

National Climate Summary – February 2004

- **Rainfall: Extremely wet, with devastating floods, in the central, south and west of the North Island**
- **Wind: Much windier than usual, especially over the North Island**
- **Temperatures: Below average overall, especially in the South Island**
- **Soil moisture: Significant deficits persist in central Marlborough, Canterbury, and Otago, but surpluses in some North Island areas**
- **Sunshine: Extremely low in the south and west of the North Island**

A total of 30 monthly historical rainfall records were swept aside in a number of New Zealand regions during the exceptionally wet February that produced widespread flooding and extensive infrastructure damage. Rainfall was very much above average in the south and west of the North Island from Waikato to Wellington, including Wairarapa. It was a month of climate extremes, with seven heavy rainfall and at least three damaging high wind events. The reason for the exceptional climate pattern was an unusually high number of depressions (“lows”) to the south of the South Island, which often intensified as they passed over New Zealand. There were very few of the typical late summer anticyclones (“highs”). This pattern produced the strongest westerlies in over 60 years of records for February over the North Island, and southwesterlies over the South Island.

More than 1000 mm was recorded in the Tararua Ranges for the month. This was due to a number of high rainfall-flood producing events, on the 1st, and especially between the 14th and 18th of February. The latter, produced the most disastrous floods in the Wanganui, Manawatu/Rangitikei region for many decades, as well as flooding in southern Hawkes’ Bay, Wairarapa, Lower Hutt, and Picton. Hundreds of people were left homeless, considerable areas of farmland were inundated by silt and floodwaters, many rivers breached their banks, sheep and cattle stock were drowned or swept away by floodwaters, many bridges were damaged, and numerous roads closed, along with power, gas and water supply outages to tens of thousands of people. The cost of damage resulting from the floods has well exceeded \$100 million. Further flood-producing rainfall occurred in parts of Northland, Auckland, Coromandel, Waikato, Bay of Plenty, King Country, and Taranaki on the 28th.

Rainfall was also above average in most other regions of New Zealand. Many locations experienced 7 to 10 more wet days than average for the time of year, some more. Unusually, soil moisture surpluses exist in some North Island areas, and the west of the South Island. However, soil moisture deficits remain high in parts of central Marlborough, Canterbury, and Otago. Temperatures were below normal. Sunshine totals were well below normal throughout the south and west of the North Island.

Highlights:

- The highest February 2004 temperature was 31.0°C, recorded at Alexandra on the 2nd.
- The lowest temperature for the month was -1.1°C, recorded at Manapouri on the 26th.
- High rainfall events were frequent during the month, affecting Northland, Auckland, Bay of Plenty, Waikato, Coromandel, East Cape, southern Hawke’s Bay, Wairarapa, King Country, Tongariro/Ruapehu, Taranaki, Wanganui, Manawatu, Wellington/Lower Hutt, the Marlborough Sounds, Westland, and Fiordland. Most northern and western regions experienced at least two high rainfall events during the month. The most significant of these produced widespread rainfall totalling 65–150 mm in the 24 hours to 9 am on the 16th in many population centres (with very much higher totals in the high-country catchments) throughout the southwest North Island, from Taranaki to Wellington, as well as in southern Hawke’s Bay, Wairarapa, and the Marlborough Sounds, with further high rainfall in Wanganui and Taranaki on the 18th. The same weather event also produced storm-force southerlies and high seas, which buffeted parts of the North Island, from the afternoon of the 15th into the morning of the 16th. Ferry sailings were cancelled and considerable delays occurred at Wellington airport and other airports due to high winds. There were power cuts and fallen trees in some areas.

- Gales (from the northwest) affected the Kapiti–Wellington region on the 21st, and around Dunedin (from the southwest) on the 24th.
- A depression from the Tasman Sea and the remnants of tropical cyclone Ivy produced rainfall, in excess of 100 mm in parts of Northland, Auckland, Coromandel, Waikato, Bay of Plenty, King Country, and Taranaki on the 28th with houses flooded in Turangi as the Tongariro River overflowed its banks. Storm force northeasterlies gusted to 120 km/h at Cape Reinga, with gales also affecting Auckland.
- Of the four main centres, Dunedin was the driest. It was very wet in Auckland, Wellington and Christchurch. Temperatures were below average in all four centres. Sunshine hours were below normal in Auckland and Wellington, and near normal in Christchurch, and Dunedin.

Rainfall: Rainfall was 400–600 percent (four to six times) of average February totals in much of the south and west of the North Island from Waikato to Wellington, including Wairarapa, and 200–300 percent of average in most other North Island regions, as well as Buller, north Westland, Marlborough and Nelson. Totals were also above average over much of the South Island.

Temperature: Mean temperatures were as much as 2.5°C below normal in the Southern Lakes, Central Otago, and inland Canterbury, and below normal in most other regions. However, Hawke’s Bay temperatures were above average. The February national average temperature of 16.1°C was 1.1°C below normal.

Sunshine: Sunshine totals were extremely low throughout the south and west of the North Island, and below normal in most other regions. However, sunshine was near normal in Canterbury and coastal Otago.

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EXTREMELY WET IN THE NORTH ISLAND

Rainfall was 400–600 percent (four to six times) of average February totals in much of the south and west of the North Island from Waikato to Wellington, including Wairarapa, and 200–300 percent of average in most other North Island regions, as well as Buller, north Westland, Marlborough and Nelson. Totals were at least 125 percent of average over much of the South Island, but near average in Central Otago and coastal south Canterbury.

High February rainfall was recorded at:

Location	February rainfall (mm)	Percentage of normal	Records began	Comments
Cape Reinga	266	372	1920	3 rd highest
Kaitaia Observatory	309	293	1986	Highest
Kerikeri	347	366	1982	2 nd highest
Kerikeri Airport	342	325	1979	2 nd highest
Mokohinau Island	220	479	1935	2 nd highest
Warkworth	230	305	1973	Highest
Henderson	240	378	1986	Highest
Owairaka	277	424	1949	2 nd highest
Auckland Airport	272	417	1962	Highest
Pukekohe	210	260	1979	Highest
Whitianga Airport	280	311	1988	Highest
Matamata, Hinuera	228	283	1921	3 rd highest
Tauranga Airport	237	304	1898	Well above normal
Te Puke	320	277	1973	Highest
Hamilton, Ruakura	220	311	1906	3 rd highest
Hamilton Airport	332	496	1936	2 nd highest
Port Taharoa	314	457	1974	Highest
Rotorua Airport	283	279	1964	2 nd highest
New Plymouth	398	416	1863	2 nd highest
Lower Retaruke	420	475	1962	Highest
Taupo Airport	181	228	1976	Highest
Turangi	263	240	1968	Highest
Waione	289	339	1992	Highest
Castlepoint	223	308	1902	2 nd highest
East Taratahi	232	564	1973	Highest
Martinborough	235	571	1951	Highest
Hicks Bay	350	496	1991	Highest
Paraparaumu Airport	361	642	1945	Highest for any month ever
Palmerston North Airport	271	469	1944	Highest
Palmerston North Levin	299	481	1929	Highest
Wellington, Kelburn	269	425	1896	Highest
Wellington Airport	364	587	1862	Highest
Wallaceville	291	570	1960	Highest
Stratford	403	634	1924	Highest
Normanby	638	535	1961	Highest
Ohakune	187	252	1978	Highest
Waiouru	375	404	1975	Highest
Wanganui, Spriggens Park	307	515	1951	Highest
Farewell Spit	239	369	1890	Highest
Takaka	346	672	1875	Highest
Arapito	339	257	1986	Highest
Lake Rotoiti	256	181	1979	2 nd highest
Hokitika Airport	256	257	1934	Well above normal
Reefton	347	202	1964	Highest
Nelson Airport	260	255	1961	Highest
Blenheim Research	160	282	1941	4 th highest
Arthurs Pass	124	187	1930	2 nd highest
Mt Cook Village	685	285	1917	Well above normal
Queenstown	604	236	1930	Well above normal
Chatham Islands	126	215	1872	Well above normal
	112	205	1951	Well above normal

MUCH WINDIER

February was very much windier than usual in throughout much of the North Island and western South Island, due to a lack of anticyclones and frequent depressions tracking south of the country. Wind indices show it was a month with the strongest westerlies ever over the North Island in records back to 1941.

Some wind gust statistics are:

Days with wind gusts to at least 60 km/h

Location	Days Feb 2004	Departure from normal	Records began	Comments
Auckland Airport	12	+7	1963	Highest
Tauranga Airport	8	+5	1959	Highest
Rotorua Airport	9	+7	1966	Highest
Taupo Airport	9	+5	1982	Highest
Gisborne Airport	6	+4	1954	2 nd equal highest
Napier Airport	10	+4	1955	2 nd highest
Castlepoint	23	+6	1972	Highest
New Plymouth Airport	10	+4	1954	Highest
Palmerston Nth Airport	12	+5	1966	2 nd equal highest
Levin	11	+8	1967	Highest
Paraparaumu Air.	13	+5	1954	Highest
Wellington, Kelburn	24	+5	1967	Equal highest
Westport Airport	7	+3	1954	Equal highest
Hokitika Airport	10	+6	1954	Highest
Christchurch Airport	8	+4	1954	2 nd equal highest

COOLER OVERALL, ESPECIALLY IN THE SOUTH ISLAND

Mean temperatures were 1.5 to 2.5°C below normal in the Southern Lakes, Fiordland, Central Otago, and inland Canterbury, and 1.0 to 1.4°C below normal in King Country, Taranaki, Wellington, Wairarapa, Buller, Westland, coastal south Canterbury Southland, and the rest of Otago. They were 0.5 to 0.9°C below normal in parts of Northland, Auckland, Coromandel, Waikato, Bay of Plenty, and north Canterbury, and near average in most other regions. Hawke's Bay temperatures were as much as 0.5°C above average.

Well below average February mean air temperatures were recorded at:

Location	Mean temperature	Departure from average (°C)	Records began	Comments
Mt Cook Village	11.9	-2.9	1930	Well below normal
Lake Tekapo	12.5	-2.5	1927	Well below normal
Wanaka Airport	13.9	-3.0	1993	Lowest
Dunedin, Musselburgh	13.5	-1.6	1947	2 nd lowest
Manapouri Airport	12.0	-2.1	1991	2 nd lowest
Queenstown Airport	12.9	-2.2	1969	Lowest
Lauder	13.3	-2.6	1982	Lowest
Clyde	13.8	-2.7	1984	Lowest
Gore	11.9	-2.2	1943	2 nd lowest
Tiwai Point	12.4	-2.1	1971	Lowest

Well above average February mean air temperatures were recorded at:

Location	Mean temperature	Departure from average (°C)	Records began	Comments
Raoul Island	24.6	+1.9	1941	Highest

Mean daily maximum temperatures were 3 or 4°C below normal in King Country, inland south Canterbury, Southern Lakes, and Central Otago.

Extremely low February mean daily maximum air temperatures were recorded at:

Location	Mean daily maximum temperature	Departure from average (°C)	Records Began	Comments
Taumarunui	20.4	-4.4	1965	Lowest
Mt. Cook Village	16.7	-4.1	1930	Well below normal
Wanaka Airport	19.3	-4.1	1993	Lowest

EXTREMELY LOW SUNSHINE IN THE SOUTH AND WEST OF THE NORTH ISLAND

Sunshine totals were extremely low, only 55–69 percent of normal, throughout the south and west of the North Island, and below normal in most other regions. However, they were near normal in Canterbury and coastal Otago.

Very low February sunshine was recorded at:

Location	February sunshine (hours)	Percentage of normal	Records began	Comments
Ruakura	122	62	1937	Lowest
Taumarunui	103 ^{to 28th}	57	1948	Lowest
New Plymouth Airport	133	60	1916	2 nd lowest
Turangi	116 ^{to 27th}	59	1977	Lowest
Martinborough	120	61	1987	Lowest
Paraparaumu	134	63	1953	2 nd lowest
Palmerston North	106	56	1930	Lowest
Wellington, Kelburn	145	69	1928	2 nd lowest
Stratford	133	64	1963	Lowest
Takaka	166	76	1986	2 nd lowest
Blenheim Research	173	71	1986	Lowest

FEBRUARY CLIMATE IN THE FOUR MAIN CENTRES

Of the four main centres, Dunedin was the driest. It was very wet in Auckland, Wellington and Christchurch. Temperatures were below average in all four centres. Sunshine hours were below normal in Auckland and Wellington, and near normal in Christchurch, and Dunedin.

Location	Feb. mean temp. (°C)	Dep. from normal (°C)		Feb. rainfall (mm)	% of normal		Feb. sunshine (hours)	% of normal	
Auckland	18.9 ^a	-0.9	Below average	277 ^a	424	Record high	151 ^b	81	Below average
Wellington	15.5	-1.6	Well below average	364	587	Record high	145	69	Well below average
Christchurch	16.2	-0.6	Below average	85 ^c	207	Well above average	193 ^c	98	Near average
Dunedin	13.5	-1.6	Well below average	75	121	Above average	149	97	Near average

a Mt. Albert b Whenuapai c Christchurch Airport

HIGHLIGHTS AND EXTREME EVENTS

- The highest February 2004 temperature was 31.0°C, recorded at Alexandra on the 2nd.
- The lowest temperature for the month was -1.1°C, recorded at Manapouri on the 26th.
- High rainfall events (some flood-producing) were frequent during the month, affecting Northland, Auckland, East Cape, southern Hawke's Bay, Wairarapa, Ruapehu, Taranaki, Wanganui, Manawatu, Wellington, Westland, and Fiordland. Most northern and western regions experienced at least two high rainfall events during the month. Only Canterbury, central and coastal Otago, and coastal Southland escaped. Brief descriptions of these, along with high-wind events are:

1–3 Feb: Heavy rainfall occurred throughout Northland, Auckland, Waikato, Taranaki, Wanganui, Wellington, Marlborough, and Westland, totalling 50–100 mm in the 24 hours to 9 am on the 2nd in many areas. There were floods at Castor Bay and Hillsborough on the North Shore, in Auckland, with 55 mm in 2 hours during the morning of 2 February. Crail Bay, in Pelorus Sound, recorded a record for February (since measurements began in 1983) of 154 mm, most of which fell in about 15 hours during the night of 1/2 February. Rainfall later spread to western Bay of Plenty and Fiordland, totalling about 60 mm for the 24 hours to 9 am on the 3rd.

4–5 Feb: Heavy rainfall occurred throughout Auckland and around East Cape totalling 50–70 mm in the 24 hours to 9 am on the 5th in many areas.

9–12 Feb: Heavy rainfall occurred in Fiordland and the Southern Alps, totalling 116 mm in the 24 hours to 9 am on the 10th at Mt Cook Village. Rainfall occurred later in Ruapehu, totalling about 82 mm for the 24 hours to 9 am on the 12th. The Hutt River overflowed near Melling after heavy rainfall on the 12th, flooding adjacent roads.

14–16 Feb: High rainfall occurred around East Cape totalling 129 mm in the 24 hours to 9 am on the 15th. Further widespread rainfall totalling 65–150 mm occurred in the 24 hours to 9 am on the 16th in many population centres (with very much higher totals in excess of 250 mm in the high-country of the Tararua and Orongaronga Ranges) throughout the southwestern North Island, from Taranaki to Wellington, as well as in southern Hawke's Bay, and Wairarapa. A civil state of emergency was declared in Wanganui, Manawatu and Rangitikei, the towns of Scotts Ferry,

Waitotara, Fielding, Tangimoana, Longburn, Marton, and Hunterville being badly affected by floodwaters. Hundreds of people were left homeless, considerable areas of farmland including crops were inundated by silt and floodwaters, many rivers breached their banks, sheep and cattle stock were drowned or swept away by floodwaters, many bridges were damaged, and numerous roads closed, along with power, gas and water supply outages to tens of thousands of people. The towns of Woodville, Waipurakau, Martinborough, and the city of Wanganui were also affected as nearby rivers flooded. On the 16th the Wellington region also suffered, with about 500 people in Lower Hutt evacuated due to floodwaters. Many commuters were unable to enter Wellington, as sections of some roads out of the city were closed, including the rail service from the Hutt Valley.

Record high 1-day rainfall was recorded at:

Date	Location	Rainfall (mm)	Records began	Comments
15 Feb	Waiouru	134.0	1950	Highest for any month
15 Feb	Ohakune	122.6	1974	Highest for any month

This event also produced gale-force southerlies, which buffeted parts of the North Island, as a depression intensified east of Wairarapa, from the afternoon of the 15th into the morning of the 16th. High seas with swells of 9 m to 11 m were reported through Cook Strait. Ferry sailings were cancelled (for 1800 people) and considerable delays occurred at Wellington airport (where 200 passengers stayed overnight) and other airports due to high winds. Power cuts affected parts of Wellington during the evening of Wellington on the 15th. There were also many fallen trees, especially in the Auckland region (where hundreds were reported). Winds gusted to 119 km/h in Wellington, and at the airport it was the most severe southerly storm since May 1992, and most severe February southerly event since 1967. High gusts of 230 km/h occurred in the Tararua Range, 161 km/h at Brothers Island, 154 km/h at Mt Kau Kau, and 135 at Cape Reinga on the 15th. Gusts to 163 km/h were measured at Castlepoint, 161 km/h at Mt Kau Kau, 156 km/h at Baring Head, and 154 km/h at Brothers Island on the 16th.

- 17–18 Feb: Rainfall totalling over 100 mm occurred in Fiordland, with rainfall totalling 50–80 mm spreading to the Southern Lakes, Westland, Wanganui and Taranaki on the 18th. Parts of Picton and Waikawa Bay were flooded after heavy rainfall on the 18th. Picton recorded 40 mm in 40 minutes. A civil emergency was declared due to a threat of possible dam burst.
- 21 Feb: Northwesterlies gusted to 178 km/h at Mt Cook Village, 167 km/h at Mt Kau Kau, 163 km/h at Castlepoint, 146 km/h at Baring Head, 139 km/h at Paraparaumu Airport (the highest gust at the airport since November 1982), 137 km/h at Kelburn (the highest February wind gust there since at least 1971), and 135 km/h at Brothers Island.
- 20–23 Feb: Rainfall totalling 100–200 mm occurred in Fiordland, south Westland, and the Southern Lakes.
- 24 Feb: Gale-force southwesterlies gusted to 119 km/h at Musselburgh in Dunedin, the highest there since November 1984, with gusts to 180 km/h reported in more exposed areas.
- 28 Feb: A depression from the Tasman Sea and the remnants of tropical cyclone Ivy produced further high rainfall, totalling over 100 mm in parts of Northland, Coromandel, Waikato, Bay of Plenty, King Country, and Taranaki. Thirty houses were flooded in Turangi as the Tongariro River overflowed its banks. Storm-force northeasterlies gusted to 120 km/h at Cape Reinga, with gales also affecting Auckland.

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