

Second warmest autumn on record, wet for the West Coast

Temperature	Autumn temperatures were well above average (>1.20°C) for New Zealand. Pockets of above average temperatures (+0.51°C to +1.20 °C) were observed in Gisborne, Waikato, Marlborough, Nelson, Tasman, the West Coast and Southland. No locations observed average temperatures (-0.50°C to +0.50°C) or below average temperatures.
Rainfall	Rainfall was above normal (120-149%) for the western portion of the South Island. Rainfall in northern and eastern parts of the North Island as well as Marlborough and Canterbury was below normal (50-79%). Near normal rainfall (80-119%) was observed in western Waikato, Taranaki, Manawatu-Whanganui and western Wellington.
Sunshine	Autumn sunshine was near normal for the majority of the country. Above normal sunshine (110-125%) was observed in Northland, parts of Auckland and eastern parts of the Gisborne, Wellington, Canterbury and Otago regions.
Soil Moisture	As at 1 June 2016, soil moisture levels were below normal for the time of year for large parts of Gisborne, Hawke's Bay, and the Wairarapa as well as central and northern parts of Canterbury. Soil moisture levels for the remainder of the country were near normal for the time of year.

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Overview

During autumn, air pressure was lower than normal south of Australia while slightly higher than normal pressures existed to the northeast of New Zealand. The resulting pressure gradient led to a prevalence of north-westerly wind flow throughout the season. In addition to frequent north-westerlies, warmer than usual sea surface temperatures, particularly to the west of the country persisted throughout autumn. The combination of these two factors contributed to the exceptional warmth felt across New Zealand throughout all three months of autumn. Virtually every climate station in New Zealand recorded above average (+0.51°C to +1.20 °C) temperatures or higher during autumn, with numerous locations experiencing record or near-record warmth (particularly in the North Island). The nationwide average temperature in autumn 2016 was 14.7°C ¹(1.4°C above the 1981-2010 autumn average from NIWA's seven station temperature series which began in 1909),

¹ Interim value

making autumn 2016 the 2nd warmest autumn on record using this series. The warmest autumn on record was autumn 1938.

Rainfall throughout the months of autumn was variable. It was particularly wet in Tasman, West Coast and western Southland during May (in excess of 200% of normal May rainfall was recorded there) and as a result rainfall for the season as a whole was above (120-149%) to well above (>149%) normal. Conversely, rainfall in northern and eastern parts of the North Island as well as Marlborough and Canterbury was below normal (50-79%). Pockets of well below normal rainfall (<50%) were recorded in Northland, Gisborne, Hawke's Bay, eastern Wellington and Canterbury.

Soil moisture levels at the beginning of autumn were below normal for the time of year for the lower North Island and Canterbury. April was a particularly dry month in the North Island and eastern South Island. As a result, soil moisture levels in these regions gradually decreased as autumn progressed. The arrival of steady rain during the second half of May led to soil moisture levels gradually rising to near normal in southern Canterbury, Otago, Southland, the West Coast and western parts of the North Island. As at 1 June 2016, soil moisture levels remain below normal for the time of year for large parts of Gisborne, Hawke's Bay, the Wairarapa as well as central and northern parts of Canterbury.

Autumn sunshine was near normal for the majority of the country. Above normal sunshine (110-125%) was observed in Northland, parts of Auckland and eastern parts of Gisborne, Wellington, Canterbury and Otago.

Further Highlights:

- The highest temperature was 33.1°C, observed at Hastings, Napier and Gisborne on 8 March
- The lowest temperature was -5.6°C, observed at Ranfurly on 25 May.
- The highest 1-day rainfall was 304 mm, recorded at Takaka on 23 March.
- The highest wind gust was 196 km/hr, observed at Cape Turnagain on 10 March.
- Of the six main centres in autumn 2016, Auckland was the warmest and sunniest, Dunedin was the coldest, Christchurch was the driest, Tauranga was the wettest and cloudiest
- Of the available, regularly reporting sunshine observation sites, the sunniest four locations in 2016 so far (1 January – 31 May) were Richmond (1289 hours), Blenheim (1167 hours), New Plymouth (1164 hours) and Takaka (1123 hours).

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Temperature: 2nd warmest autumn on record

All three months of autumn saw temperatures for the majority of the country in the above average (+0.51°C to +1.20°C) and well above average (>1.20°C) ranges. As a result, autumn 2016 as whole was the 2nd warmest on record according to NIWA's seven station series. This record is only surpassed by autumn 1938. The nationwide average temperature in autumn 2016 was 14.7°C (1.4°C above the 1981-2010 autumn average from NIWA's seven station temperature series which began in 1909)

Numerous locations experienced record or near record mean, mean maximum and mean minimum high autumn temperatures. Notable records include Lincoln and Levin which observed their highest autumn average temperature with records extending back to 1881 and 1895, respectively.

Record² or near-record mean air temperatures for autumn were recorded at:

Location	Mean air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Auckland (Pukekohe)	16.9	1.4	1969	Highest
Auckland (Whangaparaoa)	18.4	1.5	1982	Highest
Cape Reinga	18.2	1.2	1951	Highest
Cheviot	13.5	1.7	1982	Highest
Gisborne	16.8	2.0	1905	Highest
Hamilton	16.3	1.8	1906	Highest
Hawera	15.3	1.9	1977	Highest
Hicks Bay	17.7	1.8	1969	Highest
Kaikohe	18.4	2.7	1973	Highest
Kaikoura	14.7	1.6	1963	Highest
Kaitaia	18.5	1.6	1948	Highest
Levin	15.7	1.9	1895	Highest
Lincoln	13.9	1.8	1881	Highest
Masterton	15.5	2.7	1992	Highest
New Plymouth	16.3	1.8	1944	Highest
Ngawi	16.5	1.4	1972	Highest
Port Taharoa	17.6	1.4	1973	Highest
Rotorua	14.9	1.6	1964	Highest
Stratford	14.0	1.5	1960	Highest
Tara Hills	11.3	1.6	1949	Highest
Taupo	14.2	2.1	1949	Highest
Tauranga	17.3	1.6	1913	Highest
Te Kuiti	15.5	1.4	1959	Highest

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.

Tiwai Point	12.9	1.9	1970	Highest
Waione	15.5	1.5	1991	Highest
Waipara West	14.6	1.6	1973	Highest
Whanganui (Spriggens Park)	16.7	2.0	1937	Highest
Wellington	15.9	1.4	1962	Highest
Whangarei	18.5	1.9	1967	Highest
Whatawhata	17.5	2.8	1952	Highest
Auckland (Mangere)	18.2	1.9	1959	2nd-highest
Auckland (Whenuapai)	17.1	1.5	1945	2nd-highest
Christchurch (Riccarton)	14.9	2.5	1863	2nd-highest
Dannevirke	14.7	1.8	1951	2nd-highest
Dunedin (Musselburgh)	13.0	1.5	1947	2nd-highest
Farewell Spit	16.3	1.6	1971	2nd-highest
Hastings	15.7	2.1	1965	2nd-highest
Le Bons Bay	13.5	1.2	1984	2nd-highest
Mahia	16.4	1.4	1990	2nd-highest
Mokohinau	19.3	1.7	1994	2nd-highest
Motu	12.9	1.7	1990	2nd-highest
Nelson	14.8	1.5	1943	2nd-highest
Nugget Point	11.8	1.1	1970	2nd-highest
Paeroa	16.8	1.6	1947	2nd-highest
Palmerston North	15.6	1.9	1928	2nd-highest
Paraparaumu	15.6	1.9	1953	2nd-highest
South West Cape	11.7	1.0	1991	2nd-highest
Taumarunui	14.8	1.7	1947	2nd-highest
Te Puke	16.0	1.3	1973	2nd-highest
Waipawa	14.5	1.4	1945	2nd-highest
Whitianga	16.9	1.5	1962	2nd-highest
Alexandra	12.1	1.2	1983	3rd-highest
Culverden	13.1	1.4	1928	3rd-highest
Gore	11.2	1.2	1971	3rd-highest
Haast	13.1	1.1	1949	3rd-highest
Hanmer Forest	12.2	1.5	1906	3rd-highest
Invercargill	11.9	1.6	1905	3rd-highest
Lake Tekapo	11.0	1.7	1927	3rd-highest
Lumsden	11.2	1.3	1982	3rd-highest
Motueka	14.3	1.4	1956	3rd-highest
Ohakune	12.4	1.5	1962	3rd-highest
Puysegur Point	13.1	1.4	1978	3rd-highest
Ranfurly	10.6	1.5	1975	3rd-highest
Reefton	13.3	1.6	1960	3rd-highest
Takaka	14.7	1.5	1978	3rd-highest
Waiau	13.4	1.7	1974	3rd-highest
Wairoa	16.3	1.6	1964	3rd-highest
Westport	14.5	1.2	1937	3rd-highest
Auckland (North Shore)	18.4	1.7	1994	4th-highest
Balclutha	11.6	0.9	1964	4th-highest
Lauder	11.4	1.6	1924	4th-highest

Oamaru	12.8	1.2	1908	4th-highest
Turangi	13.3	1.2	1968	4th-highest
Wanaka	12.1	1.5	1955	4th-highest
Whakatane	16.3	1.8	1974	4th-highest
Low records or near-records				
None observed				

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

Location	Mean maximum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Kaikohe	22.1	2.8	1973	Highest
Whangarei	22.4	1.9	1967	Highest
Mokohinau	21.2	1.7	1994	Highest
Auckland (Mangere)	21.8	1.8	1959	Highest
Whatawhata	22.1	2.5	1952	Highest
New Plymouth	20.4	2.0	1944	Highest
Ngawi	19.8	1.7	1972	Highest
Gisborne	21.9	1.8	1905	Highest
Hastings	21.4	2.1	1965	Highest
Mahia	19.4	1.6	1990	Highest
Palmerston North	20.3	1.7	1928	Highest
Stratford	18.4	1.6	1960	Highest
Hawera	19.4	2.1	1977	Highest
Takaka	20.3	1.5	1978	Highest
Nelson	19.8	1.6	1943	Highest
Hanmer Forest	20.4	2.8	1906	Highest
Kaikoura	18.4	2.0	1963	Highest
Christchurch (Riccarton)	21.0	3.6	1863	Highest
Tiwai Point	17.2	2.8	1970	Highest
Kaitaia	22.5	1.8	1948	2nd-highest
Auckland (Whangaparaoa)	21.2	1.5	1982	2nd-highest
Auckland (Whenuapai)	21.6	1.3	1945	2nd-highest
Motu	18.4	2.4	1990	2nd-highest
Masterton	22.1	3.1	1992	2nd-highest
Waipawa	20.7	2.0	1945	2nd-highest
Wairoa	21.6	1.9	1964	2nd-highest
Paraparaumu	19.6	1.8	1953	2nd-highest
Wellington	19.0	1.6	1962	2nd-highest
Whanganui (Spriggens Park)	21.0	2.2	1937	2nd-highest
Farewell Spit	19.6	1.2	1971	2nd-highest
Puysegur Point	15.5	1.5	1978	2nd-highest
Appleby	20.5	1.9	1932	2nd-highest
Waiau	20.4	2.2	1974	2nd-highest
Cheviot	20.2	2.2	1982	2nd-highest
Lincoln	19.4	2.1	1881	2nd-highest
Le Bons Bay	16.8	1.5	1984	2nd-highest

Timaru	18.1	1.4	1885	2nd-highest
Dunedin (Musselburgh)	17.3	2.2	1947	2nd-highest
Lumsden	16.6	1.4	1982	2nd-highest
Balclutha	16.9	1.4	1964	2nd-highest
Nugget Point	15.2	1.3	1970	2nd-highest
South West Cape	13.7	0.7	1991	2nd-highest
Rotorua	19.1	1.1	1964	3rd-highest
Waione	20.7	1.3	1991	3rd-highest
Hicks Bay	21.1	2.1	1969	3rd-highest
Levin	20.0	1.8	1895	3rd-highest
Motueka	20.4	1.7	1956	3rd-highest
Blenheim	20.3	1.3	1932	3rd-highest
Mt Cook	16.2	1.7	1929	3rd-highest
Waipara	20.2	1.7	1973	3rd-highest
Lake Tekapo	17.0	1.8	1927	3rd-highest
Tara Hills	17.7	1.6	1949	3rd-highest
Ranfurly	17.2	1.8	1975	3rd-highest
Cromwell	18.9	1.8	1949	3rd-highest
Hamilton	21.4	1.6	1906	4th-highest
Dannevirke	19.2	1.6	1951	4th-highest
Napier	21.2	1.8	1870	4th-highest
Reefton	18.3	1.2	1960	4th-highest
Gore	16.2	1.8	1971	4th-highest
Invercargill	16.6	1.9	1905	4th-highest
Low records or near-records				
None observed				

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

Location	Mean minimum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Kaikohe	14.8	2.6	1973	Highest
Dargaville	14.1	1.7	1943	Highest
Whangarei	14.6	1.9	1967	Highest
Mokohinau	17.4	1.7	1994	Highest
Tauranga	13.3	1.9	1913	Highest
Te Puke	11.4	1.9	1973	Highest
Taupo	9.8	2.7	1949	Highest
Pukekohe	12.7	1.5	1969	Highest
Whatawhata	12.8	3.0	1952	Highest
Port Taharoa	14.9	2.3	1973	Highest
Te Kuiti	10.4	1.8	1959	Highest
New Plymouth	12.2	1.5	1944	Highest
Waione	10.3	1.7	1991	Highest
Levin	11.4	2.2	1895	Highest
Hawera	11.1	1.8	1977	Highest
Farewell Spit	12.9	2.0	1971	Highest

Haast	9.6	1.5	1949	Highest
Secretary Island	10.9	1.2	1985	Highest
Cape Campbell	12.6	1.0	1953	Highest
Kaikoura	11.1	1.1	1963	Highest
South West Cape	9.7	1.2	1991	Highest
Cape Reinga	15.8	1.5	1951	2nd-highest
Kaitaia	14.5	1.5	1948	2nd-highest
Auckland (Whenuapai)	12.7	1.6	1945	2nd-highest
Whitianga	12.5	1.9	1962	2nd-highest
Rotorua	10.8	2.1	1964	2nd-highest
Auckland (Mangere)	14.6	2.1	1959	2nd-highest
Hamilton	11.2	2.1	1906	2nd-highest
Taumarunui	9.3	1.9	1947	2nd-highest
Masterton	8.9	2.4	1992	2nd-highest
Dannevirke	10.3	1.9	1951	2nd-highest
Hicks Bay	14.3	1.5	1969	2nd-highest
Paraparaumu	11.7	2.1	1953	2nd-highest
Wellington	12.9	1.3	1962	2nd-highest
Stratford	9.6	1.4	1960	2nd-highest
Ohakune	7.7	1.7	1962	2nd-highest
Whanganui (Spriggens Park)	12.4	1.9	1937	2nd-highest
Reefton	8.4	1.9	1960	2nd-highest
Puysegur Point	10.7	1.4	1978	2nd-highest
Nelson	10.0	0.9	1943	2nd-highest
Cheviot	6.7	1.1	1982	2nd-highest
Invercargill	7.6	1.7	1905	2nd-highest
Auckland (Whangaparaoa)	15.6	1.6	1982	3rd-highest
Paeroa	12.3	2.2	1947	3rd-highest
Ngawi	13.1	1.1	1972	3rd-highest
Gisborne	11.8	2.2	1905	3rd-highest
Wairoa	11.0	1.3	1964	3rd-highest
Mahia	13.3	1.2	1990	3rd-highest
Waipara West	9.0	1.6	1973	3rd-highest
Le Bons Bay	10.1	1.0	1984	3rd-highest
Lumsden	5.8	1.1	1982	3rd-highest
Tiwai Point	8.7	0.9	1970	3rd-highest
Nugget Point	8.4	0.9	1970	3rd-highest
Castlepoint	12.8	1.0	1972	4th-highest
Westport	10.6	1.2	1937	4th-highest
Milford Sound	8.3	1.9	1934	4th-highest
Culverden	6.8	1.6	1928	4th-highest
Manapouri	6.4	2.3	1963	4th-highest
Alexandra	5.5	1.2	1983	4th-highest
Low records or near-records				
None observed				

Rainfall: Wet in the west of the South Island, dry in the east of the North Island

Rainfall was variable throughout the months of autumn. During March, moist tropical air masses brought significant rainfall to some parts of the country, while in April the prevalence of high pressure contributed to a lack of meaningful rainfall. During the second half of May, a succession of low pressure systems brought stormy and active weather to the South Island and western North Island.

For the season as a whole, wet weather during May in Tasman, West Coast and western Southland (in excess of 200% of normal May rainfall was recorded there) resulted in above (120-149%) to well above (>149%) normal seasonal rainfall totals.

Conversely, autumn rainfall in northern and eastern parts of the North Island as well as Marlborough and Canterbury was below normal (50-79%). Pockets of well below normal rainfall (<50%) were recorded in Northland, Gisborne, Hawke's Bay, eastern Wellington and Canterbury. Dargaville experienced its driest autumn on record with records extending back to 1943. Near normal rainfall (80-119%) was observed in western Waikato, Taranaki, Manawatu-Whanganui and western Wellington.

Record or near-record autumn rainfall totals were recorded at:

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
High records or near-records				
South West Cape	515	152	1991	Highest
Milford Sound	3017	175	1929	2nd-highest
Takaka	719	157	1976	3rd-highest
Palmerston North	356	165	1928	4th-highest
Low records or near-records				
Dargaville	145	52	1943	Lowest
Auckland (Mangere)	180	65	1959	2nd-lowest
Castlepoint	70	30	1902	2nd-lowest
Mahia	140	44	1990	3rd-lowest
Taupo	143	69	1949	4th-lowest
Kaikoura	71	41	1898	4th-lowest

Sunshine: Near normal for most

Autumn sunshine was near normal for the majority of the country. Above normal sunshine (110-125%) was observed in Northland, parts of Auckland and eastern parts of Gisborne, Wellington, Canterbury and Otago. Timaru has the sunniest autumn on record with records extending back to 1930.

Of the available, regularly reporting sunshine observation sites, the sunniest four locations in 2016 so far (1 January – 31 May) were Richmond (1289 hours), Blenheim (1167 hours), New Plymouth (1164 hours) and Takaka (1123 hours).

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

Location	Sunshine hours	Percentage of normal	Year records began	Comments
High records or near-records				
Takaka	621	110	1985	Highest
Appleby	681	111	1995	Highest
Timaru	559	121	1930	Highest
Ashburton	562	128	1930	3rd-highest
New Plymouth	621	116	1972	4th-highest
Cheviot	534	115	1983	4th-highest
Low records or near-records				
Turangi	447	90	1976	3rd-lowest
Hokitika	351	79	1912	Equal 4th-lowest

Autumn climate in the six main centres

Autumn temperatures were well above average (>1.20°C above the autumn average) for all main centres. Tauranga experienced its warmest autumn on record while Auckland and Dunedin experienced their second warmest autumn on record. Rainfall was below normal (50-79%) in Auckland and Hamilton and near normal (80-119%) in the remaining main centres. Below normal sunshine hours (75-89%) were observed in Tauranga and Hamilton. Of the six main centres in autumn 2016, Auckland was the warmest and sunniest, Dunedin was the coldest, Christchurch was the driest, and Tauranga was the wettest and cloudiest.

Autumn 2016 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland ^a	18.2	+1.9	Well above average (2 nd highest on record)
Tauranga ^b	17.3	+1.6	Well above average (highest on record)
Hamilton ^c	15.8	+1.6	Well above average (3 rd highest on record)
Wellington ^d	15.3	+1.6	Well above average
Christchurch ^e	13.3	+1.4	Well above average
Dunedin ^f	13.0	+1.5	Well above average (2 nd highest on record)
Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland ^a	180	65%	Below normal (2 nd lowest on record)
Tauranga ^b	321	98%	Near normal
Hamilton ^c	202	73%	Below normal
Wellington ^d	290	103%	Near normal
Christchurch ^e	169	114%	Near normal
Dunedin ^f	168 ³	94%	Near normal

³ Missing 5 days of data.

Sunshine			
Location	Sunshine (hours)	% of normal	Comments
Auckland ^a	509	101%	Near normal
Tauranga ^b	427	76%	Below normal
Hamilton ^c	443	89%	Below normal
Wellington ^d	499	100%	Near normal
Christchurch ^e	477 ⁴	96%	Near normal
Dunedin ^f	413 ⁵	109%	Near normal

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

Highlights and extreme events

This section contains information pertaining to some of the more significant highlights and extreme events that occurred during autumn 2016. Note that a more detailed list of significant weather events for autumn 2016 can be found in the *Highlights and extreme events* section of NIWA's monthly Climate Summaries. These monthly summaries are available online, and may be viewed at the following website: <http://www.niwa.co.nz/climate/summaries/monthly>

Temperatures

A strong ridge of high pressure resided over the country from 5-8 of March and provided a period of unusually warm and settled weather. On the 8th, the temperature reached its apex as northwest flow ahead of a weakening cold front accentuated the warmth with a Foehn effect on the eastern side of the North Island. This allowed for the highest temperatures of the month to occur as Hastings, Napier and Gisborne all reached 33.1°C.

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

Location	Extreme maximum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Mokohinau	25.4	Mar-6th	1994	Highest
Ngawi	30.6	Mar-6th	1972	Highest
Napier	33.1	Mar-8th	1868	Highest
Hastings	33.1	Mar-8th	1965	Highest
Takaka	30.5	Mar-7th	1978	Highest
Farewell Spit	27.5	Mar-7th	1971	Highest
Motueka	31.4	Mar-6th	1956	Highest
Appleby	29.6	Mar-6th	1932	Highest
Nelson	29.0	Mar-7th	1943	Highest
Le Bons Bay	28.7	Mar-10th	1984	Highest
Kaikohe	27.5	Apr-2nd	1973	2nd-highest

⁴ Missing 4 days of data.

⁵ Missing 9 days of data.

Masterton	30.5	Mar-6th	1992	2nd-highest
Gisborne	33.1	Mar-8th	1905	2nd-highest
Wairoa	32.0	Mar-8th	1964	2nd-highest
Mahia	30.4	Mar-8th	1990	2nd-highest
Christchurch (Riccarton)	32.9	Mar-20th	1863	2nd-highest
Whakatane	28.7	Mar-8th	1975	3rd-highest
Castlepoint	28.5	Mar-6th	1972	3rd-highest
Dunedin	31.5	Mar-19th	1962	Equal 3rd-highest
Tiwai Point	26.7	Mar-14th	1970	4th-highest
Balclutha	30.0	Mar-19th	1964	4th-highest
South West Cape	22.2	Mar-19th	1991	4th-highest
Low records or near-records				
None observed				

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

Location	Extreme minimum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Mokohinau	21.1	Mar-24th	1994	Highest
Auckland (Whangaparaoa)	20.0	Mar-24th	1982	Highest
Secretary Island	17.8	Mar-20th	1988	Highest
Nelson	20.5	Mar-7th	1943	Highest
Waipara West	21.5	Mar-21st	1973	Highest
Lake Tekapo	17.7	Mar-8th	1928	Highest
Gore	16.9	Mar-20th	1972	Highest
Waione	18.4	Mar-6th	1993	Equal highest
Hawera	19.1	Mar-24th	1977	2nd-highest
Milford Sound	18.1	Mar-20th	1935	2nd-highest
Kaikohe	20.1	Mar-24th	1973	Equal 2nd-highest
Mt Cook	17.3	Mar-7th	1929	Equal 2nd-highest
Paraparaumu	19.0	Mar-8th	1972	3rd-highest
Waiau School	18.5	Mar-7th	1974	3rd-highest
Manapouri	16.5	Mar-6th	1973	3rd-highest
Paeroa	20.4	Mar-24th	1971	Equal 3rd-highest
Hamilton	19.9	Mar-24th	1946	Equal 3rd-highest
New Plymouth	20.0	Mar-24th	1944	Equal 3rd-highest
Masterton	18.1	Mar-8th	1992	Equal 3rd-highest
Puysegur Point	17.3	Mar-20th	1978	Equal 3rd-highest
Cape Reinga	19.6	Mar-23rd	1971	4th-highest
Auckland (North Shore)	20.8	Mar-24th	1994	4th-highest
Farewell Spit	18.8	Mar-7th	1972	4th-highest
Reefton	17.0	Mar-8th	1972	4th-highest
Tara Hills	16.3	Mar-6th	1949	4th-highest
Invercargill	17.3	Mar-20th	1905	4th-highest
Balclutha	14.5	Mar-21st	1972	4th-highest

Whangarei	21.5	Mar-24th	1967	Equal 4th-highest
Tiwai Point	16.0	Mar-20th	1972	Equal 4th-highest
Low records or near-records				
None observed				

Rain and slips

On 17 March, the eastern Coromandel Peninsula was hit by heavy rain and flooding. Whitianga was cut off for a time due to floodwaters closing roads.

Early on 24 March, a state of emergency was declared on the South Island's west coast after strong winds and heavy rain pummelled the area. The Waiho River in Franz Josef breached its banks, forcing nearly 200 people to evacuate from the town's Scenic Circle Hotel, Top 10 Holiday Park and Westwood Lodge. The Mueller Hotel in Franz Josef bore the brunt of the flood, with silt coating every floor and water marks 1.5m up the walls, and the river was still flowing through the hotel days later. The hotel may have to be demolished. SH 6 around Franz Josef was closed for a time due to flooding. The area from Motueka to Collingwood in Tasman District was inundated by very heavy rain in the early hours of the morning, causing major flooding and river breaches. The flooding closed SH 60 from Riwaka to Collingwood as well as numerous local roads, and caused around 12 households to be evacuated. Many orchards in the area were flooded, affecting crops and machinery in the middle of harvesting season. Some beaches around Nelson experienced sewage overflows, and tourists who were trapped in their campervan by rising water in Motueka were rescued by a farmer.

On 17 April heavy rain fell over north-eastern parts of the North Island. The Coromandel Peninsula was particularly hard-hit, where flooding and slips closed roads and damaged farm fencing.

On 5 May, a relatively short but intense period of rainfall resulted in flooding for parts of the Wellington region. Porirua was worst affected, with five houses flooded, five schools closed, and surface flooding on many roads. Farther north, Palmerston North also suffered surface flooding after a torrential downpour of rain. In the three hours from midday to 3 p.m., the city recorded 47.8 mm of rain. This was more rainfall than the total rainfall that had been recorded in the city over the preceding 41 days.

On 20 May, heavy rain caused slips and the closure of State Highway 6 north of Greymouth. The heavy rain also caused localised flooding in Hokitika and Greymouth.

On 22 and 23 May heavy rain caused flooding in parts of Dunedin. 50mm of rain in 24 hours was recorded at Dunedin airport – the 4th highest 1-day rainfall total on record. Surface flooding occurred along a number of highways in Southland and Otago. Flooding on State Highway 6 between Nokomai and Fairlight and State Highway 83 between Oamaru and Kurow meant extra care was needed.

On 30 May, heavy rain in the early morning hours led to flooding in the Wellington region. Johnsonville Shopping Centre was flooded as well as parts of Strathmore Park. The rain also contributed to a slip at Pukerua Bay on the Kapiti coast which caused one lane on State Highway 1 to be closed. Two slips occurred in the Manawatu Gorge. Several slips along State Highway 60 between Riwaka and Takaka reduced the highway to one lane.

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

Location	Extreme 1-day rainfall (mm)	Date of extreme rainfall	Year records began	Comments
Takaka	304	Mar-23rd	1976	Highest
Motueka	193	Mar-23rd	1956	Highest
Appleby	116	Mar-23rd	1932	Highest
Nelson	124	Mar-23rd	1941	Highest

Wind

On 7 and 8 March, northwest winds fanned a bush fire near Hanmer Springs. The town was cut off for a time due to road closures around the fire, and many residents lost power.

On 10 March, high winds affected much of the South Island. All flights in and out of Dunedin and Invercargill were cancelled for a time, and downed trees blocked roads in coastal Otago. The winds also caused damage to power lines, leading to power outages in many parts of Otago and Southland. Dunedin Airport also lost power for a short time and had to rely on its generator. In Canterbury, the high winds fanned numerous out-of-control bush and scrub fires, particularly near Darfield and Mt Somers. Wind warnings were in place for SH 2 at Rimutaka Hill, SH 87 from Outram to Kyeburn, SH 1 from Palmerston to Waitaki Bridge, SH 83 from Omarama to Pukeuri, SH 8 from Lindis Pass to Twizel, SH 8 from Pukaki to Twizel, SH 80 at Mt Cook, SH 1 from Rakaia to Glenavy, SH 8 from Pukaki to Fairlie, and SH 73 from Springfield to Castle Hill, warning that extra care was needed for high sided vehicles and motorcycles. On a bridge over the Pukaki-Ohau canal, a truck trailer flipped in the high winds. Wind-driven waves crashed over coastal roads and the high tide flooded the Otepunui Garden area in Invercargill.

On 23-24 March, strong winds battered northern and western parts of the country. Almost 18,000 homes in Auckland and Northland were without power, trees fell on powerlines and trampolines were blown onto roofs. Wind warnings were in place for the Auckland Harbour Bridge and SH 1 at the Desert Road. Auckland ferry services were cancelled or delayed due to the resulting rough seas.

On 12 May, strong winds struck many parts of the country. In Wellington, a glass pane was blown out of a CBD high-rise, the Cook Strait ferry was cancelled and two Air New Zealand flights were forced to turn back to Auckland in the evening after high winds whipping around the capital stopped them from landing. In Carterton, 1500 homes lost power which was quickly restored. Motorists were warned to take care on SH1 from Blenheim to Kaikoura, SH73 from Arthur's Pass to Springfield and SH7 from Hanmer Springs to Springs Junction due to strong winds. Small tornadoes were reported on the West Coast. One tornado blew a 2000-litre water tank off its stand. State Highway 1 was partially closed north of Christchurch after trees were knocked over by strong gusts. Strong winds were also blamed for two vehicles rolling in Canterbury. State Highway 6 was closed at Haast Pass due to fallen trees but no detour was available. In Dunedin, air passengers experienced delays and cancellations because of the winds. The combination of winds and high tide also caused flooding along a coastal road in Dunedin.

On 13 May, wild weather continued overnight in Wellington. Rimutaka Hill Road between Wellington and Wairarapa was closed at 1am due to high winds causing a risk to motorists and a yacht broke its

mooring and smashed into the rocks in Evans Bay, Wellington. Downed power lines, roofs flying off buildings, and windows being smashed in were reported across greater Wellington.

On 16 May, strong winds overnight lifted roofs and knocked over powerlines in Canterbury. Power was cut to about 300 homes in Selwyn and Banks Peninsula but was restored by the morning.

On 20 May a tornado was reported in the Waikato, near Te Awamutu. The tornado lifted roofs, uprooted trees and tore down powerlines.

On 24 May, in the early morning hours, what is thought to have been a tornado left behind a path of destruction at Foxton beach caravan park (Manawatu).

On 29 May strong winds caused a tree to come down on a power line in Titirangi (Auckland) knocking out power to several houses. There were also reports of trees falling on houses in other parts of the Auckland region.

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

Location	Extreme wind gust (km/hr)	Date of extreme gust	Year records began	Comments
Manapouri	106	Mar-10th	1991	Highest
Auckland (North Shore)	76	May-29th	1994	3rd-highest
Hawera	96	Mar-24th	1986	3rd-highest
Hanmer Forest	100	May-12th	1995	3rd-highest
Ashburton	95	May-12th	1970	3rd-highest
Gore	107	Mar-10th	1987	3rd-highest
Castlepoint	152	Mar-10th	1972	Equal 3rd-highest
Paeroa	87	Mar-24th	1991	4th-highest
Hamilton	82	May-29th	1991	4th-highest
Dannevirke	85	May-16th	1961	4th-highest
Westport	111	May-18th	1973	4th-highest
Winchmore	91	May-12th	1970	Equal 4th-highest

Lightning and hail

On 3 April, a lightning strike set a hay barn alight near Rotorua.

On 16 May, more than 30,000 lightning strikes were recorded across the country associated with an active cold front. A second front brought further thunder and lightning overnight. One lightning strike split a tree on a Hamilton property in half.

On 24 May more than a thousand lightning strikes were recorded across the top of the South Island and bottom of the North overnight. 18,000 people in Wellington were left without power following the lightning strikes.

Cloud and fog

On 3 May, early morning fog in Auckland caused delays to the Birkenhead and Northcote Point ferry services.

On 4 May, fog in Auckland caused the delay or cancellation of at least 30 flights. Ferry services were also delayed by the poor visibility.

On 6 May, several flights were cancelled due to heavy fog at New Plymouth Airport.

On 11 May, low-lying cloud and poor weather in Nelson led to the cancellation of eight flights.

Snow and ice

On 22 May overnight snow caused disruptions in several parts of the country. 36 people travelling through remote Central Otago were hit by a sudden snowstorm and were trapped in their vehicles overnight. Continued bad weather slowed down rescue efforts and snow banks of up to 2m prevented a land-based rescue. Snow in the Crown Range also led to 12 vehicles sliding off the road and a further 20 vehicles were stranded before the pass was eventually closed. All motorists were rescued. Snow flurries had also been reported on Arthur's, Porters and Lindis Passes. In the North Island, Rimutaka Hill between Wellington and Wairarapa got a dusting of snow. Mt Ruapehu also received its second snowfall of the season.

For further information, please contact:

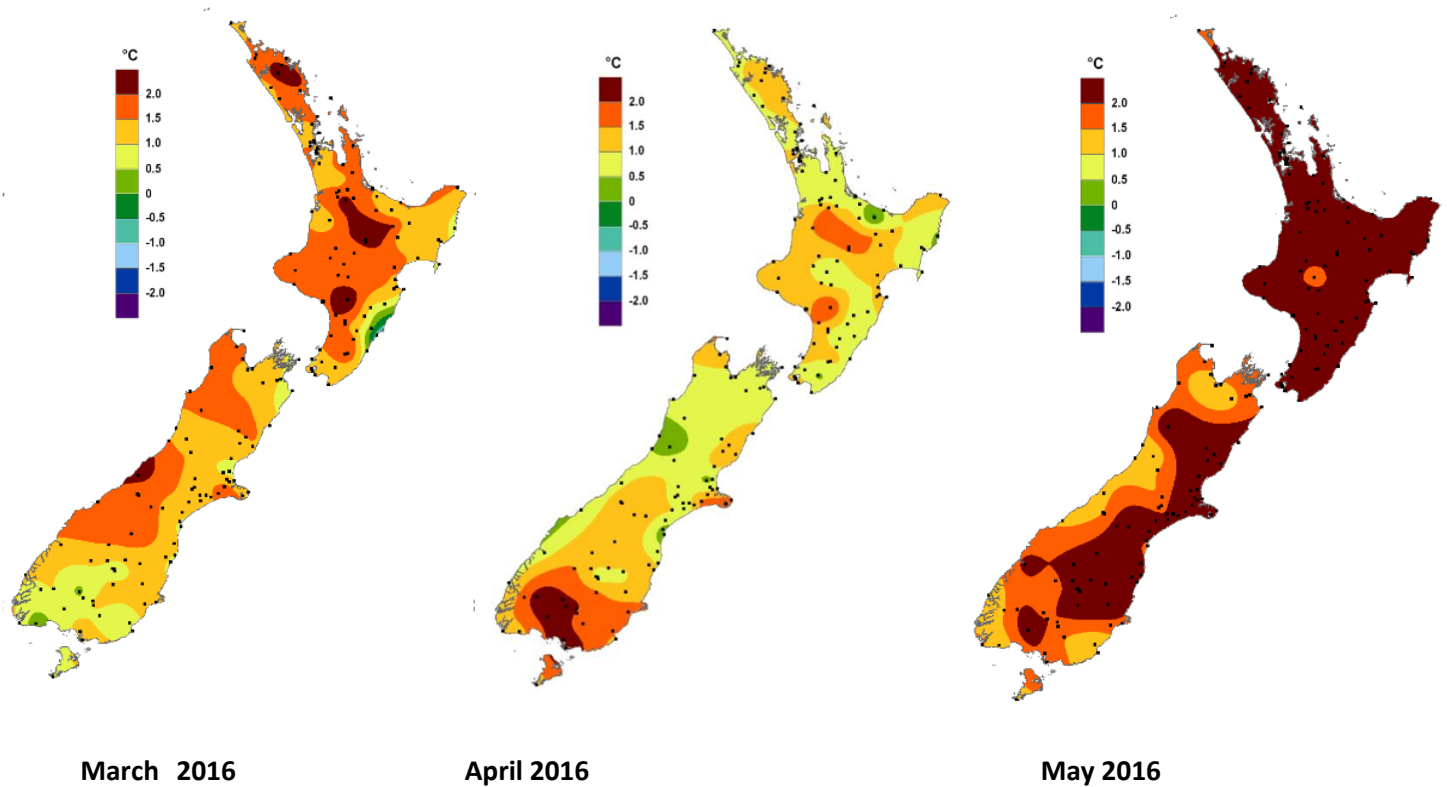
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March, April and May 2016 mean temperature, expressed as a departure from average (1981-2010 average).

It was consistently warmer than normal for all three months of autumn. According to the NIWA seven station series, autumn 2016 was the 2nd warmest autumn on record.

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