

## A dry month for most and warm for the eastern South Island.

<b>Rainfall</b>	Rainfall was below normal (50-79%) or well below normal (< 50%) for the majority of the North Island, as well as northern, eastern and inland parts of the South Island north of Otago. Conversely, rainfall was above normal (120-149%) or well above normal (> 149%) for south-eastern parts of the South Island, Fiordland and southern Westland.
<b>Temperature</b>	October temperatures were above average (+0.51°C to +1.20°C) or well above average (> +1.20°C) throughout the South Island, with the exception of the West Coast. Similarly, temperatures were above average in parts of Auckland, Bay of Plenty, Gisborne, Hawke's Bay and the Kapiti Coast. Temperatures were typically near average (within 0.50°C of average) for remaining parts of New Zealand.
<b>Soil Moisture</b>	As of 1 November 2015, soil moisture levels were typically below normal for much of the North Island, as well as for most eastern, inland and northern parts of the South Island. The notable exceptions were northern Wairarapa and the south-eastern South Island where soil moisture levels were above normal for the time of year.
<b>Sunshine</b>	A sunny October for eastern and southern parts of the North Island as well as eastern and central areas of the South Island, with above normal (110-125%) or well above normal (> 125%) sunshine recorded in many of these areas.

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### Overview

October 2015 saw a strengthening of El Niño, with the current event slightly weaker than the 1997/98 El Niño (the strongest since 1950) at this stage. The month was characterised by air pressures which were higher than normal over southern Australia, the Tasman Sea and New Zealand and lower than normal to the south-east of New Zealand. This resulted in more south-westerly airflows over New Zealand than is normal for the time of year. This southwest flow anomaly (typical of El Niño at this time of year) was clearly illustrated by the rainfall anomalies observed across New Zealand for October. Areas sheltered from the south-westerlies received below normal (50-79%) or well below normal (< 50%) rainfall, and this was the case for the majority of the North Island, as well as northern, eastern and inland parts of the South Island north of Otago. In contrast, rainfall was above normal

(120-149%) or well above normal (> 149%) in areas exposed to the south-west, including south-eastern parts of the South Island, Fiordland and southern Westland. The contrast between areas of below normal and above normal rainfall was notable, with relatively few locations receiving near normal rainfall (within 20% of normal) for the month.

Soil moisture levels largely resembled the rainfall anomalies observed throughout New Zealand during October. Specifically, as of 1 November 2015 soil moisture levels were below normal for much of the North Island, as well as for most eastern, inland and northern parts of the South Island. In contrast, soil moisture levels were higher than normal in northern parts of coastal Wairarapa and the south-eastern South Island around eastern Southland and southern Otago. Soil moisture levels were near normal for the time of year the West Coast and remaining parts of Southland.

October temperatures were above average (+0.51°C to +1.20°C) or well above average (> 1.20°C) for most of the South Island, except the West Coast where temperatures were near average (within 0.50°C of the October average). Temperatures were also above average in parts of Auckland, Bay of Plenty, Gisborne, Hawke's Bay and the Kapiti Coast, with near average temperatures for remaining parts of the North Island. The nation-wide average temperature in October 2015 was 12.7°C (0.6°C above the 1981-2010 October average from NIWA's seven station temperature series which begins in 1909)<sup>1</sup>.

October sunshine was abundant for eastern and southern parts of the North Island as well as eastern and central areas of the South Island, with above normal (110-125%) or well above normal (> 125%) sunshine recorded in many of these areas. Sunshine hours were near normal (90-109%) for most remaining areas of the country. Record or near-record high sunshine hours for the month were observed in ten locations from as far south as Balclutha to as far north as Kaitaia.

#### **Further Highlights:**

- The highest temperature was 31.8°C, observed at Kaikoura on 7 October.
- The lowest temperature was -3.7°C, observed at Pukaki Aerodrome on 26 October.
- The highest 1-day rainfall was 291 mm, recorded at Milford Sound on 16 October.
- The highest wind gust was 172 km/hr, observed at Cape Turnagain on 5 October and South West Cape on 7 October.
- Of the six main centres in October 2015, Auckland was the warmest, Christchurch was the coolest, driest and sunniest, Dunedin was the wettest and Hamilton was the cloudiest.
- Of the available, regularly reporting sunshine observation sites, the sunniest four locations so far in 2015 (1 January to 31 October) are: Blenheim (2239 hours), Whakatane (2212), Appleby (2189) and Lake Tekapo (2149 hours).

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<sup>1</sup> Interim value

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## Rainfall: Dry for areas sheltered from south-westerlies

October was a dry month for areas of the country sheltered from south-westerly winds. It was especially dry in Blenheim and Taupo, with these locations receiving just 10% and 11% of normal October rainfall respectively. Extensive areas of the North Island and South Island were similarly dry and received less than 50% of normal October rainfall. No locations observed record or near-record high rainfall totals for the month. However, rainfall totals were very high in Milford Sound where 902 mm of rainfall was recorded (141% of the October normal).

### Record<sup>2</sup> or near-record October rainfall totals were recorded at:

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
Low records or near-records				
Taupo	10	11	1949	Lowest
Motu	69	33	1990	Lowest
Masterton	33	34	1992	Lowest
Toenepi	11	12	1951	Equal lowest
Rotorua	25	22	1963	2nd-lowest
Stratford	63	29	1960	2nd-lowest
Blenheim	6	10	1941	2nd-lowest
Waipara West	11	28	1973	2nd-lowest
Matamata	22	22	1951	3rd-lowest
Wellington (Airport)	18	19	1958	3rd-lowest
Te Puke	33	24	1973	4th-lowest
Whakatane	30	30	1952	4th-lowest
Hanmer Forest	27	27	1905	4th-lowest
Motueka	29	25	1943	Equal 4th-lowest
High records or near-records				
None observed				

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## Temperature: Warm October for the eastern South Island

Despite an anomalous south-westerly airflow for this time of year, it was a warm month for much of the South Island. This could possibly be attributed to a lack of cold southerly outbreaks, when air originates from the high-latitudes. Timaru exceeded a daily maximum temperature of 25.0°C on five occasions: the highest such occurrence for October there in records that began in 1885. Twenty-eight stations observed record or near-record high mean daily maximum air temperatures, yet just two locations observed near-record mean daily minimum air temperatures. This suggests that the warm mean temperatures observed were largely a result of higher than average daytime maximum

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<sup>2</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.

temperatures. The nation-wide average temperature in October 2015 was 12.7°C (0.6°C above the 1981-2010 October average from NIWA's seven station temperature series which begins in 1909).

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

Location	Mean air temp. (°C)	Departure from normal (°C)	Year records began	Comments
<b>High records or near-records</b>				
Ranfurly	11.0	1.9	1975	Highest
Waiau	13.7	2.4	1974	2nd-highest
Cheviot	12.7	1.4	1982	2nd-highest
Orari Estate	12.6	1.7	1972	2nd-highest
Motu	11.4	1.2	1990	3rd-highest
Gisborne	15.8	2.0	1905	3rd-highest
Farewell Spit	14.3	1.2	1971	3rd-highest
Nelson	13.8	1.4	1943	3rd-highest
Tara Hills	11.4	1.6	1949	3rd-highest
Whatawhata	14.5	1.4	1952	4th-highest
Ngawi	14.4	0.7	1972	4th-highest
Motueka	13.5	1.3	1956	4th-highest
Waipara West	13.3	1.2	1973	4th-highest
Lake Tekapo	11.0	2.2	1927	4th-highest
<b>Low records or near-records</b>				
None observed				

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

Location	Mean maximum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
<b>High records or near-records</b>				
Farewell Spit	18.1	1.4	1971	Highest
Motueka	20.1	2.3	1956	Highest
Nelson	18.7	1.8	1943	Highest
Appleby	19.1	2.0	1932	Highest
Waiau	20.2	2.7	1974	Highest
Ranfurly	18.2	2.7	1975	Highest
Dunedin (Musselburgh)	17.4	2.7	1947	Highest
Motu	16.8	2.2	1990	2nd-highest
Masterton	19.3	1.3	1992	2nd-highest
Gisborne	21.7	2.7	1905	2nd-highest
Takaka	18.8	1.0	1978	2nd-highest
Hanmer Forest	19.4	2.6	1906	2nd-highest
Cheviot	19.4	2.3	1982	2nd-highest
Lake Tekapo	17.8	3.0	1927	2nd-highest
Orari Estate	19.6	2.9	1972	2nd-highest
Cromwell	20.0	2.4	1949	2nd-highest
Ngawi	18.1	1.3	1972	3rd-highest
Hastings	20.8	2.6	1965	3rd-highest
Mahia	17.9	1.5	1990	3rd-highest

Nelson	18.2	1.4	1943	3rd-highest
Le Bons Bay	15.6	1.7	1984	3rd-highest
Dunedin (Airport)	17.7	1.5	1962	3rd-highest
Kaikohe	18.1	1.2	1973	4th-highest
Tauranga	19.4	1.3	1913	4th-highest
Kaikoura	17.4	2.1	1963	4th-highest
Waipara West	19.2	1.5	1973	4th-highest
Christchurch (Riccarton)	20.3	3.2	1863	4th-highest
Tara Hills	18.8	2.7	1949	4th-highest
<b>Low records or near-records</b>				
South West Cape	11.1	-1.2	1991	2nd-lowest
Port Taharoa	15.8	-1.5	1973	3rd-lowest
Campbell Island	8.1	-0.8	1991	3rd-lowest

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

Location	Mean minimum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
<b>High records or near-records</b>				
Whatawhata	11.0	2.0	1952	2nd-highest
Waiau	7.2	2.0	1974	2nd-highest
<b>Low records or near-records</b>				
None observed				

## Sunshine: Above normal for many parts of the country

October was a sunny month for many parts of the country, particularly for areas sheltered from the anomalous south-westerly airflow. Ten locations observed record or near-record high total sunshine hours for the month. Of the available, regularly reporting sunshine observation sites, the sunniest four locations so far in 2015 (1 January to 31 October) are: Blenheim (2239 hours), Whakatane (2212), Appleby (2189) and Lake Tekapo (2149 hours).

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

Location	Sunshine hours	Percentage of normal	Year records began	Comments
<b>High records or near-records</b>				
Ashburton	271	168	1930	Highest
Lake Tekapo	291	118	1928	Highest
Blenheim	271	121	1947	2nd-highest
Cheviot	246	133	1983	2nd-highest
Cromwell	276	127	1979	2nd-highest
Balclutha	251	148	1964	2nd-highest
Gisborne	272	124	1905	3rd-highest
Takaka	264	113	1985	3rd-highest
Kaitaia	231	123	1985	4th-highest
New Plymouth	245	130	1972	4th-highest

## October climate in the six main centres

October temperatures were above average in Auckland, Tauranga and Dunedin but near average for the remaining three main centres. Dunedin received near normal rainfall, but it was a very dry month for the remaining main centres which all received well below half of their respective normal rainfall. Wellington, Christchurch and Dunedin enjoyed ample October sunshine. Of the six main centres in October 2015, Auckland was the warmest, Christchurch was the coolest, driest and sunniest, Dunedin was the wettest and Hamilton was the cloudiest.

### October 2015 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland <sup>a</sup>	15.0	+0.6	Above average
Tauranga <sup>b</sup>	14.9	+0.8	Above average
Hamilton <sup>c</sup>	13.0	0.0	Near average
Wellington <sup>d</sup>	12.5	+0.5	Near average
Christchurch <sup>e</sup>	11.6	+0.2	Near average
Dunedin <sup>f</sup>	12.0	+1.1	Above average
Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland <sup>a</sup>	36	40%	Well below normal
Tauranga <sup>b</sup>	28	31%	Well below normal
Hamilton <sup>c</sup>	40	40%	Well below normal
Wellington <sup>d</sup>	27	23%	Well below normal
Christchurch <sup>e</sup>	12	25%	Well below normal
Dunedin <sup>f</sup>	71 <sup>3</sup>	114%	Near normal
Sunshine			
Location	Sunshine (hours)	% of normal	Comments
Auckland <sup>a</sup>	168	95%	Near normal
Tauranga <sup>b</sup>	200	94%	Near normal
Hamilton <sup>g</sup>	164	93%	Near normal
Wellington <sup>d</sup>	222	115%	Above normal
Christchurch <sup>e</sup>	232	114%	Above normal
Dunedin <sup>f</sup>	226 <sup>3</sup>	134%	Well above 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>3</sup> Missing one day of data.

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## Highlights and extreme events

### Wind

On 4 October very strong winds occurred throughout the South Island. At least 2200 homes in Canterbury and Otago were without power as winds brought down trees onto power lines. The Waimate and Mackenzie Districts were worst affected and parts of these areas remained without power the following day. Fire crews responded to numerous callouts for downed trees, power lines and out of control fires from Southland to north Canterbury. A dust storm struck in Twizel, where the strongest winds were replaced by rain and thunder during the afternoon. A caravan was blown off the road near Tekapo, while a woman was hospitalised after being blown off the Hooker Valley Track near Mt Cook Village. Flights at Invercargill Airport were cancelled due to wind gusts which peaked at 130 km/hr, stranding dozens of passengers. Cancelled and diverted flights were also reported at Dunedin and Queenstown airports. Approximately \$680,000 in insurance claims were lodged with rural insurance companies, and these included damage to houses, farm buildings and irrigators.

A combination of very strong winds, high temperatures and low humidity created the perfect recipe for extreme fire danger in eastern parts of the South Island on 7 October. Four homes were damaged by a large fire which burned on Saddle Hill (south of Mosgiel). Residents of 30 properties were forced to evacuate due to the fire. Farther north, residents of Dunback (Otago, north of Dunedin) were evacuated due to an uncontrolled fire which threatened property there. Several buildings were destroyed by a vegetation fire near Dunsandel (Canterbury, south of Christchurch), and SH 75 near Akaroa was closed due to an uncontrolled fire. In Gore, Devon Street was blocked off after a falling tree brought down power lines onto a parked car.

On 18 October, strong winds hit southern and eastern parts of the South Island. The Fire Service reported six weather-related callouts, including for lifted roofs and downed power lines.

On 21 October, strong winds again struck eastern areas of the South Island. The Fire Service were called out to 15 wind-related incidents - mostly small scrub fires on the Canterbury Plains. A tree was blown onto power lines near Clinton (Southland), and the intersection of Irwell Street and SH 94 in Gore was temporarily closed after strong winds blew down power lines.

The highest wind gust was 172 km/hr, observed at Cape Turnagain on 5 October and South West Cape on 7 October.

### Record or near-record October extreme wind gusts were recorded at:

Location	Extreme wind gust (km/hr)	Date of extreme gust	Year records began	Comments
Tara Hills	107	4th	1985	Highest
Gore	122	4th	1987	Highest
South West Cape	172	7th	1991	Highest
Oamaru	95	4th	1984	2nd-highest
Lauder	119	4th	1981	Equal 2nd-highest
Dannevirke	106	22nd	1961	3rd-highest
Oamaru	91	5th	1984	3rd-highest
Tiwai Point	137	4th	1971	3rd-highest
Ashburton	109	4th	1970	4th-highest
Invercargill	130	4th	1972	4th-highest

## Rain and slips

A period of heavy rain on 29 October resulted in surface flooding on some Kapiti Coast properties. In Upper Hutt, a bridge on Bridge Road had slumped and was impassable, with the damage thought to have resulted from the swollen river below. In Lower Hutt, the Riverbank Carpark was closed due to flooding.

The highest 1-day rainfall was 291 mm, recorded at Milford Sound on 16 October.

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

Location	Extreme 1-day rainfall (mm)	Date of extreme rainfall	Year records began	Comments
Tiwai Point	45	16th	1970	2nd-highest
Balclutha	38	16th	1964	2nd-highest
Nugget Point	32	16th	1930	2nd-highest
Milford Sound	291	16th	1929	3rd-highest
Gore	45	16th	1967	3rd-highest
Mahia	43	29th	1990	4th-highest
Invercargill	41	16th	1939	4th-highest

## Temperatures

Much of the first week of October was dominated by a north-westerly airflow. This contributed to temperatures which were considerably warmer than normal for the time of year, especially in eastern parts of the country. Temperatures on 6 and 7 October were particularly warm, with numerous locations seeing daily maximum temperatures reach the late-20s. Most notable was Kaikoura, which reached 31.8°C on 7 October. A cool change arrived during the afternoon and evening over the South Island, which typically saw temperatures plummet by 10°C or more in less than an hour. For example, in Dunedin (Musselburgh) the temperature dropped from 27.8°C to 16.9°C between 3 p.m. and 4 p.m.

The highest daily maximum temperature was 31.8°C, observed at Kaikoura (Middle Creek) on 7 October. This was followed by 30.6°C, recorded at Wairoa and Kaikoura (Peninsula) on 7 October, respectively. The lowest daily minimum temperature was -3.7°C, observed at Pukaki Aerodrome on 26 October. This was followed by -3.5°C at Snowdon (Canterbury) on 30 October, and -3.2°C at Hanmer Forest (on 24 October) and Lauder (on 30 October).

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

Location	Extreme maximum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Wairoa	30.6	7th	1964	Highest
Hanmer Forest	28.4	7th	1906	Highest
Kaikoura	31.8	7th	1963	Highest
Cheviot	29.8	7th	1982	Highest
Kaikohe	22.7	7th	1973	2nd-highest



Masterton	25.6	7th	1992	2nd-highest
Ngawi	26.5	7th	1972	2nd-highest
Appleby	26.0	11th	1932	2nd-highest
Waiau	29.5	7th	1974	2nd-highest
Orari Estate	29.9	7th	1972	2nd-highest
Dunedin (Airport)	29.2	7th	1962	2nd-highest
Auckland (Mangere)	23.2	23rd	1959	3rd-highest
Christchurch (Riccarton)	30.2	7th	1863	3rd-highest
Le Bons Bay	25.3	7th	1984	3rd-highest
Dunedin (Musselburgh)	29.0	7th	1947	3rd-highest
Hastings	28.3	7th	1965	4th-highest
Farewell Spit	22.8	4th	1971	4th-highest
Ranfurly	23.8	7th	1975	4th-highest
Nugget Point	24.3	7th	1970	4th-highest
Mahia	23.8	16th	1990	Equal 4th-highest
Takaka	24.5	7th	1978	Equal 4th-highest
Cromwell	26.7	7th	1949	Equal 4th-highest
Alexandra	27.2	7th	1983	Equal 4th-highest
<b>Low records or near-records</b>				
None observed				

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

Location	Extreme minimum (°C)	Date of extreme temperature	Year records began	Comments
<b>High records or near-records</b>				
Waiau	16.8	7th	1974	Highest
Cheviot	17.1	7th	1982	Highest
Ranfurly	14.9	7th	1975	Highest
Oamaru	17.9	7th	1908	Highest
Manapouri	13.7	7th	1973	Highest
Lake Tekapo	14.6	7th	1928	2nd-highest
Orari Estate	16.2	7th	1972	2nd-highest
Lumsden	16.6	7th	1982	2nd-highest
Invercargill	15.1	7th	1905	2nd-highest
Puysegur Point	13.6	7th	1978	Equal 2nd-highest
Waipara West	16.6	7th	1973	3rd-highest
Le Bons Bay	14.4	7th	1984	Equal 3rd-highest
Queenstown	14.0	7th	1871	Equal 3rd-highest
Ngawi	17.2	7th	1972	4th-highest
Tara Hills	14.2	7th	1949	4th-highest
<b>Low records or near-records</b>				
Martinborough	-1.0	9th	1986	3rd-lowest
Mahia	5.2	31st	1990	4th-lowest

## Lightning and Hail

On 18 October, frequent hail showers struck Invercargill in association with the northward passage of a cold front. A shower of hail was also reported in Dunedin in the early morning.

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**For further information, please contact:**

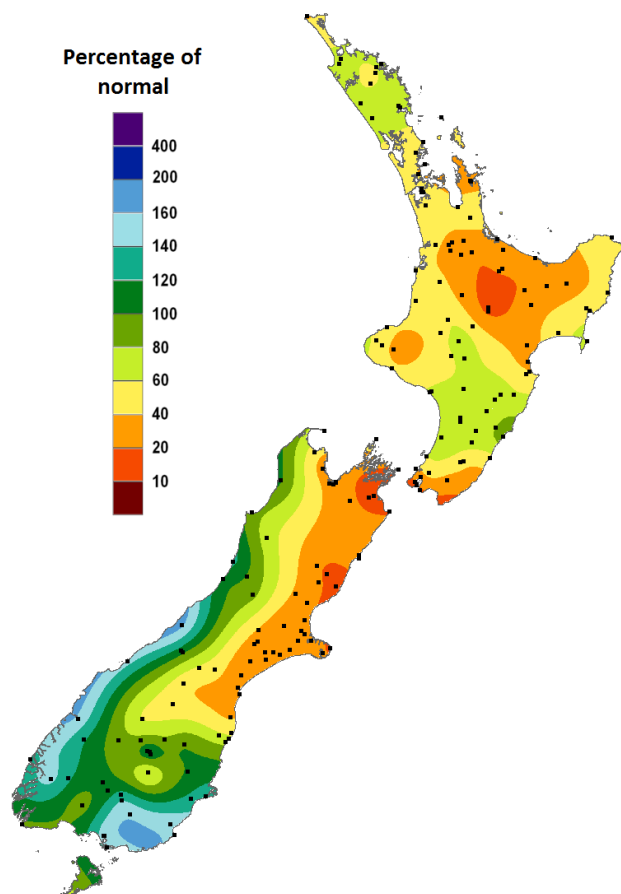
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*October 2015 total rainfall, expressed as a percentage of the 1981-2010 normal.*

*Rainfall was below normal (50-79%) or well below normal (< 50%) for much of the North Island, as well as northern, eastern and inland parts of the South Island north of Otago. Conversely, rainfall was at least above normal (120-149%) for the south-east of the South Island, Fiordland and southern Westland, as indicated by blue colours on the map.*

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