

## A warm and dry month about central parts of New Zealand.

<b>Temperature</b>	Temperatures were above average (0.5-1.2°C above December average), or well above average (more than 1.2°C above December average), throughout much of New Zealand. The exceptions were parts of the Far North, Waikato, Bay of Plenty, and eastern parts of the South Island south of Christchurch, where near average temperatures (within 0.5°C of December average) were recorded.
<b>Rainfall</b>	Below normal rainfall (50-79 percent of December normal) or well below normal (less than 50 percent of December normal) was recorded across parts of Taranaki, the Central Plateau and the lower North Island, as well as northern Marlborough, the Mackenzie Country and parts of Central Otago, with near-record low rainfall totals observed in inland parts of the central and lower North Island. Well above normal rainfall (more than 150 percent of December normal) was observed in areas of Northland, the Coromandel Peninsula and Bay of Plenty, as well as around the Kaikoura coast and southwestern Southland.
<b>Soil moisture</b>	As at 1 January 2014, soils were drier than normal across western and central parts of the North Island, especially about western and central Waikato, the Central Plateau, as well as across and west of the Tararua Range. Soils were wetter than normal throughout the Coromandel Peninsula, the Bay of Plenty, and many eastern parts of the South Island.
<b>Sunshine</b>	A very sunny month (well above normal sunshine totals, more than 125% of December normal) for parts of Auckland and southern Northland, the southeastern North Island and the western South Island about northern Fiordland and the Westland glaciers. In contrast, below normal sunshine (75-90 percent of normal December sunshine) for northern and inland parts of Otago, and northern Southland.

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## Overview

December 2013 was characterised by mean sea level pressure anomalies that were well below normal across New Zealand, with particularly negative anomalies extending south-westward into the Australian Bight and the southern Ocean. Positive pressure anomalies were situated to the south-east of the country. These regional pressure patterns resulted in a weak northerly flow anomaly across the North Island, with wind patterns of variable nature across the remainder of the country.

Temperatures were above average (0.5-1.2°C above December average) or well above average (more than 1.2°C above December average) throughout much of New Zealand. The exceptions were parts of the Far North, Waikato, Bay of Plenty, eastern Canterbury and Otago, and Southland, where near average temperatures (within 0.5°C of December average) were recorded. The nation-wide average temperature in December 2013 was 16.6°C, (1.0°C above the 1971-2000 December average from NIWA's seven-station temperature series which begins in 1909).

Rainfall was below normal (50-79 percent of December normal) or well below normal (less than 50 percent of December normal) for parts of Taranaki, the Central Plateau and the lower North Island, as well as northern Marlborough, the Mackenzie Country and parts of Central Otago. In contrast, well above normal rainfall (more than 150 percent of December normal) was observed in northeastern parts of the North Island, including areas of Northland, the Coromandel Peninsula and Bay of Plenty, as well as around the Kaikoura coast and southwestern Southland. Rainfall was above normal (120-149 percent of December normal) across most remaining parts of the northeastern North Island and the eastern South Island. Rainfall totals were typically near normal (within 20 percent of December normal) for the remainder of the country. As at 1 January 2014, soils were drier than normal across western and central parts of the North Island, especially about western and central Waikato, the Central Plateau, as well as across and west of the Tararua Range. Soils were wetter than normal throughout the Coromandel Peninsula, the Bay of Plenty, and many eastern parts of the South Island near Dunedin, and north of Ashburton. Soil moisture levels were nearer to normal for the remainder of the country.

Well above normal sunshine totals (more than 125% of December normal) were recorded in parts of Auckland and southern Northland, the southeastern North Island and the western South Island about northern Fiordland and the Westland glaciers. In contrast, below normal sunshine (75-90 percent of normal December sunshine) was recorded about northern and inland parts of Otago, and northern Southland. Sunshine was largely near normal elsewhere (within 10 percent of normal December sunshine).

### Further Highlights:

- The highest temperature was 34.2°C, recorded at Clyde on 5 December.
- The lowest temperature was -1.2°C, observed at Middlemarch on 1 December.
- The highest 1-day rainfall was 175 mm, recorded at North Egmont on 4 December.
- The highest wind gust was 152 km/hr, observed at Cape Turnagain on 21 December.
- In December 2013, Wellington was the driest and sunniest, Auckland was the warmest, Dunedin was the coolest and cloudiest, and Tauranga was the wettest of the six main centres.

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## Temperature: Above average temperatures for central parts of New Zealand and Hawke's Bay.

Near record high mean air temperatures for the month of December were recorded at five locations across the country. Mean maximum air temperatures for December were especially high about the Hawke's Bay. For example, the mean maximum air temperature at Wairoa was 25.2°C, which is 2.0°C higher than normal for the time of year.

The nation-wide average temperature in December 2013 was 16.6°C, (1.0°C above the 1971-2000 December average from NIWA's seven-station temperature series which begins in 1909).

**Record<sup>1</sup> or near-record mean air temperatures for December were recorded at:**

Location	Mean air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Masterton	17.7	1.6	1992	Equal 3rd-highest
Wairoa	19.6	1.5	1964	4th-highest
Farewell Spit	17.6	1.3	1971	4th-highest
Motueka	17.7	1.4	1956	4th-highest
Cheviot	16.3	1.2	1982	3rd-highest

**Record or near-record mean maximum air temperatures for December were recorded at:**

Location	Mean maximum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Kaikohe Aws	22.6	1.5	1973	3rd-highest
Wairoa	25.2	2.0	1964	2nd-highest
Appleby	22.4	1.6	1932	3rd-highest
Nelson	22.5	1.8	1943	4th-highest
Cheviot	22.6	1.8	1982	3rd-highest

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<sup>1</sup> The rankings (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>.etc) in all Tables in this summary are relative to climate data from a *group* of nearby stations, some of which may no longer be operating. The current climate value is compared against all values from any member of the group, without any regard for homogeneity between one station's record, and another. This approach is used due to the practical limitations of performing homogeneity checks in real-time.

**Record or near-record mean minimum air temperatures for December were recorded at:**

Location	Mean minimum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Paraparaumu	14.0	1.4	1953	4th-highest
Farewell Spit	14.2	1.5	1971	4th-highest

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**Rainfall: Very dry or very wet in isolated areas, with above average rainfall towards the northeast of the North Island.**

Record or near-record low rainfall totals for December were recorded in isolated inland areas of the North Island, with Masterton observing just 11 mm of rainfall – well below normal for the time of year. In contrast, Kerikeri and Ranfurly received more than two-times their respective December normal rainfall. December rainfall was above normal towards the northeast of the North Island, however the rain that fell in these parts tended to come in relatively short and heavy bursts, as opposed to being evenly distributed across the month. For example, 247 mm of rain (191% of normal) was recorded in Whitianga, yet 224.6 mm (91% of their December 2013 total) was recorded on just three days of the month (4, 5 and 28 December). Additionally, less than 1 mm of rain was registered on 23 days of the month.

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

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
High records or near-records				
Kerikeri	253	238	1981	2nd-highest
Ranfurly	135	217	1943	3rd-highest
Low records or near-records				
Masterton	11	17	1926	2nd-lowest
Ohakune	54	44	1961	4th-lowest

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**Sunshine: Below normal sunshine for parts of Otago, near normal or above normal sunshine elsewhere.**

Sunshine hours for December were below normal in parts of Otago, with Queenstown recording just 75% of normal sunshine hours for the month. In contrast, it was a very sunny month in Kaitaia, where well above normal sunshine hours (150% of December normal) were recorded. Sunshine hours were mostly near normal or above normal for the remainder of the country.

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

Location	Sunshine hours	Percentage of normal	Year records began	Comments
High records or near-records				
Kaitaia	245	150	1985	4th-highest
Low records or near-records				
Queenstown	168	75	1930	3rd-lowest

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## December climate in the six main centres

Wellington enjoyed a warm and dry December, with the mean temperature well above average and total rainfall below normal. As at 23 December, the city had received just 15.6 mm of rainfall (19% of normal December rainfall). Despite above normal rainfall in Auckland for December as a whole, the city experienced an extended dry spell – no rainfall was recorded on 15 consecutive days from 9 December to 23 December.

In December 2013, Wellington was the driest and sunniest, Auckland was the warmest, Dunedin was the coolest and cloudiest, and Tauranga was the wettest of the six main centres.

### December 2013 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland <sup>a</sup>	19.0	0.8	Above average
Tauranga <sup>b</sup>	18.7	0.7	Above average
Hamilton <sup>c</sup>	16.9	0.0	Average
Wellington <sup>d</sup>	16.7	1.3	Well above average
Christchurch <sup>e</sup>	16.5	0.7	Above average
Dunedin <sup>f</sup>	13.8	0.0	Average
Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland <sup>a</sup>	113 <sup>2</sup>	130%	Above normal
Tauranga <sup>b</sup>	149	157%	Well above normal
Hamilton <sup>c</sup>	98	94%	Near normal
Wellington <sup>d</sup>	51	62%	Below normal
Christchurch <sup>e</sup>	71	151%	Well above normal
Dunedin <sup>f</sup>	110	137%	Above normal
Sunshine			
Location	Sunshine (hours)	% of normal	Comments
Auckland <sup>a</sup>	222	112%	Above normal
Tauranga <sup>b</sup>	223	96%	Near normal
Hamilton <sup>e</sup>	211	95%	Near normal
Wellington <sup>d</sup>	226	101%	Near normal
Christchurch <sup>e</sup>	200	91%	Near normal
Dunedin <sup>f</sup>	160	95%	Near 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

<sup>2</sup> Missing one day of data from 8 December.

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## Highlights and extreme events

### Temperatures

In the first week of December, a warm northerly airmass ahead of an approaching trough resulted in a number of consecutive hot days, particularly in inland parts of the South Island. Clyde (in Central Otago) had four consecutive days of maximum temperatures reaching at least 29.9°C. Meanwhile, temperatures along the east coast of the South Island remained near the low 20's due to a mild sea breeze associated with the high pressure system present at the time. As the high departed to the east, northerly winds strengthened on 6 December, allowing warm foehn winds to prevail over the sea breeze along the east coast. For example, Ashburton had reached 26°C by 10 a.m., whilst Leeston recorded a maximum temperature of 32.7°C.

The highest temperature was 34.2°C, recorded at Clyde on 5 December.

The lowest temperature was -1.2°C, observed at Middlemarch on 1 December.

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

Location	Extreme maximum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Secretary Island	25.9	26th	1985	Highest (equal 4th-highest for any month)

### Record or near-record daily minimum air temperatures for December were recorded at:

Location	Extreme minimum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Hokitika	17.5	6th	1866	4th-highest
Greymouth	17.7	6th	1972	Equal 2nd-highest
Nugget Point	16.0	15th	1972	Highest

### Rain and slips

The highest 1-day rainfall experienced in December was 175 mm recorded at North Egmont on 4 December.

Heavy rain during the first week of December brought relief to soils in the upper North Island which were drier than normal for the time of year. Kerikeri recorded 102 mm of rain on 4 December, and Whakatane recorded 108.8 mm of rain on 5 December. On 5 December, caution was required on

SH23 between Hamilton and Raglan due to surface flooding. In addition, access along SH25 between Whitianga and Tairua was restricted to 4WD vehicles due to flooding at Wades River, and firefighters had to rescue a woman who had become trapped in her car in the resulting floodwaters along the road.

On 16 December, a short burst of torrential rain associated with a thunderstorm struck Dunedin, causing surface flooding on a number of the city's streets. There were reports of leaking roofs and burglar alarms being triggered by the heavy rain, whilst water washed into around 20 businesses on George Street.

On 29 December, police advised motorists against all non-essential travel in the northeastern Waikato. The eastern side of the Coromandel Peninsula was hit hard, with flooding in Tairua, Pauanui, Matarangi, Whitianga, and camping grounds at Opoutere and Cooks Beach. The community hall at Cooks Beach was opened to accommodate evacuated campers. On SH25 between Tairua and Whitianga, flooding closed the north-bound lane whilst a slip is caused delays to both lanes at Pumpkin Hill.

On 30 December, firefighters were called to help clear a slip near Marahau (Tasman region) which blocked one lane of the road between Sandy Bay and Marahau.

**Record or near record December extreme 1-day rainfall totals were recorded at:**

Location	Extreme 1-day rainfall (mm)	Date of extreme rainfall	Year records began	Comments
Kerikeri	95	3rd	1981	2nd-highest
Whangaparaoa	52	28th	1946	4th-highest
Whatawhata	66	5th	1952	Highest
Ranfurly	43	21st	1943	4th-highest

**Wind**

The highest wind gust recorded in December was 152 km/hr at Cape Turnagain, on 21 December.

On 7 December, a short burst of strong wind caused localised damage on Egmont Road in Taranaki. One home-owner lost part of their roof and had a window blown in, whilst a letterbox, trampoline and swing-set were blown over at a neighbouring property. Further south, caution was advised to motorists travelling on SH2 at the Rimutaka Hill Road due to strong winds. In Wellington, *East by West* ferry crossings were cancelled due to the rough conditions.

On 19 December, a funnel cloud was witnessed over Whanganui.

On 28 December, a funnel cloud was observed over the Hauraki Plains.



On 29 December, damaging winds struck Papamoa, with reports of a weak tornado or waterspout there. Roofing iron and tiles were lifted from houses, whilst fences and small trees were knocked over. Heavy rain at the time resulted in a number of Fire Service callouts, as water was entering houses through their compromised roofs.

On 31 December, a waterspout came ashore at Hokitika.

**Record or near record December extreme wind gusts were recorded at:**

Location	Extreme wind gust (km/hr)	Date of extreme gust	Year records began	Comments
Cape Reinga	115	3rd	1974	3rd-highest
Ashburton	91	18th	1970	Equal 4th-highest

**Lightning and hail**

On 13 December, a century-old macrocarpa tree was destroyed by a bolt of lightning on a farm near Tikokino in the Central Hawke's Bay. A flock of sheep were sheltering under the tree at the time, with 53 ewes killed.

On 16 December, a damaging thunderstorm struck parts of mid-Canterbury, with a tornado occurring near Mayfield. Hail stones of up to 3cm in diameter were reported, which destroyed many crops and stripped trees of their foliage. In Mayfield, the hailstorm broke many windows at homes and businesses in the township. One farmer reported losing 70 - 80% of his carrot and maize crops, with a value in excess of \$100,000.

On 18 December, thunderstorms beginning in Dunedin tracked north over the South Island, dropping hail in Oamaru and causing lightning strikes throughout Canterbury. The thunderstorms tracked past Christchurch city, however heavy rain, thunder and lightning were reported by residents on Banks Peninsula.

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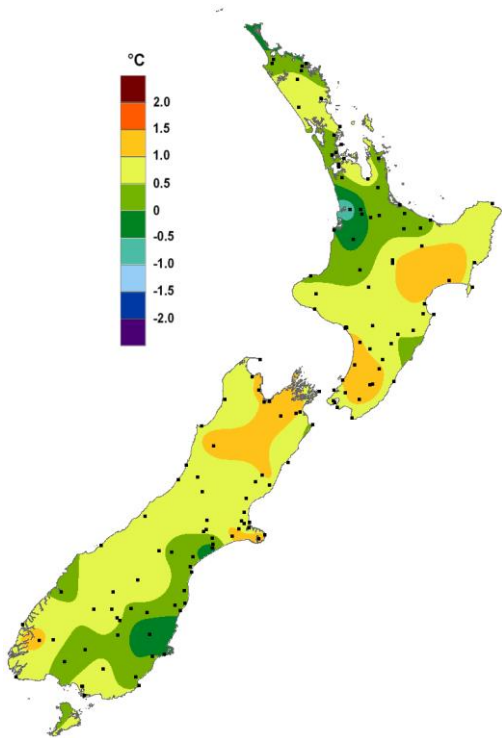
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*December 2013 mean temperatures, expressed as a difference from average (°C).*

*Mean temperatures were at least above average (between 0.5 to 1.2°C above the December average) across many areas of New Zealand, especially about the northern South Island, southern North Island and Hawke's Bay. Elsewhere, near average temperatures were observed (within 0.5°C of the December average temperature, as indicated by green colours on the map).*

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