

## National Climate Summary – January 2008: heat waves & drought

- Temperature: Above average especially Waikato, King Country, Nelson and inland South Island
- Soil moisture: Severe deficits in many North Island areas and the east of the South Island
- Rainfall: Extremely low in northern areas from Auckland south, Wairarapa, and the coastal northeast of the South Island
- Sunshine: Extremely high in the south; well below average in Northland

January was a month of records.

Heat wave conditions occurred across inland areas of the South Island, and even extended to coastal parts of Canterbury and central Marlborough, for the first three weeks of January, with temperatures of 30°C or more recorded regularly. Record daytime maximums for January occurred in inland Otago and inland Southland. January 2008 temperatures were well above average everywhere, with the national average temperature of 18.3°C being 1.3°C above average.

Extremely low rainfall occurred in many areas, with totals of less than 10 mm in the Hauraki Plains, Waikato, King Country, coastal Marlborough and parts of north Canterbury. In Waikato it was the driest January in over 100 years of records. Rainfall was a 25% or less (a quarter) of normal in south Auckland, Waikato, southern Coromandel, King Country, the central North Island, coastal Wairarapa, coastal Marlborough and north Canterbury. As a result severe soil moisture deficits (more than 130 mm) had developed from Auckland to the King Country, South Taranaki, northern Manawatu, Hawke's Bay to Wairarapa, Wellington, and persisted in the South Island from Marlborough to central Canterbury. There is no single definition of a "drought" but, in general terms, areas with more than 130 mm soil moisture deficit may be said to be experiencing agricultural drought conditions, particularly if these areas are not accustomed to very dry conditions at the time of year.

The only place where rainfall was above average in January was in parts of Horowhenua.

Otago and Southland as well as inland areas of Canterbury basked in their sunniest January on record, whilst well below average sunshine hours were recorded in Northland.

The month's overall climate pattern was produced by many more anticyclones east of the South Island producing light winds over the southern North Island, and South Island, and easterlies over the rest of the North Island.

### Further Highlights:

- The lowest air temperature during the month was 0.0 °C recorded at Waiouru. The highest temperature during January 2008 was 34.8 °C recorded at both Timaru Airport on the 12<sup>th</sup> and Waione on the 22<sup>nd</sup>.
- From the 30<sup>th</sup> December to 22<sup>nd</sup> of January, apart from two days, heat wave conditions occurred in inland and eastern areas of the South Island.
- Wallaceville (Upper Hutt) recorded its highest January temperature on record of 30.9°C (records commenced in 1940) on the 21<sup>st</sup> and Palmerston North 31.8°C on the 22<sup>nd</sup> (records commenced in 1918).
- Heavy rain localised to the Kapiti District produced widespread flooding in Horowhenua. Over 200 mm of rain fell at Muhunua, with 320 mm at Oriwa, 140 mm at Waikanae and 120 mm at Levin in 30 hours.
- The remnants of ex-tropical cyclone Funa crossed the South Island on 22<sup>nd</sup> January producing 160 mm at Haparapara (Bay of Plenty), 217 mm at Little Devil (Tasman District) and 227 mm at Waiho (Westland). Wind speeds of 158 km/hr occurred at Castlepoint, and 143 km/hr at Mt Kaukau (Wellington) from the westerly quarter. The former was the highest gust for the month.

- Of the five main centres, Auckland was the warmest, Dunedin the sunniest and wettest, and Hamilton by far the driest.

**Temperature:** Mean temperatures were at least 0.5 °C above average in the east of the North Island, and from 1 to 2°C above average over the remainder of New Zealand. Average maximum temperatures were over 2°C above average from the Waikato to the central Plateau, Nelson, and inland areas of the South Island, where some locations were up to 4°C above average.

**Rainfall:** January 2008 rainfall was less than 25 percent (quarter) of normal in south Auckland, Waikato, southern Coromandel, King Country, the central North Island, coastal Wairarapa, coastal Marlborough and north Canterbury. Totals were less than 50 percent (half) of normal throughout Bay of Plenty, Taranaki, northern Manawatu. Hawke’s Bay and the rest of the southern North Island, except Horowhenua where totals were 150% (one and a half) of normal.

**Sunshine:** Sunshine hours were over 150 percent of normal in Southland and Otago, and at least 130 percent of normal in inland areas of the South Island. All these totals were new January records. Above average sunshine hours occurred over most of the remainder of New Zealand. However, cloudy skies prevailed over Northland.

**For further information, please contact:**

**Dr Jim Salinger – Principal Scientist – Climate, NIWA National Climate Centre, Auckland,  
Tel. (09) 375 2053 (work) or (027) 521 9468 (mobile) or (09) 576 9468 (Home).**

**Dr Jim Renwick – Science Leader – NIWA National Climate Centre, Wellington, Tel. (04) 386 0343  
(work) or (021) 178 5550 (mobile)**

**RAINFALL: EXTREMELY LOW OVER MANY AREAS OF THE NORTH ISLAND EXCEPT THE HOROWHENUA, BELOW NORMAL OVER THE ENTIRE SOUTH ISLAND**

January 2008 rainfall was less than 25 percent (quarter) of normal in south Auckland, Waikato, southern Coromandel, King Country, the central North Island, coastal Wairarapa, coastal Marlborough and north Canterbury. Totals were less than 50 percent (half) of normal throughout Bay of Plenty, Taranaki, northern Manawatu Hawke’s Bay and the rest of the southern North Island, except Horowhenua. Half normal rainfall occurred over the remainder of Marlborough, Canterbury and parts of Southland. Other areas were below average except the Horowhenua, which was above average.

**Near or record low January rainfall was recorded at:**

Location	January Rainfall (mm)	Percentage of normal	Year records began	Comments
Paeroa	8	10	1916	Very low
Matamata	3	3	1966	Lowest
Pukekohe	13	14	1982	2 <sup>nd</sup> lowest
Ruakura	4	4	1906	Lowest
Hamilton Airport	7	8	1990	Lowest
East Taratahi	13	27	1926	2 <sup>nd</sup> lowest
Waiouru	11	12	1966	2 <sup>nd</sup> lowest
Wanganui	15	25	1908	2 <sup>nd</sup> lowest
Kaikoura	7	17	1949	2 <sup>nd</sup> lowest
Le Bons Bay	6	9	1948	2 <sup>nd</sup> lowest

**TEMPERATURE: WELL ABOVE AVERAGE**

Mean temperatures were at least 0.5 °C above average in the east of the North Island, and from 1 to 2°C above average over the remainder of New Zealand, and over 2°C in some parts of central and north Otago. The national average temperature of 18.3°C was 1.3°C above average. Average maximum temperatures were over 2°C above average from the Waikato to the central Plateau and Nelson. In inland areas of the South Island these were over 3°C above average and over 4°C at Alexandra and Tara Hills, Omarama.

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

Location	Mean air temperature (°C)	Departure from Normal	Year Records began	Comments
Pukekohe	20.5	+1.9	1969	2 <sup>nd</sup> highest
Whatawhata	20.1	+2.0	1952	3 <sup>rd</sup> highest
Ruakura	20.3	+2.0	1921	3 <sup>rd</sup> highest
Hamilton Airport	20.4	+2.2	1970	2 <sup>nd</sup> highest
Nelson Airport	19.5	+1.8	1941	2 <sup>nd</sup> highest
Arthurs Pass	15.2	+2.4	1980	2 <sup>nd</sup> highest
Tekapo	17.5	+2.3	1927	2 <sup>nd</sup> highest
Fairlie	17.5	+1.8	1925	2 <sup>nd</sup> highest
Tara Hills	18.5	+2.3	1950	Highest
Wanaka	19.3	+2.0	1927	Hihest
Alexandra	19.8	+2.4	1928	3 <sup>rd</sup> highest
Clyde	19.0	+1.9	1984	2 <sup>nd</sup> highest

**Near record high mean maximum air temperatures were recorded at:**

Location	Mean maximum air temperature (°C)	Departure from Normal	Year Records began	Comments
Pukekohe	25.6	+2.4	1969	Hihest
Whatawhata	25.7	+2.5	1952	2 <sup>nd</sup> highest
Ruakura	26.8	+2.9	1921	Highest
Hamilton Airport	27.0	+2.6	1970	Equal highest
Port Taharoa	25.3	+2.3	1982	2 <sup>nd</sup> highest
Te Kuiti	26.7	+2.6	1960	2 <sup>nd</sup> highest
New Plymouth Airport	24.0	+2.4	1944	3 <sup>rd</sup> highest
Chateau, Mt Ruapehu	20.2	+2.5	1930	4 <sup>th</sup> highest
Palmerston North Airport	24.9	+2.2	1962	3 <sup>rd</sup> highest
Wanganui Airport	24.1	+2.0	1988	2 <sup>nd</sup> highest
Nelson	24.7	+2.6	1944	Highest
Hanmer Forest	25.8	+2.9	1906	2 <sup>nd</sup> highest
Arthurs Pass	21.3	+3.5	1979	2 <sup>nd</sup> highest
Winchmore	24.4	+2.5	1950	Well above average
Tekapo	25.4	+3.8	1927	Highest
Fairlie	24.9	+2.6	1928	2 <sup>nd</sup> highest
Timaru Airport	23.4	+2.1	1962	3 <sup>rd</sup> highest
Tara Hills, Omarama	27.3	+4.1	1950	Highest
Wanaka	26.5	+2.7	1974	2 <sup>nd</sup> highest
Dunedin Airport	23.9	+3.2	1963	Highest
Manapouri, West Arm	21.7	+3.1	1962	2 <sup>nd</sup> highest
Queenstown Airport	25.3	+3.7	1978	2 <sup>nd</sup> highest
Lumsden	24.0	+3.5	1962	Highest
Alexandra	28.2	+4.5	1929	2 <sup>nd</sup> highest
Clyde	27.2	+3.1	1978	Highest
Gore	21.7	+2.5	1972	Highest

## SUNSHINE: RECORD HIGH VALUES IN THE SOUTH, BELOW NORMAL IN NORTHLAND

Sunshine hours were over 150 percent of normal in Southland and Otago, and at least 130 percent of normal in inland areas of the South Island. All these totals were new January records. Above average sunshine hours (110-120 percent of normal) occurred over most of the remainder of New Zealand. However, cloudy skies prevailed over Northland.

### Near or record January sunshine hours were recorded at:

Location	January Sunshine (hours)	Percentage of normal	Year records began	Comments
Mt Cook	246	136	1935	2 <sup>nd</sup> highest
Tekapo	308	120	1928	Highest
Musselburgh, Dunedin	279	157	1935	Highest
Invercargill Airport	287	160	1935	Highest

## JANUARY'S CLIMATE IN THE FIVE MAIN CENTRES

Auckland was the warmest and Dunedin the wettest and sunniest, and Hamilton the driest of the five main centres. Rainfall was below normal in all these centres. Temperatures were above normal in all the five cities. Sunshine hours were well above normal in the two South Island main centres, above normal in Wellington and near normal in Hamilton and Auckland.

### January 2008 main centre climate statistics:

Location	Jan. mean temp. (°C)	Dep. from normal (°C)		Jan. rainfall (mm)	% of normal		Jan. Sunshine (hours)	% of normal	
Auckland	21.0	+1.3	Well above normal	19 <sup>a</sup>	25	Very low	240	104	Normal
Hamilton	20.3	+2.0	3 <sup>rd</sup> highest	4	4	Lowest on record	248	107	Normal
Wellington	17.8	+0.9	Above normal	33	46	Well below normal	271 <sup>c</sup>	110	Above normal
Christchurch <sup>b</sup>	17.8	+0.7	Above normal	13 <sup>c</sup>	30	Well below normal	267	116	Well above normal
Dunedin	16.5	+1.3	Well above normal	45	62	Below normal	279	157	Highest on record

<sup>a</sup> Owairaka <sup>b</sup> Christchurch Airport <sup>c</sup> 1-day missing

## HIGHLIGHTS AND EXTREME EVENTS

### • Temperature

The lowest air temperature during the month was 0.0 °C recorded at Waiouru. The highest temperature during January 2008 was 34.8 °C recorded at both Timaru Airport on the 12<sup>th</sup> and Waione on the 22<sup>nd</sup>.

From the 30<sup>th</sup> December to 22<sup>nd</sup> of January, apart from two days, heat wave conditions occurred in inland and eastern areas of the South Island. At least two locations record temperatures of 30°C or more over this period. Towards the end of this period numerous forest and scrub fires occurred.

Wallaceville (Upper Hutt) recorded its highest January temperature on record of 30.9°C (records

commenced in 1940) on the 21<sup>st</sup> and Palmerston North 31.8°C on the 22<sup>nd</sup> (records commenced in 1918).

- **High winds**

Wind speeds of 158 km/hr occurred at Castlepoint, and 143 km/hr at Mt Kaukau (Wellington) from the westerly quarter. The former was the highest gust for the month. These were all caused by ex-tropical cyclone Funa, and high wind gusts brought down power lines in Canterbury, and also in the lower North Island to 16,000 homes.

- **High rainfall**

Heavy rain localised to the Kapiti District produced widespread flooding in Horowhenua . Over 200 mm of rain fell at Muhunoa, with 320 mm at Oriwa, 140 mm at Waikanae and 120 mm at Levin in 30 hours. The floods closed State Highway 1 south of Levin, and closed several other roads. It also closed Waikanae camping ground and caused evacuations of some houses. .

The remnants of ex-tropical cyclone Funa crossed the South Island on 22<sup>nd</sup> January producing 160 mm at Haparapara (Bay of Plenty), 217 mm at Little Devil (Tasman District) and 227 mm at Waiho (Westland). Makarora received 123 mm of rain which brought down a rockslide closing State Highway 6. however this brought welcome rain to Bendigo, Tarras and the Upper Clutha with 50 mm of rain.

- **Severe Soil Moisture Deficits**

By the end of January severe soil moisture deficits (more than 130 mm) had developed from Auckland to the King Country, South Taranaki, northern Manawatu, Hawke's Bay to Wairarapa, Wellington, and persisted in the South Island from Marlborough to central Canterbury. The remainder of the North Island, except Northland and Horowhenua were recording significant soil moisture deficit, as well as other northern and eastern South Island areas from Nelson through to inland Southland. The combination of the hot and dry conditions meant that dairy farmers in some areas started drying off dairy stock, with sheep farmers selling stock early. Water restrictions were imposed in Wanganui, South Taranaki and parts of the Waikato, with drought committees were formed in Southland and Canterbury.

**For further information, please contact:**

**Dr Jim Salinger – Principal Scientist –NIWA National Climate Centre, Auckland,**

**Tel. (09) 375 2053 (work) or (027) 521 9468 (mobile) or (09) 576 9468 (home);**

**Drew Lorrey – Climate Scientist – NIWA National Climate Centre, Auckland,**

**Tel. (09) 375 2055**

**Michele Hollis, NIWA Communications Manager Tel. (04) 386-0483 or (027) 255 2500.**

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

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