

National Climate Summary – Winter 2009: Extreme temperature swings through winter

- Temperature: Near average in many regions; after a cold start to winter, a record warm August.
- Rainfall: Well above normal in Bay of Plenty, Gisborne, and Westland. Below normal in the east of the South Island and parts of Wellington, Kapiti Coast and the Wairarapa. Near normal elsewhere.
- Sunshine: A sunny winter for the north and west of the North Island, as well as in the Clutha, and parts of Canterbury and Westland. Rather cloudy in Buller.

The temperature averaged over the whole winter was close to average for much of New Zealand, with the three-month nationally-averaged temperature of 8.3°C being only 0.2°C above the winter mean. However, extreme temperature swings were observed through winter; June and July were colder than normal, followed by a record warm August.

Winter rainfall totals were well above normal (between 120 and 150 percent of normal) in the Bay of Plenty, Gisborne, and Westland. In contrast, winter rainfalls were below normal (between 50 and 80 percent of normal) throughout the east of the South Island, as well as in parts of Wellington, Kapiti Coast and the Wairarapa. Rainfalls were near normal elsewhere.

June 2009 was dominated by higher-than-normal pressures over the country, resulting in more frosts and much colder than normal temperatures everywhere. During July 2009, there was a transition towards more southwesterly winds over New Zealand. During August 2009, frequent northerly winds affected the country, resulting in very warm temperatures.

Major Highlights:

- 16 - 26 June: Freezing southerly conditions brought snow and ice to low levels in Otago and Southland on the 16th. Frosty conditions and very cold temperatures then affected many areas until the 26th.
- 27 - 30 June: A slow-moving low to the north of New Zealand brought heavy rain, strong winds and thunderstorms to the northeast of the country, as well as snow to the Central Plateau. A civil defence emergency was put in place in Gisborne on the 30th, as rain continued and rivers rose.
- 23 - 24 July: A powerful storm brought damaging winds to Wellington and much of the east coast of the North Island (cutting power to over 4,000 people), and heavy rain to Wellington, the Wairarapa and Greymouth, causing road and rail closures, slips and flooding in these areas.
- 26 - 31 August: Thunderstorms brought heavy rain and lightning to Taranaki, Auckland and the western Bay of Plenty (cutting power to more than 8000 homes). Heavy rain on the 31st resulted in surface flooding across the greater Wellington region.
- The lowest temperature during winter was recorded at Middlemarch, with a minimum temperature of -11.7°C on July 19th. The highest temperature for winter was 22.2 °C recorded at Timaru on August 25th. The highest 1-day rainfall was 205 mm, recorded at Te Puia Springs (Gisborne) on June 29th.
- Of the six main centres, Auckland was the warmest, Christchurch the coldest, Tauranga the wettest but also the sunniest, and Dunedin was the driest.

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TEMPERATURE: NEAR AVERAGE FOR MUCH OF COUNTRY

June and July 2009 were colder than normal, while August was record warm. This resulted in three-month (winter) temperatures being close to average across much of the country, with the exception of small areas of below average temperatures (between 1.2°C and 0.5°C below average) in Auckland, Waikato, and parts of Gisborne, Hawkes Bay, Wairarapa, the Kapiti Coast/Horowhenua, Buller, Westland, Marlborough and Otago. Small pockets of above average winter temperatures (between 0.5°C and 1.2°C above average) were observed in Northland, Nelson, Canterbury and central Otago. The winter national average temperature of 8.3 °C was 0.2 °C above average.

Extreme low winter mean daily air temperatures were recorded at:

Location	Mean air temperature (°C)	Departure from normal	Year records began	Comments
Warkworth	10.8	-0.9	1966	2nd-lowest
Pukekohe	9.8	-0.7	1969	4th-lowest
Dannevirke	6.8	-1.3	1951	3rd-lowest
Castlepoint	9.5	-0.9	1972	2nd-lowest
Wanganui	9.7	-0.3	1987	4th-lowest

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

Location	Mean maximum air temperature (°C)	Departure from normal	Year records began	Comments
Appleby (Nelson)	14.0	1.2	1943	2nd-highest
Kaitaia	14.6	-1.1	1967	Lowest
Taupo	10.9	-0.8	1949	3rd-lowest
Pukekohe	13.9	-0.4	1969	2nd-lowest
Dannevirke	10.5	-1.5	1951	Lowest
Castlepoint	11.8	-1.2	1972	Lowest
Hicks Bay	14.1	-0.3	1969	4th-lowest
Manapouri	8.2	-0.8	1963	4th-lowest

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

Location	Mean minimum air temperature (°C)	Departure from normal	Year records began	Comments
Kaikohe	9.6	1.5	1973	2nd-highest
Cape Campbell	7.4	2.7	1953	3rd-highest
Darfield	2.5	0.9	1939	3rd-highest
Cromwell	0.6	1.7	1949	3rd-highest
Gore	1.9	0.4	1971	Highest
Invercargill	2.4	0.9	1948	4th-highest
Warkworth	7.0	-1.4	1966	3rd-lowest
Dunedin	0.8	0.5	1947	2nd-lowest

RAINFALL:

Winter rainfall totals were well above normal (between 120 and 150 percent of normal) in the Bay of Plenty, Gisborne, and Westland. In contrast, winter rainfalls were below normal (between 50 and 80 percent of normal) throughout the east of the South Island, as well as in parts of Wellington, Kapiti Coast and the Wairarapa. Rainfalls were near normal elsewhere. Record low winter rainfall was observed at both Ranfurly (14 mm) and Lumsden (106 mm).

Near or record winter rainfall totals were recorded at:

Location	Winter rainfall (mm)	Percentage of normal	Year Records began	Comments
Hokitika	929	135	1963	3rd-highest
Kumeu (Waitakere)	306	73	1978	3rd-lowest
Ranfurly	14	18	1943	Lowest
Dunedin	72	48	1918	3rd-lowest
Lumsden	106	52	1982	Lowest

SUNSHINE: ABOVE NORMAL FOR THE NORTH AND WEST OF THE NORTH ISLAND AND IN THE CLUTHA; BELOW AVERAGE IN BULLER

Sunshine totals were above normal (between 110 and 125 percent of normal) throughout the north and west of the North Island, as well as in the Clutha region, and parts of Canterbury and Westland. In contrast, it was rather cloudy (with sunshine totals between 75 and 90 percent of normal) in Buller. Elsewhere, winter sunshine totals were near normal.

Extreme winter sunshine hours were recorded at:

Location	Winter sunshine (hours)	Percentage of normal	Year records began	Comments
Dargaville	422	126	1943	3rd-highest
Te Kuiti	366	122	1962	3rd-highest
Taumarunui	332	125	1947	2nd-highest
Balclutha	344	118	1964	4th-highest

WINTER CLIMATE IN THE SIX MAIN CENTRES

Of the six main centres, Auckland was the warmest, Christchurch the coldest, Tauranga the wettest and also the sunniest, and Dunedin was the driest. Winter temperatures were near average in all six main centres. Winter rainfall was near normal in Tauranga and Hamilton, below normal in Auckland and Wellington, and well below normal in Christchurch and Dunedin (with around half of normal winter rainfall recorded). Winter sunshine was above normal in Auckland and Hamilton, and near normal elsewhere.

Location	Winter Mean Temp. (°C)	Dep. from normal (°C)		Winter rainfall (mm)	% of normal		Winter Sunshine (hours)	% of normal	
Auckland ^a	11.0	0.0	Near average	294	76%	Below normal	441	115%	Above normal
Tauranga ^b	10.9	0.2	Near average	402	107%	Near normal	444	98%	Near normal
Hamilton	8.8	-0.1	Near average	319	85%	Near normal	284	120%	Above normal
Wellington ^c	9.2	0.0	Near average	290	73%	Below normal	360	101%	Near normal
Christchurch ^d	6.5	0.1	Near average	112	56%	Well below normal	408	103%	Near normal
Dunedin	6.7	0.0	Near average	94	49%	Well below normal	323	106%	Near normal

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

HIGHLIGHTS AND EXTREME EVENTS

• High rainfall

10-12 June: High 1-day rainfall totals were recorded in Northland, Coromandel, Bay of Plenty and Gisborne.

29 – 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: A powerful storm brought heavy rain to Wellington, Wairarapa, and Greymouth, causing road and rail closures, slips and flooding in these areas. 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 about 6.20 pm, 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. 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. Heavy rain also triggered a fresh slip at Buckland's Beach, Auckland.

30- 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.

Awakeri (near Opotiki) did experience a record-high daily rainfall total of 154 mm on June 10th. Several locations experienced near-record winter 1-day rainfalls during the event 28-30 June.

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

Location	Extreme 1-day rainfall (mm)	Date of extreme rainfall	Year Records began	Comments
Kaitaia	84	Jun 11th	1967	4th-highest
Awakeri (Opotiki)	154	Jun 10th	1962	Highest
Aniwhenua (Whakatane)	105	Jun 12th	1981	3rd-highest
Opouriao (Whakatane)	155	Jun 12th	1962	3rd-highest
Miranda (Firth of Thames)	72	Jun 28th	1978	2nd-highest
Waihirere, Glanavon (Gisborne)	91	Jun 28th	1961	2nd-highest
Te Puia Springs (Gisborne)	205	Jun 29th	1946	2nd-highest
Mokairau, Pakarae (Gisborne)	133	Jun 30th	1947	3rd-highest
Te Pohue (Hawkes Bay)	127	Jun 29th	1983	4th-highest
Judgeford (Porirua)	64	Jul 23rd	1978	3rd-highest
Trentham Racecourse (Upper Hutt)	80	Jul 23rd	1930	3rd-highest
Wallaceville (Upper Hutt)	101	Aug 30th	1939	2nd-highest
Kokiri, Maori Gully Rd (Westland)	102	Jul 23rd	1980	4th-highest

Temperature

Cold spells

5 – 22 June: An extended period of near-record or record cold temperatures was observed across the country during the period June 5th to 22nd. A record low winter temperature was observed at Warkworth on June 5th (-1.3 °C).

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

Location	Extreme minimum temperature (°C)	Date of extreme temperature	Year Records began	Comments
Kaitia	1.5	Jul 26th	1985	Equal 3rd-lowest
Warkworth	-1.3	Jun 5th	1966	Lowest
Whangaparaoa	4.1	Jun 1st	1982	Equal lowest
Ardmore	-3.5	Jun 5th	1969	Equal 4th-lowest
Port Taharoa	0.5	Jun 17th	1973	2nd-lowest
Waikeria	-5.8	Jun 19th	1977	Equal 2nd-lowest
Te Kuiti	-3.9	Jun 19th	1959	3rd-lowest
Turangi	-7.4	Jun 5th	1968	2nd-lowest
Paraparaumu	-4.2	Jun 8th	1953	3rd-lowest
Wellington	-0.6	Jun 8th	1962	3rd-lowest
Hawera	-3.3	Jun 8th	1977	Equal 4th-lowest
Wanganui	-1.5	Jun 8th	1987	2nd-lowest
Motueka	-4.8	Jun 19th	1956	Equal 3rd-lowest
Pelorus Sd, Crail Bay	-0.6	Jun 17th	1982	2nd-lowest
Blenheim	-5.5	Jun 17th	1932	3rd-lowest
Grassmere Salt Works	-4.3	Jun 22nd	1953	2nd-lowest
Le Bons Bay (Banks Peninsula)	0.0	Jun 17th	1984	Equal 3rd-lowest

Warm spells

15 – 30 August: Record high winter temperatures were observed over the second half of August 2009, with records broken at Paraparaumu (21.0 °C) and Wanganui (20.1 °C) on August 15th, at Appleby (Nelson) on August 28th (19.8 °C), and Waiouru on August 29th (18.0 °C).

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

Location	Extreme maximum temperature (°C)	Date of extreme temperature	Year Records began	Comments
Leigh	20.2	Jun 19th	1966	Equal 2nd-highest
Kumeu (Waitakere)	20.0	Aug 30th	1978	2nd-highest
Paraparaumu	21.0	Aug 15th	1953	Highest
Palmerston North	20.2	Aug 30th	1918	4th-highest
Wallaceville	19.9	Aug 15th	1939	3rd-highest
Waiouru	18.0	Aug 29th	1962	Highest
Wanganui	20.1	Aug 15th	1987	Highest
Milford Sound	17.7	Aug 16th	1934	Equal 3rd-highest
Appleby (Nelson)	19.8	Aug 28th	1943	Highest
Lumsden	17.4	Aug 11th	1982	3rd-highest
Tiwai Point (Southland)	17.4	Aug 25th	1970	Equal 3rd-highest

• Snow

16 June: Dunedin Airport and many roads were closed, after snow fell to low levels in Otago and Southland. 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 Matura were

closed by snow. Multiple traffic accidents were caused by the icy conditions, especially on Dunedin's hills. Further north, SH2 over the Rimutaka Hill north of Wellington, was closed briefly.

29 June: 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: The Desert Road between Rangipo and Waiouru was closed overnight on the 2nd 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 July 5th, 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.

13-14 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.

19 July: A freezing front brought snow, hail, sleet and icy winds to Otago and Southland on 19 July. SH93 between Clinton and Matura, and SH87 from Mosgiel to Kyeburn were closed by snow.

1 -3 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. Snow closed the Desert Road on the morning of 3 August.

- **High winds and tornadoes**

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

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

11 July: Severe winds in Northland 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 cut power to about 5,000 buildings.

21 July: A tornado was reported in the morning of the 21st, 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 the 23rd closed the Rimutaka Hill Road from 8 pm until about 9 pm. In Wellington, gale-force winds of up to 130 kph ripped the glass of a balcony in the central city, and a contractor had to abseil in to secure the site. In 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, power lines between Tokomaru Bay and Ruatoria were also damaged when trees were blown over by the strong northwesterlies.

Near record high extreme wind gusts for winter were recorded at:

Location	Extreme wind gust speed (km/hr)	Date of extreme gust	Year Records began	Comments
Whangarei	104	Jul 18th	1973	Equal 3rd-highest
Westport	163	Jul 3rd	1973	Highest
Tara Hills (Omarama)	85	Jul 21st	1985	Equal 4th-highest

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