strong winds and persistent rain to the Greater Wellington region and the eastern South Island. Parts of Otago, Christchurch and Banks Peninsula experienced flooding. The Ōpāwaho/Heathcote River burst its banks, leaving some roads submerged in water. Some nearby properties were also impacted by the flooding and several roads around the city are closed. The Timaru District Council declared a State of Emergency for Pleasant Point (near Temuka) after damage to a stopbank.

On 25-26 July a sub-tropical low brought strong winds and heavy rain to the upper North Island before impacting the east of both the North and South islands. Two thousand properties around Waitangi and Paihia lost power and there were several school closures. In Auckland a number of public transport routes were impacted by the weather and all Gulf Harbour ferry services were cancelled. Flooding and slips affected the Coromandel overnight and much of the Peninsula became cut off. A slip also blocked SH33 near Bay of Plenty. On 26 July, heavy rain caused surface flooding and closed roads in Christchurch, where the Avon and Heathcote Rivers burst their banks in places and worsened flooding across the central city. The heavy rain closed schools and shut streets. The Waitaki District Council warned people to stay home as flooding closed more than 20 roads. Four households were evacuated in Lyttelton and Redcliffs because of slips.

On 30-31 July heavy rain overnight caused the closure of SH1 through Seddon and flooding was reported around Nelson and Tasman.

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

Location	Extreme 1-day rainfall (mm)	Date of extreme rainfall	Year records began	Comments
Aoraki/Mt Cook Village	371	18th	1928	Highest
Tara Hills	84	18th	1949	Highest
Clyde	26	18th	1978	Highest
South West Cape	111	26th	1991	Highest
Waimate	90	26th	1898	2nd-highest
Windsor	65	26th	2000	2nd-highest
Warkworth	86	11th	1967	3rd-highest
Auckland (Whenuapai)	69	11th	1943	3rd-highest
Te Puke	101	25th	1973	3rd-highest
Blenheim	69	30th	1927	3rd-highest
Dunedin (Musselburgh)	66	12th	1918	3rd-highest
Oamaru	50	12th	1950	4th-highest
Dunedin (Airport)	44	12th	1962	4th-highest

Wind

On 5 July, strong winds at Bluff tore the roof off a building on the town's main street and brought down power lines.

On 11 July, strong winds brought down power lines in Taranaki, causing power outages for approximately 300 properties across Warea, Eltham, Urenui and Okato.

On 18 July, strong winds in Canterbury and Otago caused power outages affecting more than 1000 homes. The wind also downed trees including on SH1 near Karitane and caused flight disruptions at Dunedin and Christchurch airports.

On 21 July a deep low brought strong southerly winds to the Greater Wellington region. The weather caused most flights in and out of Wellington to be cancelled as well as the Cook Strait ferry crossings. Large waves affected the southern coastal roads and caused widespread erosion.

The highest wind gust recorded during July was 198 km/h, observed at Cape Turnagain on 9 July.

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

Location	Extreme wind gust (km/h)	Date of extreme gust	Year records began	Comments
Baring Head	158	21st	1991	Highest
Puysegur Point	163	18th	1986	Highest
Winchmore	132	18th	1970	Highest
Windsor	89	18th	2001	Highest
Cape Campbell	122	18th	1963	2nd-highest
Middlemarch	109	18th	2000	2nd-highest
Westport	109	12th	1973	Equal 2nd-highest
Clyde	82	17th	1983	Equal 2nd-highest

Paeroa	109	25th	1991	3rd-highest
Aoraki/Mt Cook (Airport)	130	18th	2000	3rd-highest
Oamaru	85	18th	1984	Equal 3rd-highest
Diamond Harbour	95	8th	1980	4th-highest
Kaikohe	82	12th	1986	Equal 4th-highest
Castlepoint	143	13th	1972	Equal 4th-highest
Upper Hutt	87	21st	1999	Equal 4th-highest
Gore	93	18th	1987	Equal 4th-highest

Snow and ice

On 8 July, snow fell to low elevations in many inland parts of the South Island, including Cromwell, Wānaka, and Lake Tekapo. The Crown Range Road was closed due to snow and black ice, while the Haast, Lindis and Burke's Passes were also closed due to snow.

On 12 July, the atmospheric river that brought flooding to parts of the country also brought snow to Canterbury and Otago. SH8 between Fairlie and Lake Tekapo was closed due to snow and ice. SH73 between Springfield and Castle Hill was also closed. Around 50 cm of snow was reported by mid-afternoon in Mount Cook Village.

On 18-19 July snow fell over high elevations in the South Island. NIWA's monitoring station at Mueller Hut (Aoraki/Mt Cook National Park) recorded over half a meter of new snow.

On 26 July SH80 to Aoraki Mt Cook and the Lindis and Burkes passes were closed for a time due to snow.

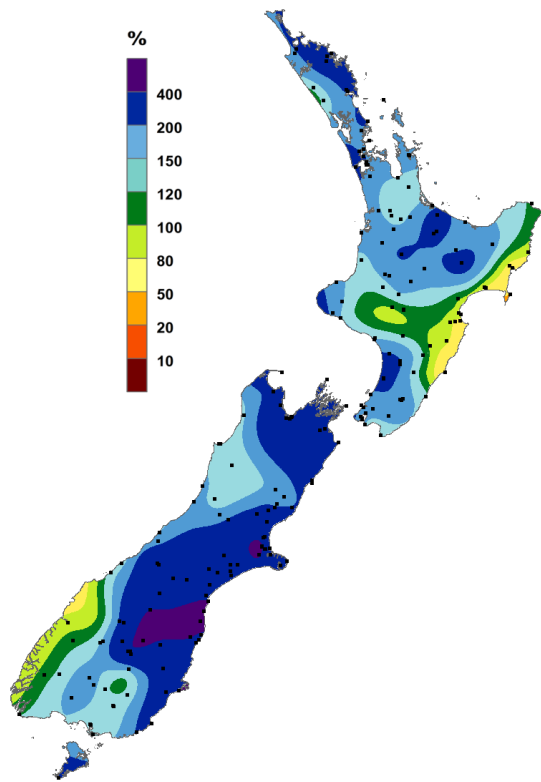
On 31 July the Arthur's, Lindis and Porter's passes (SH6, SH7 and SH73) were closed due to snow. Snow fell to around 300m in interior Canterbury.

For further information, please contact:

Nava Fedaeff

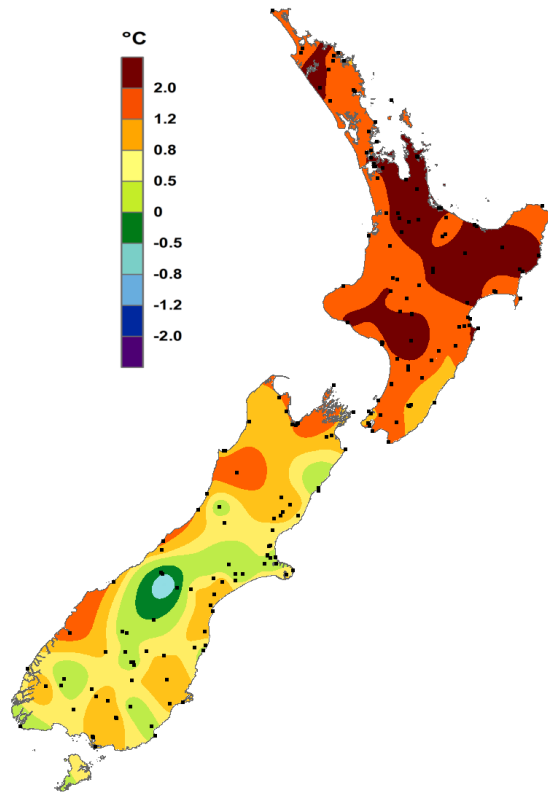
Climate Scientist, NIWA Auckland

Tel. 09 375 6337



July rainfall

Expressed as a percentage of the 1981-2010 normal.



July temperature

Expressed as a departure from the 1981-2010 average in degrees Celsius.

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

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