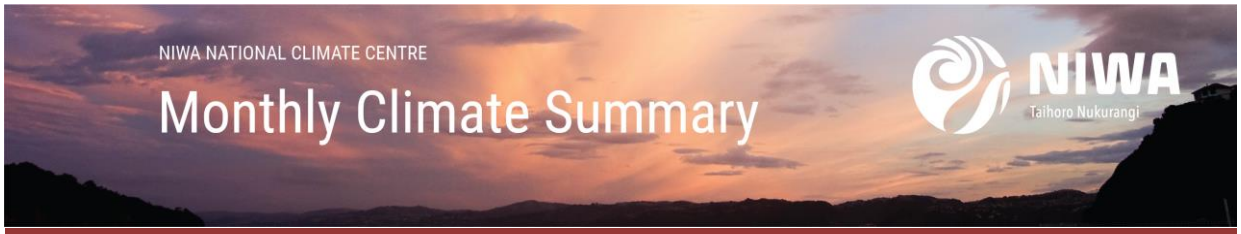

Aotearoa New Zealand Climate Summary: **September 2022** Issued: 4 October 2022

Wet for the eastern North Island, dry for the South Island

Rainfall	Rainfall was above normal (120-149% of normal) or well above normal rainfall (>149% of normal) in parts of northern Northland and Auckland, Waikato, Bay of Plenty, Gisborne, Hawke's Bay, Wairarapa and southeastern Marlborough. Rainfall was below normal (50-79% of normal) or well below normal (<50% of normal) for most of the South Island, parts of Kāpiti Coast, and central parts of Northland. Near normal rainfall (80-119% of normal) was typically observed elsewhere.
Temperature	Temperatures were near average (within ±0.50°C of average) for most of the country. Areas of above average temperatures (0.51°C to 1.20°C above average) were observed in coastal Southland, West Coast, isolated eastern parts of Canterbury, Nelson, Tasman, Manawatū, Hawke's Bay, inland Gisborne, eastern Bay of Plenty, central Waikato, and northern Northland.
Soil Moisture	At the end of the month, and for the time of year, soil moisture levels were higher than normal in coastal parts of Gisborne and Hawke's Bay, much of Marlborough, and Kaikōura. Soil moisture levels were also higher than normal for a small portion of Central Otago about Alexandra, Clyde, and Cromwell, which was a relic of the exceptionally high rainfall observed in these parts during July and August. Soil moisture levels were typically near normal for most remaining parts of New Zealand. The exception was eastern parts of Otago, where soil moisture levels were lower than normal.

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

Overview

September 2022 was characterised by higher than normal mean sea level pressure (MSLP) over Aotearoa New Zealand, but especially near the South Island. This produced more northeasterly airflow than normal in the North Island, and more easterly airflow than normal in the South Island. The prominence of high pressure systems over and near the South Island deflected moisture-bearing low pressure systems off towards the north of the country, with North Island areas exposed to the east bearing the brunt of the precipitation as these low pressure systems passed by. The relative lack of westerly winds during the month was notable because these are a hallmark of early spring weather patterns in New Zealand.

The observed MSLP patterns for the month were associated with a continuation of a moderate La Niña event, and a positive Southern Annular Mode (SAM). The SAM is a proxy for the location of a belt of

westerly winds that encircle the South Ocean and occasionally protrude into the mid-latitudes. Usually, a positive SAM can indicate calmer and drier conditions for New Zealand, and this was certainly the case for most of the South Island.

Rainfall was above normal (120-149% of normal) or well above normal rainfall (>149% of normal) in parts of northern Northland and Auckland, Waikato, Bay of Plenty, Gisborne, Hawke's Bay, Wairarapa and southeastern Marlborough. It was an exceptionally wet month about western Bay of Plenty, Gisborne, Hawke's Bay and coastal Wairarapa where more than 200% of normal September rainfall was recorded. Rainfall was below normal (50-79% of normal) or well below normal (<50% of normal) for most of the South Island, Stewart Island, parts of Kāpiti Coast, and central parts of Northland. Near normal rainfall (80-119% of normal) was commonly observed in Tasman, Nelson, inland Marlborough, western parts of the North Island and Auckland.

Temperatures were near average (±0.50°C of average) for most of the country during the month. The exception was areas of coastal Southland, West Coast, isolated eastern parts of Canterbury, Nelson, Tasman, Manawatū, Hawke's Bay, inland Gisborne, eastern Bay of Plenty, central Waikato, and northern Northland, where temperatures were above average (0.51°C to 1.20°C above average). Overall, the nationwide average temperature in September 2022 was 11.0°C. This was 0.4°C above the 1981-2010 September average, making it New Zealand's 19th-warmest September since NIWA's seven station temperature series began in 1909.

Further Highlights:

- The highest September temperature was 24.2°C, observed at Akaroa on 29 September.
- The lowest September temperature was -9.6°C, observed at Mount Cook Airport on 6 September.
- The highest 1-day rainfall was 168 mm, recorded at Lake Moeraki on 1 September.
- The highest wind gust was 176 km/h, observed at Cape Turnagain on 4 September.
- Of the six main centres in September 2022, Auckland was the warmest, Christchurch was the sunniest and driest, Tauranga was the wettest, Wellington was the least sunny, and Christchurch and Dunedin were the equal-coldest.
- Of the available, regularly reporting sunshine observation sites, the sunniest four regions in 2022 so far are Taranaki (1907 hours), Bay of Plenty (1863 hours), Wider Nelson (1806 hours), and Auckland (1750 hours).

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Rainfall: Very wet for eastern and inland parts of the North Island

It was an exceptionally wet month for several eastern and inland locations of the North Island. Taupō observed its wettest September since records began in 1949, with 197 mm of rainfall. Napier and Gisborne observed 384% and 298% of normal September rainfall respectively, making it the second-wettest September in well over 100 years of records at both locations.

In contrast, it was a dry month for much of the South Island, although no locations observed record or near-record rainfall totals. Most notable were Manapouri and Queenstown, which observed just 28% and 31% of normal September rainfall, respectively.

Record[1] or near-record September rainfall totals were recorded at:

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
High records or near-records				
Taupō	197	242	1949	Highest
Mokohinau	132	187	1994	2nd-highest
Te Puke	299	237	1973	2nd-highest
Hicks Bay	317	333	1916	2nd-highest
Gisborne	214	298	1905	2nd-highest
Napier	187	384	1870	2nd-highest
Low records or near-records				
None Observed				

Temperature: Near average for much of the country

Temperatures were typically near average across New Zealand during September, although there were areas of above average temperatures in both the North and South Islands. A cold outbreak early in September (see *Highlights and extreme events* section for further details) was offset by relatively warm temperatures for most of the remainder of September, such that relatively few locations observed record or near-record mean temperatures.

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

Location	Mean air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Leigh	15.1	1.4	1966	Highest
Motu	11.4	2.9	1990	Highest
Whangaparāoa	14.0	0.8	1982	2nd-highest
Cape Reinga	14.1	0.6	1951	3rd-highest
Whakatāne	12.9	0.9	1974	3rd-highest
Porirua	11.3	0.2	1968	3rd-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.

Mokohinau	14.6	0.8	1994	4th-highest
Low records or near-records				
None observed				

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

Location	Mean maximum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Leigh	19.1	2.7	1966	Highest
Motu	16.2	3.3	1990	Highest
Whangaparāoa	17.3	1.0	1982	2nd-highest
Greymouth	15.3	1.2	1947	3rd-highest
Auckland (Māngere)	17.4	1.2	1959	4th-highest
Porirua	14.8	0.1	1968	4th-highest
Low records or near-records				
None observed				

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

Location	Mean minimum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Mokohinau	12.8	0.8	1994	Highest
Motu	6.7	2.6	1990	Highest
Whakatāne	8.4	1.5	1974	4th-highest
Low records or near-records				
None observed				

September climate in the six main centres

September temperatures were above average for Tauranga, while temperatures were near average for remaining main centres. As well as observing relative warmth, it was a particularly wet month in Tauranga, with 292% of normal September rainfall. The prevalence of high pressure over the and near the South Island was reflected in the sunshine totals, with Christchurch and Dunedin recording higher total sunshine hours compared to their North Island counterparts. Of the six main centres in September 2022, Auckland was the warmest, Christchurch was the sunniest and driest, Tauranga was the wettest, Wellington was the least sunny, and Christchurch and Dunedin were the equal-coldest.

September 2022 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland[a]	13.5	+0.5	Near average
Tauranga[b]	13.1	+0.7	Above average
Hamilton[c]	11.5	+0.2	Near average
Wellington[d]	10.9	+0.1	Near average
Christchurch[e]	9.7	+0.3	Near average
Dunedin[f]	9.7	+0.2	Near average
Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland[a]	105	102	Near normal
Tauranga[b]	248	292	Well above normal
Hamilton[c]	164	163	Well above normal
Wellington[d]	132	135	Above normal
Christchurch[e]	27	65	Below normal
Dunedin[f]	35	73	Below normal
Sunshine			
Location	Sunshine (hours)		
Auckland[a]	168		
Tauranga[b]	166[2]		
Hamilton[g]	157		
Wellington[d]	155		
Christchurch[e]	178		
Dunedin[f]	174		

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

[2] Missing one day of data.

Highlights and extreme events

Rain and slips

The highest 1-day rainfall was 168 mm, recorded at Lake Moeraki on 1 September.

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

Location	Extreme 1-day rainfall (mm)	Date of extreme rainfall	Year records began	Comments
Taumarunui	80	19th	1913	Equal 2nd-highest
Te Puke	72	30th	1973	3rd-highest
Auckland (Airport)	51	5th	1959	3rd-highest
Haast	130	1st	1943	3rd-highest
Tūrangi	58	19th	1968	4th-highest
Ōkārito	85	1st	1981	4th-highest

Temperatures

The highest September temperature was 24.2°C, observed at Akaroa on 29 September.

The lowest September temperature was -9.6°C, observed at Mount Cook Airport on 6 September.

From 5-7 September, a cold front delivered a pool of cold air over New Zealand, with low daily maximum and minimum temperatures observed in many regions of the country. Pukekohe recorded a daily maximum of 9.8°C on 5 September; its equal-lowest daily maximum temperature for September since records began in 1969. Mount Cook Airport recorded a daily minimum temperature of -9.6°C on 6 September; its lowest daily minimum temperature for September since records began in 1929.

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

Location	Extreme maximum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Motu	22.4	24th	1990	2nd-highest
Auckland (Māngere)	21.4	25th	1959	Equal 4th-highest
Low records or near-records				
Pukekohe	9.8	5th	1969	Equal lowest
Hamilton (Ruakura)	9.9	5th	1940	2nd-lowest
Castlepoint	7.8	6th	1972	2nd-lowest
Waikeria	10.7	5th	1972	Equal 2nd-lowest
Matamata	11.0	5th	1999	3rd-lowest
Hamilton (Airport)	10.2	5th	1946	3rd-lowest
Puysegur Point	6.8	5th	1978	3rd-lowest
Balclutha	4.9	5th	1972	3rd-lowest
Nugget Point	3.7	5th	1972	3rd-lowest
Whakatāne	11.2	5th	1975	Equal 3rd-lowest
Taupō	7.9	5th	1950	4th-lowest
Te Kuiti	10.2	5th	1959	4th-lowest
Taumarunui	8.7	5th	1947	4th-lowest

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

Location	Extreme minimum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Motu	13.6	30th	1990	Highest
Cape Reinga	14.8	29th	1971	Equal highest
Auckland (Western Springs)	15.7	30th	1971	2nd-highest
Kaikōura	13.6	29th	1972	2nd-highest
Whangaparāoa	14.6	30th	1982	3rd-highest
Porirua	13.0	2nd	1972	Equal 3rd-highest
Port Taharoa	14.7	30th	1974	4th-highest
Mokohinau	15.4	30th	1994	Equal 4th-highest
Motueka	12.4	29th	1972	Equal 4th-highest
Low records or near-records				
Mt Cook (Airport)	-9.6	6th	1929	Lowest
Rotorua	-3.0	7th	1964	2nd-lowest
Waipawa	-3.2	7th	1945	2nd-lowest
Cheviot	-4.1	15th	1982	Equal 2nd-lowest
Campbell Island	-3.1	4th	1991	Equal 2nd-lowest
Māhia	3.2	7th	1990	3rd-lowest
Appleby	-3.1	7th	1932	3rd-lowest
Christchurch	-4.7	7th	1863	3rd-lowest
Clyde	-6.2	6th	1978	3rd-lowest
Orari Estate	-3.4	6th	1972	Equal 3rd-lowest
Whakatu	-2.6	7th	1965	4th-lowest
Tākaka	-1.7	7th	1978	4th-lowest
Le Bons Bay	0.6	6th	1984	4th-lowest
Wānaka	-4.6	6th	1955	4th-lowest

Wind

The highest wind gust was 176 km/h, observed at Cape Turnagain on 4 September.

On 4 September, strong winds toppled approximately 30 shipping containers at Bluff Port. There were also power outages caused by downed power lines for about 5000 customers in Bluff, Riverton and Otatara. At Queens Park golf course in Invercargill, 30 trees were brought down by the wind, whilst 11 flights into and out of Invercargill Airport were cancelled.

On 6 September, power lines were brought down by strong winds In Hāwera, cutting power to 135 households. In Morrinsville, 121 households were without power due to trees falling on power lines. Fallen trees also took out power lines on SH1 south of Kaitaia, with about 500 people without power in that area.

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

Location	Extreme wind gust (km/h)	Date of extreme gust	Year records began	Comments
Invercargill	115	4th	1972	2nd-highest

Te Puke	63	6th	1987	Equal 3rd-highest
Tūrangi	95	13th	1973	4th-highest
Hāwera	96	6th	1986	4th-highest

Lightning and hail

On 21 September, a thunderstorm struck parts of Hawke's Bay, with thunder, lightning and accumulations of hail reported, particularly about Hastings.

Snow and ice

On 5-6 September, a cold outbreak resulted in snow falling to low elevations for parts of New Zealand. Snow flurries were reported in central Dunedin on 5 September, with snow and ice causing treacherous conditions about the hill suburbs of the city on 6 September. Farther north, snow fell to sea level at Christchurch with light accumulations of snow reported in parts of the city. The snowfalls caused road closures in both the South and North Islands, including SH87 between Outram and Middlemarch, SH1 between Dunedin and Waitati, the Desert Road between Waiouru and Rangipō, and SH5 between Napier and Taupō.

On 13 September, cold southerlies delivered a light snowfall to parts of Southland, including Garston and Kingston.

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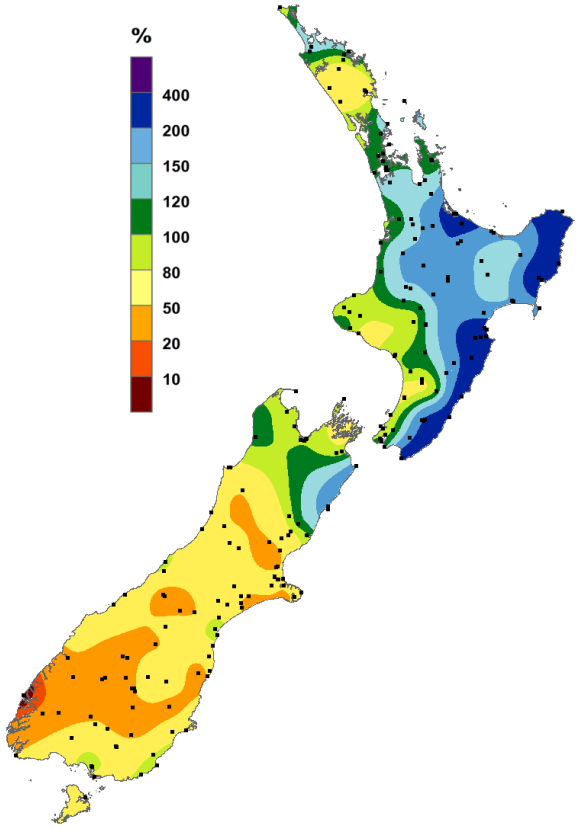
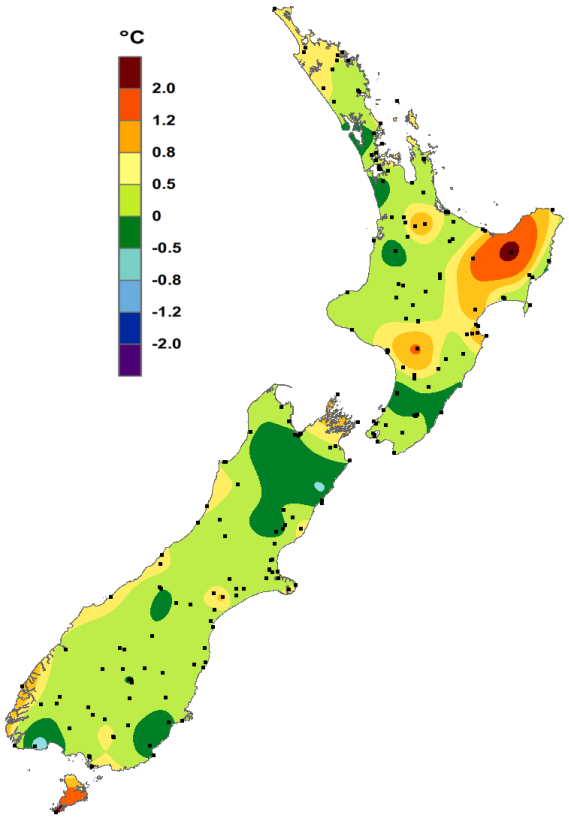


September rainfall
Expressed as a percentage of the 1981-2010 normal.



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

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