

National Climate Summary – March 2011: A mixed-bag start to autumn

- **Rainfall: A wet month for the North Island, Marlborough Sounds, coastal Southland and much of Otago.**
- **Temperatures: Near average in most regions due to the contrast between prevailing warm northeast winds and an extreme cold outbreak on 6 March. Above average in coastal parts of the northeastern North Island.**
- **Sunshine: Extremely sunny on the West Coast. Cloudy for Northland and north Otago.**
- **Soil moisture deficits: Remain significant in Tasman District, Marlborough and parts of Canterbury.**

Overall in March 2011, anticyclones ('highs') dominated to the east of New Zealand, bringing more northeasterly winds than normal to the country. The first week of the month was unsettled, as were the periods March 21/22 and 26/27. This resulted in a very wet March across the North Island, as well as for the Marlborough Sounds, coastal Southland, and most of Otago. But autumnal anticyclones brought dry, settled weather to many areas for the remainder of the month. Ex-tropical cyclone Bune passed east of East Cape at the end of the month.

March rainfall totals were well above normal (more than 150 percent of normal) across almost all of the North Island, as well as in the Marlborough Sounds, coastal Southland and much of Otago. Rainfall totals were generally near normal elsewhere in the South Island, except in Marlborough (where totals ranged between 60 and 80 percent of March normal). At the end of March, significant soil moisture deficit (deficit more than 110 mm) remained in the Tasman District, Marlborough and parts of Canterbury.

Monthly mean temperatures were above average (between 0.5°C and 1.2°C above March average) in eastern coastal areas between North Cape and East Cape. But for the vast majority of New Zealand, March temperatures were near average (within 0.5°C of March average) – reflecting the contrast between prevailing northeast winds bringing generally warm air onto the country and an extremely cold southerly outbreak which affected much of New Zealand on 6 March. Small pockets of below average temperatures (between 0.5°C and 1.2°C below March average) were experienced around the Central Plateau, as well as in alpine areas of Westland. The New Zealand national average temperature was 15.8°C (equal to the 1971–2000 March average).

March sunshine totals were well above normal on the West Coast of the South Island (more than 125 percent of March normal). It was the sunniest March on record for Greymouth. Auckland, the Bay of Plenty, Central Plateau, Hawkes Bay, Kapiti Coast and Wellington, Southland and Canterbury were also sunny, with totals between 110 and 124 percent of normal. In contrast, it was rather cloudy in Northland and north Otago, with below normal totals (less than 90 percent of March normal). Elsewhere, March sunshine was close to normal.

Further Highlights:

- The highest temperature recorded was 31.4°C recorded at Christchurch on 4 March.
- The lowest temperature recorded was -2.3°C recorded at Masterton on 8 March.
- The highest 1-day rainfall of 159 mm occurred at Whitianga on 21 March.
- The highest gust was 159 km/hr, recorded at Southwest Cape (Stewart Island) on 2 March.
- Of the six main centres, Auckland and Tauranga were jointly the warmest, Hamilton was the wettest, Christchurch the driest, and Tauranga the sunniest.

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RAINFALL: WELL ABOVE NORMAL RAINFALL FOR THE NORTH ISLAND, MARLBOROUGH SOUNDS, COASTAL SOUTHLAND AND MUCH OF OTAGO.

March rainfall totals were well above normal (more than 150 percent of normal) across almost all of the North Island, as well as in the Marlborough Sounds, coastal Southland and much of Otago. Rainfall totals were generally near normal elsewhere in the South Island (between 80 and 119 percent of normal), except in Marlborough (where totals ranged between 60 and 80 percent of March normal). At the end of March, significant soil moisture deficit (deficit more than 110 mm) remained in the Tasman District, Marlborough and parts of Canterbury.

Record or near-record March rainfall totals were recorded at:

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
Wanganui	100	145	1987	2nd highest

TEMPERATURES: NEAR AVERAGE IN MOST REGIONS DUE TO THE CONTRAST BETWEEN PREVAILING NORTHEAST WINDS AND AN EXTREME COLD OUTBREAK ON 6 MARCH. ABOVE AVERAGE IN COASTAL PARTS IN THE NORTHEAST OF THE NORTH ISLAND.

Monthly mean temperatures were above average (between 0.5°C and 1.2°C above March average) in coastal areas between North Cape and East Cape. But for the vast majority of New Zealand, March temperatures were near average (within 0.5°C of March average) – reflecting the contrast between prevailing northeast winds bringing generally warm air onto the country and an extremely cold southerly outbreak which affected much of New Zealand on 6 March. Small pockets of below average temperatures (between 0.5°C and 1.2°C below March average) were experienced around the Central Plateau, as well as in alpine areas of Westland. The New Zealand national average temperature was 15.8°C (equal to the 1971–2000 March average)¹.

March maximum temperatures were the highest on record for Kaikohe and Leigh, both located on the coast, in the northeast of the North Island.

Record or near-record high March mean maximum air temperatures were recorded at:

Location	Mean maximum air temperature (°C)	Departure from normal (°C)	Year records began	Comments
Kaikohe	23.7	1.9	1973	Highest
Leigh	23.8	1.8	1966	Highest
Nelson	22.3	1.6	1943	4th-highest

Record or near-record high March mean minimum daily air temperatures were recorded at:

Location	Mean minimum air temperature (°C)	Departure from normal (°C)	Year records began	Comments
Appleby	8.2	-3.4	1943	4th-lowest

¹ Interim monthly value.

SUNSHINE: EXTREMELY SUNNY ON THE WEST COAST. CLOUDY FOR NORTHLAND AND NORTH OTAGO.

March sunshine totals were well above normal on the West Coast of the South Island (more than 125 percent of March normal). It was the sunniest March on record for Greymouth. Auckland, the Bay of Plenty, Central Plateau, Hawkes Bay, Kapiti Coast and Wellington, Southland and Canterbury were also sunny, with totals between 110 and 124 percent of normal. In contrast, it was rather cloudy in Northland and north Otago, with below normal totals (less than 90 percent of March normal). Elsewhere, March sunshine was close to normal.

Record or near-record March sunshine hours were recorded at:

Location	Sunshine (hours)	Percentage Of normal	Year records began	Comments
Greymouth	234	154	1947	Highest
Balclutha	183	128	1964	4th-highest

MARCH CLIMATE IN THE SIX MAIN CENTRES

Of the six main centres, the month of March 2011 as a whole was rather sunny (except for at Hamilton). It was a very wet March for the four North Island main centres, but rainfalls were close to normal for Christchurch and Dunedin. Temperatures were above average at Tauranga and Dunedin, but near average at the other main centres. Of the six main centres, Auckland and Tauranga were jointly the warmest, Hamilton was the wettest, Christchurch the driest, and Tauranga the sunniest.

March 2011 main centre climate statistics:

Location	Mean temp. (°C)	Departure from normal (°C)		Rainfall (mm)	% of normal		Sunshine (hours)	% of normal	
Auckland ^a	18.7	+0.1	Near average	181	206%	Well above normal	208	113%	Above normal
Tauranga ^b	18.7	+0.8	Above average	156	124%	Above normal	223	113%	Above normal
Hamilton ^c	17.2	+0.3	Near average	193	213%	Well above normal	195 ^g	105%	Near normal
Wellington ^d	15.7	-0.1	Near average	116	126%	Above normal	215	113%	Above normal
Christchurch ^e	15.2	+0.1	Near average	54	96%	Near normal	202	110%	Above normal
Dunedin ^f	14.4	+0.6	Above average	72	103%	Near normal	156	111%	Above normal

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

HIGHLIGHTS AND EXTREME EVENTS

Rain and slips

The highest 1-day rainfall in March 2011 was 159 mm, recorded at Whitianga on 21 March, the second-highest one-day total recorded there in March since records began in 1961.

On 16 March, a slip came down on the Johnsonville commuter train lines, in Wellington, causing delays. On 18 March, heavy rain, with thunder, flooded houses in South Auckland.

On 21-22 March, heavy rain in the Coromandel caused flooding and slips, closing many roads, including Hot Water Beach Road and Hikuai Settlement Road, south of Tairua. SH25 was closed between Thames and Coromandel, and also at Opoutere where forestry logs were washed on to the road. In Eastland, SH35 was closed by flooding about 1 km north of Te Puia Springs, and East Cape Road was closed at Te Araroa by flooding, a slip and fallen trees. In Gisborne, arcing power lines led to a fire on a wooden pole, and other power lines were brought down. In rural areas, the persistent rain put a stop to harvesting, with maize, sweetcorn, tomatoes and grapes affected.

On 27 March, a sudden downpour from Wellington to Kapiti flooded properties, ripped up roads, and caused cars to float down streets. People had to be helped from their cars after they became trapped in the flooding. In Tauranga, a deluge popped stormwater manhole covers and flooded streets. The area between Wanganui, Feilding and Mangaweka was lashed with localised heavy rain and thunderstorms.

Record or 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
Whitianga	159	21st	1961	2nd-highest
Taupo	69	26th	1949	3rd-highest
Wanganui	39	4th	1987	Highest

• Temperature

The highest temperature recorded in March was 31.4°C recorded at Christchurch on 4 March. The lowest temperature recorded during the month was -2.3°C recorded at Masterton on 8 March. An extremely cold outbreak affected the country on March 6th, associated with an intense southerly flow. Several sites in the lower North Island experienced near-record low March maximum temperatures on the afternoon of 6 March.

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

Location	Extreme maximum temperature (°C)	Date of extreme temperature	Year Records Began	Comments
Kaikohe	26.8	17th	1973	2nd-highest
Leigh	26.9	4th	1966	2nd-highest
Le Bons Bay	27.4	4th	1984	2nd-highest
Takapau Plains	11.7	6th	1972	4th-lowest
Martinborough	13.8	6th	1986	4th-lowest
Hastings	14.0	6th	1972	4th-lowest
Waipawa	12.6	6th	1945	Equal 3rd-lowest
Mahia	14.9	6th	1990	Equal 4th-lowest
Paraparaumu	14.3	6th	1972	4th-lowest
Wanganui	14.1	6th	1972	4th-lowest

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

Location	Extreme minimum temperature (°C)	Date of extreme temperature	Year records began	Comments
Mahia	9.7	29th	1990	4th-lowest
Wanganui	5.0	31st	1987	Equal 2nd-lowest
Appleby	1.1	31st	1943	Equal 4th-lowest
Kaitaia	20.2	5th	1985	Equal 4th-highest
Kerikeri	20.7	5th	1981	Equal 2nd-highest
Kaikohe	20.5	5th	1973	Highest
Whangaparaoa	19.9	27th	1982	2nd-highest
Martinborough	19.2	2nd	1986	3rd-highest
Mahia	18.6	5th	1990	Equal highest
Hawera	18.4	2nd	1977	2nd-highest
Wanganui	18.7	2nd	1987	2nd-highest
Puysegur Point	16.5	14th	1978	4th-highest
Waipara West	20.6	2nd	1973	Equal 4th-highest

- **Wind**

The highest gust observed during March 2011 was 159 km/hr, recorded at Southwest Cape (Stewart Island) on 2 March. The high winds on the 2nd also spread to other areas of the South Island (with areas of Nelson, Southland and Central Otago affected), as well as Wellington. In the capital, strong winds knocked over street signs and blew out office block windows in central Wellington, closing Brandon Street; and near the Basin Reserve, a shop sign was blown into the path of oncoming traffic.

On 22 March, strong winds brought down a tree near Mangawhai, blocking the road. In the Auckland suburb of Parnell, firefighters had to cut through an oak tree, blown on to a house and car, to provide access to the occupants and in Otara a fallen tree brought down phone lines.

Near-record high extreme wind gusts for March were recorded at:

Location	Extreme wind gust speed (km/hr)	Date of extreme gust	Year records began	Comments
Pukekohe	61	22nd	1986	Equal 3rd-highest
Nelson	87	2nd	1972	Equal 4th-highest
Kaikoura	126	27th	1972	Equal 3rd-highest
Lauder	132	14th	1981	Highest
Gore	117	2nd	1987	Highest

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