

National Climate Summary – Autumn 2009: Cold and sunny for most places; dry in the north and wet in the south.

- Temperature: Below average for most of the country, except for Southland and Fiordland where autumn temperatures were near average.
- Sunshine: Above normal for most of New Zealand; below normal in parts of Otago.
- Rainfall: Above normal in Canterbury and Otago, the lower North Island, and western Northland; below normal in central and eastern North Island and northern South Island.

Autumn overall was colder than average (by between 0.5 and 1.5°C) for most of the country with the exception of Southland and Fiordland where temperatures were near average. Below average temperatures persisted for the whole period for most areas, while parts of the West Coast, coastal Fiordland, Southland and south Otago had some respite in April with warmer than average temperatures for that month. The national average temperature of 12.5 °C was 0.7 °C below average for autumn.

Autumn rainfall totals were above normal (120 – 150% of normal) in western parts of Northland, Wairarapa, Canterbury, Southern Alps and Otago. However, much of the rain in these areas occurred in May, with March and April being particularly dry for most of the country, particularly Hawke’s Bay, Taranaki District, Marlborough, and north Canterbury. Areas that received below normal (between 50 and 80% of normal) rainfall for autumn were Waikato, central and eastern North Island (with the exception of Wairarapa), Tasman District and Marlborough. Severe soil moisture deficits in many eastern areas of the country eased to near normal levels by the end of May.

March and April were dominated by the slow passage of anticyclones (“highs”) coming over New Zealand from the west. In March, these highs tended to stall over the Tasman Sea resulting in more south to south-westerly air flows than normal over New Zealand, while in April they persisted to the east of the North Island resulting in more northerly air flows than normal over the country. In May, the anticyclones tended to persist over southern Australia resulting in more southerly air flows than normal over New Zealand. More depressions (“lows”) than normal passed over and to the east of New Zealand in this month, which contributed to the cold and wet conditions experienced in many eastern areas during May.

Major Highlights:

- On 5–7 March, a storm crossed the upper North Island and moved down to the Bay of Plenty. Winds reached 150 km/h at Cape Reinga. The high winds, heavy rain and lightning strikes caused property damage and brought down trees and power lines. On 17 March, heavy rain caused surface flooding, landslips, and sewer overflows in Tauranga.
- Heavy rain along the West Coast resulted in flooding on 27 April. Homes were evacuated in Greymouth and roads became impassable. 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.
- There were several extreme events during May. Many locations received record low maximum and minimum temperatures, particularly between the 9th and the 11th and on the 21st and 22nd. Heavy rainfall resulted in flooding in south Canterbury on the 17th, and in Otago on the 18th. High winds buffeted Wellington on the 15th, 17th, 23rd, 24th, 30th and 31st. Snow fell to low levels periodically during the month and tornadoes damaged property in Warkworth on the 11th, and in Taranaki on the 17th.
- The lowest temperature during autumn was recorded at Hanmer Forest on the 12th of May, where the minimum temperature was -7.0 °C. The highest temperature for autumn was 30.5 °C recorded at Hastings on 1 March. The highest 1-day rainfall was 341 mm recorded at Mt Cook on 27 April (the highest autumn 1-day total for this location, since records began in 1928).
- Of the six main centres, Tauranga was the warmest and sunniest, Wellington the wettest, and Hamilton was the driest.

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TEMPERATURE: BELOW AVERAGE FOR MUCH OF COUNTRY

Seasonal mean temperatures were below average (by between 0.5 and 1.5°C) for most of the country with the exception of Southland and Fiordland where temperatures were near average. The national average temperature of 12.5 °C was 0.7 °C below average for autumn. Several locations received record or near-record low average autumn temperatures (see tables below).

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

Location	Mean air temperature (°C)	Departure from normal	Year records began	Comments
Kaitaia	15.0	-1.8	1967	2nd-lowest
Warkworth	14.7	-1.6	1966	2nd-lowest
Kumeu (Waitakere)	14.2	-1.1	1978	3rd-lowest
Rotorua	12.3	-1.0	1964	3rd-lowest
Taupo	11.2	-1.1	1949	2nd-lowest
Pukekohe	14.2	-1.2	1969	3rd-lowest
Port Taharoa	15.3	-0.9	1973	3rd-lowest
Taumarunui	11.8	-1.5	1947	2nd-lowest
Turangi	11.1	-1.2	1968	3rd-lowest
Takapau Plains	11.3	-1.3	1962	2nd-lowest
Dannevirke	10.8	-2.2	1951	2nd-lowest
Castlepoint	13.4	-1.6	1972	2nd-lowest
Martinborough	11.7	-1.8	1986	2nd-lowest
Ngawi	14.1	-0.7	1972	2nd-lowest
Hicks Bay	15.2	-0.8	1969	4th-lowest
Hastings	13.5	-0.9	1965	2nd-lowest
Waipawa	11.9	-1.2	1945	2nd-lowest
Paraparaumu	12.8	-1	1953	4th-lowest
Stratford	11.6	-0.8	1960	4th-lowest
Waiouru	8.4	-1.3	1962	2nd-lowest
Wanganui	13.6	-1.0	1987	3rd-lowest
Motueka	11.9	-1.0	1956	3rd-lowest
Pelorus Sound	13.4	-1.0	1982	3rd-lowest
Blenheim	11.8	-1.3	1932	3rd-lowest
Arthurs Pass	7.4	-2.1	1973	3rd-lowest
Cheviot	10.5	-1.3	1982	2nd-lowest
Waipara West	12.0	-0.6	1973	4th-lowest
Le Bons Bay	11.4	-0.9	1984	3rd-lowest
Lumsden	9.3	-0.7	1982	4th-lowest
Tiwai Point	10.4	-0.7	1970	4th-lowest
Balclutha	9.7	-1.1	1964	3rd-lowest

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

Location	Mean maximum air temperature (°C)	Departure from normal	Year records began	Comments
Appleby	19.1	1.0	1943	3rd-highest

Kaitaia	19.2	-1.6	1967	2nd-lowest
Dargaville	18.8	-2.0	1943	2nd-lowest
Warkworth	19.0	-0.9	1966	3rd-lowest
Kumeu (Waitakere)	19.1	-1.1	1978	2nd-lowest
Whitianga	19.6	-0.6	1962	4th-lowest
Whakatane	19.1	-1.0	1974	4th-lowest
Rotorua	17.1	-1.0	1964	4th-lowest
Taupo	16.4	-1.3	1949	3rd-lowest
Pukekohe	18.7	-0.8	1969	2nd-lowest
Dannevirke	15.3	-2.3	1951	2nd-lowest
Castlepoint	16.1	-1.9	1972	Lowest
Martinborough	17.1	-1.9	1986	2nd-lowest
Ngawi	17.0	-0.9	1972	2nd-lowest
Hicks Bay	18.4	-0.7	1969	3rd-lowest
Paraparaumu	16.8	-0.9	1953	4th-lowest
Waiouru	13.3	-1.2	1962	3rd-lowest
Wanganui	17.7	-0.8	1987	4th-lowest
Farewell Spit	17.6	-0.9	1971	3rd-lowest
Pelorus Sound	17.1	-0.9	1982	3rd-lowest
Cape Campbell	15.3	-2.5	1953	Lowest
Arthurs Pass	11.6	-2.3	1973	2nd-lowest
Cheviot	16.8	-1.2	1982	2nd-lowest
Waipara West	17.0	-1.1	1973	3rd-lowest
Le Bons Bay	14.4	-1.0	1984	3rd-lowest
Oamaru	15.1	-1.6	1908	3rd-lowest

Extreme low autumn mean minimum daily air temperatures were recorded at:

Location	Mean minimum air temperature (°C)	Departure from normal	Year records began	Comments
Kaitaia	10.9	-2.0	1967	Lowest
Warkworth	10.4	-2.3	1966	2nd-lowest
Kumeu (Waitakere)	9.4	-1.1	1978	3rd-lowest
Rotorua	7.6	-1.1	1964	3rd-lowest
Taupo	6.1	-1.0	1949	2nd-lowest
Port Taharoa	11.4	-1.3	1973	2nd-lowest
Te Kuiti	7.6	-1.2	1959	3rd-lowest
Taumarunui	5.4	-2.1	1947	Lowest
Turangi	5.1	-2.0	1968	Lowest
Takapau Plains	6.5	-1.6	1962	2nd-lowest
Dannevirke	6.3	-2.1	1951	2nd-lowest
Castlepoint	10.8	-1.2	1972	2nd-lowest
Martinborough	6.4	-1.8	1986	2nd-lowest
Ngawi	11.2	-0.6	1972	2nd-lowest
Hastings	7.8	-1.4	1965	2nd-lowest
Waipawa	6.0	-1.8	1945	3rd-lowest
Wallaceville	6.6	-1.6	1939	4th-lowest
Stratford	7.1	-1.0	1960	4th-lowest
Waiouru	3.6	-1.4	1962	3rd-lowest
Wanganui	9.5	-1.2	1987	3rd-lowest
Lake Rotoiti	3.3	-0.9	1965	3rd-lowest
Greymouth	8.4	-0.8	1947	4th-lowest
Motueka	5.7	-1.4	1956	3rd-lowest
Pelorus Sound	9.7	-1.2	1982	2nd-lowest
Appleby	6.1	-2.5	1943	3rd-lowest
Blenheim	5.3	-2.0	1932	2nd-lowest
Hanmer Forest	2.6	-1.7	1906	3rd-lowest
Cheviot	4.2	-1.5	1982	3rd-lowest
Le Bons Bay	8.4	-0.8	1984	4th-lowest
Dunedin	4.6	-0.2	1947	2nd-lowest
Queenstown	4.1	-0.5	1871	3rd-lowest
Tiwai Point	6.7	-1.1	1970	3rd-lowest
Balclutha	4.7	-1.3	1964	3rd-lowest

SUNSHINE: ABOVE NORMAL FOR MOST AREAS

Autumn sunshine hours were above normal (between 110 and 130% of normal) for all of New Zealand except for parts of Otago where sunshine totals were below normal (by between 75 and 90% of normal). Kaitaia and Balclutha recorded their highest autumn sunshine totals since their respective records began.

Extreme high autumn sunshine hours were recorded at:

Location	Autumn sunshine (hours)	Percentage of normal	Year records began	Comments
Kaitaia	586	119	1985	Highest
Te Kuiti	509	126	1962	3rd-highest
Taumarunui	485	129	1947	2nd-highest
Waipawa	557	124	1945	4th-highest
Greymouth	506	132	1947	3rd-highest
Cheviot	514	107	1983	3rd-highest
Timaru	512	116	1930	4th-highest
Invercargill	424	130	1932	3rd-highest
Balclutha	443	126	1964	Highest

RAINFALL: BELOW NORMAL IN THE NORTH; ABOVE NORMAL IN THE SOUTH

Autumn rainfall totals were above normal (120 – 150% of normal) in western parts of Northland, Wairarapa, Canterbury, Southern Alps and Otago. However, much of the rain in these areas occurred in May, with March and April being particularly dry for most of the country, notably Hawke's Bay, Tararua District, Marlborough, and north Canterbury. Areas that received below normal (between 50 and 80% of normal) rainfall for autumn were Waikato, central and eastern North Island (with the exception of Wairarapa), Tasman District and Marlborough. Severe soil moisture deficits in many eastern areas of the country eased to near normal levels by the end of May.

Near or record autumn rainfall totals were recorded at:

Location	Autumn 2009 rainfall (mm)	Percentage of normal	Year Records began	Comments
Mt Cook	2161	189	1928	2nd-highest
Lake Tekapo	278	180	1925	4th-highest
Kumeu (Waitakere)	264	85	1978	4th-lowest
Rotorua	216	64	1963	2nd-lowest
Taupo	93	38	1949	Lowest
Hamilton	170	59	1935	3rd-lowest
Dannevirke	134	50	1951	3rd-lowest
Stratford	331	66	1960	4th-lowest
Takaka	242	50	1976	4th-lowest
Motueka	159	47	1943	3rd-lowest
Pelorus Sound	210	52	1982	Lowest
Appleby	125	52	1941	4th-lowest
Nelson	92	38	1941	2nd-lowest
Tiwai Point	208	66	1970	4th-lowest

AUTUMN CLIMATE IN THE SIX MAIN CENTRES

Of the six main centres, Tauranga was the warmest and sunniest, Wellington the wettest, and Hamilton was the driest. Autumn temperatures were below average everywhere except Tauranga, which was near average. Autumn rainfall was near normal in Wellington, above normal in Christchurch and Dunedin and below

normal in Auckland, Tauranga and Hamilton. Autumn sunshine was above normal in Dunedin, Tauranga and Auckland, and near normal in Christchurch, Wellington and Hamilton.

Location	Autumn Mean Temp. (°C)	Dep. from normal (°C)		Autumn rainfall (mm)	% of normal		Autumn Sunshine (hours)	% of normal	
Auckland ^a	14.9	-1.2	Below average	219	76	Below normal	539	112	Above normal
Tauranga ^b	15.3	0.0	Near average	259	80	Below normal	592	112	Above normal
Hamilton	13.6	-0.6	Below average	170	59	3 rd lowest since 1935	518 ^d	108	Near normal
Wellington	12.8	-0.9	Below average	360	117	Near normal	511	108	Near normal
Christchurch ^c	11.1	-1.0	Below average	203	127	Above normal	489	101	Near normal
Dunedin	11.0	-0.6	Below average	266	132	Above normal	413	114	Above normal

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

HIGHLIGHTS AND EXTREME EVENTS

• High rainfall and hail

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

17 March: Heavy rain caused surface flooding, landslips, and sewer overflows in Tauranga.

27 April: Homes were evacuated and roads flooded in Greymouth. 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 slip blocked Oropi Gorge Road in the Bay of Plenty after a weekend of heavy rain in the region.

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: 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. 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.

18 May: Farmers used boats to rescue 150 sheep, stranded by the flooded Clutha River at Barnego, near Balclutha.

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

Location	Extreme 1-day rainfall (mm)	Date of extreme rainfall	Year Records began	Comments
Kaitia	129	Apr 25th	1893	4th-highest
Whakamarama	193	Mar 6th	1950	3rd-highest
Te Puke	147	Mar 6th	1973	2nd-highest
Arapito	122	Apr 27th	1978	2nd-highest

Franz Josef	230	Apr 26th	1982	2nd-highest
Mt Cook	341	Apr 27th	1928	Highest
Lake Tekapo	88	May 16th	1925	2nd-highest
Woodbury	150	May 5th	1973	Highest
Tara Hills	70	May 16th	1949	Highest

• Temperature

Cold spells

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

9 – 10 April: A record low daily maximum temperature for April was set at Pukekohe on the 9th (13.8°C). The temperature fell to 0.8°C at Kumeu (Waitakere) overnight on the 10th (a record lowest April minimum temperature for this location).

21 – 22 May: There were several locations that recorded record-low autumn temperatures on these days (see table below).

31 May: Record low May maximum temperatures were recorded at Dannevirke (5.0°C), Castlepoint (7.7°C), Stratford (5.4°C), Waiouru (1.5°C) and Wanganui (8.5°C).

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

Location	Extreme minimum temperature ($^{\circ}\text{C}$)	Date of extreme temperature	Year Records began	Comments
Kerikeri	3.0	May 22nd	1981	Equal 4th-lowest
Warkworth	0.1	May 22nd	1966	2nd-lowest
Whangaparaoa	5.4	May 21st	1982	Lowest
Te Puke	-1.0	May 22nd	1973	Equal 2nd-lowest
Whakatane	-1.6	May 22nd	1975	2nd-lowest
Rotorua	-2.9	May 22nd	1964	Lowest
Taupo	-4.1	May 22nd	1949	3rd-lowest
Pukekohe	-0.5	May 22nd	1969	4th-lowest
Port Taharoa	2.0	May 21st	1973	Lowest
Te Kuiti	-2.5	May 22nd	1959	3rd-lowest
Taumarunui	-4.0	May 22nd	1947	3rd-lowest
New Plymouth	-0.8	May 22nd	1944	Lowest
Martinborough	-2.3	May 22nd	1986	3rd-lowest
Ngawi	4.6	May 28th	1972	Equal 4th-lowest
Hicks Bay	1.7	May 22nd	1969	3rd-lowest
Hastings	-2.4	May 22nd	1965	2nd-lowest
Waipawa	-4.2	May 22nd	1945	2nd-lowest
Wairoa	-0.2	May 22nd	1964	4th-lowest
Stratford	-1.8	May 22nd	1960	Equal 2nd-lowest
Waiouru A	-6.1	May 22nd	1962	4th-lowest
Wanganui	1.3	May 28th	1987	Equal 3rd-lowest
Hokitika	-1.8	May 12th	1963	2nd-lowest
Motueka	-2.7	May 21st	1956	4th-lowest
Pelorus Sound	2.0	May 21st	1982	3rd-lowest
Blenheim	-4.7	May 21st	1932	Lowest
Dunedin	-4.9	May 3rd	1947	3rd-lowest
Lumsden	-5.2	May 2nd	1982	4th-lowest
Balclutha	-4.5	May 2nd	1964	Equal 3rd-lowest

Warm spells

1 March: The highest temperature during autumn 2009 was 30.5°C recorded at Hastings on this day.

6 – 7 March: Kaikohe experienced its highest recorded autumn maximum temperature on the 6th reaching 26.9°C, and Ohakune recorded its highest March minimum temperature of 17.4°C on the 7th.

26 – 27 April: Nugget Point (South Otago) experienced its highest recorded April maximum temperature on the 26th reaching 24.9°C, and Takapau Plains (Hawke's Bay) recorded its highest April maximum temperature of 25.9°C on the 27th. A record high minimum temperature for April was also recorded at Darfield on the 27th (19.0 °C).

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

Location	Extreme maximum temperature (°C)	Date of extreme temperature	Year Records began	Comments
Kaitaia	26.6	Mar 6th	1985	4th-highest
Kerikeri	27.8	Mar 6th	1981	3rd-highest
Kaikohe	26.9	Mar 6th	1973	Highest
Whangarei	28.6	Mar 6th	1967	2nd-highest
Whangaparaoa	25.7	Mar 1st	1982	2nd-highest
Whakamarama	25.0	Mar 3rd	1984	Equal 3rd-highest
Whakatane	27.7	Mar 3rd	1975	4th-highest
Opotiki	28.1	Mar 3rd	1947	2nd-highest
Puyssegur Point	24.9	Mar 5th	1978	2nd-highest
Tiwai Point	27.0	Mar 5th	1970	2nd-highest
Tautuku	28.0	Mar 5th	1976	3rd-highest

• Snow

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

10 May: A cold front brought 10–20 cm of snow to inland Otago. 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. 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.

20 May: 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.

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. 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.

- **High winds and tornadoes**

6 March: Winds reached 154 km/hr at Cape Reinga and 93 km/hr across Auckland Harbour on this day. The high winds caused property damage, and brought down trees and power lines.

15 May: Strong winds buffeted Wellington damaging power lines and cutting power for a few hours to 2500 homes in Karori and Makara.

17 May: High winds 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. Taranaki was hit by a mini tornado, 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.

20 May: Wind gusts brought down a tree, blocking SH75 near Akaroa. Further north, the gales caused the delay or cancellation of Cook Strait ferries.

23 – 24 May: Southerly gales hammered Wellington over this weekend, 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.

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

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

Location	Extreme wind gust speed (km/hr)	Date of extreme gust	Year Records began	Comments
Cape Reinga	154	Mar 5th	1974	Equal 2nd-highest
Milford Sound	120	May 10th	1974	4th-highest
Craigieburn Forest	111	Apr 27th	1974	3rd-highest

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