

A warm start to the year for the North and wet for many

Temperature	January temperatures were well above average ($>1.2^{\circ}\text{C}$) or above average ($0.5\text{-}1.2^{\circ}\text{C}$) in most parts of the North Island and north and west of the South Island. Temperatures were well below average ($<-1.2^{\circ}\text{C}$) or below average (-0.5°C to -1.2°C) in the eastern and southern South Island.
Rainfall	Rainfall was well above normal ($>149\%$) or above normal ($120\text{-}149\%$) in most parts of the north and east of both Islands. Rainfall was below normal ($50\text{-}79\%$) or well below normal ($<50\%$) in isolated parts of Taranaki and Queenstown-Lakes. Near normal rainfall ($80\text{-}120\%$) was observed elsewhere.
Sunshine	Sunshine was near normal ($90\text{-}109\%$) or below normal ($75\text{-}89\%$) for the North Island, and below normal or well below normal ($<75\%$) for the South Island.
Soil Moisture	As of 1 February 2016, soil moisture levels were above normal for the time of year for eastern Northland, Coromandel, northern Hawke's Bay, Gisborne, northern Tasman, Nelson and coastal Canterbury. Drier than normal soils were evident in the remainder of the North Island, southern Tasman, Otago, and Southland.

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Overview

During January 2016, strong El Niño conditions continued in the Tropical Pacific. However, rather than the typical south-westerly flow anomaly over New Zealand that is associated with El Niño at this time of year, high pressure anomalies to the east of New Zealand, as well as to the south and west of the South Island caused northeast flow anomalies over the North Island and southeast flow anomalies over the South Island in January.

The northeast flow anomaly over the North Island during January caused warm and humid tropically-derived air masses (including two ex-tropical cyclones) to affect New Zealand during the month. Above average ($+0.51^{\circ}\text{C}$ to $+1.20^{\circ}\text{C}$ above the January average) and well above average ($>+1.20^{\circ}\text{C}$ above the January average) temperatures were observed for the entire Island, as well as the north and west South Island. In contrast, the predominant southeast flow anomaly over the South Island caused below average (-1.20°C to -0.51°C below the January average) or well below average ($<-1.20^{\circ}\text{C}$ below the January average) temperatures for the east and south of the South Island. The nation-wide average

temperature in January 2016 was 17.6°C (0.6°C above the 1981-2010 January average from NIWA's seven station temperature series which begins in 1909)¹.

The moist tropical air masses (including ex-tropical cyclones Ula and Victor) that affected New Zealand in January not only brought warm temperatures and high humidity, but also brought significant rainfall. Rainfall totals for January were well above normal (>149% of January normal) in northern and eastern regions of both Islands. Notably, Timaru received almost three times its normal rainfall for January (296% of January normal rainfall), with over half of that occurring in one day (81 mm, the highest 1-day rainfall total for January in Timaru, in records going back to 1881). Rainfall was above normal (120-149% of January normal) for many other locations in the North Island. Few locations recorded below normal (50-79% of January normal) or well below normal (<50% of January normal) rainfall in January – this only occurred in isolated parts of Taranaki Region and Queenstown-Lakes District.

At the end of December 2015, soil moisture levels were extremely low for many parts of the country, particularly in the North Island and the north and south of the South Island. However, numerous rainfall events throughout the country in January alleviated soil moisture deficits, and as of 1 February 2016, soil moisture levels were above normal for the time of year for eastern Northland, Coromandel, northern Hawke's Bay and Gisborne, as well as northern Tasman, Nelson, and coastal Canterbury. Drier than normal soils were present in the remainder of the North Island, south Tasman, Otago and Southland. Near normal soil moisture conditions were evident elsewhere.

Sunshine was near normal (90-109% of January normal) or below normal (75-90% of January normal) for the North Island in January. Sunshine was below normal or well below normal (<75% of January normal) for the South Island. The wet and stormy conditions across much of the country during the month caused sunshine totals to be lower than normal for most places.

Further Highlights:

- The highest temperature was 34.4°C, observed at Gisborne on 24 January.
- The lowest temperature was -1.2°C, observed at Manapouri on 4 January.
- The highest 1-day rainfall was 195 mm, recorded at Milford Sound on 23 January.
- The highest wind gust was 183 km/hr, observed at Cape Turnagain on 10 January.
- Of the six main centres in January 2016, Auckland was the warmest, wettest, and sunniest, Dunedin was the coolest, Hamilton was the driest, and Christchurch was the cloudiest.
- Of the available, regularly reporting sunshine observation sites, the sunniest four locations in 2016 so far (1 January – 31 January) were New Plymouth (279 hours), Richmond (275 hours), Auckland (North Shore, 256 hours), and Appleby (250 hours).

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¹ Interim value

Temperature: Tropical air masses bring warm temperatures to the North Island

The predominant northeast flow anomaly across the North Island in January brought much higher than normal temperatures for many locations, due to warm air being brought down from the tropics. Of note, two ex-tropical cyclones and a sub-tropical low pressure system affected the country over the month, bringing rain but also high temperatures and extremely high humidity for extended periods. Four locations experienced their warmest January on record. See the *Highlights and extreme events* section for further information on the extreme temperatures.

In contrast, the south-easterly flow anomaly across the South Island meant the east and south of that Island were exposed to cooler air masses, and as such that part of the country recorded much lower than normal temperatures for the time of year. The west and north of the South Island were sheltered from these cooler temperatures.

The nation-wide average temperature in January 2016 was 17.6°C (0.6°C above the 1981-2010 January average from NIWA's seven station temperature series which begins in 1909).

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

Location	Mean air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Kerikeri	20.9	1.7	1981	Highest
Kaikohe	21.2	2.6	1973	Highest
Auckland (Whenuapai)	20.5	1.5	1945	Highest
Motueka	19.4	1.7	1956	Highest
Motu	17.5	2.0	1990	2nd-highest
Masterton	19.8	2.4	1992	2nd-highest
Gisborne	21.0	1.9	1905	2nd-highest
Kaitaia	21.0	1.6	1948	3rd-highest
Dargaville	20.4	1.3	1943	3rd-highest
Whangarei	21.3	1.3	1967	3rd-highest
Auckland (Lincoln Rd)	20.9	1.3	1948	3rd-highest
Whatawhata	20.4	2.1	1952	3rd-highest
Whangaparaoa	20.7	1.1	1982	4th-highest
Auckland (North Shore)	21.1	1.1	1994	4th-highest
Whitianga	20.1	1.2	1962	4th-highest
Whakatane	20.2	1.3	1974	4th-highest
Hawera	17.7	1.3	1977	4th-highest
Low records or near-records				
South West Cape	11.8	-1.3	1991	2nd-lowest

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

Location	Mean maximum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Kaitaia	25.1	1.1	1985	3rd-highest
Kaikohe	25.1	2.2	1973	3rd-highest
Motu	22.3	1.8	1990	3rd-highest
Whatawhata	25.8	2.5	1952	3rd-highest
Masterton	26.3	2.3	1992	4th-highest
Low records or near-records				
South West Cape	14.4	-1.7	1991	Lowest
Cheviot	21.6	-1.5	1982	2nd-lowest
Waipara West	21.4	-2.4	1973	3rd-lowest
Timaru	18.2	-2.1	1885	4th-lowest

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

Location	Mean minimum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Kaikohe	17.3	3.1	1973	Highest
Auckland (Whenuapai)	16.1	1.8	1945	Highest
Motu	12.7	2.3	1990	Highest
Masterton	13.3	2.5	1992	Highest
Waione	13.5	1.1	1991	Highest
Motueka	13.9	1.9	1956	Highest
Kaitaia	17.1	2.0	1948	2nd-highest
Kerikeri	16.8	2.7	1981	2nd-highest
Whangarei	17.5	1.9	1967	2nd-highest
Auckland (Lincoln Road)	17.0	2.4	1948	2nd-highest
Whitianga	16.1	2.3	1962	2nd-highest
Whakatane	16.3	2.5	1974	2nd-highest
Dargaville	16.4	1.4	1943	3rd-highest
Tauranga	17.0	1.9	1913	3rd-highest
Taupo	13.4	2.0	1949	3rd-highest
Auckland (Mangere)	17.4	1.5	1959	3rd-highest
Ngawi	15.9	1.1	1972	3rd-highest
Gisborne	15.4	1.8	1905	3rd-highest
Reefton	13.0	2.1	1960	3rd-highest
Cheviot	11.9	1.5	1982	3rd-highest
Cape Reinga	17.1	1.2	1951	4th-highest
Auckland (North Shore)	18.0	1.7	1994	4th-highest
Te Puke	15.2	2.1	1973	4th-highest
Whatawhata	14.9	1.7	1952	4th-highest
Martinborough	13.4	1.1	1986	4th-highest
Paraparaumu	14.7	1.4	1953	4th-highest
Nelson	15.1	1.3	1943	4th-highest
Waiau School	12.5	1.8	1974	4th-highest

Low records or near-records				
South West Cape	9.2	-0.8	1991	3rd-lowest
Tiwai Point	9.8	-1.2	1970	4th-lowest

Rainfall: Very wet for north and east of both Islands

The northeast flow anomaly over the North Island and the southeast flow anomaly over the South Island caused a very wet month for the north and east of both Islands. Numerous heavy rainfall events and storms affected the country throughout the month, associated with low pressure systems – notably two ex-tropical cyclones and a subtropical low pressure system. Almost three times the normal January rainfall was recorded at Timaru (296% of January normal).

The rain provided welcome relief to farmers, as soil moisture levels were extremely low at the end of December 2015. The consistent rainfall events throughout the month of January saw these extreme soil moisture deficits alleviated for much of the country, and as of 1 February 2016 soil moisture levels are above normal for the time of year for eastern Northland, Coromandel, northern Hawke’s Bay and Gisborne, as well as northern Tasman, Nelson, and coastal Canterbury. Drier than normal soils were present in the remainder of the North Island, south Tasman, Otago and Southland. Near normal soil moisture conditions were evident elsewhere.

Record² or near-record January rainfall totals were recorded at:

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
High records or near-records				
Waipara West	117	203	1973	3rd-highest
Motu	221	168	1990	Equal 3rd-highest
Takaka	270	205	1976	4th-highest
Motueka	204	249	1943	4th-highest
Timaru	140	296	1881	4th-highest
Low records or near-records				
None observed				

² The rankings (1st, 2nd, 3rd.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.

Sunshine: Cloudy conditions for most of the country

Due to the wet and sometimes stormy conditions around New Zealand for January, sunshine totals were relatively low. Sunshine was near normal (90-109% of January normal) or below normal (75-90% of January normal) for the North Island in January. Sunshine was below normal or well below normal (<75% of January normal) for the South Island.

Of the available, regularly reporting sunshine observation sites, the sunniest four locations in 2016 so far (1 January – 31 January) were New Plymouth (279 hours), Richmond (275 hours), Auckland (North Shore, 256 hours), and Appleby (250 hours).

Record or near-record January sunshine hours were recorded at:

Location	Sunshine hours	Percentage of normal	Year records began	Comments
High records or near-records				
None observed				
Low records or near-records				
Cheviot	178	77	1983	2nd-lowest
Christchurch (Airport)	156	65	1930	3rd-lowest
Cromwell	216	86	1979	4th-lowest

January climate in the six main centres

January temperatures in North Island main centres were either above average (Tauranga and Wellington) or well above average (Auckland and Hamilton). However for the South Island main centres, mean temperatures were below average. Christchurch recorded two-and-a-half times its normal January rainfall (260% of January normal) and Auckland received nearly double normal January rainfall (191%). In contrast, Hamilton and Dunedin observed near normal rainfall. It was a cloudy month for all main centres, with all places recording below or well below normal sunshine. In particular, Christchurch recorded just 65% of normal sunshine for January, its 3rd lowest sunshine total on record for January. Of the six main centres in January 2016, Auckland was the warmest, wettest, and sunniest, Dunedin was the coolest, Hamilton was the driest, and Christchurch was the cloudiest.

January 2016 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland ^a	21.2	+1.6	Well above average
Tauranga ^b	20.6	+1.1	Above average
Hamilton ^c	19.5	+1.2	Well above average
Wellington ^d	17.6	+0.7	Above average
Christchurch ^e	16.6	-0.6	Below average
Dunedin ^f	14.3	-1.0	Below average
Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland ^a	117	191%	Well above normal
Tauranga ^b	104	133%	Above normal
Hamilton ^c	75	91%	Near normal
Wellington ^d	96	127%	Above normal
Christchurch ^e	93	260%	Well above normal
Dunedin ^f	81	112%	Near normal
Sunshine			
Location	Sunshine (hours)	% of normal	Comments
Auckland ^a	206	89%	Below normal
Tauranga ^b	188	72%	Well below normal
Hamilton ^g	205	89%	Below normal
Wellington ^d	192	78%	Below normal
Christchurch ^e	156	65%	Well below normal – 3 rd lowest on record
Dunedin ^f	157	87%	Below normal

^a Mangere ^b Tauranga Airport ^c Hamilton Airport ^d Kelburn ^e Christchurch Airport ^f Musselburgh ^g Ruakura

Highlights and extreme events

Rain and slips

On 1-2 January, a subtropical low pressure system brought heavy rain to Northland, Auckland and Coromandel. Campsites in these regions were flooded and many holiday campers decided to head home early. Whitianga received 145% (119 mm) of its normal January rainfall in just two days (1-2 January). Many other sites also received their normal January rainfall in a few days.

On 8 January, a motorcyclist on SH 3 in Taranaki was killed in a crash that was caused by heavy rain. Torrential rain occurred across much of the North Island, and surface water on roads caused heavy traffic delays. The front façade of the Countdown Sunnynook in Auckland collapsed. In west Auckland, firefighters were called to help pump out flooded properties. One women's semifinal of the ASB Classic in Auckland was postponed to the next morning due to heavy rain.

On 12 January, the remains of ex-tropical cyclone Ula passed to the east of New Zealand. The storm had significantly weakened and was far offshore so the only impacts felt in New Zealand were rain, warm temperatures, and high humidity for the eastern and northern North Island.

On 18 January, heavy rain caused substantial damage to the Tongariro Alpine Crossing. The damage was caused by water and rock movement with part of the track washed out.

On 19 January, heavy rain fell in south Canterbury, including the towns of Timaru, Geraldine and Temuka, blocking stormwater drains and causing surface flooding. A number of roads were closed for a time by the flooding. Notably, Timaru recorded its highest 1-day rainfall total for January of 81mm (more than half the rainfall total for the month), in records that began in 1881.

On 26 January, motorists parking their cars in Dunedin got off paying for parking because the paper inside the pay-and-display machines had stuck together in the wet and humid conditions.

On 27 January, heavy rain caused surface flooding in Napier and all Rugby Sevens activities were cancelled in Wellington due to the rain. Heavy rain and thunderstorms occurred in parts of Auckland, and there were numerous flooding-related calls to the fire service in South Auckland.

The highest 1-day rainfall was 195 mm, recorded at Milford Sound on 23 January.

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

Location	Extreme 1-day rainfall (mm)	Date of extreme rainfall	Year records began	Comments
Wairoa	101	28th	1967	Highest
Mahia	63	28th	1990	Highest
Timaru	81	19th	1881	Highest
Secretary Island	168	23rd	1985	3rd-highest

Temperatures

In late January, much of New Zealand sweltered under high temperatures and high humidity, as a result of tropically-derived air masses travelling over New Zealand, some of these from ex-Tropical Cyclone Victor. Daytime temperatures in Auckland almost reached 30°C for about a week.

On 26 January, a goods train derailed in National Park in the central North Island. The derailment was due to buckled tracks caused by high temperatures.

Overnight on 26-27 January, many record or near-record high minimum temperatures were observed around the country, making for an uncomfortable night's sleep.

The highest temperature for January was 34.4°C, observed at Gisborne on 24 January. The lowest temperature was -1.2°C, observed at Manapouri on 4 January.

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

Location	Extreme maximum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Masterton	34.1	26th	1992	Highest
Kaitaia	29.0	30th	1948	2nd-highest
Hawera	27.3	17th	1977	2nd-highest
Auckland (Mangere)	29.3	24th	1959	3rd-highest
Castlepoint	31.1	24th	1972	3rd-highest
Auckland (Whenuapai)	28.7	24th	1945	Equal 3rd-highest
Whatawhata	30.8	26th	1952	Equal 3rd-highest
Kaikohe	28.8	23rd	1973	4th-highest
Auckland (North Shore)	28.6	23rd	1995	4th-highest
Whangaparaoa	27.7	30th	1982	Equal 4th-highest
Le Bons Bay	28.7	25th	1984	Equal 4th-highest
Low records or near-records				
South West Cape	10.1	28th	1991	Equal lowest
Cheviot	13.4	13th	1982	3rd-lowest
Wairoa	14.9	4th	1972	Equal 3rd-lowest
Le Bons Bay	11.2	13th	1984	Equal 3rd-lowest
Whitianga	18.9	1st	1971	4th-lowest

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

Location	Extreme minimum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Whakatane	21.7	27th	1975	Highest
Motu	18.2	27th	1990	Highest
Ngawi	23.4	24th	1972	Highest
Westport	19.5	26th	1966	Highest

Reefton	18.1	26th	1972	Highest
Motueka	19.8	27th	1972	Highest
Waipara West	22.4	25th	1973	Highest
Cape Reinga	20.0	31st	1971	2nd-highest
Whangaparaoa	20.4	27th	1982	2nd-highest
Whitianga	20.9	27th	1971	2nd-highest
Taupo	19.4	27th	1950	2nd-highest
Hamilton (Airport)	21.1	27th	1946	2nd-highest
Taumarunui	20.5	27th	1947	2nd-highest
Kaikoura	19.3	25th	1972	2nd-highest
Le Bons Bay	19.5	24th	1984	2nd-highest
Auckland (Whenuapai)	21.0	27th	1951	Equal 2nd-highest
Tauranga	21.1	27th	1941	Equal 2nd-highest
Te Puke	20.2	27th	1973	Equal 2nd-highest
Kaikohe	20.6	28th	1973	3rd-highest
Rotorua	19.5	27th	1972	3rd-highest
Whatawhata	20.4	27th	1952	3rd-highest
Hamilton (Ruakura)	21.1	27th	1940	3rd-highest
Blenheim	20.4	25th	1972	Equal 3rd-highest
Auckland (North Shore)	21.0	27th	1994	4th-highest
Lake Tekapo	18.0	25th	1928	Equal 4th-highest
Low records or near-records				
Turangi	0.6	5th	1968	Lowest
Queenstown	0.3	4th	1871	Lowest
Lumsden	-0.4	4th	1982	Lowest
Milford Sound	3.5	7th	1934	Equal lowest
Alexandra	1.1	4th	1983	2nd-lowest
Greymouth	5.6	9th	1947	2nd-lowest
Tiwai Point	4.2	14th	1970	3rd-lowest
Puysegur Point	6.5	14th	1978	Equal 3rd-lowest
Ranfurly	-1.1	4th	1975	4th-lowest
Manapouri	-1.2	4th	1963	4th-lowest
Paraparaumu	3.7	5th	1953	Equal 4th-lowest
Wellington (Airport)	7.2	5th	1962	Equal 4th-lowest

Wind

On 1-2 January, a subtropical low pressure system brought strong easterly quarter (northeast to southeast) winds to eastern parts of the northern North Island. A launch near Kawau Island broke free from its mooring and washed up ashore. Campers' belongings were blown around campsites, and tents were flattened by the wind. Short power cuts occurred in isolated areas of Northland, Auckland, and Coromandel due to trees falling on power lines.

On 8 January, strong winds were experienced across both Islands. Auckland and Wellington commuter ferries were cancelled and flights in and out of Wellington were delayed and cancelled as the stormy weather whipped up fierce winds. Wellington was affected by gale force winds up to 140 km/hr, and an open-air concert in the Botanic Gardens was cancelled. One lane of SH 1 from Kilbirnie to Wellington Airport was closed, due to strong winds and the Zephyrometer wind needle sculpture

making the lane too hazardous to open. A tree blown over by strong winds blocked SH 32 between Kinloch and Mangakino. High winds in Picton flattened tents at a campsite.

On 9 January, strong gusts blew out windows at the Remarkables Ski Area base, causing at least \$100,000 worth of damage.

On 15 January, strong winds affected Canterbury. Flights were cancelled in Christchurch, power was cut to some residents, and trees and power lines were felled by the wind. One fallen tree closed Armagh Street in central Christchurch. Organisers of the World Busker's Festival were forced to cancel all performances in Hagley Park during the day due to safety concerns. The wind fanned a bush fire near Kaikoura, which forced the closure of the highway and the train line.

The highest wind gust was 183 km/hr, observed at Cape Turnagain on 10 January.

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

Location	Extreme wind gust (km/hr)	Date of extreme gust	Year records began	Comments
Motu	95	8th	1991	Highest
Mahia	93	28th	1991	2nd-highest
South West Cape	165	9th	1991	Equal 2nd-highest
Kaukau Top	150	8th	1969	Equal 3rd-highest
Cape Reinga	122	2nd	1974	4th-highest

Lightning and Hail

On 18 January, a number of thunderstorms affected Wellington, causing over 28 lightning strikes in the area.

On 27 January, thunderstorms in Auckland caused two flights to be delayed as they had been affected by cross winds and heavy rain. The planes were forced to circle until they had clearance to land.

On 30 January, thunderstorms in Auckland caused heavy rain and lightning strikes across the south and east of the region.

Cloud and fog

On 17 January, sea fog cancelled or delayed at least 40 flights in Wellington.

For further information, please contact:

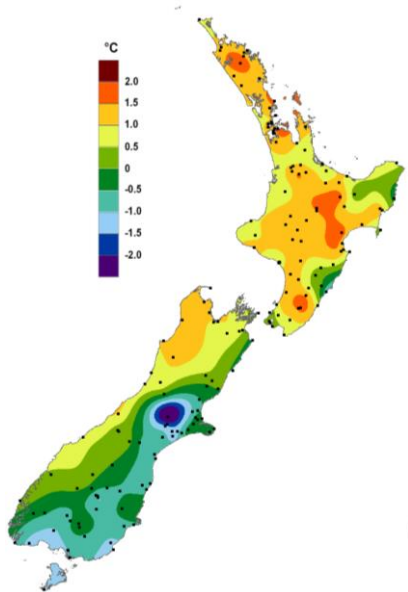
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January 2016 mean temperature, expressed as a departure from average (1981-2010 average).

Temperatures were well above average (>1.2°C) for much of the North Island and above average (+0.5°C to +1.2°C) for the west and north of the South Island.

Temperatures were below (-0.5°C to -1.2°C) or well below (>-1.2°C) average for the east and south of the South Island.

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