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New Zealand national climate summary 2009: extreme temperature swings

New Zealand's climate for 2009 was characterised by frequent see-saws in temperature. Heat waves occurred in January and the start of February; May was the coldest on record; October had its lowest temperatures since 1945; and August was the warmest August ever. In individual months (especially September and November), daily temperatures frequently broke long-standing records, with extremely cold temperatures often occurring within a week or so of record hot events. Overall, there were two months with above average temperatures and four with below average temperatures.

For the year as a whole, temperatures were near average (within 0.5°C of the long-term average) for most of the country, but were between 0.5 and 1.0°C cooler than average in parts of Auckland, Waikato, Manawatu, southern Hawkes Bay, Wairarapa, Wellington, Marlborough, inland Canterbury, and eastern Otago. The national average temperature for 2009 was 12.3°C, 0.2°C below the long-term normal. The years 2000-2009 were a warm decade overall, with a 10-year average temperature of 12.6°C, 0.1°C above the 1971-2000 normal.

Rainfall during the year was below normal (50 to 80 percent of normal) in parts of Auckland, central North Island, northern Hawkes Bay, southern Wairarapa, north Canterbury, inland south Canterbury, and central Otago. Other areas received near-normal rainfall.

Nelson was the sunniest centre in 2009, recording 2571 hours, followed by Tauranga with 2540 hours, then Blenheim with 2477 hours.

Of the main centres, Tauranga was the warmest and sunniest, Wellington was the wettest, and Christchurch was the driest.

The broad climate setting changed from La Niña at the start of the year, to moderate El Niño conditions by the spring of 2009.

Notable climate features of 2009 (in various parts of the country) included the record warmth of January, the heatwaves of early February, and the record cold and extreme wet of May. At the end of June, Gisborne declared a State of Emergency due to flooding. An unusually icy, snowy period prevailed throughout June and July, followed by the record warmth of August, which contributed to a severe avalanche season. Unseasonable snowfalls then characterised the coldest October in 64 years. An extremely windy and dry November and December followed, resulting in significant soil moisture deficits in Northland, Central North Island, Canterbury, and Otago.

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Section 1: The year in review

Broadly speaking, the overall climate (with clear geographical exceptions) was as follows:

- January: Very dry and sunny. Record warm in eastern areas.
- February: Heat waves at start, then a cool change. Wet and cloudy.
- March: Extremely dry, very sunny, and cool.
- April: A month of contrasts.
- May: Coldest May on record. Very wet.
- June and July: Cold and snowy.
- August: Warmest August ever. Very dry in eastern areas.
- September: Very sunny, with extreme temperature swings.
- October: Coldest October since 1945. Unseasonable snow.
- November: Extremely dry and windy, with extreme temperature swings.
- December: Sunny and dry, particularly in the north and east

January: Very dry and sunny; record warmth in eastern areas

January rainfall was less than half of normal over much of the country, the exceptions being Gisborne and Southland (with well above normal rainfall) and Manawatu and northern Taranaki (receiving near normal rainfall). At the end of January, soil moisture levels were below normal for most North Island areas except Gisborne and northern Manawatu, as well in Tasman district, northern Westland, Canterbury and south Otago. It was a sunny month for most regions, except Southland and Otago. January temperatures were well above average along the South Island east coast from Kaikoura to Mosgiel, and several sites in Canterbury and Otago recorded their highest mean January maximum temperatures ever. It was also warmer than normal in the east of the North Island, western Bay of Plenty, inland Canterbury and Otago, and much of Southland.

February: Heat waves at start, then a cool change; wet and cloudy.

Temperatures flip-flopped from above average over the first 12 days of February (which included record high temperatures at numerous locations) to below average for the remainder of the month. Heatwave conditions were experienced over the country from 7 to 12 February when temperatures of 34°C or more occurred in many locations on each day. February was wet for most of country except in the southwest. It was also very cloudy, with most areas recording below normal sunshine totals.

March: Extremely dry, very sunny, and cool

Record low March rainfall was experienced in parts of Wairarapa, Marlborough, north Canterbury, north and central Otago. It was also very dry in other areas, except the western Bay of Plenty and eastern Otago. Record high March sunshine totals were observed in Northland, Auckland, King Country and the central South Island, and sunshine totals were also above normal elsewhere. It was a cool month, with below average temperatures over most of the country.

April: A month of contrasts

April was a month of contrasts. It was wet in the north and west, dry in the south and east; cool in the north and east, warm in the south and west. Exceptionally low rainfall for April (less than 20 percent of normal) occurred in southern Hawke's Bay and Tararua District. This resulted in significant soil moisture deficits there. Other eastern areas of both islands, around Auckland, and along the south coast of the South Island received below normal April rainfall (between 20 and 60 percent of normal). In contrast, double normal April rainfall was recorded in Northland and parts of the West Coast and Southern Alps. April temperatures were below average over most of the central and eastern parts of the North Island, while parts of the West Coast, coastal Fiordland, Southland and south Otago were warmer than average by between 0.5 and 1.5 °C.

May: Coldest May on record; very wet
It was an extremely early start to winter. The lowest May temperatures ever recorded, and very wet conditions, were experienced in most regions of New Zealand.

June–July: Cold and snowy
June and July continued cold. Slow-moving winter anticyclones brought extremely frosty, yet sunny, conditions between 16 and 26 June. It was extremely wet in the east of the North Island in June, due to heavy rain on June 28-29th. A Civil Defence Emergency was established in the Gisborne District on 30 June, due to flooding and slips. There were three extreme snow/ice events in June, and seven in July.

August: Warmest ever; very dry in eastern areas
Nationally, it was the warmest August ever, since records began 155 years ago. All regions of New Zealand experienced record-high August mean temperatures, but extreme high daily maximum temperature records were also set in numerous locations on August 15-16, and August 28-30. The remarkable warmth of August, combined with heavy snowfall in previous months, resulted in a series of major avalanches in South Island alpine areas. It was very dry in eastern areas of both Islands, with rainfall totals less than half of August normal.

September: Very sunny, with extreme temperature swings
It was a very sunny start to spring, with sunshine totals between 110 and 140 percent of normal across the country. Although temperatures were close to normal for the month overall, extreme temperature swings were typical. It was record-breaking cold on September 5-6 in many locations, when a large anticyclone became slow-moving over the country; and record warm on September 14 in eastern areas of the South Island during an extremely strong northwesterly wind event. A deep, wintry low brought record-cold temperatures, high winds, and snow and ice to the South Island on the 24th.

October: Coldest October since 1945; unseasonable snow
Nationally, it was the coldest October in 64 years, with all-time record low October temperatures in many areas. Temperatures were more than 2.0°C below average throughout eastern and alpine areas of the South Island, as well as in the lower half of the North Island. Record low October temperatures were recorded on the 4th/5th in most North Island locations, and on the 9th at many South Island sites. The exceptionally heavy snow event on the 4th/5th in the Hawkes Bay and Central North Island was estimated to be the worst in October since 1967. Well above normal October rainfall was recorded in the east of the North Island, as well as in Wellington, Marlborough and parts of Canterbury. In comparison, it was very dry and extremely sunny on the West Coast of the South Island.

November: Extremely dry and windy with extreme temperature swings
November was extremely dry in the northeast of the North Island, and eastern South Island. Record low November rainfall was observed in Northland, parts of Auckland, Coromandel, Bay of Plenty, Taupo, Canterbury, Otago and inland Southland. By the end of November, significant soil moisture deficits were seen in the northeast of the North Island, especially Northland, as well the Kaikoura Coast, Canterbury and Otago. It was also an exceedingly windy month. Several extreme temperature swings were observed during the month, with record cold November temperatures reported in the first half of the month, and record hot conditions observed in the second half of November.

December: Very sunny in the north and east
December sunshine totals were well above normal in the north and east of the North Island and parts of North Canterbury. Well below normal rainfall was recorded in much of the Far North District for December. It was also drier-than-normal in Central North Island, Bay of Plenty, Gisborne, southern

Hawkes Bay, Tararua District, Wairarapa, Northern South Island, Canterbury and Otago. Soil moisture levels on 31 December 2009 were well below normal in the Far North, Central North Island and Eastern Bay of Plenty. Temperatures were near average (between -0.5°C and 0.5°C from average) for most of the country.

NIWA analyses of month-by-month records show:

- The highest annual average temperature for 2009 was 15.8°C at Whangarei, followed by Kaitaia and Kaikohe with an equal-second of 15.6°C.
- The highest recorded extreme temperature of the year (38.0°C) occurred in Culverden on 8 February. It was the highest February maximum temperature ever recorded at this location. The second highest temperature for the year was 37.8°C in Cheviot on 8 February and the third highest was 37.3°C in Wairoa (East Cape) recorded on 1 February.
- The lowest air temperature for the year was -11.7 ºC recorded at Middlemarch on 19 July, followed by -11.0°C at Lake Tekapo and -10.4°C at Tara Hills (both recorded on 14 July).
- The highest recorded wind gust for the year (as archived in the NIWA climate database) was 184 km/h at Southwest Cape, Stewart Island, on 4 November (a November record at this site), with equal-second 183 km/h gusts also recorded at Southwest Cape (8 February), Palmerston North (8 June), and White Island (20 June) during the year.
- Mount Cook received the top three highest 1-day rainfalls in 2009; being 341 mm on 27 April, 321 mm on 16 May and 295 mm on 26 April.
- The driest rainfall recording locations were Ranfurly in Central Otago with 263mm of rain for the year, followed by Clyde with 299 mm, and then Middlemarch with 365 mm.
- Of the regularly reporting gauges, Cropp River in the Hokitika River catchment recorded the highest rainfall with 10956 mm, followed by Doon (Fiordland) with 7266 mm and North Egmont with 7040 mm.
- Wellington was the wettest main centre with 1274 mm; in contrast Christchurch was the driest of the six main centres with 589 mm.
- Nelson was the sunniest centre in 2009, recording 2571 hours, followed by Tauranga (the sunniest of the main centres) with 2540 hours, then Blenheim with 2477 hours.
- Whakatane had instrument problems at the start of the year so an annual sunshine total could not be computed. However, their 8-month total from May to December (1614 hours) is only one hour less than the Nelson total over the same period so they will definitely be in the race for 2010.

Section 2: Prevailing climate patterns – Switch from La Niña to El Niño

Overall, mean sea level pressures were below average to the east of New Zealand in 2009, resulting in more frequent southerly winds than normal over the country. Warmer than normal sea temperatures prevailed around New Zealand from January to April, but enhanced southerly winds in May brought much colder than normal seas to our coasts, which generally prevailed for the remainder of the year.

The start of the year was dominated by a weakening La Niña event in the equatorial Pacific. During autumn and winter, the tropical Pacific climate was neutral (neither El Niño nor La Niña). A weak El Niño developed in the tropical Pacific in early spring, and had strengthened to moderate intensity by November.

Over New Zealand, monthly wind-flow patterns were highly variable throughout the year:

- January: Settled, with frequent anticyclones. Warm, dry, and sunny.
- February: Heatwaves at first, but ended cold and unsettled in the south.

- March: Settled. Dry, sunny and cool.
- April: Wet in the north and west, dry in the south and east. More northerly winds than normal.
- May: Stormy and record cold; frequent southerly winds and snowfalls.
- June: Cold and frosty; with wintertime highs and frequent southerly winds.
- July: Cold, with frequent southwest winds and snowfalls.
- August: Record warm, with much more frequent northerly winds than normal.
- September: Settled, with stronger than normal northerly winds.
- October: Extremely cold, frequent southeast winds and uncommonly late snowfalls.
- November: Extremely windy and dry, with frequent strong southwest winds.
- December: More frequent southwesterly winds than normal.

Section 3: Temperature – Slightly cooler than average year

The national average temperature in 2009 was 12.3°C, 0.2°C below the 1971–2000 normal. In 2009, there were two months with above average temperatures and four with below average temperatures. The warmest location was Whangarei, with a mean temperature for the year of 15.8°C (0.1 °C above normal).

The average temperature during the decade 2000-2009 was 12.6°C, 0.1°C above the 1971-2000 normal. This continues the series of relatively warm decades experienced in New Zealand since the 1970s. From the historical 7-station series, the 2000s were just 0.02°C warmer than the 1980s (previously the warmest decade on record for New Zealand). From a separate 11-station series, the 2000s were 0.08–0.20°C warmer than the 1980s.

In Kaitaia, Warkworth, Dannevirke, and Le Bons Bay, 2009 was the coolest year on record (based on averaging the mean daily temperature).

Kaikohe and Appleby recorded their highest average maximum temperature on record and Kaitaia, Pukekohe and Dannevirke recorded their lowest average maximum temperature on record (based on averaging the maximum temperature recorded each day).

Taumarunui, Dannevirke, Hanmer, Le Bons Bay and Queenstown recorded their lowest average minimum temperature on record (based on averaging the minimum temperature recorded each day).

Table 1: Near or record high or low annual average temperatures for 2009:

Location	Mean temperature (°C)	Departure (°C)	Year records began	Comments
Mean Temperature				
Kaikohe	15.8	1.2	1973	2nd-highest
Kaitaia	14.3	-1.3	1967	Lowest
Warkworth	14.3	-0.9	1966	Lowest
Kumeu, Auckland	14.0	-0.4	1978	3rd-lowest
Pukekohe	13.6	-0.8	1969	3rd-lowest
Port Taharoa	14.6	-0.5	1973	3rd-lowest
Taumarunui	12.2	-0.8	1947	4th-lowest
Dannevirke	11.0	-1.5	1951	Lowest
Castlepoint	13.1	-0.9	1972	2nd-lowest
Martinborough	12.3	-0.8	1986	2nd-lowest
Ngawi	13.9	-0.2	1972	3rd-lowest
Hawera	12.1	-0.3	1977	3rd-lowest
Wanganui	13.2	-0.6	1987	3rd-lowest

Blenheim	12.0	-0.6	1932	3rd-lowest
Arthurs Pass	7.2	-1.6	1973	4th-lowest
Waipara West	11.9	-0.3	1973	4th-lowest
Le Bons Bay	11.0	-0.3	1984	Lowest
Manapouri	9.0	-0.8	1963	4th-lowest
Queenstown	9.3	-0.3	1871	4th-lowest
Lumsden	9.2	-0.5	1982	4th-lowest
Balclutha, Telford	9.5	-0.9	1964	2nd-lowest
Mean Maximum Temperature				
Kerikeri	20.4	0.4	1981	3rd-highest
Kaikohe	19.5	1.3	1973	Highest
Whangaparaoa	18.8	0.8	1982	4th-highest
Appleby	18.5	1.1	1943	Highest
Kaitaia	18.2	-1.3	1967	Lowest
Dargaville	18.3	-1.3	1943	2nd-lowest
Pukekohe	18.0	-0.5	1969	Lowest
Dannevirke	15.4	-1.5	1951	Lowest
Castlepoint	15.9	-1.2	1972	2nd-lowest
Martinborough	17.5	-0.9	1986	4th-lowest
Ngawi	17.0	-0.2	1972	4th-lowest
Hawera	16.1	-0.5	1977	4th-lowest
Wanganui	17.0	-0.6	1987	4th-lowest
Arthurs Pass	11.3	-1.9	1973	3rd-lowest
Waipara West	17.1	-0.6	1973	3rd-lowest
Le Bons Bay	14.3	-0.2	1984	4th-lowest
Manapouri	13.8	-0.8	1963	4th-lowest
Gore	13.6	-0.6	1971	2nd-lowest
Balclutha, Telford	14.1	-1.1	1964	2nd-lowest
Mean Minimum temperature				
Kaikohe	12.0	0.9	1973	2nd-highest
Cromwell	5.6	0.8	1949	3rd-highest
Kaitaia	10.4	-1.4	1967	2nd-lowest
Warkworth	10.1	-1.5	1966	2nd-lowest
Whangaparaoa	12.4	-0.3	1982	4th-lowest
Kumeu, Auckland	9.4	-0.5	1978	3rd-lowest
Port Taharoa	11.1	-0.6	1973	2nd-lowest
Te Kuiti	7.5	-0.9	1959	2nd-lowest
Taumarunui	6.2	-1.2	1947	Lowest
Takapau Plains	6.6	-0.9	1962	3rd-lowest
Dannevirke	6.6	-1.4	1951	Lowest
Castlepoint	10.3	-0.7	1972	3rd-lowest
Martinborough	7.1	-0.8	1986	2nd-lowest
Ngawi	10.7	-0.2	1972	4th-lowest
Waipawa	6.2	-1.1	1945	2nd-lowest
Wallaceville	6.8	-1.1	1939	3rd-lowest
Wanganui	9.4	-0.6	1987	3rd-lowest
Blenheim	5.8	-1.1	1932	2nd-lowest
Hanmer Forest	2.6	-1.3	1906	Lowest
Le Bons Bay	7.8	-0.3	1984	Lowest
Dunedin	4.6	-0.1	1947	2nd-lowest
Queenstown	3.9	-0.4	1871	Lowest
Balclutha, Telford	4.8	-0.8	1964	2nd-lowest

New records for temperature extremes were set during the February 2009 heat wave, with extremely high day and night time temperatures especially in the east of the North Island.

Table 2: Near or record high or low annual temperature extremes for 2009:

Location	Temperature (°C)	Date of occurrence	Year records began	Comments
Highest extreme maximums				
Whangarei	30.7	Jan-02nd	1967	3rd-highest
Whakatane	32.1	Nov-24th	1975	Highest
Rotorua	30.0	Feb-09th	1964	3rd-highest
Takapau Plains	32.8	Jan-08th	1962	Highest
Martinborough	34.1	Feb-08th	1986	3rd-highest
Napier	36.7	Feb-01st	1868	Highest
Hastings	37.1	Feb-01st	1965	Highest
Wallaceville	30.6	Feb-08th	1939	4th-highest
Hawera	26.8	Feb-08th	1977	3rd-highest
Waiouru	28.0	Jan-08th	1962	4th-highest
Takaka	31.6	Feb-07th	1978	Highest
Farewell Spit	29.5	Feb-08th	1971	Highest
Waipara West	36.2	Feb-08th	1973	3rd-highest
Lumsden	28.8	Jan-24th	1982	4th-highest
Nugget Point	28.7	Jan-25th	1970	Equal 4th-highest
Highest extreme minimums				
Warkworth	21.4	Feb-12th	1966	Equal highest
Tauranga	22.5	Feb-11th	1941	Highest
Whakatane	22.0	Feb-12th	1975	Highest
Rotorua	20.2	Feb-12th	1972	2nd-highest
Taupo	19.9	Feb-12th	1950	Equal 2nd-highest
Auckland Aero	22.1	Feb-12th	1961	2nd-highest
Hamilton	21.3	Feb-12th	1946	3rd-highest
Taumarunui	20.9	Feb-12th	1947	2nd-highest
Hastings	21.4	Jan-03rd	1972	3rd-highest
Waiouru	17.4	Feb-12th	1972	3rd-highest
Nelson	19.9	Feb-10th	1943	Equal 4th-highest
Lake Tekapo	20.8	Feb-09th	1928	Highest
Tara Hills	19.7	Feb-09th	1949	2nd-highest
Wanaka	19.6	Feb-09th	1972	2nd-highest
Manapouri	17.6	Feb-09th	1973	3rd-highest
Lumsden	19.6	Feb-09th	1982	Highest
Cromwell	23.3	Feb-09th	1949	Highest
Nugget Point	15.6	Jan-25th	1972	3rd-highest
Lowest extreme maximums				
Hamilton	7.0	May-22nd	1946	4th-lowest
Stratford	5.4	May-31st	1972	Equal lowest
Hawera	7.8	Jul-11th	1977	Equal 2nd-lowest
Waiouru	0.9	Oct-05th	1972	4th-lowest
Arthurs Pass	0.2	May-31st	1973	2nd-lowest
Manapouri	2.1	Jun-22nd	1973	4th-lowest
Lowest extreme minimums				
Warkworth	-1.3	Jun-05th	1966	Lowest
Port Taharoa	0.5	Jun-17th	1973	Lowest
Paraparaumu	-4.4	Jun-08th	1953	3rd-lowest
Hawera	-3.3	Jun-08th	1977	Equal 3rd-lowest
Blenheim	-5.5	Jun-17th	1932	4th-lowest

Section 4: Sunshine – Above normal in many locations

It was a sunny year, with most locations in New Zealand recording near or above normal sunshine totals. Sunshine hours were above normal in Northland, central areas of the North Island, East Cape, southern Hawke's Bay, West Coast, Canterbury and southeast Otago. Kaitaia, Tauranga, Taumarunui and Greymouth experienced their sunniest years on record. The sunniest centre in 2009 was Nelson, recording 2571 hours, followed by Tauranga (the sunniest of the main centres) with 2540 hours, then Blenheim with 2477 hours. The Whakatane site had instrument problems at the start of the year so an annual total could not be computed. However, their 8-month total from May to December (1614 hours) is only one hour less than the Nelson total over the same period so they will definitely be in the race for 2010.

Table 3: Near or record high sunshine hours for the year 2009:

Location	Sunshine (hours)	Percent of normal	Records began	Comments
Kaitaia	2326	111	1985	Highest
Dargaville	2067	110	1943	3rd-highest
Tauranga	2540	113	1933	Highest
Taumarunui	2019	124	1947	Highest
Waipawa	2295	121	1945	3rd-highest
Greymouth	2115	126	1947	Highest
Balclutha, Telford	1958	120	1964	2nd-highest

Section 5: Rainfall – Below normal in many areas

Rainfall during the year was below normal (50 to 80 percent of normal) in parts of Auckland, central North Island, northern Hawkes Bay, southern Wairarapa, north Canterbury, inland south Canterbury and central Otago. Other areas received near-normal rainfall.

Table 4: Near or record low annual rainfall for the year 2009:

Location	Rainfall (mm)	Percentage of normal	Year records began	Comments
Whangarei	1066	76	1937	4th-lowest
Taupo	712	65	1949	Lowest
Lake Rotoiti	1273	79	1933	2nd-lowest
Wanaka	495	66	1927	4th-lowest
Lumsden	734	78	1982	2nd-lowest

Of the regularly reporting gauges monitored by NIWA, Cropp River in the Hokitika River catchment recorded the highest rainfall with 10956 mm, followed by Doon (Fiordland) with 7266 mm for 2009. Ranfurly in Central Otago was the driest of the sites where NIWA records rainfall, with 263 mm of rain for the year (62 percent of normal), followed by Clyde with 299 mm (72 percent of normal), and then Middlemarch with 365 mm (70 percent of normal).

Near record values of annual 1-day rainfall extremes occurred at only two localities; Kaitaia and Tara Hills.

Table 5: One day rainfall extremes for 2009:

Location	1-day extreme rainfall (mm)	Date	Year records began	Comments
Kaitaia	111	Apr-25th	1985	3rd-highest
Tara Hills	70	May-16th	1949	2nd-highest

Section 6: 2009 climate in the six main centres

Tauranga was the warmest and sunniest of the six main centres (the Tauranga 2009 sunshine hours total was the highest ever at this location since records began in 1933). Wellington was the wettest of the main centres, and Christchurch was the driest.

Table 6: 2009 Climate in the six main centres

Location	Mean temp. (°C)	Departure from normal (°C)		Rainfall (mm)	% of normal		Sunshine (hours)	% of normal	
Auckland[a]	14.6	-0.7	Below average	955	81%	Well below normal	2176	108%	Above normal
Tauranga[b]	15.1	0.5	Above average	1221	101%	Near normal	2540	113%	Highest
Hamilton[c]	13.2	-0.3	Below average	1088	90%	Below normal	2120[g]	106%	Above normal
Wellington[d]	12.4	-0.4	Below average	1274	106%	Above normal	2079	101%	Near normal
Christchurch[e]	11.1	-0.5	Below average	589	94%	Below normal	2170	103%	Near normal
Dunedin[f]	10.8	-0.3	Below average	736	91%	Below normal	1704	107%	Above normal

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

Section 7: Significant extremes

Floods

There were numerous heavy rainfall events during 2009, about fifteen of which produced significant flooding and property damage. The worst flooding events during 2009 were those of 27 April on the West Coast, 16-20 May in Canterbury, Otago, and alpine areas of the South Island, and 28-30 June in Gisborne and the Manawatu-Wanganui region (causing a State of Emergency to be declared in Gisborne).

On April 27, Mt Cook recorded 341 mm of rainfall (its highest April 1-day total since records began in 1928). Torrential rain also occurred in Greymouth on the 27th, and roads became impassable there. At least nine homes were evacuated on the eastern side of town. Flooding also forced the closure of SH6 at Punakaiki, and between Haast and Makarora. Trampers were stranded in the Mueller Hut in Aoraki Mt Cook National Park, and about 120 people were evacuated from the Milford Track by helicopter. On 17 May, SH1 south of Ashburton, was closed for several hours after the Rangitata River burst its banks. The main railway line between Rangitata River and Temuka was also closed by flooding. Inland, 33 people were evacuated in Omarama, as water was up to 1 m deep in places after a stopbank designed to cope with a 100-year flood was overtopped. A major slip closed SH8, on the Omarama side of the Lindis Pass. On 18 May, farmers near Balclutha used boats to rescue sheep stranded by the flooded Clutha River. The Skippers Road in Queenstown was closed

until further notice, after slips and washouts. The previous three days of rain had also damaged many roads in the Queenstown Lakes area, with access requiring four-wheel drive vehicles. On 29 June, heavy rain caused slips and the closure of SH4 between Raetihi and Wanganui. SH57 between Palmerston North and Linton was flooded, and slips occurred in the Manawatu Gorge. On 30 June, the residents of the small settlement of Mangatuna just out of Gisborne were evacuated following heavy rainfall. Many slips affected the Napier-Taupo Road, and SH2 between Napier and Wairoa, although both remained open. A Civil Defence Emergency was established in the Gisborne District on the morning of the 30th.

Snow

It was a very snowy year, with an extended snow season that started in April and finished in October. Numerous snowfall events, and the record warmth of August, contributed to a high-risk avalanche season in late winter/early spring. Significant snowfalls, which were widespread and to low levels, were observed 31 May, 16 June, 2-5 July, and 4-6 October.

On 31 May, snow and slips closed the highway between Opotiki and Gisborne as wintry conditions brought snow and ice to the country's roads. Snow fell to sea level along Wellington's south coast and from Southland to Kaikoura, and blanketed high-country passes, including the Rimutaka Hill Road summit and Desert Road. Snow settled to about 200 m inland and elsewhere around Canterbury, with about 8 cm on the ground near Springfield and in parts of Otago. On 16 June, Dunedin Airport and many roads were closed, after snow fell to low levels in Otago and Southland. Flights were cancelled and some schools in Dunedin were closed for the day. Heavy snow on 2-3 July closed the Desert Road between Rangipo and Waiouru overnight, and also closed the Haast Pass. Cromwell was cut off, and schools in the area were closed. A series of avalanches on 1-2 August blocked the only road access to Milford Sound for 10 days, as both ends of the Homer Tunnel were buried in more than 100,000 tonnes of debris. The snow on October 4 – 6 in the Hawkes Bay and Central North Island was exceptionally late and very heavy, and estimated to be the worst in October since 1967. Hundreds of travellers were stranded as numerous roads were closed, and there were heavy lambing losses. Snowfall was also observed in Taranaki, Waikato and Rotorua on 6 October, for the first time in about 30 years around Rotorua.

Wind

It was a very windy year overall, particularly in May.

Gale force winds on 3 January caused havoc in Canterbury, with more than 10,000 homes left without power. Strong winds buffetted Wellington on 15 and 17 May, damaging power lines and cutting power, cancelling flights and causing property damage. On 23-24 May, southerly gales hammered Wellington, closing roads, tearing boats from their moorings, and damaging trees, roofs and power lines. Cook Strait ferries were cancelled, and flights were delayed, cancelled or diverted. On 23 July, Wellington and the Wairarapa were affected by high winds, which brought down trees onto high voltage lines, briefly cutting power to about 4,000 customers from Masterton to Castlepoint. Further north, powerlines between Tokomaru Bay and Ruatoria were also damaged by the strong northwesterlies. On September 14th, record-high wind gusts were experienced over the southern half of the South Island during a storm-force northwesterly event. Damage included felled power lines and lifted roofs on the Otago peninsula, and in Arrowtown, a tree felled by the wind crashed onto a vehicle, killing the driver. Gusty cross-winds on 4-5 October forced the closure of New Plymouth airport for 20 hours. The strong winds also brought down trees and cut the power supply to about 1,000 properties in Taranaki, and about 1,200 homes in the Rotorua District. High winds, together with heavy snow, brought down trees and power poles across the central North Island, leaving about 1,300 people without power. Some properties were without power for four days. On 13-15 November, strong winds caused havoc in Canterbury and Masterton, grounding helicopters and planes, felling trees, and downing power lines.

Drought

Soil moisture levels at the end of January were below normal for much of the North Island (except Gisborne and northern Manawatu), as well as in the Tasman District, northern Westland, north and south Canterbury, and south Otago. Rainfall in the latter part of February returned soil moisture levels to near normal status across much of the country. By April, significant soil moisture deficits (more than 50 mm below normal levels) had re-developed in southern Hawkes Bay and the Tararua District, but were short-lived due to wet conditions in these areas in May. After a windy and extremely dry November, significant soil moisture deficits (more than 50 mm below normal levels) had developed in Otago, Canterbury, the Kaikoura coast, Northland, and parts of Auckland, Coromandel, Bay of Plenty, central North Island, Gisborne and Hawkes Bay. However, rainfall in the first week of December returned soil moisture levels back to near normal in most regions, except Northland, central North Island, Bay of Plenty and Otago.

Further detailed information about significant climate and weather events for 2009 is attached.

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Note for editors:

Climate measurements have been made in New Zealand for about 150 years, with reasonable coverage of reliable data from at least 1900. NIWA makes its raw climate data publicly available for free on-line. Journalists are advised, however, to take extreme care when interpreting trends from raw data to ensure they have not been compromised by changes in site location, urbanisation, exposure, or instrumentation over time. If in any doubt, please call us.

Significant weather and climate events – 2009

Section 8: High temperatures

2009 was notable for two remarkably warm months (January and August), and a heat wave in early February. Many new records of extreme monthly maximum temperatures were established in these two months, as well as record high daily maximum temperatures on the following dates: 8, 16 and 24-25 January, 7 -12 February, 15, 25, 28, 30 August, 14 September, and 23-24, 29-30 November.

- **January**

January temperatures were well above average (between 1.5 and 2.5°C above normal) along the east coast of the South Island from Kaikoura to Mosgiel, with many January records set in this area. Above average temperatures (between 0.5 and 1.5°C above normal) were experienced in western Bay of Plenty, eastern North Island, inland Canterbury and Otago and much of Southland. The highest temperature during January 2009 was 37.2°C recorded at Waione in the Wairarapa on the 8th (the highest January maximum temperature for this location and the equal 9th highest January temperature for anywhere in New Zealand – the highest was 38.9°C in Ruatoria in January 1979). Culverdon also recorded 37.0°C on the 24th (the 2nd-highest January maximum temperature for this location). Takapau Plains (southern Hawkes Bay), Ohakune and Cheviot also received their highest ever January maximum temperatures with readings of 32.8°C and 30.0°C on the 8th, and 36.3°C on the 16th, respectively.

- **Heatwave: 7 -12 February**

The highest temperature during February 2009 was 38.0°C recorded at Culverden on the 8th (the highest February maximum temperature ever recorded for this location). Heatwave conditions were experienced over the country from 7 to 12 February, when temperatures of 34°C or more occurred in many locations on each day. Many locations experienced their highest recorded February maximum and minimum temperatures during the heat wave.

- **August**

It was an early start to spring. Temperatures were more than 2°C above average in central Otago and the Lakes District, and parts of: Canterbury, Northland, Auckland, and the western Bay of Plenty. Well above average temperatures (between 1.2°C and 2°C above average) were recorded elsewhere, except for Gisborne and Hawke's Bay (with temperatures between 0.5°C and 1.2°C above average). It was the warmest August since records began 155 years ago, with a national average temperature of 10.2°C (1.7°C above the long-term August average). Maximum temperatures at many locations were the highest ever recorded for August.

- **14 September**

The highest temperature during September 2009 was 29.0°C recorded at Alexandra on the 14th (a September record for this site), associated with severe north-westerly winds experienced over the southern South Island on that day. Numerous other locations also experienced record or near-record high September maximum temperatures on the 14th.

- **23-24, 29-30 November**

Record or near-record warm afternoon conditions were experienced in the east of the South Island on 21 and 23 November, in strong north-westerly events. Several North Island climate stations also registered record high afternoon temperatures on the day after (the 24th), or on November 29 and 30, also associated with strong north-westerly winds.

- **December**

Kaikohe recorded its highest ever December temperature on the 26th (27.8°C). Gisborne, Napier, Blenheim and Arthurs Pass all recorded their highest ever December minimum temperatures during the month.

Table 7: Extremes of daily maximum temperature in 2009 were recorded at:

Location	Maximum temperature (°C)	Date of occurrence	Records began	Comments
January				
Kaikohe	28.4	1st	1973	4th-highest
Whangarei	30.7	2nd	1967	3rd-highest
Whangaparaoa	27.2	25th	1982	Equal 2nd-highest
Whitianga	29.6	25th	1962	3rd-highest
Turangi	31.4	31st	1968	Equal highest
Takapau Plains	32.8	8th	1962	Highest
East Taratahi	34.6	8th	1906	3rd-highest
Waione	37.2	8th	1992	Highest
Martinborough	33.3	31st	1986	4th-highest
Wallaceville	30.2	31st	1939	3rd-highest
Ohakune	30.0	8th	1962	Highest
Waiouru	28.2	8th	1962	2nd-highest
Takaka	30.5	23rd	1978	4th-highest
Farewell Spit	27.9	31st	1971	Equal 2nd-highest
Lake Rotoiti	31.0	26th	1965	Equal 2nd-highest
Puysegur Point	23.4	24th	1978	Equal 2nd-highest
Appleby	30.3	31st	1943	4th-highest
Hanmer Forest	34.7	24th	1906	4th-highest
Culverden	37.0	24th	1928	2nd-highest
Cheviot	36.3	16th	1982	Highest
Waipara West	35.2	16th	1973	4th-highest
Darfield	35.4	25th	1939	2nd-highest
Christchurch	35.7	8th	1863	3rd-highest
Lincoln	35.0	8th	1881	Equal 4th-highest
Le Bons Bay	30.6	8th	1984	2nd-highest
Woodbury	34.0	23rd	1973	2nd-highest
Dunedin	32.0	23rd	1947	3rd-highest
Gore	30.4	24th	1971	2nd-highest
Tiwai Point	29.0	24th	1970	2nd-highest
Nugget Point	28.7	25th	1970	Equal 2nd-highest
February				
Kaitaia	30.4	7th	1985	Highest
Kerikeri	28.9	8th	1981	Equal 4th-highest
Kaikohe	31.6	8th	1973	Highest
Whangarei Aero	30.5	12th	1967	Equal 2nd-highest
Warkworth	29.4	12th	1966	Highest
Whangaparaoa	28.5	8th	1982	Highest
Kumeu (Waitakere)	31.3	12th	1978	Highest
Whenuapai	32.4	12th	1945	Highest
Whitianga Aero	31.9	8th	1962	Highest
Paeroa	32.2	8th	1947	2nd-highest
Te Puke	30.7	8th	1973	Equal 2nd-highest
Rotorua Aero	30.0	9th	1964	2nd-highest
Taupo	30.4	8th	1949	4th-highest
Whatawhata	31.5	18th	1952	Highest
Turangi	32.6	8th	1968	Highest
Takapau Plains	30.7	8th	1962	Equal 4th-highest
Castlepoint	31.5	8th	1972	Highest
East Taratahi	33.6	8th	1906	4th-highest
Martinborough	34.1	8th	1986	Highest
Ngawi	30.2	8th	1972	Equal 3rd-highest
Hicks Bay	28.2	8th	1969	2nd-highest
Gisborne	34.6	1st	1905	3rd-highest
Napier Aero	36.7	1st	1868	Highest
Waipawa	33.8	8th	1945	2nd-highest
Wairoa, North Clyde	37.3	1st	1964	Highest
Wallaceville	30.6	8th	1939	3rd-highest
Ohakune	30.0	8th	1962	Equal highest
Waiouru	28.0	8th	1962	3rd-highest
Takaka	31.6	7th	1978	2nd-highest
Farewell Spit	29.5	8th	1971	Highest
Lake Rotoiti	31.3	8th	1965	Highest

Motueka, Riwaka	30.5	8th	1956	4th-highest
Appleby	29.7	8th	1943	4th-highest
Blenheim Aero	34.1	9th	1932	2nd-highest
Hanmer Forest	35.7	8th	1906	3rd-highest
Culverden	38.0	8th	1928	Highest
Cheviot	37.8	8th	1982	Highest
Winchmore	35.2	8th	1928	Equal 4th-highest
Waipara West	36.2	8th	1973	2nd-highest
Darfield	36.4	8th	1939	2nd-highest
Le Bons Bay	30.9	9th	1984	2nd-highest
Woodbury	35.0	8th	1973	2nd-highest
March				
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
April				
Takapau Plains	25.9	27th	1962	Highest
Castlepoint	24.5	27th	1972	4th-highest
Milford Sound	22.6	25th	1934	Equal 4th-highest
Puysegur Point	20.7	15th	1978	3rd-highest
Woodbury	27.0	4th	1973	Equal 4th-highest
Dunedin	26.8	26th	1947	2nd-highest
Cromwell	27.0	16th	1949	2nd-highest
Nugget Point	24.9	26th	1970	Highest
June				
Kaitaia	20.0	11th	1985	Equal 3rd-highest
July				
Waipara (Canterbury)	19.7	31st	1973	4th-highest
August				
Kaikohe	19.0	28th	1973	Equal 2nd-highest
Dargaville	20.5	30th	1943	Equal 4th-highest
Whangarei	20.9	28th	1967	Highest
Warkworth	18.9	30th	1966	2nd-highest
Whangaparaoa	19.2	28th	1982	2nd-highest
Kumeu (Waitakere)	20.0	30th	1978	Highest
Whenuapai (West Auckland)	19.4	30th	1945	Equal 4th-highest
Takapau Plains	18.5	30th	1962	4th-highest
Martinborough	19.2	30th	1986	4th-highest
Ngawi (coastal Wairarapa)	18.7	15th	1972	Equal 3rd-highest
Gisborne	21.5	30th	1905	3rd-highest
Hastings	22.2	26th	1965	Equal 2nd-highest
Wairoa, North Clyde	21.4	30th	1964	Equal 4th-highest
Paraparaumu	21.0	15th	1953	Highest
Palmerston North	20.2	30th	1918	2nd-highest
Wellington	17.7	14th	1962	Equal 4th-highest
Wallaceville	19.9	15th	1939	2nd-highest
Stratford	16.8	29th	1960	Equal 4th-highest
Hawera	17.5	15th	1977	2nd-highest
Ohakune	17.4	15th	1962	2nd-highest
Waiouru	18.0	29th	1962	Highest
Wanganui	20.2	15th	1937	4th-highest
Takaka	20.0	28th	1978	Highest
Lake Rotoiti	16.1	17th	1965	4th-highest
Milford Sound	17.7	16th	1934	4th-highest
Motueka	19.5	28th	1956	Equal 3rd-highest
Appleby	19.8	28th	1943	Highest
Arthurs Pass	13.0	16th	1978	Equal 4th-highest
Culverden	22.0	25th	1928	4th-highest
Tiwai Point (Southland)	17.4	25th	1970	Equal 3rd-highest
September				
Kaitaia	21.5	13th	1985	3rd-highest
Kaikohe	20.7	14th	1973	4th-highest
Kumeu (Waitakere)	20.4	14th	1978	3rd-highest
Ngawi	23.4	14th	1972	3rd-highest

Farewell Spit	20.9	15th	1971	Highest
Lake Rotoiti	21.6	14th	1965	Equal 2nd-highest
Appleby (Nelson)	21.8	15th	1943	3rd-highest
Blenheim	24.4	14th	1932	2nd-highest
Hanmer Forest	26.1	14th	1906	4th-highest
Culverden	24.0	11th	1928	Equal 4th-highest
Le Bons Bay	22.4	14th	1984	2nd-highest
Orari (South Canterbury)	27.5	14th	1972	Highest
Timaru	28.2	14th	1885	Highest
Oamaru	26.4	14th	1908	2nd-highest
Dunedin (Musselburgh)	25.4	14th	1947	2nd-highest
Manapouri	19.7	14th	1963	2nd-highest
Alexandra	29.0	14th	1928	Highest
Queenstown	23.3	14th	1871	4th-highest
Lumsden	21.0	14th	1982	Equal 3rd-highest
Cromwell	26.0	14th	1949	Highest
October				
Whangarei	24.3	17th	1967	4th-highest
November				
Kerikeri	26.4	30th	1981	2nd-highest
Kaikohe	24.9	27th	1973	2nd-highest
Whangarei	25.9	30th	1967	3rd-highest
Tauranga	28.6	24th	1913	Highest
Te Puke	28.8	24th	1973	Highest
Whakatane	32.1	24th	1975	Highest
Rotorua	27.3	24th	1964	Highest
Turangi	26.8	24th	1968	2nd-highest
Hastings	30.2	29th	1965	4th-highest
Wairoa, North Clyde	29.8	29th	1964	4th-highest
Farewell Spit	24.4	24th	1971	3rd-highest
Le Bons Bay	25.4	21st	1984	4th-highest
Oamaru	29.0	21st	1967	Highest
Dunedin (Airport)	31.1	23rd	1947	Highest
Queenstown	26.0	23rd	1968	Equal 4th-highest
Balclutha	27.6	23rd	1964	4th-highest
Nugget Point	27.9	23rd	1970	Highest
December				
Kerikeri	29.2	11th	1981	2nd-highest
Kaikohe	27.8	26th	1973	Highest
Whangaparaoa	26.5	26th	1982	2nd-highest
Whitianga	27.9	10th	1962	4th-highest
Whakatane	29.3	19th	1975	Equal 2nd-highest
Taupo	27.0	10th	1976	2nd-highest
Le Bons Bay	27.8	26th	1984	3rd-highest
Dunedin	32.0	25th	1962	2nd-highest
Nugget Point	27.0	25th	1970	3rd-highest

Table 8: Near or record high monthly maximum temperatures were recorded at:

Location	Maximum temperature (°C)	Departure from normal (°C)	Records began	Comments
January				
Whangaparaoa	24.2	1.9	1982	2nd-highest
Tauranga Aero	25.5	1.6	1913	4th-highest
Rotorua Aero	24.1	1.2	1964	4th-highest
Waipawa	25.9	1.6	1945	4th-highest
Takaka	24.5	2.1	1978	3rd-highest
Lake Rotoiti	23.5	2.8	1965	4th-highest
Hanmer Forest	26.4	3.5	1906	2nd-highest
Kaikoura	22.1	1.7	1963	3rd-highest
Culverden	27.6	3.8	1928	2nd-highest
Cheviot	25.6	2.5	1982	Highest
Winchmore	24.9	2.7	1928	4th-highest
Waipara West	25.9	2.0	1973	3rd-highest
Darfield	25.9	2.8	1939	3rd-highest
Christchurch	24.7	2.4	1863	3rd-highest
Le Bons Bay	21.3	2.2	1984	Highest

Fairlie	25.7	3.3	1925	2nd-highest
Woodbury	25.9	3.6	1973	Highest
Dunedin Aero	23.1	2.4	1947	Highest
Dunedin, Musselburgh	21.1	2.2	1947	2nd-highest
Nugget Point	19.5	1.8	1970	4th-highest
February				
Kaitaia	25.6	0.7	1985	3rd-highest
Whangarei Aero	25.6	1.2	1967	4th-highest
Whangaparaoa	24.4	1.9	1982	2nd-highest
Kumeu (Waitakere)	24.5	0.4	1978	2nd-highest
Wairoa, North Clyde	25.9	1.8	1964	3rd-highest
April				
Appleby	19.5	1.3	1943	Highest
Dunedin	17.9	1.3	1947	2nd-highest
Cromwell	19.0	1.7	1949	4th-highest
Invercargill	16.5	1.5	1948	4th-highest
Tiwai Point	15.6	1.0	1970	4th-highest
Nugget Point	15.8	1.8	1970	2nd-highest
August				
Kaitaia	16.7	0.5	1985	3rd-highest
Whangarei	17.0	1.4	1967	Highest
Whangaparaoa	16.2	2.2	1982	Highest
Kumeu (Waitakere)	16.2	1.1	1978	2nd-highest
Whenuapai (West Auckland)	16.3	1.2	1945	2nd-highest
Tauranga	16.2	1.4	1913	2nd-highest
Port Taharoa	16.0	1.4	1973	2nd-highest
Turangi	13.2	1.3	1968	4th-highest
New Plymouth	15.2	1.5	1944	Highest
East Taratahi (Masterton)	15.0	1.9	1906	3rd-highest
Martinborough	15.9	2.3	1986	2nd-highest
Ngawi (Wairarapa coast)	15.2	2.3	1972	2nd-highest
Gisborne	16.3	1.4	1905	4th-highest
Paraparaumu	14.7	1.7	1953	Highest
Palmerston North	15.4	2.1	1928	Highest
Levin	15.3	2.0	1895	Highest
Wellington	14.7	2.0	1962	Highest
Wallaceville	15.5	2.6	1939	Highest
Stratford	13.4	1.5	1960	2nd-highest
Hawera	14.2	1.6	1977	Highest
Ohakune	12.0	1.9	1962	3rd-highest
Waiouru	10.4	1.6	1962	3rd-highest
Wanganui	16.0	2.2	1937	Highest
Takaka	15.0	1.4	1978	3rd-highest
Westport	14.3	1.3	1937	2nd-highest
Lake Rotoiti	11.3	1.8	1965	2nd-highest
Reefton	13.8	1.8	1960	Highest
Greymouth	13.9	1.3	1947	4th-highest
Puysegur Point (Fiordland)	12.6	1.9	1978	Highest
Nelson	14.3	1.2	1943	Highest
Appleby	15.4	2.3	1943	Highest
Blenheim	16.0	2.2	1941	Highest
Hanmer Forest	15.5	4.0	1906	2nd-highest
Kaikoura	13.8	2.3	1963	2nd-highest
Winchmore	14.4	2.8	1928	2nd-highest
Waipara West	15.5	3.0	1973	2nd-highest
Christchurch	14.2	2.1	1863	4th-highest
Le Bons Bay (Banks Peninsula)	12.4	2.4	1984	2nd-highest
Timaru	13.2	1.6	1885	4th-highest
Oamaru	13.8	1.8	1908	2nd-highest
Tara Hills	11.5	2.1	1949	3rd-highest
Wanaka	12.0	1.6	1955	3rd-highest
Dunedin	13.8	1.8	1947	2nd-highest
Manapouri	11.2	1.1	1963	3rd-highest
Lumsden	12.3	1.9	1982	Highest
Cromwell	14.0	3.0	1949	Highest
Gore	12.0	1.9	1971	2nd-highest
Invercargill	12.5	1.4	1948	2nd-highest
Nugget Point (coastal Otago)	11.7	1.9	1970	2nd-highest
September				

Whangaparaoa	16.8	1.5	1982	2nd-highest
Kumeu (Waitakere)	17.2	0.9	1978	2nd-highest
Whenuapai	17.5	1.2	1945	2nd-highest
Lake Rotoiti	14.2	2.4	1965	2nd-highest
November				
Kerikeri	22.1	1.4	1981	Highest
Te Puke	21.0	1.3	1973	2nd-highest
Whakatane	21.2	0.5	1974	3rd-highest
Nelson	20.0	1.4	1943	3rd-highest
Dunedin (Airport)	19.0	1.5	1947	Highest
December				
Kerikeri	24.6	2.0	1981	Highest
Kaikohe	24.0	2.9	1973	Highest
Whangarei	24.3	1.6	1967	3rd-highest
Whangaparaoa	22.4	1.8	1982	2nd-highest
Whakatane	22.6	0.8	1974	3rd-highest

Section 9: Low temperatures and severe frost

2009 was notable for four extremely cold months (March, May, June and October), and an extended frosty period across many regions of the country between 16 and 26 June. Many record low monthly minimum temperatures were established in these four months, as well as widespread and record low daily minimum temperatures on the following dates: 12 and 23-25 March, 21-22 April, May 21-22, 8 and 17-19 June, 4-6 September, and 4-6 October.

- **March**

The national average temperature of 15.1°C for March 2009 was 0.6°C below average for this time of the year. Monthly 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 Hawkes Bay were well below normal (by between 1.5 and 2.0°C).

- **April**

Monthly temperatures were below average (by between 0.5 and 1.0 °C) over most of the central and eastern parts of the North Island for April. Notably, several sites in Otago, Canterbury, and the lower North Island recorded their lowest April minimum temperature on the 21st or 22nd.

- **May**

It was a record cold May for many, many locations, the length and breadth of the country. Extremely low temperatures (between 2.0 and 2.5 °C lower than normal) were recorded over most of the South Island, lower parts of the North Island, King Country, Waikato, Auckland and parts of Northland. Most other locations experienced well below average temperatures (between 1.2 and 2.0 °C lower than normal). The national average temperature of 9.0°C was 1.6°C below the long-term average for May.

- **June**

Monthly minimum temperatures in June were well below average in many locations of New Zealand. The persistence of the wintertime "highs" resulted in an extended frosty period between the 16th and 26th – and this is reflected in the minimum temperatures. Several sites recorded their lowest-ever June extreme daily minimum air temperature; Warkworth, Whanagaparaoa, Part Taharoa (coastal Waikato), Turangi, Paraparaumu, Wellington, Wanganui and Banks Peninsula. The Wellington and Paraparaumu records were notable, in that the minimum air temperature recorded on the 8th (-0.6 ºC and -4.2 ºC respectively) broke long-standing records, going back to 1962 (Wellington) and 1953 (Paraparaumu).

- **4-6 September**

Numerous September minimum temperature records were broken on the 4th, 5th, and 6th of the month, right across the country from Southland to Northland. Record cold temperatures were experienced on the 5th and 6th, when a large anticyclone became slow moving over the country. The clear skies and light winds of this early-spring anticyclone resulted in extremely frosty conditions, which were widespread.

- **4-6 October**

Record cold or near-record cold afternoon conditions were experienced on October 4th/5th in many North Island locations, associated with the heavy snowfall and bitterly cold southeast winds over the central North Island.

Table 9: Extremes of daily minimum temperature in 2009 were recorded at:

Location	Minimum temperature (°C)	Date of occurrence	Records began	Comments
January				
Warkworth	7.4	5th	1966	2nd-lowest
Te Puke	4.4	21st	1973	Equal 3rd-lowest
February				
Warkworth	9.2	25th	1966	3rd-lowest
Dunedin Aero	1.9	11th	1947	3rd-lowest
Queenstown Aero	1.7	14th	1871	3rd-lowest
March				
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
April				
Warkworth	3.5	10th	1966	2nd-lowest
Kumeu (Waitakere)	0.8	10th	1978	Lowest
Pukekohe	2.1	10th	1969	3rd-lowest
Hamilton	-0.4	10th	1946	4th-lowest
Taumarunui	-2.6	2nd	1947	Equal lowest
Turangi	-3.1	2nd	1968	Equal lowest
Martinborough	-1.8	22nd	1986	2nd-lowest
Ngawi	5.9	22nd	1972	Equal 4th-lowest
Paraparaumu	0.2	22nd	1953	3rd-lowest
Ohakune	-2.7	22nd	1962	4th-lowest
Wanganui	2.2	22nd	1987	3rd-lowest
Appleby	-0.8	21st	1943	4th-lowest
Cheviot	-2.6	22nd	1982	3rd-lowest
Christchurch	-2.2	22nd	1863	Equal 4th-lowest
Lake Tekapo	-5.0	9th	1925	4th-lowest
Dunedin	-4.0	21st	1947	Lowest
Gore	-2.6	21st	1971	2nd-lowest
Balclutha	-3.6	21st	1964	Lowest
May				
Kaitaia Observatory	4.7	24th	1985	Equal 3rd-lowest
Kerikeri Ews	3.0	22nd	1981	Equal 3rd-lowest
Warkworth Ews	0.1	22nd	1966	Lowest
Whangaparaoa Aws	5.4	21st	1982	Lowest
Te Puke Ews	-1.0	22nd	1973	Equal 2nd-lowest
Whakatane Aero Aws	-1.6	22nd	1975	2nd-lowest
Rotorua Aero Aws	-2.9	22nd	1964	Lowest
Taupo Aws	-4.1	22nd	1949	3rd-lowest
Pukekohe Ews	-0.5	22nd	1969	3rd-lowest
Port Taharoa Aws	2.0	21st	1973	Lowest
Te Kuiti Ews	-2.5	22nd	1959	3rd-lowest
Taumarunui Aws	-4.0	22nd	1947	3rd-lowest

New Plymouth Aws	-0.8	22nd	1944	Lowest
Ngawi Aws	4.6	28th	1972	4th-lowest
Hicks Bay Aws	1.7	22nd	1969	3rd-lowest
Hastings Aws	-2.4	22nd	1965	2nd-lowest
Waipawa Ews	-4.2	22nd	1945	2nd-lowest
Wairoa, North Clyde Ews	-0.2	22nd	1964	4th-lowest
Stratford Ews	-1.8	22nd	1960	Equal 2nd-lowest
Waiouru Aws	-6.1	22nd	1962	4th-lowest
Wanganui Aws	1.3	28th	1987	Equal 4th-lowest
Hokitika Aero	-1.8	12th	1963	2nd-lowest
Pelorus Sd, Crail Bay	2.0	21st	1982	3rd-lowest
Blenheim Aero Aws	-4.7	21st	1932	Lowest
Le Bons Bay Aws	0.8	21st	1984	3rd-lowest
Dunedin Aero Aws	-4.9	3rd	1947	3rd-lowest
Balclutha, Telford Ews	-4.5	2nd	1964	Equal 3rd-lowest
June				
Kaitaia	2.0	19th	1985	4th-lowest
Warkworth	-1.3	5th	1966	Lowest
Whangaparaoa	4.1	1st	1982	Lowest
Kumeu (Waitakere)	-3.2	4th	1978	3rd-lowest
Te Puke	-1.6	17th	1973	4th-lowest
Rotorua	-4.0	19th	1964	Equal 3rd-lowest
Taupo	-5.4	18th	1949	4th-lowest
Hamilton	-4.5	19th	1946	2nd-lowest
Port Taharoa	0.5	17th	1973	Lowest
Te Kuiti	-3.9	19th	1959	2nd-lowest
Taumarunui	-5.8	23rd	1947	2nd-lowest
Turangi	-7.4	5th	1968	Lowest
Castlepoint	2.0	17th	1972	Equal 4th-lowest
Paraparaumu	-4.2	8th	1953	Lowest
Wellington	-0.6	8th	1962	Lowest
Hawera	-3.3	8th	1977	Equal 2nd-lowest
Wanganui	-1.5	8th	1987	Lowest
Lake Rotoiti	-8.2	19th	1965	Equal 4th-lowest
Milford Sound	-3.4	23rd	1934	Equal 4th-lowest
Puysegur Point (Fiordland)	0.6	7th	1978	2nd-lowest
Motueka, Riwaka	-4.8	19th	1956	2nd-lowest
Pelorus Sd, Crail Bay	-1.0	17th	1982	2nd-lowest
Appleby	-5.5	19th	1943	4th-lowest
Blenheim	-5.5	17th	1932	3rd-lowest
Le Bons Bay	0.0	17th	1984	Lowest
Manapouri	-5.9	7th	1963	4th-lowest
July				
Kaitaia	1.5	26th	1985	Equal lowest
Warkworth	-0.5	26th	1966	Lowest
Te Kuiti	-3.6	14th	1959	Equal 2nd-lowest
New Plymouth	-1.8	14th	1944	2nd-lowest
Takapau Plains	-3.6	27th	1962	Equal 4th-lowest
Dannevirke	-4.6	27th	1951	2nd-lowest
Ngawi	2.9	14th	1972	4th-lowest
Hawera	-2.8	14th	1977	Equal 3rd-lowest
Le Bons Bay	0.9	13th	1984	4th-lowest
September				
Kaitaia	2.2	7th	1967	4th-lowest
Warkworth	1.2	6th	1966	Lowest
Whangaparaoa	5.4	5th	1982	Lowest
Kumeu (Waitakere)	-1.5	6th	1978	Lowest
Whitianga	-1.3	6th	1962	Lowest
Ruakura	-2.8	6th	1906	Equal 3rd-lowest
Hamilton	-2.2	6th	1946	Equal lowest
Port Taharoa	1.5	6th	1973	Lowest
Te Kuiti	-2.3	5th	1959	Lowest
Taumarunui	-4.2	5th	1947	2nd-lowest
Turangi	-5.0	5th	1968	2nd-lowest
Dannevirke	-3.4	5th	1951	3rd-lowest
Martinborough	-2.9	5th	1986	3rd-lowest
Ngawi	2.7	5th	1972	Lowest
Paraparaumu	-2.8	5th	1953	2nd-lowest
Levin	-2.3	5th	1895	3rd-lowest

Wallaceville	-4.0	6th	1939	Equal 3rd-lowest
Stratford	-1.6	7th	1960	4th-lowest
Hawera	-2.7	5th	1977	Lowest
Wanganui	0.1	5th	1987	Equal lowest
Takaka	-0.9	6th	1978	4th-lowest
Motueka	-2.2	5th	1956	3rd-lowest
Blenheim	-3.5	5th	1932	Lowest
Culverden	-6.0	5th	1928	4th-lowest
Christchurch (Airport)	-3.9	4th	1863	2nd-lowest
Oamaru	-4.0	5th	1908	3rd-lowest
Dunedin (Airport)	-4.7	5th	1947	Lowest
Queenstown	-3.8	4th	1871	Equal 3rd-lowest
Lumsden	-4.8	4th	1982	2nd-lowest
Gore	-3.4	4th	1971	Equal 4th-lowest
October				
Warkworth	2.4	30th	1966	Lowest
Whangaparaoa	5.9	5th	1982	Lowest
Pukekohe	1.6	30th	1969	4th-lowest
Dannevirke	-2.3	21st	1951	4th-lowest
Hokitika	-0.9	5th	1866	4th-lowest
Haast	-0.4	29th	1949	Equal 3rd-lowest
Puysegur Point	3.0	4th	1978	4th-lowest
Appleby (Nelson)	-0.7	6th	1943	4th-lowest
Le Bons Bay	1.7	10th	1984	Equal lowest
Dunedin (Airport)	-3.3	7th	1947	Lowest
Queenstown	-3.5	5th	1871	Lowest
Lumsden	-4.3	5th	1982	Lowest
November				
Warkworth	4.4	7th	1966	Lowest
Turangi	-1.7	12th	1968	3rd-lowest
New Plymouth	2.1	12th	1944	3rd-lowest
Martinborough	0.0	12th	1986	3rd-lowest
Hawera	0.7	12th	1977	Equal 3rd-lowest
Christchurch	-0.7	17th	1863	Equal 4th-lowest
Dunedin (Airport)	-0.4	16th	1947	Lowest
Balclutha	0.0	10th	1964	Equal 3rd-lowest
December				
Kerikeri	8.0	16th	1978	Equal 4th-lowest
Warkworth	5.2	16th	1966	Lowest
Martinborough	1.4	22nd	1986	Lowest
Napier	4.0	22nd	1973	3rd-lowest
Waipawa	1.1	22nd	1945	Equal 4th-lowest
Winchmore	0.9	4th	1928	4th-lowest
Le Bons Bay	4.4	15th	1984	4th-lowest
Woodbury	0.0	2nd	1973	Equal 3rd-lowest
Timaru	1.0	31st	1962	4th-lowest
Oamaru	2.0	15th	1967	4th-lowest
Dunedin	-0.7	4th	1947	Lowest
Lumsden	-3.5	3rd	1982	Lowest

Table 10: Near or record low monthly minimum temperatures were recorded at:

Location	Minimum temperature (°C)	Departure from normal (°C)	Records began	Comments
January				
Warkworth	13.2	-1.9	1966	2nd-lowest
Dannevirke	10.6	-1.6	1951	4th-lowest
Martinborough	11.0	-1.2	1986	3rd-lowest
Appleby	10.6	-2.5	1943	3rd-lowest
Blenheim Aero	9.9	-2.0	1932	4th-lowest
February				
Puysegur Point	10.1	-1.3	1978	3rd-lowest
Dunedin Aero	8.5	-0.4	1947	4th-lowest
Tiwai Point	9.3	-1.6	1970	2nd-lowest
Balclutha	8.3	-1.3	1964	4th-lowest
March				
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
April				
Takapau Plains	6.0	-2.2	1962	2nd-lowest
Dannevirke	5.8	-2.6	1951	2nd-lowest
Ohakune	4.3	-1.5	1962	4th-lowest
Wanganui	9.4	-1.3	1987	4th-lowest
Cheviot	4.3	-1.2	1982	4th-lowest
May				
Kaitaia	8.1	-2.9	1967	2nd-lowest
Kerikeri	7.7	-1.8	1981	Lowest
Warkworth	7.2	-3.5	1966	Lowest
Whangaparaoa	9.8	-2.0	1982	2nd-lowest
Tiri Tiri Lighthouse	11.0	-0.8	1982	4th-lowest
Kumeu (Waitakere)	6.2	-2.0	1978	2nd-lowest
Pukekohe	6.7	-2.5	1969	3rd-lowest
Port Taharoa	8.1	-2.4	1973	Lowest
Te Kuiti	4.2	-2.1	1959	4th-lowest
Taumarunui	2.5	-2.4	1947	3rd-lowest
Turangi	2.7	-1.6	1968	4th-lowest
Castlepoint	8.1	-1.9	1972	2nd-lowest
Martinborough	4.5	-0.9	1986	4th-lowest
Ngawi	8.6	-1.5	1972	Lowest
Hicks Bay	9.2	-1.5	1969	3rd-lowest
Stratford	4.8	-1.5	1960	4th-lowest
Hawera	5.8	-1.4	1977	4th-lowest
Wanganui	7.2	-1.5	1987	3rd-lowest
Takaka	2.9	-2.8	1978	3rd-lowest
Westport	4.9	-2.6	1937	2nd-lowest
Hokitika	3.8	-2.1	1963	2nd-lowest
Greymouth	4.7	-2.4	1947	2nd-lowest
Motueka	1.5	-2.7	1956	Lowest
Pelorus Sd, Crail Bay	7.5	-1.1	1982	2nd-lowest
Appleby	1.7	-3.9	1943	Lowest
Blenheim	1.6	-2.8	1932	Lowest
Kaikoura	6.3	-1.5	1963	4th-lowest
Arthurs Pass	-1.0	-3.4	1973	2nd-lowest
Cheviot	1.7	-1.2	1982	4th-lowest
Le Bons Bay	5.4	-2.0	1984	2nd-lowest
Dunedin	1.5	-0.7	1947	2nd-lowest
Lumsden	0.9	-1.6	1982	4th-lowest
Tiwai Point	3.8	-2.0	1970	2nd-lowest
Balclutha	1.9	-1.9	1964	2nd-lowest
June				
Kaitaia	6.9	-2.3	1967	2nd-lowest
Whangaparaoa	8.7	-1.1	1982	3rd-lowest
Kumeu (Waitakere)	4.6	-1.9	1978	3rd-lowest
Taupo	0.7	-2.1	1949	3rd-lowest
Ruakura	1.4	-3.3	1906	3rd-lowest
Hamilton	1.4	-2.7	1946	2nd-lowest
Port Taharoa	6.3	-2.4	1973	Lowest
Te Kuiti	1.5	-3.1	1959	2nd-lowest
Taumarunui	0.0	-3.3	1947	Lowest
Dannevirke	2.0	-2.4	1951	3rd-lowest
Castlepoint	6.6	-1.6	1972	2nd-lowest
Ngawi	7.1	-1.1	1972	2nd-lowest

Hicks Bay	7.3	-1.4	1969	3rd-lowest
Levin	2.3	-2.9	1895	4th-lowest
Wanganui	5.1	-1.6	1987	2nd-lowest
Milford Sound	0.2	-1.7	1934	4th-lowest
Pelorus Sd, Crail Bay	4.9	-1.5	1982	Lowest
Hanmer Forest	-3.5	-2.7	1906	2nd-lowest
Arthurs Pass	-2.3	-2.4	1973	4th-lowest
Cheviot	-0.1	-0.8	1982	3rd-lowest
Le Bons Bay (Banks Peninsula)	4.8	-0.8	1984	4th-lowest
Queenstown	-2.1	-1.2	1871	2nd-lowest
July				
Warkworth	5.9	-2.0	1966	Lowest
Ngawi	6.7	-0.9	1972	Equal 4th-lowest
Le Bons Bay (Banks Peninsula)	4.1	-0.8	1984	3rd-lowest
Dunedin	-0.6	-0.4	1947	Lowest
September				
Kumeu (Waitakere)	7.1	-1.1	1978	3rd-lowest
Dannevirke	4.0	-2.1	1951	2nd-lowest
Martinborough	4.7	-1.2	1986	3rd-lowest
Wanganui	7.0	-1	1987	4th-lowest
Blenheim	3.4	-1.4	1932	4th-lowest
Hanmer Forest	-0.3	-2.1	1906	2nd-lowest
Dunedin (Airport)	2.7	-0.3	1947	Lowest
October				
Kaitaia	8.7	-1.9	1967	2nd-lowest
Warkworth	8.5	-2.1	1966	Lowest
Whangaparaoa	10.1	-1.3	1982	4th-lowest
Port Taharoa	9.4	-1.6	1973	2nd-lowest
Dannevirke	5.3	-2.5	1951	2nd-lowest
Castlepoint	8.0	-2.2	1972	2nd-lowest
Ngawi	8.5	-1.6	1972	2nd-lowest
Wellington	8.5	-1.4	1962	3rd-lowest
Wanganui	8.4	-1.2	1987	3rd-lowest
Westport	6.3	-2.1	1937	3rd-lowest
Lake Rotoiti	1.6	-2.0	1965	3rd-lowest
Hokitika	5.4	-2.0	1963	2nd-lowest
Reefton	3.6	-2.6	1960	Lowest
Greymouth	6.6	-1.7	1947	3rd-lowest
Haast	5.1	-1.4	1949	4th-lowest
Puysegur Point	6.7	-1.0	1978	3rd-lowest
Blenheim	4.7	-2.1	1932	2nd-lowest
Hanmer Forest	1.3	-2.8	1906	3rd-lowest
Kaikoura	6.3	-1.9	1963	Lowest
Arthurs Pass	0.8	-3.4	1973	Lowest
Waipara West	4.4	-2.1	1973	Lowest
Le Bons Bay	5.0	-2.0	1984	2nd-lowest
Lake Tekapo	1.1	-2.4	1927	3rd-lowest
Tara Hills	1.5	-2.2	1949	3rd-lowest
Wanaka	3.5	-1.8	1955	4th-lowest
Dunedin	4.1	-0.8	1947	Lowest
Queenstown	2.8	-1.6	1871	Lowest
Nugget Point	5.5	-0.9	1970	4th-lowest
December				
Kaitaia	11.5	-2.1	1967	3rd-lowest
Warkworth	12.2	-1.4	1966	4th-lowest
Pukekohe	11.2	-1.5	1969	4th-lowest
Te Kuiti	9.9	-1.5	1959	4th-lowest
Turangi	8.7	-1.6	1968	4th-lowest
Timaru	7.5	-2.2	1962	4th-lowest
Dunedin	7.6	-0.8	1947	2nd-lowest

Section 10: Floods and high rainfall

There were numerous heavy rainfall events during 2009, about fifteen of which produced significant flood and property damage. Most of the rainfall events that produced flooding are listed below. The worst flooding events during 2009 were those of 27 April on the West Coast, 16-20 May in Canterbury, Otago, and alpine

areas of the South Island, and 28-30 June in Gisborne and the Manawatu-Wanganui region (causing a State of Emergency to be declared in Gisborne).

- **2 January**

Heavy rain fell in Queenstown and on the West Coast overnight on 2 January. River levels in the Haast and Callery (near Franz Joseph) Rivers rose quickly as a result. The Te Anau Rodeo Club annual event was cancelled after persistent rain turned the arena into a quagmire.

- **18 January**

Flash floods struck Christchurch on the evening of 18 January. The same storm brought torrential rain and hail to Ashburton in half an hour, turning streets into rivers, and ruining vegetable gardens.

- **10 February**

Torrential rain in Manawatu and Wanganui on the afternoon of 10 February caused flooding up to 1 m deep. From 11am to 4pm, 72.4 mm was recorded in Palmerston North, and from 9am and 4 pm, 74.4 mm was recorded in Wanganui.

- **19 February**

A heavy, isolated, rainstorm about 1am on the 19th caused flash flooding in Ohope.

- **20-21 February**

Severe rain on 20 February caused surface flooding in parts of Wellington, Levin, and Palmerston North, and caused raw sewage to overflow into central Wellington, the harbour, and Lyall Bay. In Tauranga, the severe rain caused the postponement of the Kapa Haka festival, the first time this had happened in 36 years. In South Canterbury and north Otago, surface flooding affected SH1 and SH8, and closed some minor roads. Dunedin's fundraising "Relay for life" on 21 February was cancelled at midnight because of heavy rain.

- **27-28 February**

Severe rain on the 27th caused surface flooding, traffic accidents in several North Island regions, and sewage overflows in Wellington City and the harbour. Stormy weather on the 28th forced the cancellation of the Mission Estate Concert in Hawke's Bay when excessive water and mud made the venue dangerous, and the Derby Day race at Ellerslie was postponed for the first time in its history.

- **5-6 March**

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.

- **17 March**

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.

- **27 April**

Mt Cook recorded 341 mm of rainfall on the 27th (the highest April 1-day total for this location, since records began in 1928). Homes were evacuated and roads flooded as torrential rain fell in Greymouth on this day. Roads became impassable and at least nine homes were evacuated on the eastern side of town. Flooding also forced the closure of SH6 at Punakaiki, and between Haast and Makarora. Trampers were stranded in the Mueller Hut in Aoraki Mt Cook National Park, and about 120 people were evacuated from the Milford Track by helicopter. A massive slip blocked Oropi Gorge Road in the Bay of Plenty on the same day after a weekend of heavy rain in the region.

- **14 May**

On 14 May, rain in Southland closed SH99 between Riverton and Invercargill, and SH6 was reduced to one lane at Makarewa Bridge. Several other minor roads were also closed. Access to Toko Mouth in Southland was restored on 14 May after flooding closed the road for three days.

- **16 - 20 May**

On 17 May, SH1 south of Ashburton, was closed for several hours after the Rangitata River burst its banks. The main railway line between Rangitata River and Temuka was also closed by flooding, delaying three freight trains. Inland, Omarama had water up to 1 m deep in places, after a stopbank designed to cope with a 100-year flood was overtopped. About 30 people were evacuated from the camping ground, along with three residents living near the river. A major slip closed SH8, on the Omarama side of the Lindis Pass. On 18 May, farmers used boats to rescue 150 sheep, stranded by the flooded Clutha River at Barnego, near Balclutha. The Skippers Road in Queenstown was closed until further notice, after slips and washouts at various locations. The previous three days of rain had also damaged many roads in the Queenstown Lakes area, with access requiring four-wheel drive vehicles. On the morning of 20 May, a 12 m stretch of Whitewash Head Road above Scarborough in Christchurch gave way following heavy rainfall. Vehicle access was affected to 23 homes.

- **24 May**

On 24 May, residents were evacuated from two houses after a slip in Sumner, Christchurch. In Otago, a slip on Portobello Rd disrupted traffic for about an hour and a-half. And further north, a slip on the Rimutaka Hill Road partly blocked both lanes, but was eventually cleared.

- **28-30 June**

Heavy rain on 29 June caused slips and the closure of SH4 between Raetihi and Wanganui. SH57 between Palmerston North and Linton was flooded, and slips occurred in the Manawatu Gorge. On 30 June, the residents of the small settlement of Mangatuna just out of Gisborne were evacuated following heavy rainfall. Many slips affected the Napier-Taupo Road, and SH2 between Napier and Wairoa, although both remained open. A Civil Defence Emergency was established in the Gisborne District on the morning of the 30th. Further north, about 1 m of water closed Tram Valley Road in Swanson, west Auckland, isolating 30 homes overnight.

- **23-24 July**

Heavy rain on 23 July caused a slip at Maymorn Tunnel, north of Upper Hutt. About 300 train passengers were stranded after the locomotive ploughed into the wall of mud and debris and was derailed. A tree came down causing a slip, and blocking SH1 at Pukerua Bay from about 5.30 pm the same day, causing extensive delays. One lane re-opened just before 8 pm, but there was still a backlog of traffic at 10 pm. Slips and flooding also closed SH58 between Pauatahanui and Haywards Hill, the Paekakariki Hill Road, and SH53 between Martinborough and Featherston. In Lower Hutt, Eastern Hutt Road was under about 1 m of water. Five houses were evacuated in Silverstream after a creek burst its banks. In Greymouth, Sawyers Creek flooded, and houses were inundated, with some residents evacuated to motels. The Midland railway line was closed after a washout of the track at Kokiri, near Greymouth. Tranz Alpine passengers had the option of travelling by bus between Christchurch and Greymouth, or travelling by train on another day. About 8 am on 24 July, a slip immediately north of the Ngauranga Gorge closed the North Island Main Trunk Line between Wellington and Porirua. Also on 24 July, heavy rain in Auckland triggered a fresh slip at Buckland's Beach.

- **29 July**

On 29 July, a slip, with some boulders reported as big as cars, fell on to SH6 near Greymouth. Traffic was diverted to a bridge further up the Grey River, until the road was partially re-opened in the afternoon.

- **30 August-1 September**

On 31 August, Te Anga Rd, east of Waitomo Caves was closed by a large slip of mud and trees, while in the Wellington region, surface flooding closed roads in Lower Hutt, southern Wairarapa, and Plimmerton. A slip on the tracks at Pukerua Bay delayed trains until mid-morning, with buses brought in for commuters. A major slip in the Johnsonville suburb of Wellington in the early hours of 1 September left houses at the top of a bank, in a precarious position.

- **4-5 October**

Heavy rain in Bay of Plenty on 5 October, caused slips in Tauranga, flooded businesses in Rotorua, and caused a 30 m high Acacia tree to fall, blocking the road at Pongakawa.

- **9 October**

Heavy rain in the early hours of 9 October caused surface flooding in Wellington, and closed the Johnsonville railway line.

- 1**5-18 October**

Heavy rain in Wellington on 15-16 October caused surface flooding on SH1 north of the city, as well as causing slips in Lower Hutt and Evans Bay Parade. SH1 was closed by flooding near Marton, south of Wanganui, on 18 October.

Table 11: 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
February				
Cape Reinga	102	27th	1919	3rd-highest
Kaitaia	80	27th	1985	4th-highest
Kerikeri	132	27th	1981	3rd-highest
Kaikohe	158	27th	1956	2nd-highest
Te Puke	120	28th	1973	4th-highest
Wairoa, North Clyde	92	24th	1967	3rd-highest
Palmerston North	78	10th	1928	4th-highest
Wanganui	75	10th	1937	3rd-highest
Hokitika Aero	151	20th	1963	Highest
Hokitika	147	20th	1866	3rd-highest
Pelorus Sd, Crail Bay	67	12th	1982	4th-highest
Woodbury	88	20th	1973	Highest
Timaru Harbour	49	20th	1942	3rd-highest
March				
Te Puke	147	6th	1973	2nd-highest
April				
Kaitaia	115	25th	1967	Highest
Mt Cook	341	27th	1928	Highest
Timaru	47	29th	1942	3rd-highest
May				
Kerikeri	102	26th	1981	2nd-highest
Arthurs Pass	214	16th	1906	2nd-highest
Mt Cook	321	16th	1928	Highest
Lake Tekapo	88	16th	1925	Highest
Woodbury	150	5th	1973	Highest
Tara Hills	70	16th	1949	Highest
Manapouri	37	14th	1963	3rd-highest
June				
Kaitaia	84	11th	1967	3rd-highest
Kumeu (Waitakere)	32	28th	1978	4th-highest
Whakatane	82	12th	1952	4th-highest
Te Kuiti	57	28th	1957	4th-highest
Gisborne	85	28th	1937	3rd-highest
Wanganui	36	28th	1987	2nd-highest
Kaitaia	84	11th	1967	3rd-highest
Kumeu (Waitakere)	32	28th	1978	4th-highest
Whakatane	82	12th	1952	4th-highest
Te Kuiti	57	28th	1957	4th-highest
Gisborne	85	28th	1937	3rd-highest
July				
Wallaceville	66	23rd	1939	3rd-highest
Lumsden	23	21st	1982	4th-highest
Invercargill	31	21st	1939	4th-highest
Tiwai Point	28	21st	1970	4th-highest
August				
Matamata (Waikato)	78	14th	1951	2nd-highest
Paraparaumu	53	30th	1951	4th-highest
Wallaceville	101	30th	1939	2nd-highest
Stratford	81	30th	1960	3rd-highest

Ohakune	43	30th	1961	4th-highest
Takaka	82	25th	1976	4th-highest
Arthurs Pass	163	25th	1906	3rd-highest
September				
Whakatane	76	24th	1952	3rd-highest
Dannevirke	64	24th	1951	Highest
Appleby (Nelson)	59	29th	1941	3rd-highest
October				
Takapau Plains	48	4th	1962	3rd-highest
Dannevirke	48	4th	1951	4th-highest
Gisborne	62	4th	1937	3rd-highest
Wairoa, North Clyde	70	4th	1967	4th-highest
Blenheim	50	8th	1927	2nd-highest
Timaru Harbour	56	19th	1942	Highest
December				
Warkworth	73	3rd	1967	3rd-highest
Whangaparaoa	70	4th	1946	2nd-highest
Whitianga	122	4th	1961	4th-highest

Table 12: Near-record or record high monthly rainfalls were recorded at:

Locations that experienced near or record high monthly rainfall at various times during the year were:

Location	Rainfall (mm)	Percentage of normal for the month	Year Records began	Comments
February				
Kaitaia	177	230	1985	3rd-highest
Kerikeri	241	259	1981	4th-highest
Te Puke	304	301	1973	2nd-highest
Whatawhata (near Hamilton)	215	261	1952	4th-highest
Martinborough	144	289	1924	3rd-highest
Palmerston North	213	379	1928	2nd-highest
Levin	172	285	1895	3rd-highest
Wellington Aero	161	312	1958	3rd-highest
Wanganui	146	221	1987	2nd-highest
Blenheim Aero	137	302	1927	Highest
Winchmore	139	263	1909	3rd-highest
Timaru	166	371	1881	3rd-highest
Dunedin, Musselburgh	165	267	1918	4th-highest
Cromwell	64	200	1949	4th-highest
March				
Te Puke	325	209	1973	3rd-highest
April				
Kaitaia	253	253	1967	3rd-highest
Milford Sound	1008	170	1929	4th-highest
Mt Cook	1156	318	1928	Highest
May				
Dargaville	219	209	1943	4th-highest
Warkworth	205	177	1966	3rd-highest
Kumeu (Waitakere)	179	174	1978	Highest
Martinborough	177	241	1924	3rd-highest
Hawera	162	175	1977	4th-highest
Mt Cook	809	220	1928	3rd-highest
Lake Tekapo	186	373	1925	Highest
Tara Hills	116	243	1949	Highest
Ranfurly	65	203	1943	4th-highest
Dunedin	168	241	1918	4th-highest
Manapouri	186	177	1961	3rd-highest
Lumsden	100	108	1982	3rd-highest
Balclutha	113	195	1964	3rd-highest
June				
Whakatane	269	213	1952	2nd-highest
Gisborne	244	217	1905	2nd-highest
Dannevirke	144	153	1951	4th-highest
August				

Matamata	219	191	1951	Highest
Hokitika	486	217	1963	2nd-highest
Milford Sound	852	199	1929	3rd-highest
Mt Cook	673	227	1928	4th-highest
October				
Dannevirke	207	221	1951	Highest
Gisborne	152	266	1905	4th-highest
Waipawa	133	215	1945	3rd-highest
Wellington	161	171	1958	4th-highest
Ohakune	254	191	1961	3rd-highest
Wanganui	142	175	1987	3rd-highest
Blenheim	139	204	1927	4th-highest

Section 11: Low soil moisture levels and record low monthly rainfall

- **January**

In January, well below normal rainfall occurred in Northland, Auckland, central North Island, Hawke's Bay, Wairarapa, Tasman, Marlborough, north and south Canterbury and central Otago. Soil moisture levels at the end of January were below normal for much of the North Island (except Gisborne and northern Manawatu), as well as in the Tasman District, northern Westland, north and south Canterbury, and south Otago.

- **February**

Rainfall during February returned soil moisture levels to near normal status across much of the country.

- **March - April**

March was very dry, with exceptionally low rainfall in Marlborough, north Canterbury, Tekapo, north and central Otago where less than 10 mm was recorded at some locations. Rainfall was also well below normal (less than 50 percent 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 it was very wet).

Exceptionally low rainfall for April (less than 20 percent of normal) occurred in southern Hawke's Bay and Tararua District. This resulted in significant soil moisture deficits (more than 50 mm below normal levels) re-developing in these regions (although the dry soils were short-lived due to wet conditions in May). Other eastern areas of both islands, around Auckland, and along the south coast of the South Island received below normal rainfall (between 20 and 60 percent of normal) in April.

- **November-December**

Well below normal rainfall (below 50 percent of normal) was experienced in the northeast of the North Island, and the north and east of the South Island. At several locations in Northland and Central Otago, rainfall totals were in the single figures (less than 10 mm), and broke long-standing low-rainfall records for November. Record or near-record low rainfall was also observed in parts of Auckland and the Coromandel, and in the Bay of Plenty, Taupo, and Central Plateau regions. In the South Island, record low November rainfall was experienced in Canterbury, Otago, the Lakes District, and inland Southland.

After a windy and extremely dry November, significant soil moisture deficits (more than 50 mm below normal levels) had developed in Otago, Canterbury, the Kaikoura coast, Northland, and parts of Auckland, Coromandel, Bay of Plenty, central North Island, Gisborne and Hawkes Bay. However, rainfall in the first week of December returned soil moisture levels back to near normal in most regions, except Northland, central North Island, Bay of Plenty and Otago.

Table 13: Near-record or record low monthly rainfalls were recorded at:

Location	Rainfall (mm)	Percentage of normal	Year records began	Comments
January				
Kaitaia Observatory	20	24	1985	3rd-lowest
Warkworth	16	18	1966	3rd-lowest

Taupo	15	18	1949	4th-lowest
Whatawhata	18	18	1952	Lowest
Martinborough	4	9	1924	Lowest
Wellington Aero	15	24	1958	4th-lowest
Takaka	9	7	1976	Lowest
Lake Rotoiti	33	26	1933	4th-lowest
Nelson	12	17	1941	3rd-lowest
Hanmer Forest	12	18	1905	2nd-lowest
Orari Estate	12	19	1897	2nd-lowest
Oamaru	15	30	1898	3rd-lowest
Ranfurly	15	31	1943	2nd-lowest
Cromwell	9	22	1949	2nd-lowest
February				
Milford Sound	166	33	1929	3rd-lowest
March				
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
April				
Kumeu (Waitakere)	46	42	1978	2nd-lowest
Taupo	21	29	1949	3rd-lowest
Takapau Plains	19	22	1962	2nd-lowest
Dannevirke	21	24	1951	Lowest
Waipawa	16	23	1945	3rd-lowest
Lumsden	46	64	1982	4th-lowest
Invercargill	32	34	1939	4th-lowest
Nugget Point	28	40	1930	4th-lowest
Tiwai Point	30	29	1970	3rd-lowest
Balclutha	24	53	1964	4th-lowest
May				
Takaka	65	39	1976	4th-lowest
Nelson	21	28	1941	4th-lowest
Appleby	24	31	1941	4th-lowest
June				
Hawera	48	41	1977	2nd-lowest
Reefton	95	55	1960	4th-lowest
Dunedin	17	23	1918	2nd-lowest
Manapouri	25	25	1961	3rd-lowest
Queenstown	7	11	1871	Equal lowest
Lumsden	18	24	1982	Lowest
Cromwell	6	18	1949	3rd-lowest
Gore	29	41	1950	3rd-lowest
Darfield	6	9	1919	Lowest
Ranfurly	0	0	1943	Lowest
July				
Kumeu (Waitakere)	107	73	1978	3rd-lowest
Wellington (Airport)	52	46	1958	4th-lowest
August				
Dargaville	53	47	1943	3rd-lowest
Kumeu (Waitakere)	68	50	1978	4th-lowest
Waipawa (Hawkes Bay)	8	11	1945	Lowest

Lumsden	34	54	1982	Lowest
September				
Lake Tekapo	9	18	1925	4th-lowest
Lumsden	26	40	1982	2nd-lowest
November				
Kaitaia	14	14	1967	Lowest
Kerikeri	9	7	1981	Lowest
Kaikohe	12	11	1956	Lowest
Dargaville	19	27	1943	4th-lowest
Whangarei	6	7	1937	Lowest
Warkworth	25	26	1966	2nd-lowest
Whangaparaoa	13	19	1946	Lowest
Kumeu (Waitakere)	20	22	1978	Lowest
Whitianga	24	21	1961	Lowest
Auckland (Airport)	22	28	1959	2nd-lowest
Paeroa	20	22	1914	3rd-lowest
Matamata	33	36	1951	3rd-lowest
Tauranga	12	14	1898	Lowest
Whakatane	12	14	1952	2nd-lowest
Rotorua	22	21	1963	Lowest
Taupo	22	28	1949	2nd-lowest
Lake Rotoiti	55	40	1933	4th-lowest
Reefton	69	39	1960	4th-lowest
Winchmore	20	37	1909	4th-lowest
Darfield	14	27	1919	3rd-lowest
Lincoln, Broadfield	10	21	1881	2nd-lowest
Lake Tekapo	6	15	1925	4th-lowest
Tara Hills	3	8	1949	Lowest
Wanaka	9	17	1927	4th-lowest
Ranfurly	1	3	1943	Lowest
Dunedin (Airport)	22	40	1918	4th-lowest
Lumsden	18	24	1982	Lowest
Cromwell	6	18	1949	Lowest
December				
Kaitaia	28	31	1967	4th-lowest
Kerikeri	24	23	1981	3rd-lowest
Taupo	30	27	1949	2nd-lowest
Turangi	55	43	1968	2nd-lowest
Takaka	52	39	1976	4th-lowest

Section 12: Snowfall

It was an extremely snowy year, with numerous snowfall events in 2009. Significant snowfalls, which were widespread and to low levels, were observed 31 May, 16 June, 2-5 July, and 4-6 October. The snowfalls in October were exceptional, being unseasonably late and very heavy. The most notable snowfall event of the year occurred on October 4 – 6 in the Hawkes Bay and Central North Island, and was estimated to be the worst in October since 1967. It caused hundreds of travellers to be stranded, closed numerous roads, and resulted in heavy lambing losses. Snowfall was also observed in Taranaki, Waikato and Rotorua on October 6th, for the first time in about 30 years around Rotorua.

- **8 April**

On 8 April, 10 cm of snow fell in the Coronet Peak and Remarkables Ski Areas. Further north, Mt Hutt received 20 cm of snow.

- **8-12 May**

Snow fell in Central Otago and the Southern Lakes area on 8 May, with 10 cm at Coronet Peak and 15 cm at the Remarkables ski field. A cold front brought 10-20 cm of snow to inland Otago on 10 May. More than 80 people were trapped for several hours in three tour buses on the Lindis Pass, when it was closed overnight by snow and ice. SH87 from Outram to Middlemarch was also closed. Both roads were re-opened on 11 May. Mt Hutt staff reported a base of 110 cm, after about 170 cm of snow was recorded in 10 days. In the North

Island, Mount Taranaki had a snow base of up to 50 cm by 12 May, enough to consider opening the lower and learner's slopes and t-bar.

- **18-21 May**

By 18 May, The Remarkables, Treble Cone, Cardrona, and Snow Park skifields had received between 50 cm and 1 m of snow over the preceding three days. Snow closed the Desert Road in the early hours of 20 May, and in Dunedin, Three Mile Hill Road was closed indefinitely and the Northern Motorway open to light vehicles only. SH87 between Outram and Middlemarch, SH85 between Palmerston and Kyeburn, and the Lindis Pass were also closed by snow. On 21 May, SH4 between National Park and Raetihi, and the Desert Road were closed by snow and ice for a few hours. Some schools on the Central Plateau were closed for the day. Between 30 cm and 40 cm of snow fell on the upper slopes of Whakapapa ski field. In Taranaki, snow was reported in Stratford, and black ice caused many motor vehicle accidents. Manganui Ski Field was open with 12 cm of new snow.

- **31 May**

Snow, slips and a fallen tree closed the highway between Opotiki and Gisborne on 31 May as wintry conditions brought snow and ice to the country's roads. SH2, the Waioeka Gorge Road, was closed and SH7, Lewis Pass, was closed to towing vehicles. Snow fell to sea level along Wellington's south coast and from Southland to Kaikoura, and blanketed high-country passes, including the Rimutaka Hill Road summit and Desert Road. Snow fell at Mt Hutt skifield adding another 15 cm to the more than 2 m of snow that had fallen in May, and snow settled to about 200 m inland and elsewhere around Canterbury, with about 8 cm on the ground near Springfield and in parts of Otago.

- **16 June**

Dunedin Airport and many roads were closed on 16 June, after snow fell to low levels in Otago and Southland. Ten flights were cancelled, and all primary schools and kindergartens in Dunedin were closed for the day. SH1 between Waitati and Dunedin, Milton and Balclutha, and Balclutha and Clinton, and SH93 between Clinton and Mataura were closed by snow. Multiple traffic accidents were caused by the icy conditions, especially on Dunedin's hills. Roads requiring chains and/or with vehicle restrictions in place were:

- SH1 Dunedin (Andersons Bay) to Mosgiel
- SH87 Outram to Middlemarch
- SH6 Kingston to Dipton
- SH97 Five Rivers to Mossburn
- SH94 Gore to Mossburn
- SH8 Alexandra to Roxburgh
- SH8 Lindis Pass Omarama to Tarras
- SH94 Te Anau to Milford Sound

Further north, SH2 over the Rimutaka Hill north of Wellington, was closed briefly.

- **20 June**

SH29, the road over the Kaimai Ranges was closed by ice on 20 June. On the same morning, the edges of the Pauatahanui Inlet, near Porirua, froze over.

- **29 June**

On June 29th, snow closed SH8 from Fairlie to Tekapo, and extreme caution was needed on the Desert Road through the central North Island, SH29 through Turiko in the Bay of Plenty, and SH 94 near Te Anau. Chains were also required on SH 73 near Arthurs Pass.

- **2-5 July**

On 2 July, the Desert Road between Rangipo and Waiouru was closed overnight by snow. Heavy snow on 3 July brought down trees, closing the Haast Pass. Cromwell was cut off as SH8 to Roxburgh, SH85 to Omakau, the Kawarau Gorge to Queenstown, and the Lindis Pass were all closed. Schools in Cromwell, Alexandra, Roxburgh and Omakau were closed on what was the last day of term. On 5 July, a risk of avalanche on the access road forced the Mt Hutt ski field to close for the day, after about 20 cm of snow fell overnight.

- **13-19 July**

On 13 July snow and ice closed SH1 at the Desert Road, and roads in Otago and South Canterbury were affected by black ice. The first Wilson Cup curling fixture in six years was played on natural ice at Idaburn Dam near Oturehua on 14 July. The ice was about 15 cm thick. Snow closed the Desert Road section of SH1 for a short time on 18 July. A freezing front brought snow, hail, sleet and icy winds to Otago and Southland on 19 July. SH93 between Clinton and Mataura, and SH87 from Mosgiel to Kyeburn were closed by snow.

- **1-2 August**

Trees, and snow up to 5 m deep, from a series of avalanches over 1-2 August, blocked SH94, closing the only road access to Milford Sound. Both ends of the Homer Tunnel were buried in more than 100,000 tonnes of debris. It re-opened for nine hours on 10 August, but was closed again at 5 pm. It again re-opened on the morning of 11 August.

- **2 September**

On 2 September, snow closed the Crown Range Road, and both Cardrona and The Remarkables skifields after 25-35 cm of fresh snow fell overnight. The Milford Road, and Old Coach Road from Mataura to Clinton, were also closed in the morning.

- **24 September**

SH2 over the Rimutaka Hill was closed by snow for several hours on 24 September. Heavy snow also fell in the Tararua district, closing both the Pahiatua Track and Saddle Road. The weight of the snow tore boughs from trees, interrupted power supplies, and some houses in Atea Valley were on low voltage power all night, meaning appliances like television sets, computers, fridges and freezers had to be turned off. In the Nelson region, SH60 was closed at Takaka Hill.

- **3-6 October**

On 3 October, 20 cm of snow was reported to low levels in Fiordland and Southland. Coronet Peak skifield received 7 cm of fresh powder overnight on 2-3 October, while Treble Cone received 20 cm of snow, and Cardrona 15 cm. Overnight 4-5 October, an unseasonably late and heavy snowfall event affected several hundred motorists, who were stranded in up to 50cm of snow along the Napier- Taupo Highway. Most were rescued by the army, but some spent the night in their vehicles. Snow was reported as far north as Te Aroha and Katikati, and on Mt Taranaki. Unexpected snow in the Motu-Matawai area, and further south at Te Pohue, caused significant losses in newborn lambs and calves.

Roads closed by snow on 5 October were SH1 between Turangi and Taihape, SH5 from Taupo to Napier, SH38 in the Urewera National Park, SH47 at Turangi, SH49 from its junction with SH4 to Waiouru. The Desert Road, Napier-Taupo Road and SH38 remained closed until 7 October. On 6 October, Waikato residents woke to see snow on Mt Pirongia and Mt Te Aroha. A DoC ranger reported 15 cm of snow on the road up Mt Te Aroha, the heaviest fall since 1978. On Mt Taranaki, skiers could not reach the Manganui ski field because the access road was blocked by fallen trees. About 20-25 cm of snow covered the road. At North Egmont car park a car was trapped in snow, forcing the owner to spend the night in the hut. Snow was also reported in the Rotorua district, for the first time in about 30 years.

- **8-9 October**

Snow started falling in Central Otago in the evening on 8 October, and further north in Canterbury, it was reported in Darfield and Kirwee early in the morning of 9 October. Mt Hutt ski field received about 50 cm of new snow.

Section 13: Sunshine extremes

Record or near-record extremes of sunshine hours were recorded in each month of the year during 2009, with 6 months being particularly sunny in various locations, and 1 month (February) being very cloudy. Three months (May, October, and November) displayed a range of extremes, with both record high and record low sunshine totals being experienced in different regions of the country.

Table 14: Monthly sunshine extremes were recorded at:

Location	Sunshine (hours)	Percentage of normal	Year Records began	Comments
January				
Kaitaia	281	122	1985	2nd-highest
Tauranga	324	128	1933	2nd-highest
Taumarunui	292	144	1947	2nd-highest
Turangi	296	133	1976	Highest
Dannevirke	261	124	1963	2nd-highest
Martinborough	280	121	1986	Highest
Waipawa	297	147	1945	Highest
Takaka	286	121	1985	2nd-highest
Greymouth	259	134	1947	3rd-highest
Appleby	319	120	1948	4th-highest
Blenheim	305	118	1947	3rd-highest
Cheviot	292	123	1983	Highest
February				
Takaka	177	82	1985	3rd-lowest
Blenheim	173	76	1947	Equal lowest
Cheviot	149	77	1983	2nd-lowest
Christchurch Aero	133	68	1930	4th-lowest
Timaru	108	63	1930	2nd-lowest
Cromwell	190	89	1979	2nd-lowest
March				
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
April				
Taumarunui	167	131	1947	2nd-highest
Dannevirke	191	137	1963	2nd-highest
Martinborough	178	117	1986	3rd-highest
Waipawa	206	141	1945	4th-highest
Invercargill	163	148	1932	Highest
Balclutha	173	151	1964	Highest
Kaitaia	139	88	1985	3rd-lowest
May				
Kaitaia	185	124	1985	Highest
Greymouth	165	166	1947	Highest
Cheviot	144	118	1983	3rd-highest
Turangi 2 Ews	123	84	1976	4th-lowest
New Plymouth Aero	119	83	1972	4th-lowest
Martinborough Ews	92	69	1986	Lowest
Stratford Ews	98	79	1963	Lowest
June				
Dargaville	137	152	1943	2nd-highest
Ruakura	149	145	1936	3rd-highest
Te Kuiti	131	154	1962	2nd-highest
Taumarunui	128	188	1947	Highest
Cheviot	113	125	1983	2nd-highest
Lake Tekapo	163	165	1928	Highest
July				
Martinborough	79	71	1986	4th-lowest
Paraparaumu	90	73	1953	3rd-lowest
August				
Dannevirke	162	134	1963	2nd-highest
Martinborough	171	116	1986	3rd-highest
Waipawa	183	133	1945	2nd-highest
Paraparaumu	179	126	1953	4th-highest

Wallaceville	162	132	1939	3rd-highest
Balclutha	150	130	1964	3rd-highest
Kaitaia	143	91	1985	2nd-lowest
Mt Cook	65	59	1930	2nd-lowest
September				
Te Kuiti	178	150	1962	Highest
Taumarunui	171	156	1947	2nd-highest
Turangi	173	127	1976	2nd-highest
Hokitika	186	130	1964	4th-highest
Greymouth	205	155	1947	3rd-highest
October				
Hokitika	218	138	1964	4th-highest
Greymouth	233	162	1947	2nd-highest
Martinborough	158	85	1986	3rd-lowest
Wallaceville	110	65	1939	4th-lowest
Stratford	130	76	1963	3rd-lowest
November				
Turangi	225	121	1976	4th-highest
Cromwell	282	129	1979	3rd-highest
Balclutha	249	146	1964	Highest
Kaitaia	160	84	1985	3rd-lowest
Dargaville	137	75	1943	3rd-lowest
December				
Kaitaia	287	131	1985	Highest
Te Kuiti	223	127	1962	3rd-highest
Tauranga	285	123	1932	3rd-highest
Turangi	240	125	1976	3rd-highest
Dannevirke	241	125	1963	2nd-highest
Waipawa	253	137	1945	3rd-highest

Section 14: Severe or damaging hail and electrical storms

- **3 January**

On 3 January, lightning strikes on feeders in the Dunsandel and Lincoln areas affected power to about 600 properties, and closed Christchurch International Airport for half an hour. Thunder and hail in Christchurch forced the postponement of the international cricket match against the West Indies, while large, 2 cm hailstones whipped across roads and buildings in Waipara, bringing traffic to a standstill, and denting cars.

- **18 January**

About 1000 lightning strikes were recorded in Christchurch on 18 January, causing several brief power outages. Hail was also reported.

- **7 March**

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

- **6 May**

Wellington was hit by thunder, lightning and hail in the early morning of 6 May. Minor flooding affected the southern suburbs, and hail up to 5 cm deep was reported in the eastern suburbs.

- **10-11 May**

Thunderstorms and hail affected Hamilton mid afternoon on 10 May. On 11 May, thunderstorms and hail struck Tauranga, Whakatane and Opotiki with hail stones the size of a 20 cent coin, up to 10 cm deep in places, blocking drains and flooding several streets and houses. The hail cut a ragged swathe across kiwifruit orchards, devastating some orchards and bypassing others completely. At Papamoa School a ceiling collapsed and classrooms were flooded.

- **17 May**

Taranaki was affected by lightning strikes on 17 May, damaging transformers and downing power lines, cutting power to 230 properties.

- **28 June**

A two-hour lightning and thunderstorm hit Auckland and Northland on 28 June, with hundreds of strikes between 10 pm and midnight, including at least one which hit the Sky Tower. The storm also brought heavy rain, causing some flash flooding.

- **26 August**

Thunderstorms brought heavy rain to Mt Taranaki on 26 August. Lightning strikes were also reported in Auckland, and the western Bay of Plenty where the storm cut power to more than 8000 homes, and damaged property.

- **2-4 September**

Two electrical storms struck Southland early on 2 September, damaging trees outside and electrical equipment inside. A third storm struck Invercargill about 6 pm, with lightning strike hitting a transformer, knocking out power to several houses. On 4 September, hail occurred in Wellington, and at the Matawhero sheep sale, Gisborne.

- **28 September**

On 28 September, an Air New Zealand flight from New Plymouth to Christchurch was diverted to Nelson, following a suspected lightning strike. Lightning was reported from many North Island locations.

- **14 December**

On 14 December, severe hailstorms in inland Canterbury (from Geraldine to north of Rangiora) caused thousands of dollars of damage to vegetable and arable crops.

Section 15: Tornadoes, high winds, and rough seas

- **3 January**

Gale force winds on 3 January caused havoc in Canterbury with thousands of homes left without power. Lines were blown down in central Christchurch, and in Ashburton, winds brought trees down on to power lines, causing short circuits and fires, cutting power to more than 10,000 homes in the area. On the same day, a tornado hit a farmhouse on the southern outskirts of Waikouaiti, ripping tiles off the roof, smashing windows, splintering trees and felling nearby power lines. The family cat took refuge inside the piano.

- **8 January**

On 8 January, a tornado ripped the roof off the Bannockburn Hotel, and dumped it onto nearby power lines. Power was cut to 450 customers in the area for about 20 minutes.

- **18 January**

Wind and warm temperature combined to create a rare waterspout off Sumner Beach, Christchurch on 18 January.

- **5-6 March**

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.

- **11 May**

A tornado damaged homes in Warkworth on 11 May.

- **15 May**

Strong winds buffetted Wellington on 15 May, damaging power lines and cutting power for a few hours to 2500 homes in Karori and Makara. Four domestic flights into the capital were cancelled and another four

were diverted to other airports. Two flights out of the city were cancelled. Trees and fences were blown down, and a parked van was lifted up on to the footpath on Evans Bay Parade. A large glass roof panel on Miramar Library, and a glass veranda panel from an apartment above Taranaki St were damaged.

- **17 May**

Taranaki was hit by a mini tornado on 17 May, with a trampoline flung 40 m, windows smashed, and about 20 trees flattened on a property in Opunake. Nearby 15 30-year old trees were knocked over, and three sides of a hay barn were flung 100 m across a paddock, leaving the hay stacked nicely. High winds also blew a tree down across SH2 at White Pines Bush, about 15 km north of Napier. In Wellington, flying debris from gales knocked out power for 2-3 hours to about 3000 homes Upper Hutt, Lower Hutt, and Johnsonville. SH77 was closed to campervans and other high-sided vehicles because of the high winds.

- **20May**

On 20 May, several large waterspouts were reported offshore from Papamoa between Motiti Island and Town Point, accompanied by very strong winds. Near Akaroa, gale-force wind gusts brought down a tree, blocking SH75. Further north, the gales also caused the delay or cancellation of Cook Strait ferries.

- **23-24 May**

Southerly gales hammered Wellington over the weekend of 23-24 May, closing roads, tearing boats from their moorings, and damaging trees, roofs and power lines. Cook Strait ferries were cancelled, and flights were delayed, cancelled or diverted. Trees brought down power poles near Upper Hutt cutting power to about 1200 houses on 23 May. Power was restored to most homes after several hours, but a few customers were without power until the evening of the 24th. A fallen tree blocked SH2 at Tutira, 45 km from Napier, closing the road for at least two hours.

- **30-31 May**

Eastern South Island, Wellington and eastern North Island were buffeted by high winds over the weekend of 30-31 May. Two teenage girls were rescued in atrocious weather and strong southerly winds kayaking off New Plymouth's East End Beach on 31 May.

- **12 June**

A storm on 12 June caused havoc in the Gisborne region, triggering a series of power outages due to wind damage. All power was restored by the afternoon of 13 June.

- **4 July**

A tornado affected Kaitaia on 4 July, damaging at least 20 homes, as well as the local hospital.

- **11 July**

Severe winds in Northland on 11 July brought down trees, in one case crushing a caravan and killing one of the occupants. Many homes in Northland, Auckland and the Coromandel were without electricity after falling trees brought down power lines.

- **18 July**

High winds in Northland on 18 July cut power to about 5,000 buildings.

- **21 July**

A tornado was reported in the morning of 21 July, just north of Cromwell, causing a dust storm at the local quarry. That evening, a mini tornado damaged houses in Opunake, and brought down power lines.

- **23 July**

High winds on 23 July closed the Rimutaka Hill Road from 8 pm until about 9 pm. In Wellington, gale-force winds of up to 130 km/hr ripped the glass of a balcony in the central city, and a contractor had to abseil in to secure the site. In the Wairarapa, the storm brought down trees and branches on to high voltage lines, cutting power to substations at Tinui and Awatoitoi, and briefly cutting power to about 4000 customers from Masterton to Castlepoint. Further north, powerlines between Tokomaru Bay and Ruatoria were also damaged when trees were blown over by the strong northwesterlies.

- **2 September**

A 10 m twister caused havoc on an Invercargill farm on 2 September, when it picked up water from a ditch throwing it as high as the power lines, and taking the corrugated roof off a shed.

- **14 September**

A significant wind event occurred on September 14th, with widespread and record-high wind gusts experienced over the southern half of the South Island during a storm-force northwesterly event. Damage included felled power lines and lifted roofs on the Otago peninsula. Near Arrowtown, a tree felled by the wind, crashed on to a vehicle, killing the driver.

- **17 September**

A tornado funnel cloud, reported over eastern Taranaki on 17 September, dissipated before it touched the ground.

- **28 September**

On 28 September, a tornado in Ramarama, south of Auckland, damaged properties, some severely, and uprooted trees.

- **4-5 October**

Gusty cross-winds forced the closure of New Plymouth airport for 20 hours from 3 pm on 4 October. The strong winds also brought down trees and cut the power supply to about 1000 properties in Taranaki, particularly Okato, Oakura, and Hawera. Power was also cut to about 1200 homes in the Rotorua district after high winds brought down trees. High winds on 5 October, together with the heavy snow, brought down trees and power poles in the central North Island, leaving about 1300 people without power. Some properties were without power for four days. Stock losses, particularly late born lambs, occurred in the Wairarapa during the first week in October, after several days of strong, very cold, southerly winds.

- **4 November**

Extreme winds were experienced over parts of Fiordland, Southland, Central Otago and Canterbury on the 4th. A container ship was from its moorings at the port of Lyttelton.

- **13-15 November**

On 13 November, strong winds caused havoc in Canterbury, grounding helicopters, felling trees, and downing power lines. Winds at Masterton were too strong for three original World War I planes and 17 replicas to take to the skies at the Remembrance Day World War I Air Show, on the 14th of the month. On 15 November, gale force winds toppled the main food and wine tent at Toast Martinborough. Two more marquees were crumpled, signs were ripped from their posts, and power was knocked out at Ata Rangi vineyard.

- **26-28 November**

Wind brought down trees and power lines down at Porangahau on November 26. On the 27th, extreme winds were experienced in Central Otago and Southland. Caravans were knocked over in Canterbury on the 28th, and gusts to 130 km/hr were experienced in West Melton.

- **12 December**

On 12 December, high winds in North Canterbury brought down trees and tore roofs off houses and sheds in Kaikoura. A tornado was reported near Springfield, 70 km west of Christchurch on 14 December.

- **18 December**

Winds gusted up to 130 km/hr in exposed areas of Canterbury, Otago, Southland and Fiordland. Winds also blasted the lower North Island and upper South Island, with gusts of up to 100 km/hr reported on the Rimutaka Hill road (SH2).

Table 15: Near or record high extreme wind gusts were recorded at:

Location	Extreme wind gust speed (km/hr)	Date of extreme gust	Year Records began	Comments
January				
Winchmore	106	2nd	1970	Highest
Lauder	107	2nd	1981	Equal 3rd-highest
Milford Sound	98	2nd	1974	Equal 4th-highest
February				
Cape Reinga	122	27th	1974	4th-highest
Kaikohe	72	28th	1986	Highest
Whenuapai	82	28th	1972	Equal 4th-highest
Tauranga	83	20th	1973	3rd-highest
Whakatane	85	20th	1974	Highest
Hamilton	70	28th	1978	Equal 4th-highest
Turangi	78	1st	1973	4th-highest
Castlepoint	139	1st	1972	4th-highest
Puysegur Point	145	8th	1986	4th-highest
Gore	107	8th	1987	2nd-highest
April				
Cape Reinga	130	24th	1974	3rd-highest
Rotorua	87	20th	1972	4th-highest
Hicks Bay	120	21st	1975	Equal 4th-highest
May				
Cape Reinga	150	8th	1974	3rd-highest
Kaikohe	83	8th	1986	Equal highest
Hawera	82	24th	1986	4th-highest
Milford Sound	120	10th	1974	4th-highest
Blenheim	93	17th	1972	2nd-highest
July				
Kaitaia	106	18th	1985	4th-highest
Kaikohe	82	18th	1986	Equal 3rd-highest
Whangarei	104	18th	1973	Equal 4th-highest
Castlepoint	148	21st	1972	Highest
Paraparaumu	109	23rd	1972	Equal 2nd-highest
Westport	163	3rd	1973	Highest
Tara Hills	85	21st	1985	Equal highest
Gore	104	21st	1987	2nd-highest
August				
Napier	91	27th	1973	4th-highest
Farewell Spit	91	25th	1973	Equal 4th-highest
Westport	100	31st	1973	Highest
Hokitika	100	25th	1972	4th-highest
September				
Westport	91	24th	1973	Equal 3rd-highest
Tara Hills	107	14th	1985	Highest
Lauder	119	14th	1981	Equal 4th-highest
October				
Hawera	96	9th	1986	Highest
November				
Castlepoint	161	4th	1972	3rd-highest
Puysegur Point (Fiordland)	145	4th	1986	2nd-highest
Tara Hills (Omarama)	87	27th	1985	Equal 4th-highest
Lauder	132	4th	1981	Equal highest
Gore	120	27th	1987	4th-highest
December				
Farewell Spit	93	30th	1973	Equal 3rd-highest
Puysegur Point	145	18th	1986	Equal 2nd-highest
Blenheim	109	30th	1972	2nd-highest
Tara Hills	89	18th	1985	Equal 3rd-highest
Lauder	106	18th	1981	3rd-highest

Section 16: Fog

Fog on 27 June disrupted domestic flights out of Auckland International Airport with 25 flights cancelled. International flights were not affected.

On 18 July, Christchurch Airport was brought to a standstill by thick fog. Dozens of flights were diverted, delayed or cancelled.

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