

## A warm and very dry month for most locations

<b>Rainfall</b>	Below normal rainfall (50-79% of normal) or well below normal rainfall (<50% of normal) was observed across a vast majority of New Zealand, including nearly all of the North Island, along with the upper, western, and lower South Island. Isolated pockets of near normal rainfall (80-119% of normal) were observed in eastern Northland, coastal Gisborne, Mahia Peninsula, and parts of central and southern Canterbury. In addition, a small area of above normal rainfall (120-149% of normal) was observed near Kaikōura.
<b>Temperature</b>	Temperatures were above average (>0.50°C above average) or well above average (>1.20°C above average) across a majority of New Zealand. However, generally near average ( $\pm 0.50^\circ\text{C}$ of average) temperatures were observed along the eastern coasts of both islands, including coastal Gisborne, Hawke's Bay, Wairarapa, Marlborough, and Canterbury.
<b>Soil Moisture</b>	At the end of January, soil moisture levels were lower than normal for the time of year across nearly all of the North Island, except coastal Gisborne where soil moisture was near normal. In the South Island, soil moisture levels were lower than normal in Nelson, Tasman, the West Coast, Otago, and Southland. Soil moisture levels were near normal in Marlborough Sounds and much of Canterbury, and above normal in far northern Canterbury.

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### Overview

January 2022 mean sea level pressure was higher than normal over and southwest of Aotearoa New Zealand and lower than normal to the north of the country. This resulted in more easterly winds than normal. The presence of La Niña conditions in the tropical Pacific and plentiful high pressure in the New Zealand region helped to sustain a marine heatwave in New Zealand's coastal waters during January, with sea temperatures 2-4°C above average at times. The month's high pressure and easterly

winds also resulted in plentiful sunshine across central and western New Zealand. In fact, New Plymouth set a new all-time monthly sunshine record<sup>1</sup> for the country with 358.6 hours in January.

January rainfall was below normal (50-79% of normal) or well below normal (<50% of normal) across a vast majority of New Zealand, including nearly all of the North Island along with the upper, western, and lower South Island. This dryness was primarily caused by the plentiful high pressure over New Zealand during the month. Sixteen locations experienced their driest January on record, while Auckland endured a 37-day dry spell from 17 December 2021 to 22 January 2022, which was the city's 2<sup>nd</sup>-longest dry spell since records began in 1943. In addition, a plethora of towns and cities around New Zealand instituted water restrictions during January. (see *Highlights and extreme events* section for more details).

January temperatures were above average (>0.50°C above average) or well above average (>1.20°C above average) across most of the country, although near average temperatures were observed along the east coasts of both islands due to more easterly (onshore) winds than normal during the month.

#### **Further Highlights:**

- The highest temperature was 34.7°C, observed at Lake Karapiro (Waikato) on 4 January.
- The lowest temperature was 0.4°C, observed at Invercargill on 28 January.
- The highest 1-day rainfall was 54.6 mm, recorded at Pigeon Creek (West Coast) on 19 January.
- The highest wind gust was 139 km/h, observed at Cape Turnagain on 27 January.
- Of the six main centres in January 2022, Tauranga was the warmest and sunniest, Dunedin was the coolest and least sunny, Auckland was the driest, and Christchurch was the wettest.
- Of the available, regularly reporting sunshine observation sites, the sunniest four locations so far in 2022 are Taranaki (358.6 hours), Wider Nelson (344.9 hours), Bay of Plenty (342.5 hours), and Wellington (336.4 hours).

#### **For further information, please contact:**

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<sup>1</sup> It is important to note that sunshine durations in New Zealand have been measured with different instruments over time. Contemporary observations are typically made with *Kipp & Zonen* instruments (electronic), whereas historic observations were made with *Campbell Stokes* instruments (manual). As such, these data are not reliably comparable. This topic was examined by NIWA Scientists in 2019 – for further information see <https://www.jstor.org/stable/26892910>

## Rainfall: A very dry month for much of New Zealand

January rainfall was below normal (50-79% of normal) or well below normal (<50% of normal) across a vast majority of New Zealand, including nearly all of the North Island, along with the upper, western, and lower South Island. Isolated pockets of near normal rainfall (80-119% of normal) were observed in eastern Northland, coastal Gisborne, Mahia Peninsula, and parts of central and southern Canterbury. In addition, a small area of above normal rainfall (120-149% of normal) was observed near Kaikōura.

Although many locations experienced their record or near-record driest January, it was a particularly dry month in the western North Island, where several locations received less than 10% of their normal rainfall. This included Whanganui, where no rainfall was recorded during the month, making it the city's driest January since records began there in 1890. Similarly, Taumarunui observed only 1 mm of rain during January. Conversely, a persistent, moist, onshore wind flow allowed Kaikōura to receive 127% of its normal monthly rainfall. In addition, the lack of rainfall led to rapidly drying soils during January. By the end of the month, the New Zealand Drought Index (NZDI) indicated that meteorological drought had emerged in western Northland and small pockets of Waikato.

### Record<sup>2,3</sup> or near-record January rainfall totals were recorded at:

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
<b>High records or near-records</b>				
None observed				
<b>Low records or near-records</b>				
Auckland (Western Springs)	3	4	1948	Lowest
Taupō	4	5	1949	Lowest
Whatawhata	10	10	1952	Lowest
New Plymouth	9	10	1944	Lowest
Lower Retaruke	10	10	1966	Lowest
Mt Ruapehu Chateau	24	13	2000	Lowest
Upper Hutt	3	4	1924	Lowest
Waiouru	6	8	1950	Lowest
Whanganui	0	0	1890	Lowest
Reefton	27	19	1960	Lowest
Greymouth	52	25	1947	Lowest
Franz Josef	42	10	1926	Lowest
Milford Sound	48	7	1929	Lowest
Mt Cook (Airport)	22	5	1928	Lowest
Wānaka	3	6	1927	Lowest
Manapouri (West Arm Jetty)	25	5	1971	Lowest
Dannevirke	4	5	1951	Equal lowest
Auckland (Māngere)	5	8	1959	2nd-lowest

<sup>2</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.

<sup>3</sup> All normal values in this climate summary are compared to the 1981-2010 normals.

Hamilton (Airport)	6	7	1935	2nd-lowest
Taumarunui	1	1	1913	2nd-lowest
Tūrangi	7	6	1968	2nd-lowest
Paraparaumu	6	13	1945	2nd-lowest
Westport	45	29	1944	2nd-lowest
Hokitika	51	22	1866	2nd-lowest
Puysegur Point	68	28	1879	2nd-lowest
Manapouri	10	13	1961	2nd-lowest
Tiwai Point	32	28	1970	2nd-lowest
Auckland (Albany)	5	7	1966	Equal 2nd-lowest
Hamilton (Ruakura)	6	8	1905	Equal 2nd-lowest
Te Kuiti	9	9	1950	3rd-lowest
Haast	47	12	1941	3rd-lowest
Arthur's Pass	38	9	1906	3rd-lowest
Dunedin (Airport)	23	34	1962	3rd-lowest
Clyde	11	21	1978	3rd-lowest
Pukekohe	6	9	1944	4th-lowest
Palmerston North	14	22	1928	4th-lowest
Wellington (Airport)	11	19	1958	4th-lowest
Hāwera	11	14	1977	4th-lowest
Ohakune	12	12	1961	4th-lowest
Invercargill	33	29	1900	4th-lowest
Balclutha	24	34	1964	4th-lowest

## Temperature: Warm everywhere except the eastern coasts

January temperatures were above average ( $>0.50^{\circ}\text{C}$  above average) or well above average ( $>1.20^{\circ}\text{C}$  above average) across a majority of New Zealand. However, generally near average ( $\pm 0.50^{\circ}\text{C}$  of average) temperatures were observed along the eastern coasts of both islands, including coastal Gisborne, Hawke's Bay, Wairarapa, Marlborough, and Canterbury. The first few days of 2022 featured hot temperatures across much of New Zealand, with several locations observing near-record daily maximum temperatures between 2-5 January. This was caused by a combination of a warm air mass overhead, plentiful sunshine due to high pressure, and a northeasterly wind flow.

The nationwide average temperature in January 2022 was  $18.2^{\circ}\text{C}$ . This was  $1.1^{\circ}\text{C}$  above the 1981-2010 January average from NIWA's seven station temperature series which begins in 1909, and New Zealand's 13<sup>th</sup>-warmest January on record.

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

Location	Mean air temp. ( $^{\circ}\text{C}$ )	Departure from normal ( $^{\circ}\text{C}$ )	Year records began	Comments
High records or near-records				
Cape Reinga	20.6	1.6	1951	Highest
Whangaparāoa	21.5	1.9	1982	2nd-highest
Leigh	22.0	2.5	1966	3rd-highest
Auckland (Whenuapai)	20.6	1.6	1945	3rd-highest

Whitianga	20.8	1.9	1962	3rd-highest
Taupō	19.5	2.4	1949	3rd-highest
Auckland (Airport)	21.6	1.8	1959	3rd-highest
Pukekohe	20.7	2.1	1969	3rd-highest
Mt Ruapehu Chateau	14.3	1.9	2000	3rd-highest
Brothers Island	17.9	1.5	1997	3rd-highest
Mt Cook (Village)	17.0	2.4	1929	3rd-highest
Kaitaia	21.2	1.8	1948	4th-highest
Dargaville	20.6	1.5	1943	4th-highest
Mokohinau	21.0	1.2	1994	4th-highest
Reefton	19.2	2.3	1960	4th-highest
Puysegur Point	15.1	1.3	1978	4th-highest
Manapouri (West Arm Jetty)	16.6	2.0	1971	4th-highest
South West Cape	14.0	0.9	1991	4th-highest
<b>Low records or near-records</b>				
None observed				

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

Location	Mean maximum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
<b>High records or near-records</b>				
Cape Reinga	23.8	1.7	1951	Highest
Whangaparāoa	25.7	2.4	1982	Highest
Auckland (Whenuapai)	26.1	2.5	1945	Highest
Paeroa	28.0	2.9	1947	Highest
Matamata	27.8	3.5	1999	Highest
Rotorua	26.2	3.9	1964	Highest
Taupō	27.8	5.1	1949	Highest
Auckland (Airport)	26.2	2.6	1959	Highest
Hamilton (Airport)	27.4	3.1	1946	Highest
Te Kuiti	27.8	3.6	1959	Highest
Taumarunui	28.3	4.2	1947	Highest
Tūrangi	26.5	3.4	1968	Highest
Mt Ruapehu Chateau	21.8	3.9	2000	Highest
Leigh	26.3	3.8	1966	2nd-highest
Whitianga	26.7	2.8	1962	2nd-highest
Te Puke	26.3	2.7	1973	2nd-highest
Whakatāne	26.0	2.0	1974	2nd-highest
Whatawhata	26.8	3.5	1952	2nd-highest
New Plymouth	24.4	2.9	1944	2nd-highest
Lower Retaruke	27.1	3.3	1966	2nd-highest
Waipawa	26.5	2.0	1945	2nd-highest
Brothers Island	20.8	2.1	1997	2nd-highest
Manapouri (West Arm Jetty)	22.4	2.8	1971	2nd-highest
Tauranga	25.9	2.0	1913	3rd-highest
Hamilton (Ruakura)	27.3	3.3	1906	3rd-highest
Porirua	23.2	1.8	1968	3rd-highest
Stratford	23.6	2.8	1960	3rd-highest

Waiouru	22.9	3.3	1962	3rd-highest
Reefton	26.1	3.2	1960	3rd-highest
Mt Cook (Airport)	24.2	3.8	1929	3rd-highest
Cromwell	27.9	3.5	1949	3rd-highest
Pukekohe	26.4	3.1	1969	4th-highest
Whanganui	24.5	2.0	1937	4th-highest
Tākaka	25.6	2.6	1978	4th-highest
Motueka	25.3	2.0	1956	4th-highest
Arthur's Pass	21.9	3.6	1973	4th-highest
Wānaka	26.8	3.0	1955	4th-highest
<b>Low records or near-records</b>				
None observed				

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

Location	Mean minimum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
<b>High records or near-records</b>				
Mokohinau	18.9	1.6	1994	2nd-highest
Puysegur Point	12.6	1.4	1978	3rd-highest
South West Cape	11.1	1.1	1991	3rd-highest
Cape Reinga	17.3	1.4	1951	4th-highest
Mahia	15.7	1.0	1990	4th-highest
Secretary Island	12.6	1.1	1985	4th-highest
<b>Low records or near-records</b>				
None observed				

## January climate in the six main centres

January rainfall was well below normal in all main centres except Christchurch, where rainfall was near normal. In addition, Auckland and Hamilton both had their 2<sup>nd</sup>-driest January on record. Temperatures were above average or well above average in all main centres except Christchurch, where near average temperatures were observed. Of the six main centres in January 2022, Tauranga was the warmest and sunniest, Dunedin was the coolest and least sunny, Auckland was the driest, and Christchurch was the wettest.

### January 2022 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland <sup>a</sup>	21.1	+1.5	Well above average
Tauranga <sup>b</sup>	21.2	+1.7	Well above average
Hamilton <sup>c</sup>	19.8	+1.5	Well above average
Wellington <sup>d</sup>	18.0	+1.1	Above average
Christchurch <sup>e</sup>	17.3	+0.1	Near average
Dunedin <sup>f</sup>	16.3	+1.0	Above average
Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland <sup>a</sup>	5	9	2nd-lowest on record
Tauranga <sup>b</sup>	26	33	Well below normal
Hamilton <sup>c</sup>	6	7	2nd-lowest on record
Wellington <sup>d</sup>	17	23	Well below normal
Christchurch <sup>e</sup>	36	101	Near normal
Dunedin <sup>f</sup>	30	41	Well below normal
Sunshine			
Location	Sunshine (hours)		
Auckland <sup>a</sup>	312		
Tauranga <sup>b</sup>	324		
Hamilton <sup>g</sup>	312		
Wellington <sup>d</sup>	301		
Christchurch <sup>e</sup>	294		
Dunedin <sup>f</sup>	236		

<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

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## Highlights and extreme events

### Dryness and drought

The highest 1-day rainfall was 54.6 mm, recorded at Pigeon Creek (West Coast) on 19 January.

Auckland City experienced a 37-day dry spell from 17 December to 22 January, which was its 2<sup>nd</sup>-longest dry spell since records began in 1943.

A plethora of locations around NZ instituted water restrictions during January due to the very dry month. Wellington and South Wairarapa entered Level 2 water restrictions, limiting outdoor water use. Level 2 restrictions were also enacted in the Matamata-Piako District, Te Kuiti, Levin, Ōhau, and Lake Hāwea, while restrictions on sprinkler usage began in Picton, Richmond, Stratford, much of Southland, Masterton, and Carterton. Kaipara District Council moved to Level 3 restrictions in Dargaville and Baylys Beach, as did the Hauraki District Council.

The lack of rainfall during January led to rapidly drying soils across New Zealand. By the end of the month, the New Zealand Drought Index (NZDI) indicated that meteorological drought had emerged in western Northland and small pockets of Waikato.

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

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

### Temperatures

The highest temperature was 34.7°C, observed at Lake Karapiro (Waikato) on 4 January.

The lowest temperature was 0.4°C, observed at Invercargill on 28 January.

The first few days of 2022 featured hot temperatures across much of New Zealand, with many locations exceeding 30°C, and some observing near-record daily maximum temperatures between 2-5 January. This was caused by a combination of a warm air mass overhead, plentiful sunshine due to high pressure, and a northeasterly wind flow.

The generally settled weather in January led to a continuation of marine heatwave conditions in the waters surrounding New Zealand. Particularly early in the month, sea temperatures were 2-4°C above average.

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

Location	Extreme maximum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Taupō	33.2	4th	1949	Equal highest
Lower Retaruke	31.5	4th	1966	Equal highest
Cape Reinga	26.3	12th	1951	2nd-highest
Mokohinau	27.0	5th	1994	2nd-highest
Auckland (Whenuapai)	30.1	4th	1945	2nd-highest



Te Kuiti	32.6	4th	1959	2nd-highest
Mt Ruapehu Chateau	27.3	4th	2000	2nd-highest
Kaitaia	30.0	4th	1948	3rd-highest
Whitianga	31.4	18th	1962	3rd-highest
Rotorua	30.8	3rd	1964	3rd-highest
Taumarunui	33.1	4th	1947	Equal 3rd-highest
Leigh	29.7	18th	1966	4th-highest
Motu	28.5	5th	1990	4th-highest
Brothers Island	25.0	30th	1997	4th-highest
Invercargill	32.2	2nd	1905	4th-highest
Hamilton (Airport)	31.2	4th	1946	Equal 4th-highest
Wellington (Airport)	28.2	2nd	1962	Equal 4th-highest
<b>Low records or near-records</b>				
None observed				

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

Location	Extreme minimum (°C)	Date of extreme temperature	Year records began	Comments
<b>High records or near-records</b>				
Paraparaumu	21.1	2nd	1972	Highest
South West Cape	15.7	18th	1991	3rd-highest
Porirua	18.6	25th	1972	4th-highest
Franz Josef	16.5	19th	1953	4th-highest
Brothers Island	17.1	25th	1997	4th-highest
Secretary Island	16.8	18th	1988	Equal 4th-highest
<b>Low records or near-records</b>				
None observed				

#### Wind

The highest wind gust was 139 km/h, observed at Cape Turnagain on 27 January.

On 17 January, ex-Tropical Cyclone Cody passed just east of the North Island, bringing some gusty winds to East Cape and large swell to the east coast. By 18 January it had impacted the Chatham Islands with gusty winds and heavy rain.

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

Location	Extreme wind gust (km/h)	Date of extreme gust	Year records began	Comments
Cape Campbell	111	27th	1963	Equal 3rd-highest

#### Volcanic activity

On 15 January, the Hunga Tonga–Hunga Haʻapai volcano in Tonga experienced a powerful eruption, ejecting an estimated 400,000 tonnes of sulphur dioxide into the atmosphere. However, due to the prevailing upper-level wind patterns, little of the sulphur dioxide reached NZ.

The eruption also caused a pressure wave which was measured by weather stations in NZ at a maximum amplitude of approximately 7 hectopascals. The pressure wave moved across NZ at approximately 1230 km/h.

A tsunami caused by the eruption reached northern NZ early on 16 January. Most notably, it caused extensive damage at the Tutukaka marina in Northland, as several boats sank completely, as well as damaging structures at the marina.

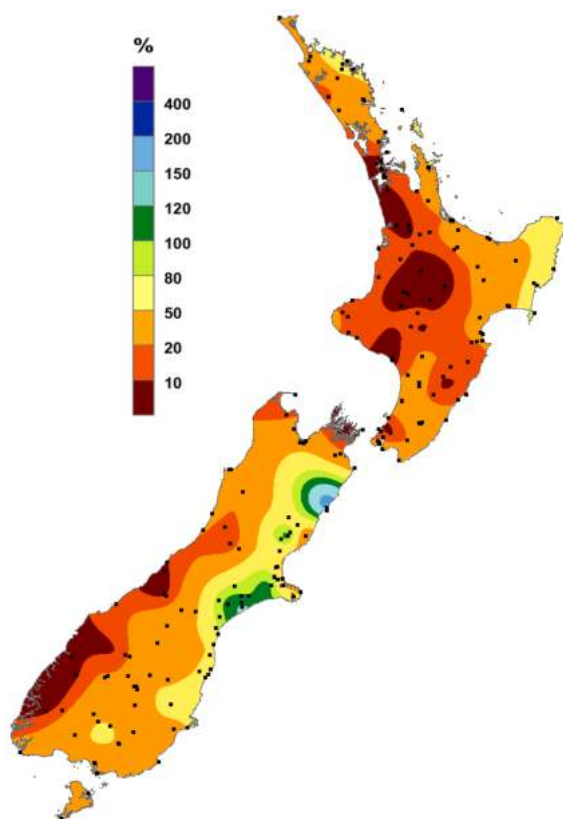
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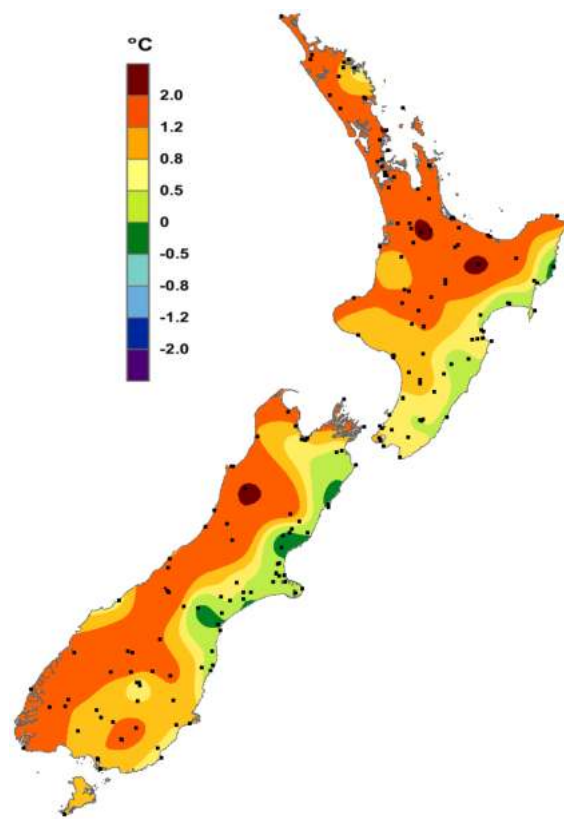
Meteorologist, NIWA Auckland

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**January rainfall**

Expressed as a percentage of the 1981-2010 normal.



**January 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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