

**National Climate Summary – Winter 2006**

**Winter 2006: Wild in the lower North Island, exceptional snowstorms in the east of the South Island, but quite benign in the north of both islands. New high sunshine records in places.**

- **Rainfall: Wet in the southern half of the North Island, especially Wanganui, Wairarapa, and Wellington; relatively dry in the north of both islands, and Otago**
- **Sunshine: Extremely sunny for winter with record winter sunshine in parts of the north and west of the North Island and the southeast of the South Island**
- **Temperature: Below normal in the north and west of the North Island, Buller, South Canterbury and east Otago; near normal elsewhere**

This was a winter of extremes in parts of New Zealand, with exceptional snowstorms in the east of the South Island, significant snowfall also in the central North Island, severe floods and landslips in the lower North Island, and damaging winds. In contrast it was also very sunny in many areas and dry in the north of both islands and Otago.

Winter rainfall was at least 150 percent (one and a half) of normal in Wanganui and Wairarapa, and parts of Wellington (including Kapiti). Soil moisture in these regions was already at field capacity (nearly saturated) at the start of June. In contrast, winter rainfall was only about 50 percent (half) of normal in parts of Northland and Otago, and below normal in Thames-Coromandel, Western Bay of Plenty, much of Auckland, Nelson, and much of Marlborough. The national average winter temperature of 8.1 °C was close to normal, being 0.2°C below average. This was lowest since 1997, as many recent winters have been much warmer than normal. Seasonal mean temperatures were below normal throughout much of the north and west of the North Island from Northland to Horowhenua, as well as Buller, South Canterbury and Otago, but near normal elsewhere. This winter was also unusual because June was an exceptionally cold month, the coldest month of the winter. Temperatures, for New Zealand as a whole, were above or near normal for the remainder of winter. Sunshine hours for winter were extremely high in the north and west of the North Island from Northland to Wellington, and in the east of the South Island from inland South Canterbury to Southland, with some centres recording their sunniest winter on record. The overall winter climate pattern was dominated by more frequent anticyclones ('highs') than usual in the Australian Bight, often extending into Tasman Sea. This pattern produced frequent southerly winds over the North Island and southwesterlies over southern New Zealand.

**Major Highlights:**

- The highest temperature recorded during the winter was 21.8 °C recorded at Timaru Airport on 29 August. The lowest air temperatures for the winter were -14.0 °C recorded Tara Hills, Omarama on 14 June and Fairlie on 28 June. The minimum air temperatures were -10 °C or lower in parts in inland South Canterbury and/or North Otago, on nine days between 14 and 29 June.
- High rainfall events were frequent throughout the winter, occurring on at least eight occasions; the worst event occurring over 4-6 July in the Wairarapa, Wanganui and Wellington regions. Over 300 mm was reported within 24 hours in parts of South Wairarapa, where people had to be evacuated from their homes. Martinborough was isolated by floodwaters, and surface flooding which also affected Greytown and Carterton. In Wairarapa, more than 50 roads were closed due to flooding or landslips. The settlement of Mangamahu (northeast of Wanganui) was isolated by the collapse of the Mangawhero river bridge. A house in Wanganui was struck by a landslide, with two others later affected in Hunterville.
- The highest wind gust for the winter was 167 km/h from the northwest was recorded at Southwest Cape (Stewart Island) on 28 August. A tornado damaged property in Greymouth on 11 June, and also destroyed property in the Waikato on the 12 July. Northwest gales buffeted the North Island on 12 June, with damage and power outages in parts of Auckland, Thames-Coromandel, Waikato, and the Marlborough Sounds. Trees fell in Tauranga, with other wind damage in Kaitoke and Nelson. Power lines were

damaged by wind in Taranaki, Bay of Plenty, and Gisborne, on 19 June, with power cut to thousands of residents. Several iron roofs were damaged in Gisborne, and New Plymouth.

- The worst of the winter snowfall events occurred in Canterbury over the night of 11/12 June, especially in the south, snow settling to depths of 75-90cm around Fairlie and Burkes Pass, almost 40cm in Ashburton, and more than 20cm in Timaru, some remaining in some inland areas until the 27<sup>th</sup>. Extended power cuts occurred throughout much of South Canterbury, due to broken power lines and poles. The roofs of several buildings also collapsed, due to the weight of snow. Many motorists were stranded in the snow, and many roads closed. Southerlies spread over the North Island over 20-22 June, bringing heavy snowfall down to 500m, affecting the Desert Road, and townships of Waiouru, Ohakune, National Park, and the outskirts of Taupo, with many roads closed, including those to the east coast. Two buses slid off icy roads in the Central North Island, and nearly 100 cars were stranded in the snow.

Of the five main centres, Wellington was the wettest, Dunedin easily the driest and Auckland the sunniest. Rainfall was above average in Wellington and Christchurch, below average in Auckland and Dunedin, and near average in the other main centres. Temperatures were near average in Wellington, but below average in the four other main centres. Winter sunshine hours were above average in all five cities, with Dunedin recording its sunniest winter on record.

**Rainfall:** Winter rainfall was at least 150 percent (one and a half) of normal in Wanganui and Wairarapa, and parts of Wellington (includes Kapiti), and also above normal in Taupo, the Gisborne high country, Hawke's Bay, Manawatu, and the mid Canterbury coast. In contrast, winter rainfall was below normal in Northland, Thames-Coromandel, Western Bay of Plenty, much of Auckland, Nelson, and much of Marlborough and Otago.

**Sunshine:** Winter sunshine hours were at least 120 percent of normal in the north and west of the North Island from Northland to Wellington, and in the east of the South Island from inland South Canterbury to Southland. It was also sunny, with at least 110 percent of normal hours in most other regions. In Dargaville, Hamilton, New Plymouth, Dunedin and Invercargill it was the sunniest winter on record.

**Temperature:** Seasonal mean temperatures were near normal for New Zealand overall. However, they were at least 0.5 °C below normal in much of the north and west of the North Island from Northland to Horowhenua, and also below normal in Buller, South Canterbury and east Otago.

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## **WINTER RAINFALL: WET IN THE SOUTHERN HALF OF THE NORTH ISLAND, ESPECIALLY WANGANUI, WAIRARAPA, AND WELLINGTON; RELATIVELY DRY IN THE NORTH OF BOTH ISLANDS AND OTAGO**

Rainfall was at least 150 percent (one and a half) of normal in Wanganui and Wairarapa, and parts of Wellington (includes Kapiti), and at least 125 percent (one and a quarter) of normal in Taupo, the Gisborne high country, Hawke's Bay, Manawatu, and the mid Canterbury coast. In contrast, winter rainfall was 75 percent (three quarters) or less of normal in Northland, Thames-Coromandel, Western Bay of Plenty, much of Auckland, Nelson, and much of Marlborough and Otago.

**Near or record high winter rainfall was recorded at:**

Location	Winter 2006 rainfall (mm)	Percentage of normal	Year Records began	Comments
East Taratahi	499	150	1972	Highest
Martinborough	458	170	2001	Highest
Ngawi/Palliser	606	171	1930	2 <sup>nd</sup> highest
Hicks Bay	700	154	1991	Highest
Wanganui, Spriggens Park	430	179	1890	Highest
Paraparaumu Airport	430	145	1945	4 <sup>th</sup> highest
Wellington, Kelburn	621	153	1862	2 <sup>nd</sup> highest (642 mm in 1881)
Wellington Airport	464	144	1960	2 <sup>nd</sup> highest
Wallaceville	586	145	1924	3 <sup>rd</sup> highest (highest since 1975)

**Low winter rainfall was recorded at:**

Location	Winter 2006 rainfall (mm)	Percentage of normal	Year Records began	Comments
Kaikohe	284	55	1986	Lowest
Whangarei Airport	259	55	1937	2 <sup>nd</sup> lowest
Warkworth	303	59	1972	2 <sup>nd</sup> lowest
Dunedin, Musselburgh	106	51	1918	Well below normal
Clyde	53	58	1983	Well below normal

**VERY SUNNY IN THE NORTH AND WEST OF THE NORTH ISLAND AND THE SOUTHEAST OF THE SOUTH ISLAND**

Sunshine hours were at least 120 percent of normal in the north and west of the North Island from Northland to Wellington, and in the east of the South Island from inland South Canterbury to Southland. It was also sunny, with at least 110 percent of normal hours in most other regions. Winter sunshine hours were near normal in Wairarapa.

**Near or record high winter sunshine was recorded at:**

Location	Winter 2006 sunshine (hours)	Percentage of normal	Year Records began	Comments
Dargaville	449	134	1943	Highest
Auckland, Mangere	469	122	1963	3 <sup>rd</sup> highest
Hamilton, Ruakura	450	125	1936	Highest
New Plymouth Airport	510	126	1973	Highest
Paraparaumu Airport	456	125	1953	2 <sup>nd</sup> highest
Wellington, Kelburn	430	122	1928	3 <sup>rd</sup> highest
Stratford	431	122	1963	3 <sup>rd</sup> highest
Dunedin, Musselburgh	455	151	1948	Highest
Invercargill Airport	358	125	1932	Highest

**TEMPERATURE: BELOW NORMAL IN THE NORTH AND WEST OF THE NORTH ISLAND, BULLER, SOUTH CANTERBURY AND EAST OTAGO; NEAR NORMAL ELSEWHERE**

Seasonal mean temperatures were near normal for New Zealand overall. However, they were at least 0.5 °C below normal in much of the north and west of the North Island from Northland to Horowhenua, and also below normal in Buller, South Canterbury and east Otago. Temperatures were about 1.0 °C below normal in some parts of Auckland, King Country, and Otago. Elsewhere, overall winter temperatures were near normal.

**WINTER CLIMATE IN THE FIVE MAIN CENTRES**

Of the five main centres, Wellington was easily the wettest, Dunedin easily the driest, and Auckland the sunniest. Rainfall was above average in Wellington and Christchurch, below average in Auckland and Dunedin, and near average in the other main centres. Temperatures were near average in Wellington, but below average in the other main centres. Winter sunshine hours were above average in Christchurch, and well above average in the four other main centres, with Dunedin recording its sunniest winter on record.

Location	Winter Mean Temp. (°C)	Dep. from normal (°C)		Winter rainfall (mm)	% of normal		Winter Sunshine (hours)	% of normal	
Auckland	10.7	-0.6	Below average	304 <sup>a</sup>	75	Below average	469	133	3 <sup>rd</sup> highest
Hamilton	8.7	-0.6	Below average	335 <sup>b</sup>	93	Near average	450	125	Highest
Wellington	9.0	-0.2	Below average	621	153	Well above average	430	122	3 <sup>rd</sup> highest
Christchurch <sup>c</sup>	5.9	-0.5	Below average	243	122	Above average	431	110	Above average
Dunedin	6.7	-0.3	Below average	106	51	Well below average	455	151	Highest

a Owairaka, b Hamilton Airport, c Christchurch Airport

**HIGHLIGHTS AND EXTREME EVENTS**

**Temperature**

- The highest temperature recorded during the winter was 21.8 °C recorded at Timaru Airport on 29 August. This was the 3<sup>rd</sup> highest August temperature there since records commenced in 1962.
- The lowest air temperatures for the winter were -14.0 °C recorded Tara Hills, Omarama on 14 June and Fairlie on 28 June. The minimum air temperatures were -10 °C or lower in parts in inland South Canterbury and/or North Otago, on nine days between 14 and 29 June.

**High rainfall**

- High rainfall events were frequent in June, occurring in various districts on 3, 10-12, 15, 18-19, and 22 June. 20 houses were evacuated due to flooding in Runanga north of Greymouth on 11 June.
- Severe flooding and landslips occurred after high rainfall from 4-6 July in the Wairarapa, Wanganui and Wellington regions. 100 mm was reported within 24 hours in parts of South Wairarapa, where people had to be evacuated from their homes. Martinborough was isolated by floodwaters, and surface flooding which also affected Greytown and Carterton. In Wairarapa, more than 50 roads were closed due to flooding or landslips. The settlement of Mangamahu (northeast of Wanganui) was isolated by the collapse of the Mangawhero river bridge. A house in Wanganui was struck by a landslide, with two others later affected in Hunterville. On 21 July, an Eastbourne house became perched above a landslide.

- High rainfall affected Northland, Bay of Plenty, and Coromandel over 5/6 August, Westland and Fiordland over 18/19 August, and Marlborough Sounds and Wellington on 25/26 August. Surface flooding occurred on 8 August in Christchurch after 3 days of rainfall. A major landslide occurred in Kelson, Wellington on the 8 August, with another in Oriental Parade, Wellington on 16 August. Flooding occurred in Makara, Wellington on 25 August, with further landslips in some areas.

### **High winds and tornadoes**

- The highest wind gust for the winter was 167 km/h from the northwest was recorded at Southwest Cape (Stewart Island) on 28 August.
- A tornado damaged property in Greymouth on 11 June. Northwest gales buffeted the North Island on 12 June, with damage and power outages in parts of Auckland, Thames-Coromandel, Waikato, and the Marlborough Sounds. Trees fell in Tauranga, with other wind damage in Kaitoke and Nelson. A wind gust of 146 km/h from the north was recorded at Mt. Kaukau, Wellington. Power lines were damaged by wind in Taranaki, Bay of Plenty, and Gisborne, on 19 June, with power cut to thousands of residents. Several iron roofs were damaged in Gisborne, and New Plymouth.
- Tornadoes destroyed property in the Waikato on the 12 July.

### **Snowfall**

- A severe, widespread heavy snowfall event occurred in Canterbury over the night of 11/12 June, especially in the south, snow settling to depths of 75-90cm around Fairlie and Burkes Pass, almost 40cm in Ashburton, and more than 20cm in Timaru, some remaining in some inland areas until the 27<sup>th</sup>. Extended power cuts occurred throughout much of South Canterbury, due to broken power lines and poles. The roofs of several buildings also collapsed, due to the weight of snow. Many motorists were stranded in the snow, and many roads closed. Southerlies spread over the North Island over 20-22 June, bringing heavy snowfall down to 500m, affecting the Desert Road, and townships of Waiouru, Ohakune, National Park, and the outskirts of Taupo, with many roads closed, including those to the east coast. Two buses slid off icy roads in the Central North Island, and nearly 100 cars were stranded in the snow.
- Snowfall closed the Desert Rd on 6 July, with many skiers stranded on Mt. Ruapehu. Showers of sleet and snow fell to low levels in the lower North Island on 21 July, and settled in the Queenstown area; and closing Queenstown airport.
- Snowfall occurred in Otago, and inland areas of Southland and Canterbury on 21 August, with all major high-country passes closed. Snowfall closed the North Island's Desert Road on 25 August.

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