

National Climate Summary – March 2012: Continuing cool

- **Temperatures:** Well below average for the south and east of the South Island, also Wellington, Wairarapa, southern Hawkes Bay, Central Plateau. Below average elsewhere, except for near average temperatures in Westland and Fiordland.
- **Rainfall:** Double March normal for Northland, north Auckland, Gisborne, southern Hawkes Bay and Wairarapa. Wet for most other regions of the North Island, also Kaikoura, north Canterbury and Otago. In contrast, rather dry for West Coast, Fiordland, Nelson City, Christchurch, south Canterbury, between Wanganui and Palmerston North, and around Taupo.
- **Soil moisture levels:** Well above normal for much of the North Island and Otago, but closer to normal elsewhere. Drier than usual Wanganui to Palmerston North.
- **Sunshine:** Very cloudy over the north and east of North Island, as well as Nelson/Marlborough. Extremely sunny for Otago and Southland.

March was characterised by higher pressures than usual to the east of the Chatham Islands, and more lows than normal to the north of the North Island. This produced more easterly winds than usual over the country. The frequent easterly winds resulted in an extremely cool March for eastern areas of both Islands, and produced wetter conditions for many areas of the North Island and some eastern South Island regions. It was also much cloudier than usual for the northeast of the North Island, as well as the northern South Island.

Mean temperatures for March were well below average (more than 1.2°C below average) for much of the south and east of the South Island, as well as Wellington, the Wairarapa, southern Hawkes Bay, and the Central Plateau. Elsewhere, March temperatures were generally below average (between 0.5°C and 1.2°C below average), with the exceptions of Westland and Fiordland, where near average temperatures were experienced (within 0.5°C of average). The nation-wide average temperature in March was 14.6°C (1.2°C below the 1971–2000 March average), using NIWA's seven-station temperature series which begins in 1909.

March rainfall totals were at least 200 percent (double) normal for Northland, north Auckland, and for eastern parts of the North Island. It was also a wet March (with at least 120 percent of March normal) across most of the remainder of the North Island, as well as for Kaikoura, north Canterbury and Otago. In contrast, it was rather dry for the West Coast of the South Island, Fiordland, Nelson City, Christchurch, south Canterbury, as well as between Wanganui and Palmerston North, and around Taupo. In Southland, rainfall was close to normal. Soil moisture levels at the end of March were well above normal for much of the North Island as well as in Otago, but were closer to normal elsewhere. An exception was between Wanganui and Palmerston North, where soils were somewhat drier than is usual at this time of year.

The effect of the prevailing easterly winds during March was evident in the observed sunshine totals. It was a very cloudy month for the north and east of the North Island (Northland, Auckland, Coromandel, Gisborne, Hawkes Bay, Wellington and the Wairarapa), as well as for Nelson/Marlborough. In contrast, it was an extremely sunny March for Otago and Southland. Sunshine hours were closer to normal elsewhere.

Further Highlights:

- The highest temperature was 29.2°C, observed at Timaru on 24 March.
- The lowest temperature was -2.6°C recorded at both Lake Pukaki (26 March) and Hanmer Forest (9 March)
- The highest 1-day rainfall experienced was 168 mm, recorded at both North Egmont (2 March), and Kerikeri (18 March).
- The highest gust recorded was 158 km/hr recorded at Brothers Island, Cook Strait, on 3 March.
- Of the six main centres, Tauranga was the warmest, wettest and also the sunniest; Christchurch was the driest, Dunedin the coolest, and Wellington the cloudiest.

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TEMPERATURE: WELL BELOW AVERAGE TEMPERATURES FOR SOUTH AND EAST OF SOUTH ISLAND, ALSO WELLINGTON, WAIRARAPA, SOUTHERN HAWKES BAY, CENTRAL PLATEAU. BELOW AVERAGE TEMPERATURES GENERALLY ELSEWHERE, EXCEPT FOR NEAR AVERAGE TEMPERATURES IN WESTLAND AND FIORDLAND.

Mean temperatures for March were well below average (more than 1.2°C below average) for much of the south and east of the South Island, as well as Wellington, the Wairarapa, southern Hawkes Bay, and the Central Plateau. Elsewhere, March temperatures were generally below average (between 0.5°C and 1.2°C below average), with the exceptions of Westland and Fiordland, where near average temperatures were experienced (within 0.5°C of average).

The nation-wide average temperature in March was 14.6°C (1.2°C below the 1971–2000 March average), using NIWA’s seven-station temperature series which begins in 1909¹.

In particular, afternoon (maximum) temperatures across the north and east of the North Island were extremely low for March, reflecting the cloudy conditions across these regions (see later in the summary for sunshine information). Records were broken at Whangarei, Warkworth, Whitianga, Hamilton, Martinborough, and Cape Campbell (see Table below).

In comparison, morning (minimum) temperatures for eastern and southern locations of the South Island were unusually low for the time of year. Records were broken at Hanmer, Invercargill, Tiwai Point and Balclutha (see Table overleaf).

Record² or near-record monthly-average maximum air temperatures for March were recorded at:

Location	Mean maximum air temperature (°C)	Departure from normal (°C)	Year records began	Comments
Kaitiāia	21.8	-1.3	1967	3rd-lowest
Dargaville	20.9	-2.4	1943	3rd-lowest
Whangarei	21.2	-1.8	1967	Lowest
Warkworth	20.5	-1.6	1966	Lowest
Whangaparaoa	20.5	-1.0	1982	4th-lowest
Whenuapai	21.0	-1.8	1945	4th-lowest
Whitianga	20.7	-2.1	1962	Lowest
Taupo	18.8	-2.1	1949	3rd-lowest
Hamilton	20.3	-2.6	1906	Lowest
Takapau Plains	17.8	-2.2	1962	3rd-lowest
Dannevirke	17.9	-2.7	1951	2nd-lowest
Castlepoint	17.8	-2.5	1972	3rd-lowest
Martinborough	19.6	-2.3	1986	Lowest
Ngawi	18.9	-1.1	1972	4th-lowest
Hicks Bay	20.0	-1.3	1969	3rd-lowest
Wellington (Airport)	18.1	-1.6	1962	Equal 3rd-lowest
Wallaceville	18.5	-1.9	1939	4th-lowest
Wanganui	19.0	-2.2	1937	4th-lowest
Farewell Spit	19.5	-1.2	1971	3rd-lowest
Cape Campbell	17.0	-3.3	1953	Lowest
Culverden	18.3	-3.0	1928	2nd-lowest
Lumsden	16.8	-1.4	1982	4th-lowest

¹ Interim monthly value.

² The rankings (1st, 2nd, 3rd....etc) in 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 because of the practical limitations of performing homogeneity checks in real-time.

Record or near-record monthly-average minimum air temperatures for March were recorded at:

Location	Mean minimum air temperature (°C)	Departure from normal (°C)	Year records began	Comments
Ngawi	12.4	-1.0	1972	3rd-lowest
Wanganui	10.5	-2.4	1937	2nd-lowest
Hanmer Forest	4.1	-3.0	1906	Lowest
Cheviot	6.7	-1.8	1982	3rd-lowest
Mt Cook	4.3	-2.7	1929	3rd-lowest
Winchmore	6.5	-2.4	1928	2nd-lowest
Le Bons Bay	9.7	-1.5	1984	4th-lowest
Orari	6.8	-1.6	1972	4th-lowest
Timaru	6.2	-2.2	1990	2nd-lowest
Tara Hills	4.6	-2.1	1949	4th-lowest
Dunedin (Airport)	5.0	-2.3	1962	2nd-lowest
Queenstown	5.6	-1.8	1871	3rd-lowest
Lumsden	5.1	-1.8	1982	2nd-lowest
Cromwell	5.8	-2.4	1949	2nd-lowest
Invercargill (Airport)	5.7	-2.3	1948	Lowest
Tiwai Point	8.0	-1.7	1970	Lowest
Balclutha	5.2	-3.1	1964	Lowest

RAINFALL: DOUBLE NORMAL FOR NORTHLAND, NORTH AUCKLAND, GISBORNE, SOUTHERN HAWKES BAY AND WAIRARAPA. ALSO WET FOR MOST OTHER AREAS OF THE NORTH ISLAND, ALSO KAIKOURA, NORTH CANTERBURY, AND OTAGO. RATHER DRY ON THE WEST COAST SOUTH ISLAND, FIORDLAND, NELSON CITY, CHRISTCHURCH, SOUTH CANTERBURY, AS WELL AS BETWEEN WANGANUI AND PALMERSTON NORTH, AND AROUND TAUPO. NEAR NORMAL FOR SOUTHLAND.

March rainfall totals were at least 200 percent (double) normal for Northland, north Auckland, and for eastern parts of the North Island (Gisborne, southern Hawkes Bay, and coastal Wairarapa). Much of the rainfall in these areas occurred between 18 and 22 March, associated with a slow-moving low near the Bay of Islands, which produced a persistent, wet, easterly regime over northern and eastern regions of the North Island. It was also a wet March (with at least 120 percent of March normal rainfall) across most of the remainder of the North Island, as well as for Kaikoura, north Canterbury and Otago.

In contrast, it was rather dry for the West Coast of the South Island, Fiordland, Nelson City, Christchurch, south Canterbury, as well as between Wanganui and Palmerston North, and around Taupo – with March rainfall in these regions generally between 50 and 79 percent of normal. In Southland, rainfall for March was close to normal.

Soil moisture levels at the end of March were well above normal for much of the North Island, as well as in Otago, but were closer to normal elsewhere. An exception was between Wanganui and Palmerston North, where soils were somewhat drier than is usual at this time of year.

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

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
Kaitaia	225	274	1967	2nd-highest
Leigh	246	235	1966	4th-highest
Warkworth	252	229	1966	4th-highest

SUNSHINE: VERY CLOUDY OVER THE NORTH AND EAST OF THE NORTH ISLAND, AS WELL AS NELSON/MARLBOROUGH. EXTREMELY SUNNY FOR OTAGO AND SOUTHLAND. SUNSHINE TOTALS NEAR NORMAL ELSEWHERE.

The effect of the prevailing easterly winds during March was evident in the observed sunshine totals. It was a very cloudy month for the north and east of the North Island (Northland, Auckland, Coromandel, Gisborne, Hawkes Bay, Wellington and the Wairarapa), as well as for Nelson/Marlborough. Sunshine totals ranged between 75 and 90 percent of March normal in these regions.

In contrast, it was an extremely sunny March for Otago and Southland (with sunshine totals in excess of 125 percent of March normal) – and a new March record set for sunshine hours was set in Balclutha. Sunshine hours were closer to normal elsewhere - that is, for Fiordland, Westland, Canterbury, Taranaki, Ruapehu, Taupo, Waitomo, and the Waikato, sunshine totals generally ranged between 90 and 110 percent of normal.

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

Location	Sunshine (hours)	Percentage Of normal	Year records began	Comments
Dunedin	198	142	1947	2nd-highest
Invercargill	181	133	1932	3rd-highest
Balclutha	209	146	1964	Highest
Blenheim	192	90	1947	3rd-lowest

MARCH CLIMATE IN THE SIX MAIN CENTRES

Of the six main centres, Tauranga was the warmest, wettest and also the sunniest; Christchurch was the driest, Dunedin the coolest, and Wellington the cloudiest.

March 2012 main centre climate statistics:

Location	Mean temp. (°C)	Departure from normal (°C)	Comment	Rainfall (mm)	% of normal	Comment	Sunshine (hours)	% of normal	Comment
Auckland ^a	17.8	-0.9	Below average	145	176%	Well above normal	<i>Missing</i>		<i>Site visited on 26 March 2012</i>
Tauranga ^b	18.1	0.2	Near average	158	125%	Above normal	216	109%	Near normal
Hamilton ^c	16.1	-0.8	Below average	90	100%	Normal	184 ^g	99%	Near normal
Wellington ^d	14.3*	-1.5	Well below average	155	168%	Well above normal	157	82%	Below normal
Christchurch ^e	13.5	-1.6	Well below average	39	70%	Below normal	189	104%	Near normal
Dunedin ^f	12.5	-1.3	4 th lowest on record	65	94%	Near normal	198	141%	2 nd highest on record

^a Auckland Airport (due to problems at end of month with Mangere EWS) ^b Tauranga Airport ^c Hamilton Airport ^d Kelburn
^e Christchurch Airport ^f Musselburgh ^g Ruakura
 *Missing data on 6 March 2012.

HIGHLIGHTS AND EXTREME EVENTS

• **Rain and slips**

The highest 1-day rainfall experienced was 168 mm, recorded at two locations during the month – at North Egmont on 2 March, and at Kerikeri on 18 March.

On 1 March, heavy rain caused a massive slip closing SH2 at Waioeka Gorge between Opotiki and Gisborne. The Gorge remained closed for much of the month – until an alternative, temporary route was opened on 29 March.

A rapidly deepening low (or weather ‘bomb’) approached New Plymouth from the Tasman Sea on 3 March, migrating eastwards across the lower North Island on the 4th. The low brought heavy rain and extremely strong winds. The Round New Zealand yacht race fleet was between New Plymouth and Nelson at the time, with one boat issuing a Mayday and several yachts seeking shelter for a time in Golden Bay. Patea and Waverley were badly affected with property damage, and downed trees blocked SH3 in more than one place. In Wellington, the Hutt River burst its banks. Four classrooms were flooded at Wainuiomata’s Fernlea School. The Karapoti Mountain Bike event held near Upper Hutt was postponed a day.

On 4 March, heavy rain forced the cancellation of the Ironman New Zealand Race, planned for Taupo, and a half-ironman was held on 5 March instead. Postal deliveries in Wellington were cancelled.

On 19 March, Northland was affected by floodwaters due to a deep low stalling east of the Bay of Islands. A fire crew had to use an inflatable boat to rescue a family of three from rising flood waters near Ngunguru, 22km northeast of Whangarei. The driver of a car was trapped in floodwaters at Motatau, 52 km northwest of Whangarei, but was freed by passersby soon thereafter. Neighbours helped to save a 61-year-old woman who was swept away by floodwaters near Whangarei. The 61-year-old had attempted to cross a bridge in her car about 11.30am at Otaika, 7km southeast of Whangarei, but became stuck. She managed to get out of the vehicle but was swept away by the rising waters. The woman managed to grab hold of a branch and neighbours, wearing lifejackets, managed to pull her to safety.

Northland Regional Council figures show that the hills above the Far North township of Kaeo recorded 283.5mm of rainfall in 35 hours – roughly twice the usual rainfall for the month of March. Roads in and out of the township were closed, and floodwater in the main street rose to a metre deep, flooding some businesses. Kerikeri Primary School shut for the day. The Twin Bridges at Kawakawa were shut about 10.50am due to rising flood waters. Flooding was reported on Ngunguru Rd, SH1 Whakapara, SH10 between Kaeo and Hihi Rd, Whananaki North Rd, Matipo Pl, Marua Rd, Otonga Rd, Kokopu Rd and Russell Rd.

On 20 March, this low remained slow-moving to the east of the Bay of Islands, resulting in gale to storm force southeast winds over the North Island. Gisborne was all but isolated, with almost all routes out of the district blocked by slips, trees or flooding for a couple of hours. The two detours out of town, after the closure of the Waioeka Gorge between Gisborne and Opotiki more than two weeks previously, were hit by the severe wind and rain lashing the East Coast. Drivers heading south on State Highway 2 were turned back after flooding temporarily closed both sides of the Whareratas south of Gisborne city during the morning. Temporary road closures also occurred during the morning for SH2 between Wairoa and Nuhaka, as well as between Gisborne and Muriwai. Slips partially blocked SH35, the East Coast highway on the south side of Tolaga Bay during the morning. There was also extensive surface flooding in the same area.

On 21 March, SH12 near Dargaville was closed to all traffic due to flooding, and SH 30 from Whakamaru to Atiamuri remained closed due to a tree lying across the road. A family in Gisborne was evacuated due to a slip in the hill behind their home, some businesses lost power in the city, and several residents were trapped at home as flooding hit the district. Gisborne District Council received 106 requests for service which were related to the rain. Wastewater briefly overflowed at Central School. Parts of Ruatoria temporarily lost power supply, as did residents in Cricklewood, inland from Wairoa.

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

Location	Extreme 1-day rainfall (mm)	Date of extreme rainfall	Year records began	Comments
Kaitaia	91	19th	1967	2nd-highest
Kerikeri	168	18th	1981	2nd-highest
Kaikohe	136	18th	1956	2nd-highest
Whangarei	133	18th	1943	4th-highest
Masterton	60	2nd	1926	4th-highest
Gisborne	153	19th	1937	2nd-highest
Alexandra	34	11th	1983	3rd-highest

- **Temperatures**

The highest temperature was 29.2°C, observed at Timaru on 24 March. The lowest temperature was -2.6°C recorded at both Lake Pukaki on 26 March and Hanmer Forest on 9 March. Afternoon (maximum) temperatures were unusually low for March on the 3rd of the month over the lower North Island, associated with extremely windy conditions associated with a rapidly deepening low in the vicinity. This was also the case on the 19th across Auckland and Northland, when afternoon maximum temperatures were record or near-record low for March, due to gale easterly winds and heavy rainfall.

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

Location	Extreme maximum temperature (°C)	Date of extreme temperature	Year Records Began	Ranking
Westport	27.3	21st	1937	2nd-highest
Greymouth	26.3	21st	1947	4th-highest
Kaitaia	17.1	19th	1971	Lowest
Kerikeri	19.0	9th	1981	4th-lowest
Dargaville	16.1	19th	1951	Lowest
Whangarei	16.9	19th	1967	3rd-lowest
Warkworth	16.0	19th	1966	Equal lowest
Whangaparaoa	17.0	19th	1982	Lowest
Whitianga	17.3	19th	1971	4th-lowest
Pukekohe	16.5	19th	1969	Equal 4th-lowest
Port Taharoa	17.7	3rd	1974	Equal 3rd-lowest
Takapau Plains	10.9	3rd	1972	3rd-lowest
Martinborough	13.6	3rd	1986	Equal 3rd-lowest
Wellington (Airport)	12.9	20th	1972	3rd-lowest
Wallaceville	12.3	3rd	1972	3rd-lowest
Stratford	12.4	3rd	1972	3rd-lowest
Ohakune	10.0	3rd	1972	3rd-lowest
Wanganui	13.7	3rd	1972	2nd-lowest
Le Bons Bay	10.7	3rd	1984	Equal 2nd-lowest

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

Location	Extreme minimum temperature (°C)	Date of extreme temperature	Year records Began	Ranking
Martinborough	1.0	14th	1986	Lowest
Hanmer Forest	-2.6	9th	1906	Equal 3rd-lowest
Timaru	-0.3	21st	1990	2nd-lowest
Balclutha	0.1	20th	1964	Equal 4th-lowest

- **Wind**

The highest gust recorded was 158 km/hr recorded at Brothers Island, Cook Strait, Wellington, on 3 March.

A low rapidly deepened over the Tasman Sea on 3 March, migrating eastwards across the lower North Island on the 4th. The winds associated with this low tore down trees and cut power to homes and farms in Taranaki, Wanganui, the Coromandel Peninsula, Te Puke, Wairoa, Kawhia, Kapiti Coast, northern Wellington, Hutt Valley, Wairarapa, Auckland, Piha, Waiheke Island and Kaipara. Cook Strait ferries were cancelled on 4 March, and flights cancelled or delayed at Wellington, Napier and New Plymouth Airports. At the Egmont A & P showgrounds, the storm blew down the doors to a pen housing 500 horses and ponies assembled for the three-day Show Jumping New Zealand's series final show. All the animals were moved to a safer area in the early hours. All the fences in the jumping arena had to be retrieved and reset, and the

Saturday programme was cancelled, with the first Trans-Tasman test between New Zealand and Australia postponed a day.

Nearly two weeks later (16 March), about 40 rural properties were still without power in the Patea, Waverly and Waitotara areas, as well as some farms in the Whanganui hill country. Lines company Powerco said the damage has been so great during the storm of 3-4 March that it had had to completely rebuild line networks in some places. Meanwhile, foresters had begun the task of clearing hundreds of hectares of trees flattened or damaged in the 3-4 March storm over the southern North Island.

On 19 March, a total of 24 return flights had to be cancelled due to Auckland Airport's gusty cross winds and wet runway, caused by a deep low east of the Bay of Islands. And the Volvo Ocean Race yacht 'Abu Dhabi' spent the night sheltering in the Hauraki Gulf, waiting for 60-knot winds to ease before resuming the round-the-world race, after being forced to turn back with a damaged bulk head the previous evening. Firefighters in Gisborne had a busy night overnight on the 19th, with gusts lifting roofs at some properties.

On 20 March, the strong southeasterly winds associated with the same slow moving low brought trees down between Taupo and National Park, blocking roads including State Highways 4, 46, 47 and 49. The Fire Service also dealt with wind damage problems in Ohakune and Turangi. Around 2500 properties lost power, mainly in Taranaki, as trees and branches came down onto lines due to the high winds. Air New Zealand flights were cancelled or delayed in many parts of the North Island due to strong winds, with about 10 flights in and out of Wellington Airport cancelled. Winds in the Capital caused the mooring of a yacht to snap at Evans Bay and forced it on to nearby rocks. Wellington's East by West ferry cancelled all sailings and high winds forced the rescheduling of Interislander sailings.

On the morning of 21 March, strong winds cut power in parts of Feilding for a short time. Around 1000 homes remained without power in the Taranaki region, even after crews worked overnight to repair the network. Around 500 Taupo residences also remained without power.

Record-high wind gusts for March were experienced at Taupo and Turangi on the 20th, and at two exposed Wellington wind stations (Baring Head and Mt. Kaukau) on the 3rd.

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
Kaitaia	100	19th	1985	2nd-highest
Kaikohe	76	3rd	1986	Equal 3rd-highest
Whangarei	85	19th	1973	4th-highest
Whenuapai	80	3rd	1972	Equal 4th-highest
Paeroa	91	21st	1991	2nd-highest
Whakatane	80	21st	1974	3rd-highest
Taupo	107	20th	1982	Highest
Pukekohe	61	3rd	1986	Equal 3rd-highest
Hamilton	67	20th	1991	4th-highest
Turangi	96	20th	1973	Highest
New Plymouth	113	20th	1972	3rd-highest
Baring Head (Wellington)	135	3rd	1991	Equal 4th-highest
Mahia	89	20th	1991	Equal 2nd-highest
Paraparaumu	115	3rd	1972	2nd-highest
Palmerston North	83	21st	1991	4th-highest
Mt Kaukau (Wellington)	154	3rd	1969	Highest
Hawera	89	20th	1986	Equal 2nd-highest
Wanganui	102	3rd	1977	Equal highest
Farewell Spit	98	3rd	1973	Equal 2nd-highest

- **Cloud and fog**

On 11 March, low cloud and fog prevented two incoming flights from landing at Nelson Airport, and one flight from taking off.

On 21 March, evening fog and low cloud in the Capital forced the cancellation of about 30 flights from Wellington Airport, upsetting the travel plans of about 2500 people.

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