

**National Climate Summary – Winter 2007: Rainfall and temperature contrasts, with floods, windstorms and tornadoes**

- **Rainfall: Well above normal in parts of Northland, Hawke's Bay, and Otago, well below normal in Nelson, and inland parts of Marlborough and Canterbury**
- **Temperature: Above average throughout the northern half of the North Island, below average over the southern half of the South Island**
- **Sunshine: Well above normal in Otago and inland South Canterbury**

The winter of 2007 had contrasts in rainfall and temperature, with significant extremes. There were serious flood producing rainfall events in Northland, Hawke's Bay, and Otago. Whangarei had its wettest winter since 1973, Nelson experienced its driest winter since 1987, and extended periods of severe frost occurred in Otago. An unprecedented swarm of damaging tornadoes affected Taranaki over 4-5 July. Other windstorms also damaged property and affected infrastructure.

Seasonal rainfall was more than 150 percent (one and a half times) of normal in some eastern areas of Northland, central parts of Hawke's Bay, and in North Otago. In contrast, rainfall was less than 50 percent (half) of normal in inland areas of Marlborough, and parts of Banks Peninsula. Moderate soil moisture deficits, although not severe, existed at the end of winter in many eastern regions from Marlborough to Central Otago. Winter, overall, was warmer than normal throughout the northern half of the North Island, where temperatures were 1°C above average. However, temperatures were more than 1.0 °C below average in some inland parts of Otago, and also below average in inland areas of south Canterbury and Southland. The national average temperature of 8.5 °C was exactly normal. Sunshine hours were well above normal in Otago and inland areas of South Canterbury. Totals were below normal in the Wairarapa. The overall winter climate pattern was dominated by more depressions ('lows'), often centred southeast of the South Island, with more frequent southerly flow over the South Island and lower half of the North Island, and more westerlies further north.

**Major Highlights:**

- The highest temperature recorded during the winter was 22.4 °C recorded at Rangiora on the 1 June. The lowest air temperature for the winter was -15.4 °C recorded at Lauder on 18 July, the lowest there since July 1995. Many other inland South Island locations recorded minimum air temperatures below -10.0 °C during July, often accompanied by freezing fog and treacherous ice.
- There were two major snowfall events, both affecting Southland and Otago. The first over 7-9 June and the second over 20-24 June, also affecting Reefton on the West Coast.
- Heavy rainfall produced widespread severe flooding and landslips throughout much of Northland on 10 July, the town of Kaeo being worst hit, and Whangarei was completely blocked off by floodwaters and slips. Flooding also occurred near Hastings on 17 July, and along the south Canterbury-Otago coast on 30 July.
- An unprecedented number of several damaging tornadoes affected parts of the north and west of the North Island over 4-5 July, with damage being particularly severe in Taranaki. The township of Oakura was severely affected, with a substantial number of houses damaged. Another small tornado occurred near New Plymouth, tipping a truck and trailer unit on its side, on 31 July.
- The flood producing event of 10 July also produced damaging easterly gales, resulting in fallen trees, broken power lines, and other damage in Northland, Auckland, and Coromandel, leaving more than 140,000 people without electricity. More gales over 11-12 August, this time from the northwest, buffeted many central and southern New Zealand regions, with damaged power lines in parts of Otago.
- Of the five main centres, Auckland was the warmest and wettest, and Christchurch the driest, sunniest and coldest.

**Rainfall:** Winter rainfall was more than 150 percent (one and a half times) of normal in some eastern areas of Northland, central parts of Hawke’s Bay, and in North Otago, and also above normal in the north of Northland, as well as Thames, Coromandel, and East Otago. In contrast, rainfall was less than 50 percent (half) of normal in inland areas of Marlborough, and parts of Banks Peninsula, and also below normal in Wairarapa, Nelson, many inland areas of Canterbury.

**Temperature:** Seasonal mean temperatures were above average throughout the northern half of the North Island and 1.0 °C above average in parts of Northland and Gisborne. In contrast, they were more than 1.0 °C below average in some inland parts of Otago, and also below average in inland areas of south Canterbury and Southland. The national average temperature of 8.4 °C was 0.1°C below normal.

**Sunshine:** Winter sunshine hours and/or solar radiation were at least 115 percent of normal in Otago, inland areas of South Canterbury, Westland, and Southland. Sunshine hours were below normal in the Wairarapa

**For further information, please contact:**

**Dr Jim Salinger – Principal Scientist – Climate, NIWA National Climate Centre, Auckland,  
Tel. (09) 375 2053, or (027) 521 9468 (mobile).**

**Stuart Burgess – Climatologist – NIWA National Climate Centre, Wellington, Tel. (04) 386 0569**

#### **TEMPERATURE: ABOVE AVERAGE THROUGHOUT THE NORTHERN HALF OF NORTH ISLAND, BELOW AVERAGE IN THE SOUTH HALF OF THE SOUTH ISLAND**

Seasonal mean temperatures were at least 0.5 °C above average throughout the northern half of the North Island and 1.0 °C above average in parts of Northland and Gisborne. In contrast, they were more than 1.0 °C below average in some inland parts of Otago, and at least 0.5 °C below average in inland areas of south Canterbury and Southland. The national average temperature of 8.3 °C was 0.2°C below normal.

**Near or record high winter mean air temperatures were recorded at:**

Location	Mean temperature	Departure from average (°C)	Records Began	Comments
Kaikohe	12.2	+1.0	1973	2 <sup>nd</sup> highest
Mokohinau Island	14.0	+1.0	1972	2 <sup>nd</sup> highest
Motu	7.2	+1.3	1991	3 <sup>rd</sup> highest
Napier Airport	10.3	+1.1	1974	Equal 2 <sup>nd</sup> highest
Palmerston North Airport	9.7	+1.1	1962	Equal 3 <sup>rd</sup> highest
Raoul Island	17.6	+0.8	1940	2 <sup>nd</sup> highest

**Near or record low winter mean air temperatures were recorded at:**

Location	Mean temperature	Departure from average (°C)	Records Began	Comments
Lauder	1.5	-1.6	1981	Lowest
Clyde	3.2	-0.8	1983	2 <sup>nd</sup> lowest

**RAINFALL: WELL ABOVE NORMAL IN PARTS OF NORTHLAND, HAWKE'S BAY, AND OTAGO, WELL BELOW NORMAL IN NELSON, AND INLAND PARTS OF MARLBOROUGH AND INLAND AREAS OF CANTERBURY**

Winter rainfall was more than 150 percent (one and a half times) of normal in some eastern areas of Northland, central parts of Hawke's Bay, and in North Otago, and at least 125 percent (one and a quarter) of normal in the north of Northland, as well as Thames, Coromandel, and East Otago.

In contrast, rainfall was less than 50 percent (half) of normal in inland areas of Marlborough, and parts of Banks Peninsula, and less than 75 percent (three quarters) of normal in southern Wairarapa, Nelson, inland areas of Canterbury.

**Well above normal winter rainfall was recorded at:**

Location	Winter 2007 rainfall (mm)	Percentage of normal	Year Records began	Comments
Whangarei Airport	724	152	1937	Highest since 1973
Napier Airport	413	185	1950	Well above normal
Middlemarch	144	152	1916	Well above normal

**Low winter rainfall was recorded at:**

Location	Winter 2007 rainfall (mm)	Percentage of normal	Year Records began	Comments
Nelson Airport	147	56	1941	3 <sup>rd</sup> lowest, lowest since 1987
Appleby	158	56	1932	Lowest since 1987
Hanmer Forest	137	40	1905	Well below normal
Darfield	120	52	1920	Well below normal
Le Bons Bay AWS	164	49	1984	Well below normal

**SUNSHINE: WELL ABOVE NORMAL IN OTAGO AND INLAND SOUTH CANTERBURY**

Winter sunshine hours and/or solar radiation were at least 115 percent of normal in Otago, inland areas of South Canterbury, Westland, and Southland. Sunshine hours were about 90 percent of normal in Wairarapa

**Near or record high winter sunshine hours were recorded at:**

Location	Winter 2007 sunshine (hours)	Percentage of normal	Year Records began	Comments
Lake Tekapo	466	131	1928	Well above normal
Dunedin, Musselburgh	376	125	1948	Well above normal

**WINTER CLIMATE IN THE FIVE MAIN CENTRES**

Of the five main centres, Auckland was the warmest and wettest, and Christchurch the driest, sunniest and coldest.

Winter temperatures were above average in Auckland and Hamilton, near average in Dunedin, and below average in the two other main centres. Rainfall was near normal and sunshine above normal in all five main centres.

Location	Winter Mean Temp. (°C)	Dep. from normal (°C)		Winter rainfall (mm)	% of normal		Winter Sunshine (hours)	% of normal	
Auckland <sup>a</sup>	12.1	+0.8	Above average	401	105	Near normal	401	105	Above normal
Hamilton	10.1	+0.8	Above average	374	104	Near normal	394	109	Above normal
Wellington	8.9	-0.3	Below average	367	90	Near normal	384	109	Above normal
Christchurch <sup>b</sup>	6.1	-0.3	Below average	172	86	Near normal	415	106	Above normal
Dunedin	6.8	-0.2	Near average	221	106	Near normal	376	125	Well above normal

a Mangere, b Christchurch Airport

## HIGHLIGHTS AND EXTREME EVENTS

### • Temperature

The highest temperature during the winter was 22.4 °C recorded at Rangiora on the 1 June. Dunedin Airport was also very warm on 31 August, recording 22.2 °C, its highest temperature for late winter in records which commenced in 1963. The lowest air temperature for the winter was -15.4 °C recorded at Lauder on 18 July, the lowest there since July 1995. Many other inland South Island locations recorded minimum air temperatures below -10.0 °C during July, often accompanied by freezing fog and treacherous ice.

### • Snowfall

7-9 June: Snowfall in Southland and Otago, resulted in power outages, with 5-10 cm of snow accumulating in many areas.

20-24 June: About 10 cm accumulated in Southland and Otago (including Queenstown and Dunedin hill suburbs), where roads were icy and treacherous. Reefton, on the West Coast, had its largest snowfall (about 8 cm) since 1969.

### • High rainfall

1 June: Major rainfall at Arthurs Pass, with 85 mm.

29 June: Rainfall totalled 130-170 mm in Buller and Westland.

17 July: Major flooding in parts of Hawke's Bay, particularly near Hastings, with further heavy rainfall resuming on the 18<sup>th</sup>.

30 July: Major floods along the south Canterbury-Otago coast.

8-11 August: Rainfall at Milford Sound totalled 431mm.

16 August: Rainfall totalled 107 mm at Kerikeri Airport.

- **High winds and tornadoes**

- 7 June: Wind gusts as high as 148 km/h were recorded from the west at Castlepoint.
- 24 June: A wind gusts of 148 km/h was recorded from the east at Taiaroa Head.
- 26 June: Gale force southerlies in Cook Strait, with 5m swells, resulted in the cancellation of ferry crossings.
- 4-5 July: Several damaging tornadoes affected parts of the north (Auckland and Tauranga) and west of the North Island. Damage was particularly severe in parts of Taranaki over 4-5 July. The first tornado affected New Plymouth's central business district, lifting a large part of the roof off a major hardware store and destroying a wall. Other shops and houses were also damaged, along with cars. Trees were uprooted and signs destroyed. On the 5<sup>th</sup>, multiple tornadoes affected Taranaki resulting in the declaration of a state of emergency. The township of Oakura was severely affected, with a substantial number of houses damaged. Other towns such Opunake, Motunui, Stratford, Hawera, Normanby, Oakiawa, Egmont Village, Inglewood, Waitara, Urenui, and Pungarehu were also affected.
- 31 July: Another, although small, tornado occurred in Brixton, near New Plymouth, tipping a truck and trailer unit on its side, and tearing roofing iron off and crumpling a building's large roller doors.
- 11-12 August: Gale force northwesterlies buffeted many central and southern New Zealand regions, with several damaged power lines in parts of Otago.

- **Combined high winds and flood producing rainfall**

- 10 July: A state of emergency was declared in the far north as gale easterlies and heavy rainfall produced widespread severe flooding and landslips throughout much of Northland. Thousands of residents were without phones and electricity, and some had to evacuate. The town of Kaeo was worst hit, and Whangarei was completely blocked off by floodwaters and slips. The same weather system produced damaging winds in Northland, Auckland, and Coromandel which resulted in fallen trees, broken power lines, and other damage. More than 140,000 people were without electricity throughout Northland, Auckland, and the Coromandel. A wind gust as high as 180 km/h was recorded on the offshore island of Tititiri Matangi and 148 km/h at Mokohinau Island, north of Auckland, during this event.

**For further information, please contact:**

**Dr Jim Salinger – Principal Scientist – Climate, NIWA National Climate Centre, Auckland,  
Tel. (09) 375 2053, or (027) 521 9468 (mobile)**

**Stuart Burgess – Climatologist – NIWA National Climate Centre, Wellington, Tel. (04) 386 0569, or  
Geoff Baird, NIWA Communications Manager Tel. (04) 386-0543 or (027) 229 6314.**

**[www.niwa.co.nz/ncc](http://www.niwa.co.nz/ncc)**

**Copyright NIWA 2007. All rights reserved.**