

## National Climate Summary – February 2011: A tale of two islands

- **Rainfall: Extremely dry across most of the North Island. Record wet for central Otago, and above normal rainfall elsewhere in the southern half of the South Island.**
- **Temperatures: Very warm for much of the North Island. Monthly temperatures close to average over the South Island (except Nelson, Marlborough). Record-breaking heat between 2 and 7 February at many locations.**
- **Sunshine: Sunny for Northland and the northern South Island. Cloudy over the southern half of the South Island. Close to normal elsewhere.**
- **Soil moisture deficits: Remain significant in southern Taranaki, Manawatu, Kapiti coast, Wellington, Wairarapa, Nelson, Marlborough and north Canterbury.**

Weather conditions were generally settled over the North Island during February 2011, with more northwest winds than usual over the South Island. It was an extremely dry February for parts of Northland and Auckland, the Central Plateau, parts of southern Hawkes Bay and the Wairarapa, and parts of Marlborough, with rainfalls less than 20 percent of February normal in these regions. It was the driest February in Dannevirke since records began there in 1951. Rainfall was also well below normal (less than 50 percent of February normal) across much of the North Island, as well as in Nelson. In contrast, it was a record wet month for central Otago, with more than double (200 percent) normal February rainfall experienced. Notably, much of this rain fell in a single extreme event on February 6<sup>th</sup>, along with record-breaking heat wave conditions. Elsewhere over the southern half of the South Island, rainfall was also above normal (between 120 and 150 percent of February normal). At the end of February, significant soil moisture deficit (deficit more than 110 mm) was evident in southern Taranaki, Manawatu, Kapiti coast, Wellington, Wairarapa, Nelson, Marlborough and north Canterbury.

Monthly mean temperatures were well above average (more than 1.2°C above average) across the North Island and in parts of Nelson and Marlborough. In contrast, monthly mean temperatures were close to February average (within 0.5°C of average) for the remainder of the South Island. The first half of February was scorching warm, with record-breaking heat experienced between 2 and 7 February at numerous locations over the entire length of the country – but cooler conditions prevailed in the second half of the month. Timaru recorded 41.3°C on the 6<sup>th</sup>, a new February and also all-time temperature record there since records began in 1885. The New Zealand national average temperature was 17.9°C (0.7°C above the 1971–2000 February average).

February sunshine totals were above normal (between 110 and 125 percent of February normal) in Northland and over the northern half of the South Island. In contrast, below normal sunshine totals (between 75 and 90 percent of February normal) were experienced over the southern half of the South Island. Elsewhere, sunshine totals in February were close to normal (within 10 percent of normal).

**Further Highlights:**

- The highest temperature recorded was 41.3°C recorded at Timaru (Gardens) on the 6th (a new February and also all-time record for Timaru).
- The lowest temperature recorded was 1.1°C recorded at Hanmer Forest on the 10th.
- The highest 1-day rainfall of 245.2 mm occurred at Mt. Cook Hermitage on the 6th.
- The highest gust was 170.5 km/hr, recorded at Cape Turnagain on the 2nd.
- Of the six main centres, Tauranga was the warmest, driest and sunniest, and Dunedin was the coolest and wettest.

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**RAINFALL: EXTREMELY DRY ACROSS MOST OF NORTH ISLAND. RECORD WET FOR OTAGO. ABOVE NORMAL RAINFALL OVER THE SOUTHERN HALF OF SOUTH ISLAND**

It was an extremely dry February for parts of Northland and Auckland, the Central Plateau, parts of southern Hawkes Bay and the Wairarapa, and parts of Marlborough, with rainfalls less than 20 percent of February normal in these regions. It was the driest February in Dannevirke since records began there in 1951, with only 6 mm of rainfall recorded. Rainfall was also well below normal (less than 50 percent of February normal) across much of the North Island, as well as in Nelson. In contrast, it was a record wet month for central Otago, with more than double (200 percent) normal February rainfall experienced. Notably, much of this rain fell in a single extreme event on February 6<sup>th</sup>, along with record-breaking heat wave conditions. Elsewhere over the southern half of the South Island, rainfall was also above normal (between 120 and 150 percent of February normal).

At the end of February, significant soil moisture deficit (deficit more than 110 mm) was evident in southern Taranaki, Manawatu, Kapiti coast, Wellington, Wairarapa, Nelson, Marlborough and north Canterbury.

**Record or near-record February rainfall totals were recorded at:**

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
Ranfurlly	106	304	1943	3rd-highest
Lumsden	115	149	1982	2nd-highest
Cromwell	73	228	1949	3rd-highest
Alexandra	99	328	1983	Highest
Kaitaia	14	16	1967	4th-lowest
Kerikeri	32	35	1981	3rd-lowest
Tauranga	9	13	1898	2nd-lowest
Taupo	2	3	1949	2nd-lowest
Pukekohe	9	12	1944	2nd-lowest
Turangi	11	11	1968	4th-lowest
Masterton	12	20	1926	4th-lowest
Dannevirke	6	9	1951	Lowest
Ohakune	2	2	1961	2nd-lowest
Waiouru	11	18	1950	3rd-lowest
Wanganui	17	26	1987	3rd-lowest
Appleby	5	9	1941	4th-lowest

**TEMPERATURES: VERY WARM FOR MUCH OF NORTH ISLAND. MONTHLY TEMPERATURES CLOSE TO AVERAGE FOR SOUTH ISLAND (EXCEPT NELSON AND MARLBOROUGH). RECORD HEAT BETWEEN 2 AND 7 FEBRUARY AT MANY LOCATIONS.**

Monthly mean temperatures were well above average (more than 1.2°C above average) across the North Island and in parts of Nelson and Marlborough. It was the warmest February on record at Tauranga since records began in 1913, with a mean monthly temperature of 21.7°C. In contrast, monthly mean temperatures were close to February average (within 0.5°C of average) for the remainder of the South Island. The first half of February was scorching warm, with record-breaking heat experienced between 2 and 7 February at numerous locations over the entire length of the country – but cooler conditions prevailed in the second half of the month. Timaru recorded 41.3°C on the 6<sup>th</sup>, a new February and also all-time temperature record there since records began in 1885, and many sites recorded temperatures in excess of 30.0°C on the 5th and 6th. The New Zealand national average temperature was 17.9°C (0.7°C above the 1971–2000 February average)<sup>1</sup>.

<sup>1</sup> Interim monthly value.

Maximum temperatures were record high for February in parts of Auckland and in Nelson, and near-record high in the Bay of Plenty, Gisborne, Wanganui, Marlborough and in Timaru.

**Record or near-record high February mean maximum air temperatures were recorded at:**

Location	Mean maximum air temperature (°C)	Departure from normal (°C)	Year records began	Comments
Kerikeri	26.0	1.3	1981	4th-highest
Kaikohe	25.8	2.5	1973	2nd-highest
Leigh	25.8	2.9	1966	Highest
Whangaparaoa	25.0	2.5	1982	Highest
Tauranga	26.0	2.0	1913	3rd-highest
Te Puke	25.8	2.1	1973	3rd-highest
Whakatane	25.9	1.5	1974	2nd-highest
Ngawi	23.5	1.7	1972	4th-highest
Hicks Bay	23.9	1.6	1969	3rd-highest
Mahia	23.4	1.9	1990	3rd-highest
Wanganui	24.4	1.7	1937	4th-highest
Takaka	25.1	2.4	1978	2nd-highest
Motueka	25.7	2.5	1956	Highest
Appleby	24.1	1.7	1943	2nd-highest
Nelson	24.2	1.9	1943	Highest
Timaru	23.4	2.7	1885	3rd-highest

**Record or near-record high February mean minimum daily air temperatures were recorded at:**

Location	Mean minimum air temperature (°C)	Departure from normal (°C)	Year records began	Comments
Kaitia	16.6	1.4	1985	4th-highest
Kaikohe	16.6	1.9	1973	4th-highest
Whenuapai	16.6	2.4	1945	2nd-highest
Whitianga	16.7	2.6	1962	3rd-highest
Te Puke	15.6	2.0	1973	4th-highest
Whakatane	16.0	1.9	1974	4th-highest
Taupo	14.0	2.6	1949	4th-highest
Auckland	17.9	1.6	1959	4th-highest
Martinborough	14.0	1.9	1986	3rd-highest
Gisborne	16.3	2.5	1905	3rd-highest
Hastings	15.7	1.9	1965	2nd-highest
Waipawa	13.8	1.9	1945	4th-highest
Wairoa	15.7	2.0	1964	3rd-highest
Mahia	16.5	1.4	1990	2nd-highest
Hawera	14.1	1.9	1977	3rd-highest
Ohakune	11.9	2.6	1962	2nd-highest
Waiouru	10.9	2.3	1962	4th-highest
Wanganui	15.4	1.2	1987	4th-highest
Farewell Spit	15.4	1.8	1971	4th-highest

**SUNSHINE: SUNNY FOR NORTHLAND AND THE NORTHERN SOUTH ISLAND. CLOUDY OVER THE SOUTHERN HALF OF THE SOUTH ISLAND. CLOSE TO FEBRUARY NORMAL ELSEWHERE.**

February sunshine totals were above normal (between 110 and 125 percent of February normal) in Northland and over the northern half of the South Island. In contrast, below normal sunshine totals (between 75 and 90 percent of February normal) were experienced over the southern half of the South Island. For the remainder of the North Island, sunshine totals in February were close to normal (within 10 percent of normal).

**Record or near-record February sunshine hours were recorded at:**

Location	Sunshine (hours)	Percentage Of normal	Year records began	Comments
Kaitiāia	252	128	1985	2nd-highest
Takaka	247	114	1985	3rd-highest
Cromwell	191	89	1979	4th-lowest

**FEBRUARY CLIMATE IN THE SIX MAIN CENTRES**

Of the six main centres, for the month of February 2011 as a whole, Tauranga was the warmest, driest and sunniest, and Dunedin was the coolest and wettest. Mean temperatures were record high at Tauranga, being the highest mean February value since records began there in 1913. It was also an extremely dry February at both Auckland and Tauranga, with equal-3<sup>rd</sup> lowest and 2<sup>nd</sup> lowest February rainfalls recorded, respectively.

**February 2011 main centre climate statistics:**

Location	Mean temp. (°C)	Departure from normal (°C)		Rainfall (mm)	% of normal		Sunshine (hours)	% of normal	
Auckland <sup>a</sup>	21.3	+1.4	Well above average	11	15%	Equal 3rd lowest since 1959	202	101%	Normal
Tauranga <sup>b</sup>	21.7	+2.2	Record high since 1913	9	13%	2nd lowest since 1898	211	100%	Normal
Hamilton <sup>c</sup>	20.2	+1.6	Well above average	34	55%	Below normal	175 <sup>g</sup>	88%	Below normal
Wellington <sup>d</sup>	17.7	+0.6	Above average	28	45%	Well below normal	207	99%	Normal
Christchurch <sup>e</sup>	17.0	+0.2	Average	35	86%	Near normal	198	101%	Normal
Dunedin <sup>f</sup>	15.2	+0.0	Average	109	177%	Well above normal	133	87%	Below normal

<sup>a</sup> Mangere   <sup>b</sup> Tauranga Airport   <sup>c</sup> Hamilton Airport   <sup>d</sup> Kelburn   <sup>e</sup> Christchurch Airport   <sup>f</sup> Musselburgh   <sup>g</sup> Ruakura

## HIGHLIGHTS AND EXTREME EVENTS

### Rain and slips

On 2 February, flooding closed SH73 between Jacksons and Kumara Junction with a detour via Moana. On 3 February, one lane of SH25 was closed by a slip at Waikawau.

The highest 1-day rainfall recorded in February 2011 was 245.2 mm, observed at Mt Cook Hermitage on the 6th. On the same day, extreme rainfalls were experienced in Otago and Southland (see table below). During the 6 - 7 February event, heavy rain caused flooding in West and South Otago, with some roads impassable, and surface flooding over large areas of farmland, especially around Kelso and low-lying parts of Balclutha. SH90 was closed near Tapanui, and two slips on the Haast Pass Highway, one southwest of Makarora, and another west of the summit, closed the road during the morning. In Timaru, the heavy rain brought down a tree which hit the 11kV power line, cutting power to homes southwest of the city. On 8 February, the Land Transport Authority closed the twin bridges over the Waitaki River at Kurow, after high river flows damaged a bridge pier.

#### Record or near record high extreme 1-day rainfall totals were recorded at:

Location	Extreme 1-day rainfall (mm)	Date of extreme rainfall	Year records began	Comments
Tara Hills	40	6th	1949	3rd-highest
Ranfurly	53	6th	1943	Highest
Dunedin	54	6th	1962	3rd-highest
Lumsden	57	6th	1982	Highest
Cromwell	52	6th	1949	Highest
Alexandra	68	6th	1983	Highest
Gore	64	6th	1967	Highest
Invercargill	54	6th	1939	3rd-highest
Tiwai Point	42	6th	1970	2nd-highest
Balclutha	73	6th	1964	2nd-highest
Nugget Point	63	6th	1930	Highest

### • Temperature

Record-breaking heat was experienced at numerous locations covering the entire length of the country between 2 and 7 February. Records were broken for February for both morning minimum and afternoon maximum temperatures (see tables below and overleaf). Timaru recorded 41.3°C on the 6<sup>th</sup>, a new February and all-time record there since records began in 1885. Many sites recorded temperatures in excess of 30.0°C during February 5 and 6.

#### Record or near-record daily maximum air temperatures were recorded at:

Location	Extreme maximum temperature (°C)	Date of extreme temperature	Year Records Began	Comments
Kerikeri	29.2	3rd	1981	Equal 3rd-highest
Kaikohe	29.8	5th	1973	3rd-highest
Leigh	29.5	5th	1966	2nd-highest
Whangaparaoa	27.9	5th	1982	2nd-highest
Tauranga	30.7	5th	1913	Equal 4th-highest
Te Puke	31.2	5th	1973	Highest
Ngawi	30.6	6th	1972	3rd-highest
Hicks Bay	28.2	4th	1969	Equal 2nd-highest
Gisborne	36.3	2nd	1905	2nd-highest

Hastings	33.8	7th	1965	4th-highest
Wairoa	34.5	2nd	1964	3rd-highest
Mahia	30.3	2nd	1990	3rd-highest
Hawera	27.4	7th	1977	Equal 3rd-highest
Wanganui	28.6	22nd	1987	2nd-highest
Takaka	33.0	6th	1978	Highest
Motueka	32.9	6th	1956	2nd-highest
Nelson	31.0	2nd	1943	3rd-highest
Appleby	29.8	2nd	1943	4th-highest
Nelson	30.2	2nd	1943	3rd-highest
Blenheim	34.1	6th	1932	2nd-highest
Kaikoura	34.3	2nd	1963	Highest
Christchurch	35.9	6th	1863	3rd-highest
Le Bons Bay	30.8	2nd	1984	3rd-highest
Lake Tekapo	32.7	6th	1925	2nd-highest
Orari	36.0	6th	1972	4th-highest
Timaru (Aero)	40.3	6th	1990	Highest
Timaru (Gardens)	41.3	6th	1885	Highest
Oamaru	35.8	6th	1908	2nd-highest
Dunedin	34.4	6th	1947	3rd-highest
Lumsden	30.3	6th	1982	2nd-highest
Alexandra	34.7	6th	1983	3rd-highest
Kerikeri	18.6	9th	1981	3rd-lowest

**Record or near-record daily minimum air temperatures were recorded at:**

Location	Extreme minimum temperature (°C)	Date of extreme temperature	Year records began	Comments
Whangaparaoa	20.2	5th	1982	Equal 3rd-highest
Whitianga	21.2	5th	1971	Equal 2nd-highest
Paeroa	21.2	5th	1971	Equal 4th-highest
Tauranga	21.5	4th	1941	Equal 4th-highest
Te Puke	20.8	4th	1973	3rd-highest
Rotorua	20.3	4th	1972	Highest
Taupo	19.7	5th	1950	3rd-highest
Port Taharoa	20.5	14th	1974	4th-highest
Turangi	18.7	5th	1968	4th-highest
Takapau Plains	20.0	6th	1972	Equal 3rd-highest
Castlepoint	21.5	6th	1972	Equal 3rd-highest
Martinborough	22.1	6th	1986	2nd-highest
Ngawi	21.7	7th	1972	4th-highest
Wallaceville	19.2	7th	1972	Equal 4th-highest
Hawera	19.6	4th	1977	Equal 2nd-highest
Ohakune	17.8	5th	1972	4th-highest
Waiouru	16.9	4th	1972	Equal 3rd-highest
Wanganui,	20.4	5th	1972	2nd-highest
Lake Rotoiti	16.9	7th	1972	3rd-highest
Reefton	20.4	7th	1972	Highest
Hanmer Forest	23.5	6th	1972	2nd-highest
Arthurs Pass	16.3	7th	1973	2nd-highest

## Wind

The highest gust observed during February 2011 was 170.5 km/hr, recorded at Cape Turnagain on the 2nd.

On 2 February, record-breaking westerly winds occurred over the South Island and around central New Zealand (see table below). High winds and low cloud prevented the Canterbury Crusaders rugby team flying to Hokitika. The northwest winds also knocked down trees, damaging a 33 KV power line, cutting power to about 2500 homes near Leeston. In Fairlie, 15 power poles were snapped, cutting power to the town. SH80 between Lake Pukaki and Mt Cook, and SH8 between Fairlie and Twizel were closed to towing vehicles. Cautions were also in place for SH1 between Blenheim and Cheviot, and SH73 between Springfield and Arthurs Pass. In Te Anau, a mini-tornado ripped corrugated iron off classroom roofs at Fiordland College, flinging one sheet up to 150 m over trees and across a sports field.

On 8 February, high winds affected SH8 from Fairlie to Twizel, and SH80 from Pukaki to Mt Cook, with warnings in place for high-sided vehicles.

### Near-record high extreme wind gusts for February were recorded at:

Location	Extreme wind gust speed (km/hr)	Date of extreme gust	Year records began	Comments
Castlepoint	154	2nd	1972	2nd-highest
Puysegur Point	146	2nd	1986	4th-highest
Tara Hills	87	2nd	1985	4th-highest
Lauder	100	2nd	1981	3rd-highest
Gore	117	2nd	1987	Highest

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