

National Climate Summary – March 2009: Extremely dry, very sunny, and cool for much of the country as anticyclones prevail

- Rainfall: Record low rainfall in parts of Wairarapa, Marlborough, north Canterbury, north and central Otago. Very dry in other areas except the western Bay of Plenty and eastern Otago.
- Sunshine: Record March sunshine in Northland, Auckland, King Country, and central South Island; above normal elsewhere.
- Temperature: Below average over most of the country; well below average for parts of southern Hawke's Bay.

Exceptionally low rainfall occurred in Marlborough, north Canterbury, Tekapo, north and central Otago where less than 10 mm was recorded at some locations. It was also well below normal (less than 50% of normal) in Waikato, Taranaki, Hawke's Bay, southern Manawatu and Wellington. Rainfall was below normal elsewhere (between 50 and 80 percent of normal) except in western Bay of Plenty and eastern Otago (where rainfall was between 120 and 200% of normal).

Extremely high sunshine totals for March were recorded in the north of the North Island where values were 30% or more above average. A new March record of 268 sunshine hours (144 percent of normal) occurred in Kaitia. Other areas of New Zealand received above normal (between 110 and 125% of normal) sunshine for the month.

Temperatures were cooler than average over most of the country for March. Averaged over the whole month, temperatures were below average (by between -0.5 and -1.5°C) for all of the North Island except for Northland, Bay of Plenty and East Cape and over all of the South Island except for north Canterbury, Otago and Southland (where temperatures were near or slightly below normal). Temperatures in parts of Southern Hawke's Bay were well below normal (by between -1.5 and -2.0°C). The national average temperature of 15.1°C was 0.6°C below the long-term average for March.

The most significant extreme weather events to impact on the country in March were on the 5th to the 7th and on the 17th. The 5–7 March storm crossed the upper North Island and moved down to the Bay of Plenty. Winds reached 150 km/h at Cape Reinga. The high winds, heavy rain and lightning strikes caused property damage and brought down trees and power lines. On 17 March, heavy rain caused surface flooding, landslips, and sewer overflows in Tauranga.

March 2009 was dominated by the slow passage of anticyclones ("highs") coming over New Zealand from the west. Frequently, these highs stalled over the Tasman Sea resulting in south to south-westerly air flows over New Zealand, which contributed to the cooler-than-normal temperatures experienced during the month. The generally anticyclonic conditions also resulted in the very dry and sunny conditions for March, with a lack of extreme events.

Further Highlights:

- The highest temperature during March 2009 was 30.5°C recorded at Hastings on the 1st. The lowest temperature during March was recorded in the Hakataramea Valley (near Kurow) on the 22nd, where the minimum temperature was -2.8°C.
- The highest 1-day rainfall total for March was 147 mm recorded at Te Puke on the 6th (the second highest March 1-day total for this location, since records began in 1973).
- The wind gust of 163 km/hr recorded on the Takapau Plains (southern Hawke's Bay) on the 12th was the highest gust for March for New Zealand.
- Of the six main centres, Tauranga was the warmest and wettest, Auckland was the sunniest and Christchurch was the driest.

RAINFALL: DRY FOR MOST AREAS, WITH EXCEPTIONALLY LOW TOTALS IN SOME

Rainfall was below normal (between 50 and 80 percent of normal) for most of New Zealand except in western Bay of Plenty and eastern Otago (where rainfall was between 120 and 200% of normal). Rainfall for March was well below normal (less than 50% of normal) in Waikato, Taranaki, Hawke's Bay, southern Manawatu, Wellington, Marlborough, Canterbury and central Otago. Ohakune, Culverden and Cromwell received their lowest ever rainfall totals for March.

Extreme (high and low) March rainfall totals were recorded at:

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
Te Puke	325	209	1973	3rd-highest
Kumeu (Waitakere)	40	41	1978	3rd-lowest
East Taratahi	7	8	1926	2nd-lowest
Palmerston North	15	21	1928	2nd-lowest
Levin	20	20	1895	4th-lowest
Wellington Aero	20	27	1958	4th-lowest
Hawera	30	33	1977	3rd-lowest
Ohakune	26	30	1961	Lowest
Wanganui	28	41	1987	3rd-lowest
Takaka	42	28	1976	4th-lowest
Lake Rotoiti	37	34	1933	3rd-lowest
Blenheim	10	20	1941	4th-lowest
Hanmer Forest	11	11	1905	2nd-lowest
Culverden	3	5	1921	Lowest
Timaru	11	21	1881	4th-lowest
Tara Hills	6	13	1949	2nd-lowest
Cromwell	7	15	1949	Lowest

SUNSHINE: ABOVE NORMAL FOR MOST OF COUNTRY, RECORD VALUES IN THE NORTH

Much of New Zealand received above normal (between 110 and 125% of normal) sunshine for the month, with Northland, Auckland, King Country, and central South Island receiving well above normal (greater than 125% of normal) sunshine hours.

Extreme (high and low) March sunshine hours were recorded at:

Location	Sunshine (hours)	Percentage of normal	Year records began	Comments
Kaitaia	268	144	1985	Highest
Dargaville	232	136	1943	2nd-highest
Te Kuiti	223	141	1962	2nd-highest
Taumarunui	210	135	1947	3rd-highest
Turangi	225	130	1976	2nd-highest
Takaka	238	108	1985	3rd-highest
Nelson	263	124	1948	Equal 3rd-highest
Cheviot	212	113	1983	3rd-highest

TEMPERATURE: COOLER THAN NORMAL

The national average temperature of 15.1°C for March 2009 was 0.6°C below average for this time of the year, continuing the pattern from mid-February. Averaged over the whole month, temperatures were below

average (by between -0.5 and -1.5°C) for all of the North Island except for Northland, Bay of Plenty and East Cape and over all of the South Island except for north Canterbury, Otago and Southland (where temperatures were near or slightly below normal). Temperatures in parts of Southern Hawke's Bay were well below normal (by between -1.5 and -2.0°C).

Extreme (high and low) March mean maximum daily air temperatures were recorded at:

Location	Mean maximum air temperature (°C)	Departure from normal (°C)	Year records began	Comments
Kaitaia	22.0	-1.1	1967	4th-lowest
Kumeu (Waitakere)	21.9	-0.8	1978	2nd-lowest
Dannevirke	17.7	-2.9	1951	Lowest
Castlepoint	18.5	-1.8	1972	4th-lowest
Martinborough	20.1	-1.8	1986	4th-lowest
Cape Campbell	17.8	-2.5	1953	2nd-lowest
Balclutha	17.1	-1.3	1964	4th-lowest

Extreme (high and low) March mean minimum daily air temperatures were recorded at:

Location	Mean minimum air temperature (°C)	Departure from normal (°C)	Year records began	Comments
Kaitaia	12.7	-2.0	1967	3rd-lowest
Warkworth	12.3	-2.4	1966	2nd-lowest
Kumeu (Waitakere)	11.6	-1.2	1978	4th-lowest
Taumarunui	7.9	-2.3	1947	3rd-lowest
Turangi	7.3	-2.5	1968	2nd-lowest
Takapau Plains	8.4	-1.9	1962	4th-lowest
Dannevirke	8.4	-2.3	1951	2nd-lowest
Martinborough	8.3	-2.4	1986	3rd-lowest
Hastings	9.9	-2.0	1965	3rd-lowest
Waipawa	7.8	-2.6	1945	3rd-lowest
Wairoa	10.4	-1.9	1964	3rd-lowest
Lake Rotoiti	5.5	-1.5	1965	3rd-lowest
Blenheim Aero	8.0	-2.2	1932	2nd-lowest
Hanmer Forest	4.8	-2.3	1906	2nd-lowest
Culverden	5.9	-3.2	1928	2nd-lowest
Cheviot	6.5	-2.0	1982	2nd-lowest

MARCH CLIMATE IN THE SIX MAIN CENTRES

Rainfall was well below normal in Auckland, Hamilton, Christchurch and the 4th lowest March total since 1958 in Wellington. Christchurch was the driest main centre and Tauranga was the wettest. Tauranga (the warmest of the main centres) had near average temperatures for March, while temperatures in Auckland, Hamilton, Wellington and Christchurch were below average. Dunedin temperatures were near average for March. Sunshine totals were above or well above normal everywhere, with Auckland receiving the most sunshine for the month.

March 2009 main centre climate statistics:

Location	Mean temp. (°C)	Departure from normal (°C)		Rainfall (mm)	% of normal		Sunshine (hours)	% of normal	
Auckland ^a	17.4	-1.2	Below average	40	45	Well below normal	239	130	Well above normal
Tauranga ^b	18.1	0.2	Near average	130	103	Near normal	234	114	Above normal
Hamilton	16.4	-0.5	Below average	27	30	Well below normal	212 ^d	114	Above normal
Wellington	15.3	-0.5	Below average	20	27	4 th lowest since 1958	218	114	Above normal
Christchurch ^c	14.2	-0.9	Below average	15	27	Well below normal	204	112	Above normal
Dunedin	13.4	-0.4	Near average	59	85	Below normal	166	118	Above normal

^a Mangere ^b Tauranga Airport ^c Christchurch Airport ^d Ruakura

HIGHLIGHTS AND EXTREME EVENTS

• Temperature

The highest temperature during March 2009 was 30.5°C recorded at Hastings on the 1st (not a March maximum temperature record for this location). Kaikohe experienced its highest recorded March maximum temperature on the 6th reaching 26.9°C, and Ohakune recorded its highest March minimum temperature of 17.4°C on the 7th.

Near record high extreme daily maximum air temperatures were recorded at:

Location	Extreme maximum temperature (°C)	Date of extreme temperature	Year Records began	Comments
Kaitaia Observatory	26.6	6th	1985	4th-highest
Kerikeri	27.8	6th	1981	3rd-highest
Kaikohe	26.9	6th	1973	Highest
Whangarei Aero	28.6	6th	1967	2nd-highest
Whangaparaoa	25.7	1st	1982	2nd-highest
Whakatane Aero	27.7	3rd	1975	4th-highest
Puysegur Point	24.9	5th	1978	2nd-highest
Tiwai Point	27.0	5th	1970	2nd-highest

Near record high extreme daily minimum air temperatures were recorded at:

Location	Extreme minimum temperature (°C)	Date of extreme temperature	Year Records began	Comments
Kaikohe	19.3	6th	1973	Equal 4th-highest
Whangaparaoa	19.1	7th	1982	Equal 2nd-highest
Ohakune	17.4	7th	1972	Highest
Wanganui	18.2	7th	1987	2nd-highest
Arthurs Pass	13.0	6th	1978	Equal 3rd-highest

The lowest temperature during March was recorded in the Hakataramea Valley (near Kurow) on the 22nd, where the minimum temperature was -2.8°C. The temperature fell to -1.3°C at Queenstown on the 22nd, the lowest March temperature for this location since records began in 1871.

Near record low extreme daily minimum air temperatures were recorded at:

Location	Extreme minimum temperature (°C)	Date of extreme temperature	Year Records began	Comments
Warkworth	6.1	24th	1966	Lowest
Port Taharoa	7.9	12th	1973	Equal 4th-lowest
Taumarunui	-1.0	25th	1947	Equal 3rd-lowest
Turangi	-1.4	25th	1968	2nd-lowest
Takapau Plains	0.0	12th	1962	3rd-lowest
Dannevirke	-0.4	12th	1951	Equal 2nd-lowest
Castlepoint	6.6	23rd	1972	3rd-lowest
Martinborough	2.1	25th	1986	4th-lowest
Ngawi	6.5	12th	1972	3rd-lowest
Hicks Bay	8.0	12th	1969	4th-lowest
Wairoa	3.9	12th	1964	2nd-lowest
Pelorus Sound	6.0	12th	1982	Equal 4th-lowest
Hanmer Forest	-2.6	24th	1906	Equal 3rd-lowest
Cheviot	-0.5	24th	1982	3rd-lowest
Queenstown	-1.3	22nd	1871	Lowest
Tiwai Point	2.8	23rd	1970	4th-lowest

Near record low extreme daily maximum air temperatures were recorded at:

Location	Extreme maximum temperature (°C)	Date of extreme temperature	Year Records began	Comments
Whangaparaoa	18.0	14th	1982	Equal 4th-lowest
Castlepoint	12.3	11th	1972	2nd-lowest
Martinborough	13.6	22nd	1986	3rd-lowest
Ngawi	13.1	23rd	1972	2nd-lowest
Hicks Bay	16.2	23rd	1972	3rd-lowest
Wellington Aero	13.3	23rd	1972	4th-lowest
Hawera	13.8	23rd	1977	Equal 3rd-lowest
Ohakune	10.8	23rd	1972	3rd-lowest
Cheviot	11.4	11th	1982	2nd-lowest
Waipara West	11.5	31st	1973	4th-lowest
Le Bons Bay	10.7	22nd	1984	Equal 2nd-lowest
Wanaka Aero	10.7	11th	1972	3rd-lowest

• Heavy rain and flooding

A storm crossed the upper North Island on 5–6 March, causing property damage, and bringing down power lines. About 13,000 homes in greater Auckland lost power for a short time, with 10 homes at Bethells Beach having no power overnight. The 147 mm recorded at Te Puke on the 6th (following on from 102.2 mm at this location on the 5th) was the second highest March 1-day total for Te Puke since records began in 1973, and the highest 1-day rainfall total recorded anywhere in New Zealand for March 2009.

Heavy rain on 17 March caused surface flooding, landslips, and sewer overflows in Tauranga. The downpour put a stop to both the swim and run legs of Tauranga Triathlon's aquathon race.

Near record high extreme 1-day rainfall totals were recorded at:

Location	Extreme 1-day rainfall (mm)	Date of extreme rainfall	Year Records Began	Comments
Te Puke	147	6th	1973	2nd-highest

• High winds and tornadoes

Winds reached 154 km/hr at Cape Reinga overnight on 5–6 March, and 93 km/hr across Auckland Harbour.

The high winds caused property damage, and brought down trees and power lines.

The wind gust of 163 km/hr recorded on the Takapau Plains (southern Hawke's Bay) on the 12th was the highest gust for March for New Zealand, though it was not a March record for this location.

Near record high extreme wind gusts were recorded at:

Location	Extreme wind gust speed (km/hr)	Date of extreme gust	Year Records began	Comments
Cape Reinga	154	5th	1974	2nd-highest
Kaikohe	76	5th	1986	3rd-highest
Whenuapai	80	5th	1972	Equal 4th-highest
Pukekohe	59	11th	1986	Equal 4th-highest
Farewell Spit	89	10th	1973	Equal 3rd-highest
Westport Aero	100	1st	1973	Equal 2nd-highest
Kaikoura	126	10th	1972	3rd-highest

• **Lightning**

Lightning strikes on 7 March cut power to approximately 74,000 consumers in Tauranga, Mt Maunganui and Te Puke, for about 2 hours.

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