NIWA National Climate Centre

Annual Climate Summary

NIWA Taihoro Nukurangi

New Zealand Climate Summary: **2015** Issued: 11 January

The year 2015: Sunny for most, drier than normal for some

Rainfall	Yearly rainfall in 2015 was below normal (50-79% of the annual normal) in Northland, Tasman, Nelson and Canterbury, as well as for parts of eastern Waikato, Bay of Plenty, Gisborne and Wellington. Rainfall was in the near normal (within 20% of the annual normal) range for the remainder of New Zealand.
Soil moisture	Below normal soil moisture levels prevailed for the majority of the country through January and February. By the end of July, soil moisture levels had returned to near normal levels for much of the country with the exception of Hawke's Bay, Wairarapa and eastern parts of Canterbury and north Otago. Soil moisture levels around the country began to decrease again in October and as of 1 January 2016, soil moisture levels were below normal for the time of year for the entire country with the exception of the Auckland region and Coromandel where levels were near normal.
Temperature	Annual temperature was near average (within 0.5°C of the annual average) across much of the country. However, above average (+0.51 to 1.20°C above the annual average) temperature was recorded in isolated locations in the Bay of Plenty and Queenstown Lakes district.
Sunshine	2015 was a very sunny throughout the country. Above normal (110-125% of the annual normal) to well above normal (> 125% of the annual normal) sunshine was recorded for much of the South Island as well as northern and eastern parts of the North Island. Several locations observed their highest annual sunshine total on record.

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Overview

Annual mean sea level pressures for 2015 were higher than normal in the Tasman Sea and lower than normal to the south of New Zealand. This pressure set-up produced more south-westerlies than normal over the country. October was particularly extreme: the mean westerly winds over the southern half of the South

Island in October 2015 were the strongest since records began in 1941[1]. El Niño Southern Oscillation (ENSO)-positive conditions prevailed for much of the year with an El Niño event officially declared in June. The El Niño continued to intensify throughout the second half of the year becoming a key climate driver for New Zealand. By many measures this El Niño developed into one of the strongest since 1950.

As a whole, annual rainfall totals for 2015 were below normal (50-79% of the annual normal) in Northland, Tasman, Nelson and Canterbury as well as parts of eastern Waikato, Bay of Plenty, Gisborne and Wellington – a pattern aided by El Niño. Rainfall was in the near normal (within 20% of the annual normal) range for the remainder of New Zealand. It was the driest year on record for Kaitaia and Kerikeri which recorded 75% and 63% of their normal annual rainfall, respectively. There were no high total rainfall records or near-records set in 2015.

The dryness, in terms of rainfall, was also reflected in soil moisture levels throughout the year. 2015 started off very dry with below normal soil moisture levels observed for the majority of the country through January and February. It was particularly dry in central and north Otago, Canterbury and Marlborough. As a result, a drought was officially declared in those areas on 12 February. By the end of July, soil moisture levels had returned to near normal levels for much of the country with the exception of Hawke's Bay, Wairarapa and eastern parts of Canterbury and north Otago. With the intensification of El Niño, soil moisture levels around the country began to decrease again in October and as of 1 January 2016, soil moisture levels were below normal for the time of year for the entire country; the exceptions were the Auckland region and district of Thames-Coromandel, where soil moisture levels were near normal.

Temperature-wise, 2015 as a whole was near average across much of the country (within 0.5°C of the annual average). Despite this, several extreme temperature events occurred throughout the year and new records set. Most notably, -21°C was recorded at Tara Hills on 24 June which became the fourth temperature ever recorded in the country.

2015 was a very sunny year with above normal (110-125% of the annual normal) to well above normal (greater than 125% of the annual normal) sunshine recorded for much of the South Island and northern and eastern parts of the North Island. Nine locations around the country experienced their sunniest year on record with several more experiencing near-record sunshine hours.

The two warmest months in 2015 in terms of the 7-station temperature series were January (+1.1°C) and March (+1.0°C), due to enhanced north-easterly airflow. September was very cold (0.8°C below the September average[2]) with the 'most southerly'[3] September airflow for over 20 years (since 1994). The nation-wide average temperature for 2015 was 12.7°C (0.1°C above the 1981–2010 annual average), using NIWA's seven-station temperature series which begins in 1909. 2015 was the 27th-warmest year since 1909, based on this seven-station series.

[1] Based on the Trenberth "Z2 Index" derived from the Christchurch minus Campbell Island pressure difference.
[2] Note all temperature, rainfall and sunshine anomalies reported in this document are relative to the 1981-2010 average/normal.
[3] Based on the Trenberth "M1 Index" derived from the Hobart minus Chatham Island pressure difference.

Section 1: The year in review

The monthly sequence of New Zealand climate (with some exceptions) was as follows:

January 2015: A warm, sunny and very dry month for most of the country.

Rainfall was well below normal (< 50% of the January normal) or below normal (50-79% of the January normal) for most parts of the country. Parts of Northland, Auckland, Taranaki, Manawatu-Whanganui, Kapiti Coast, Wellington, Marlborough, north Canterbury and Central Otago received less than 10% of their respective January normal rainfall. Temperature was above average (0.51-1.20°C above the January average) or well above average (greater than 1.20°C above the January average) for most parts of the country. Most areas recorded above normal (110-125% of the January normal) or well above normal (greater than 125% of the January normal) sunshine.

February 2015: A dry month in the east of both islands and widespread dry soils.

Well below normal rainfall (< 50% of the February normal) occurred for parts of Northland, eastern Bay of Plenty, Gisborne, Hawke's Bay, Marlborough, Canterbury and north Otago. In contrast, parts of Central Otago and Southland received well above normal rainfall (greater than 149% of the February normal). By the end of February, soil moisture levels were below normal for extensive areas of New Zealand, with the exception of the Central Plateau, Whanganui, Central Otago and northern Southland. It was a cool month for the central North Island and southern Hawke's Bay where temperature was well below average (greater than 1.20°C below the February average). Total sunshine hours were well above normal (greater than 125% of the February normal) for western and central areas of the South Island.

March 2015: A warm month for all regions, and patches of wet and dry throughout New Zealand.

Well below normal rainfall (less than 50% of the March normal) occurred for parts of Northland, coastal northern Canterbury, Milford Sound and the Queenstown Lakes District. Conversely, rainfall was well above normal (greater than 149% of the March normal) in Napier and the north-western South Island. At the end of March soil moisture levels were well below normal in western Northland, Waikato, eastern Bay of Plenty, southern Hawke's Bay, Wairarapa, coastal northern Canterbury and parts of Southland. Temperature was above average (0.51-1.20°C above the March average) for most of the country. Numerous locations in all regions except for Otago and Southland experienced well above average temperature (greater than 1.20°C above the March average). It was a relatively cloudy month for much of the country, with many areas recording below normal sunshine (75-90%) - including parts of Northland, Waikato, Christchurch, and Otago.

April 2015: A wet and warm month for many parts of the country.

Rainfall was well above normal (greater than 149% of the April normal) or above normal (120-149% of the April normal) for southern, central and western parts of the North Island, western and northern parts of the South Island, and eastern and inland parts of Canterbury south of Christchurch. Rainfall was well below normal (< 50% of the April normal) or below normal (50-79% of the April normal) for Northland, Gisborne, northern Hawke's Bay and coastal north Canterbury, and soil moisture levels were below normal in these areas at the end of the month. It was a particularly warm month for West Coast, eastern parts of Canterbury, Kapiti Coast, Manawatu-Whanganui and Taranaki where temperature was well above average (greater than 1.20°C above the April average). Most of the country recorded near normal (90-109%) or below normal April sunshine.

May 2015: Dry and sunny for eastern parts of the country.

Rainfall was well below normal (< 50% of the May normal) or below normal (50-79% of the May normal) for eastern parts of New Zealand from Gisborne all the way south to north Otago. It was especially dry about north Canterbury where soils were considerably drier than normal for this time of year. In contrast, rainfall was well above normal (greater than 149% of the May normal) or above normal (120-149% of the May normal) for western parts of the South Island, the Southern Lakes, south-western and western parts of the North Island, and eastern Bay of Plenty. May temperature was above average (+0.51°C to +1.20°C) for parts of Southland, Otago, Canterbury, Wairarapa, Whanganui and Southern Taranaki. May temperature was below average in isolated parts of central Hawke's Bay and western Waikato (-0.51°C to -1.20°C). Sunshine was above normal (110-125% of the May normal) or well above normal (greater than 125% of the May normal) for these locations.

June 2015: Very wet in many parts and an extremely cold spell for the south.

It was a wet start to winter for much of the Manawatu-Whanganui, Taranaki, Westland, Tasman, Nelson, Marlborough, Canterbury, Otago, and Southland regions where rainfall was above normal (120-149% of the June normal) or well above normal (greater than 149% of the June normal). Urban and rural areas of Whanganui, Hokitika and Dunedin suffered significant flooding during the month. Temperatures plummeted over a number of days in late-June, especially in the Mackenzie Country where Tara Hills (near Omarama) observed -21.0°C: New Zealand's fourth-lowest temperature ever recorded. Well above normal (>125%) or above normal (110-125%) sunshine was recorded in Northland, Auckland, western Waikato, Wellington, Marlborough, north Canterbury, and Central Otago. Near normal sunshine (within 10% of normal) was recorded elsewhere, expect in Franz Josef and Tauranga where below normal sunshine was recorded.

July 2015: A dry month for many parts of the country.

Rainfall was well below normal (less than 50% of the July normal) or below normal (50-79% of the July normal) for many New Zealand regions. The exceptions were parts of Auckland, Waikato, Tasman, Nelson, West Coast and Southland where rainfall was typically near normal (80-119% of the July normal) or above normal (120-149% of the July normal). Mean temperature was below average (0.51-1.20°C below the July average) in parts of the Far North, Bay of Plenty, Gisborne, Wairarapa, West Coast, coastal South Canterbury and North Otago. In contrast, July temperature was well above average (greater than 1.20°C above the July average) in Central Otago. Mid-winter sunshine was plentiful for many areas, with Marlborough and Central Otago experiencing well above normal (more than 125% of the July normal) sunshine hours.

August 2015: A cool month in the south and dry in the east.

Rainfall was below normal (50-79% of the August normal) in eastern parts of both islands. It was particularly dry in North Canterbury and eastern Bay of Plenty where rainfall was well below normal (less than 50% of the August normal). Mean temperature was below average (0.51-1.20°C below the August average) in parts of Auckland, western Waikato, Tararua, Tasman, Canterbury, Otago and Southland, and well below average (greater than 1.20°C below the August average) in parts of South Canterbury and inland Southland. Sunshine was below normal (75-89% of the August normal) for south-western parts of the North Island and north-western parts of the South Island.

September 2015: Cool for most, and a wet end to the month for eastern North Island.

After a dry start to September, a stalled low pressure system delivered considerable rainfall to the eastern North Island. For September overall, rainfall was well above normal (greater than 149% of the September normal) for many parts of the Bay of Plenty, Gisborne, Hawke's Bay, eastern Manawatu-Whanganui, eastern Marlborough and northern Canterbury. Taranaki, western Manawatu-Whanganui, Tasman, Westland, Otago and Southland recorded below normal rainfall (50-79% of the September normal). Mean temperature was below average (0.51-1.20°C below the September average) for the vast majority of the country. Sunshine was near normal (90-109%) for much of the country. Above normal sunshine (110-125%) was recorded in Nelson, Tasman and Westland.

October 2015: A dry month for most and warm for the eastern South Island.

Rainfall was below normal (50-79% of the October normal) or well below normal (less than 50% of the October normal) for the majority of the North Island, as well as northern, eastern and inland parts of the South Island north of Otago. Additionally, soil moisture levels were typically below normal in these locations at the end of the month. Temperature was above average (0.51-1.20°C above the October average) or well above average (greater than 1.20°C above the October average) throughout the South Island, with the exception of the West Coast. It was a sunny October for eastern and southern parts of the North Island as well as eastern and central areas of the South Island, where sunshine was above normal (110-125% of the October normal) or well above normal (greater than 125% of the October normal).

November 2015: A dry month for many parts of the country.

Rainfall was below normal (50-79% of the November normal) or well below normal (less than 50% of the November normal) for the majority of the South Island, as well as southern and far northern parts of the North Island. Conversely, rainfall was above normal (120-149% of the November normal) or well above normal (more than 149% of the November normal) for Gisborne, Hawke's Bay, western Waikato and southern Auckland. By the end of the month, soil moisture levels were below normal for extensive areas of New Zealand. November temperature was near average (within 0.50°C of the November average) or below average (0.51-1.20°C below the November average) for most parts of the country. A sunny November for the eastern parts of the South Island and central parts of the North Island, with above normal (110-125%) or well above normal sunshine (> 125%) recorded in many of these areas.

December 2015: An exceptionally dry and sunny month for most.

Rainfall was below normal (50-79%) for virtually the entire country with well below normal (< 50%) rainfall recorded for the majority of the North Island. A dry November and limited rainfall throughout December meant that soil moisture by the end of the month was sitting below normal for the time of year for the entire country, the exceptions being the Auckland region and Coromandel where soil moisture levels were near normal. December temperature was largely near average (-0.50°C to +0.50°C) across New Zealand. December temperature was largely near average (-0.50°C to +0.50°C) across New Zealand. Sunshine was plentiful in December with above (110-125%) to well above (>125%) normal sunshine experienced around New Zealand.

Section 2: Monthly rainfall (as a percentage of the 1981-2010 monthly normals).

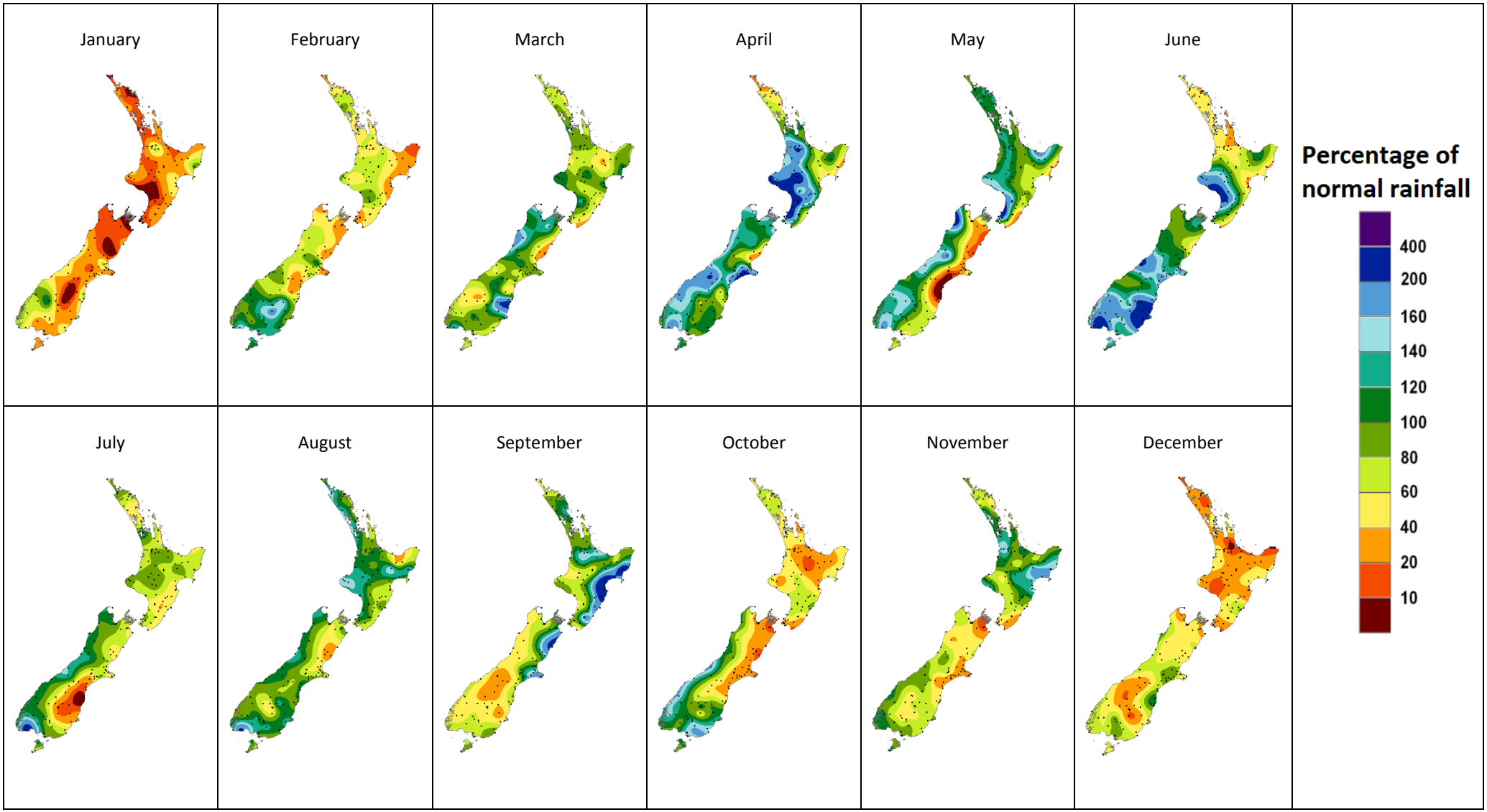

Figure 1: Monthly rainfall as a percentage of the 1981-2010 monthly normals for each month of 2015.

Section 3: Monthly temperature (in °C, as a departure from the 1981-2010 monthly averages).

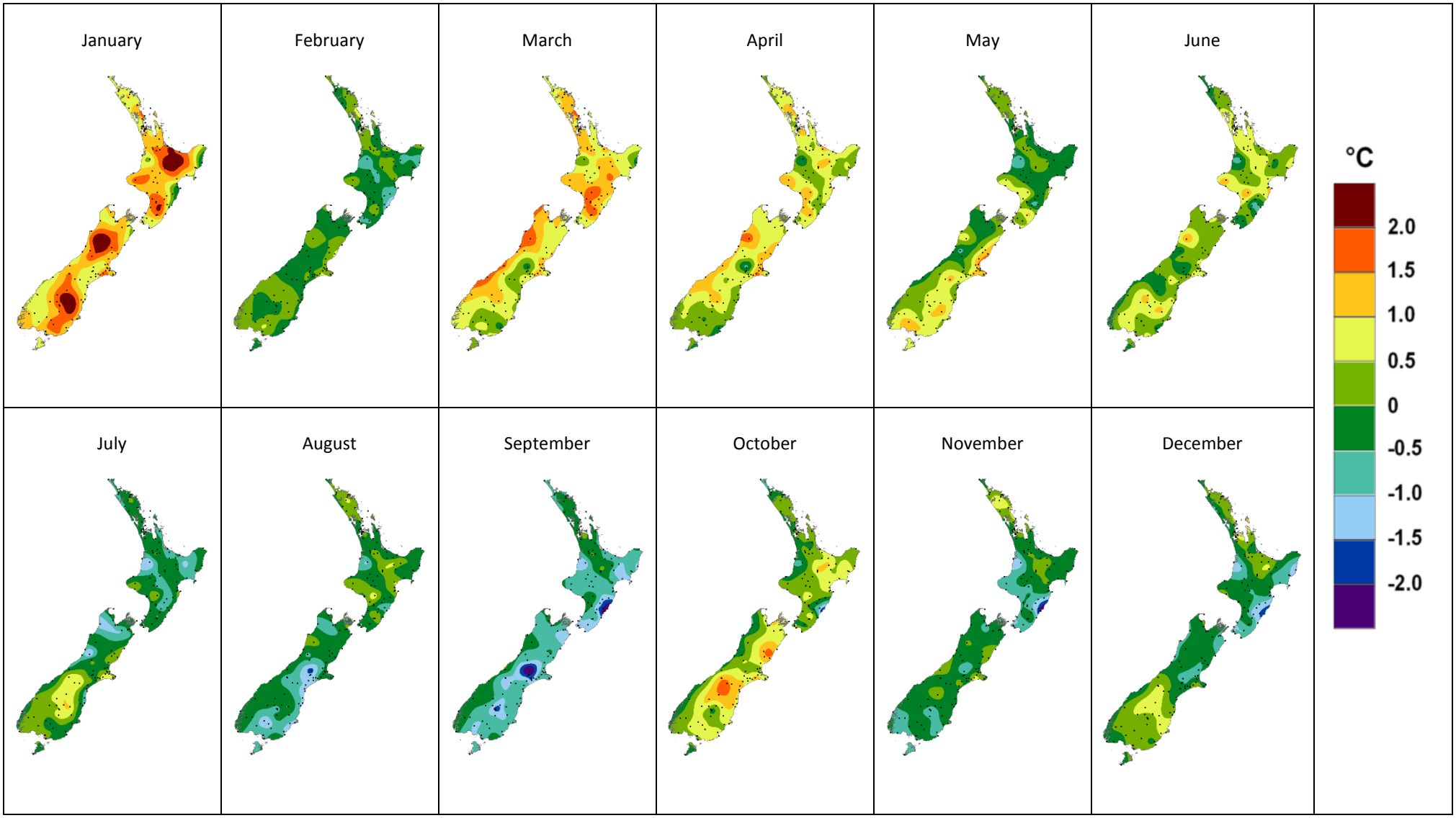

Figure 2: Monthly temperature anomalies (compared to the 1981-2010 monthly averages) for each month of 2015.

Section 4: The numbers

NIWA analyses of month-by-month records show:

- The top 3 daily rainfall totals from regularly reporting gauges in 2015 were 466 mm at North Egmont on 19 June, 420 mm at Milford Sound on 25 April and 417 mm observed at Ivory Glacier on 26 April.
- The lowest rainfall recording locations (based on data available at time of writing) for 2015 were: Clyde with 267 mm of rainfall recorded for the year, followed by Alexandra with 296 mm then Rangiora with 293 mm.
- Of all of the regularly reporting gauges (based on data available at time of writing), the wettest locations in 2015 were: Cropp River (West Coast, 975 metres above sea level) with 11632 mm, Tuke River (West Coast, 975 metres above sea level) with 8704 mm (data only available until 13 November), and Doon River (West Coast, 1211 metres above sea level) with 8418 mm.
- Of the regularly reporting gauges (based on data available at time of writing), the wettest locations in 2015 **excluding** high elevation stations were: Milford Sound with 7068 mm, Secretary Island with 4088mm, and Hokitika with 3290 mm.
- Whangarei recorded the highest annual average temperature for 2015 (16.1°C), followed by Kaitaia and Auckland (Mangere, Whangaparaoa and Albany) with 16.0°C. Cape Reinga, Kaikohe, Kerikeri and Dargaville recorded the third-highest equal annual average temperature.
- The highest air temperature of the year was 36.4°C recorded at Timaru on 16 January and at Leeston on 21 December, followed by 36.2°C at Rangiora and 36.1°C at Cheviot on 21 December.
- The lowest air temperature of the year was -21.0°C observed at Tara Hills on 24 June. This was followed by -19.8°C at Pukaki on 23 June, and -19.7°C at Tara Hills on 25 June. These temperatures are the fourth-lowest, seventh-lowest and eighth-equal lowest ever recorded in New Zealand, respectively.
- The nation-wide average temperature for 2015 was 12.7°C (0.1°C above the 1981–2010 annual average), using NIWA's seven-station temperature series which begins in 1909. 2015 was the 27th-warmest year since 1909, based on this seven-station series.
- Blenheim was the sunniest location in 2015, recording 2814 sunshine hours, followed by Whakatane (2785 hours) and Lake Tekapo (2737 hours).
- The highest confirmed wind gust for 2015 was 189 km/hr observed at Cape Turnagain on 29 June. This was followed by 178 km/hr also recorded at Cape Turnagain on 13 May and 176 km/hr at South West Cape on 21 December.
- Of the six main centres, for 2015 as a whole, Auckland was the warmest, Tauranga was the sunniest, Christchurch was the driest, Hamilton was the wettest and cloudiest, and Dunedin was the coldest.

Ranked annual total rainfall, mean temperatures and sunshine hours for the stations available at time of writing are displayed on the following three pages. Some sites have missing days of data. The number of missing days is indicated by a superscript number next to the annual value in the tables below.

Location	Rainfall (mm)
CROPP AT WATERFALL	11632
CROPP AT CROPP HUT	10396
TUKE AT TUKE HUT	8704[48]
DOON AT MIDDLE ARM	8418
IVORY AT RIPPLEROCK	8001
HOKITIKA AT COLLIERS CK	7919
WAIHO AT DOUGLAS HUT	7024
WHATAROA AT SHB	5578
GODLEY AT PANORAMA RIDGE	5472
RAKAIA AT LAKE RAMSAY	5431
GODLEY AT EADE HUT	4704
TAIPO AT SHBR	4563
MILFORD SOUND	7068
SECRETARY ISLAND AWS	4088
MT COOK EWS	3797
HOKITIKA AWS	3290
HOKITIKA AERO	3202
MT RUAPEHU, CHATEAU EWS	3009
WHAKAPAPA AT MT RUAPEHU EWS	2987
AHURIRI AT CASSINIA MORAINE	2644
MAKOTUKU AT F TRIG	2543
WAIPAOA AT MANGATU DIVIDE	2375
WESTPORT AERO AWS	2142
TONGARIRO AT WAIPAKIHI	2027
WHANGANUI AT TE PORERE	2012
COBB AT TRILOBITE	1884
STRATFORD EWS	1859
MOTU AT WAITANGIRUA	1817
MOTU EWS	1758
TAURANGA-TAUPO AT KIKO RD	1650
REEFTON EWS	1607
TAKAKA EWS	1567
WHATAWHATA 2 EWS	1467
PURUKOHUKOHU AT NO 4	1443
MAKOTUKU AT SH49A BR	1398
NEW PLYMOUTH AWS	1342
TE PUKE EWS	1320
TE KUITI EWS	1314
TONGARIRO AT TURANGI	1309
LOWER RETARUKE CWS	1307
TURANGI 2 EWS	1299
TROUNSON CWS	1262
MANGARE STM AT MANGARE RD	1261
WHANGANUI AT BELOW PIRIAKA	1234
WAIMARINO AT KEPA RD	1234
KERIKERI AERODROME AWS	1234
WHAKAURU AT MOSSOP RD	1231
OHAKUNE EWS	1223
WAIPAPA AT TTT RD CULVERT	1189
POKAIWHENUA AT PUKETURUA	1176
PARAPARAUMU AERO	1152
HAMILTON AWS	1147
MAUNGARAKI 3	1146
NGAHERE AT NGAHERE HUT	1136
TAHUNAATARA AT OHAKURI RD	1120
MANGAKINO AT DILLON RD	1116
KAIKOHE AWS	1115
INVERCARGILL AERO	1103
WAIROA, NORTH CLYDE EWS	1100
PUKEKOHE EWS	1096
WAIKATO AT GOLF COURSE	1088
PARAPARAUMU EWS	1080
KAITAIA OBSERVATORY	1076
KERIKERI EWS	1071
ROTORUA AERO AWS	1063
LEVIN AWS	1042
HAMILTON, RUAKURA 2 EWS	1031
WHANGAREI AERO AWS	1019
KAITAIA EWS	995
WARKWORTH EWS	994
FAREWELL SPIT AWS	994
RANGITAIKI AT ANIWHENUA	983
PALMERSTON NORTH EWS	966
AUCKLAND, MANGERE EWS	960
PAEROA AWS	959
WAIKATO AT REIDS FARM	953
KAITAIA AERO EWS	941
DARGAVILLE 2 EWS	911
MOTUEKA, RIWAKA EWS	889
TAURANGA AERO AWS	844
WAIOTAPU AT REPOROA	831
WHIRINAKI AT GALATEA	826
MATUKITUKI AT WEST WANAKA	804
AKAROA EWS	773
TAUPO AWS	763
QUEENSTOWN AERO AWS	717
WELLINGTON AERO	703
DUNEDIN, MUSSELBURGH EWS	695
NELSON AERO	650
DUNEDIN AERO AWS	610
NAPIER AERO AWS	609

HANMER FOREST EWS	579
AHURIRI AT STH DIADEM	576
WINCHMORE EWS	545
BLENHEIM AERO AWS	496
CASTLEPOINT AWS	475
LINCOLN, BROADFIELD EWS	429
OAMARU AIRPORT AWS	409
KAIKOURA AWS	394
WINDSOR EWS	368
LAUDER EWS	358
MIDDLEMARCH	348
TIMARU EWS	347
CHEVIOT	337
ALEXANDRA	296
CLYDE	267
Location	**Mean temp (°C)**
WHANGAREI AERO AWS	16.1
NORTH SHORE, AUCKLAND EWS	16.0
KAITAIA AERO EWS	16.0
WHANGAPARAOA AWS	16.0
AUCKLAND, MANGERE EWS	16.0
CAPE REINGA AWS	15.7
AUCKLAND AERO	15.7
KERIKERI EWS	15.7
DARGAVILLE 2 EWS	15.7
KAIKOHE AWS	15.7
KAITAIA EWS	15.5
KERIKERI AERODROME AWS	15.3
WHATAWHATA 2 EWS	15.3

TAURANGA AERO AWS	15.2
HICKS BAY AWS	15.1
PENROSE EWS, AUCKLAND RE	15.0
AUCKLAND, WHENUAPAI AWS	15.0
WHITIANGA AERO AWS	14.8
PUKEKOHE EWS	14.8
PAEROA AWS	14.7
NGAWI AWS	14.6
WARKWORTH EWS	14.6
TE PUKE EWS	14.5
FAREWELL SPIT AWS	14.4
HAMILTON, RUAKURA 2 EWS	14.4
GISBORNE AWS	14.3
WHAKATANE AERO AWS	14.3
WAIROA, NORTH CLYDE EWS	14.2
TOENEPI EWS	14.2
NAPIER AERO AWS	14.1
MAHIA AWS	14.0
WANGANUI AWS	13.9
WELLINGTON AERO	13.8
NEW PLYMOUTH AWS	13.7
HAMILTON AWS	13.7
CASTLEPOINT AWS	13.6
PALMERSTON NORTH AWS	13.5
PARAPARAUMU AERO	13.5
BROTHERS ISLAND AWS	13.4
MATAMATA, HINUERA EWS	13.4
WAIONE RAWS	13.3
PALMERSTON NORTH EWS	13.3
LEVIN AWS	13.3
PARAPARAUMU AERO AWS	13.3

NELSON AERO	13.3
BLENHEIM RESEARCH EWS	13.2
AKAROA EWS	13.2
NELSON AWS	13.1
WELLINGTON, KELBURN AWS	13.1
WHAKATU EWS	13.0
HAWERA AWS	13.0
CAPE CAMPBELL AWS	12.9
MOTUEKA, RIWAKA EWS	12.9
KAIKOURA AWS	12.9
ROTORUA AERO AWS	12.8
TAKAKA EWS	12.8
WESTPORT AERO AWS	12.8
BLENHEIM AERO AWS	12.7
STRATFORD EWS	12.5
MARTINBOROUGH EWS	12.3
RANGIORA EWS	12.3
REEFTON EWS	12.3
LINCOLN, BROADFIELD EWS	12.1
TAUPO AWS	12.1
APPLEBY 2 EWS	12.0
HOKITIKA AERO	11.9
CHRISTCHURCH AERO	11.8
HOKITIKA AWS	11.7
FRANZ JOSEF EWS	11.7
SECRETARY ISLAND AWS	11.6
TAKAPAU PLAINS AWS	11.5
TURANGI 2 EWS	11.4
CROMWELL EWS	11.4
MOTU EWS	11.4
HAAST AWS	11.3

LE BONS BAY AWS	11.2
DUNEDIN, MUSSELBURGH EWS	11.2
WANAKA AERO AWS	11.2
PUYSEGUR POINT AWS	11.1
OAMARU AWS	11.0
WINDSOR EWS	10.8
WINCHMORE EWS	10.7
TIMARU EWS	10.7
MILFORD SOUND AWS	10.7
TIMARU AERO AWS	10.6
TIWAI POINT EWS	10.6
MILFORD SOUND	10.6
OHAKUNE EWS	10.5
HANMER FOREST EWS	10.5
MIDDLEMARCH EWS	10.5
LAUDER EWS	10.5
OAMARU AIRPORT AWS	10.4
DUNEDIN AERO AWS	10.4
NUGGET POINT AWS	10.2
INVERCARGILL AERO	10.2
GORE AWS	10.1
TARA HILLS AWS	10.1
QUEENSTOWN AERO AWS	10.0
LUMSDEN AWS	9.7
MANAPOURI AERO AWS	9.5
RANFURLY EWS	9.5
SNOWDON RAWS	9.4
MANAPOURI, WEST ARM JETTY	9.4
LAKE TEKAPO EWS	9.2
MT COOK EWS	9.0
MT RUAPEHU, CHATEAU EWS	7.7

CAMPBELL ISLAND AWS	7.0
Location	**Sunshine (hours)**
BLENHEIM RESEARCH EWS	2814
WHAKATANE SUNSHINE	2784
LAKE TEKAPO EWS	2737
APPLEBY 2 EWS	2731
WAIPARA WEST EWS	2699
NELSON AERO	2601
NEW PLYMOUTH AWS	2564[1]
GISBORNE AWS	2555
TAKAKA EWS	2514
CROMWELL EWS	2513[1]
CHEVIOT EWS	2466
RANGIORA EWS	2453
PARAPARAUMU AERO AWS	2426[1]
KAITAIA EWS	2363
WAIPAWA EWS	2362[1]
ASHBURTON AERO AWS	2345[8]
TAURANGA AIRPORT	2341[4]
HOKITIKA AWS	2327[1]
KAWERAU AWS	2318[1]
AUCKLAND, ALBANY EWS	2315
AKAROA EWS	2265
AKITIO EWS	2259[14]
KAITAIA OBSERVATORY	2253
TURANGI 2 EWS	2250
WELLINGTON, KELBURN	2192

CHRISTCHURCH AERO	2186[4]
PARAPARAUMU AERO	2181
GREYMOUTH AERO EWS	2171
BALCLUTHA, TELFORD EWS	2154
AUCKLAND, MANGERE EWS	2151
DANNEVIRKE EWS	2130
DUNEDIN, MUSSELBURGH EWS	2099
HAMILTON, RUAKURA 2 EWS	2094
TE KUITI EWS	2074
MARTINBOROUGH EWS	2065
DARGAVILLE 2 EWS	2055
OHAKUNE EWS	2033
STRATFORD EWS	2013
UPPER HUTT, TRENTHAM EWS	2002[3]
HOKITIKA AERO	1992
MIDDLEMARCH EWS	1991
TAUMARUNUI AWS	1961[4]
REEFTON EWS	1862
PALMERSTON NORTH EWS	1858[1]
INVERCARGILL AERO	1853
INVERCARGILL AERO 2 EWS	1788
MT COOK EWS	1703

Section 5: Annual Rainfall – Below normal for Northland as well as northern and eastern parts of the South Island

2015 was drier than normal (rainfall 50-79% of the annual normal) across Northland with both Kaitaia and Kerikeri recording their lowest annual rainfall totals on record. Likewise, rainfall was below normal in the regions of Tasman, Nelson and Canterbury as well as parts of eastern Waikato, Bay of Plenty, Gisborne and Wellington, where near-record low annual rainfall was observed at several locations. Rainfall was near normal (within 20% of the annual normal) across the remainder of New Zealand.

The driest rainfall recording locations (based on data available at time of writing) were: Clyde with 267 mm of rainfall recorded for the year, followed by Alexandra with 296 mm then Rangiora with 293 mm. Of the regularly reporting gauges the wettest locations in 2015 were: Cropp River (West Coast, 975 metres above sea level) with 11632 mm, Tuke River (West Coast, 975 metres above sea level) with 8704 mm (data only available until 13 November) and Doon River (West Coast, 1211 metres above sea level) with 8418 mm. Of the regularly reporting gauges the wettest locations in 2015 **excluding** high elevation stations were: Milford Sound with 7068 mm, Secretary Island with 4088mm and Hokitika with 3290 mm

Table 1: Record or near-record annual rainfall totals for the year 2015[4].

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
High records or near-records				
None observed				
Low records or near-records				
Kaitaia	941	75	1948	Lowest
Kerikeri	1071	63	1981	Lowest
Hanmer Forest	579	56	1905	Lowest
Castlepoint	475	49	1902	2nd-lowest
Wellington	703	74	1958	2nd-lowest
Motueka	889	66	1943	2nd-lowest
Appleby	616	60	1932	2nd-lowest
Kaikoura	394	55	1898	2nd-lowest
Motu	1758	81	1990	3rd-lowest
Nelson	650	68	1941	3rd-lowest
Kaikohe	1115	73	1956	4th-lowest

[4] The rankings (1st, 2nd, 3rd….etc) in Tables 1 to 12 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 because of the practical limitations of performing homogeneity checks in real-time.

Te Puke	1320	80	1973	4th-lowest
Ohakune	1223	86	1961	4th-lowest
Reefton	1607	83	1960	4th-lowest

The top three 1-day rainfall totals from regularly reporting gauges in 2015 were 466 mm at North Egmont on 19 June, 420 mm at Milford Sound on 25 April and 417 mm observed at Ivory Glacier on 26 April. Paraparaumu recorded its highest 1-day extreme rainfall on May 13th during an event which caused widespread flooding along the Kapiti Coast. For the month of May, Paraparaumu received 252mm of rain in total – 303% of its normal May rainfall. In comparison Clyde only received 267mm of rain for the year as a whole.

Table 2: Record or near-record high extreme 1-day rainfall totals that occurred in 2015.

Location	1-day extreme rainfall (mm)	Date	Year records began	Comments
Paraparaumu	116	May-13th	1951	Highest
Hokitika	211	Jun-18th	1866	2nd-highest
Dunedin (Airport)	87	Jun-3rd	1962	2nd-highest
Dunedin (Musselburgh)	113	Jun-3rd	1918	3rd-highest

Section 6: Annual Temperature – Near average for much of the country.

Mean temperature was near average across most of New Zealand in 2015. However, 6 locations observed record or near-record high mean temperatures, and 4 locations observed record or near-record low mean temperatures. Whatawhata recorded both its highest annual mean and highest annual mean maximum temperatures since 1952.

Table 3: Near-record or record high or low annual average temperature departures for 2015.

Location	Mean air temp. (°C)	Departure from normal (°C)	Year records began	Comments
Mean temperature				
Whatawhata	15.3	1.4	1952	Highest
Cheviot	12.1	0.6	1982	2nd-highest
Lauder	10.5	0.9	1924	2nd-highest
Stratford	12.5	0.7	1960	3rd-highest
Kaikohe	15.7	1.0	1973	4th-highest
Reefton	12.3	0.9	1960	4th-highest
Waione	13.3	-0.3	1991	4th-lowest
Martinborough	12.3	-0.5	1986	4th-lowest

Secretary Island	11.6	-0.2	1985	4th-lowest
Mean maximum temperature				
Whatawhata	19.9	1.5	1952	Highest
Hanmer Forest	18.4	1.4	1906	Highest
Cheviot	18.6	1.2	1982	Highest
Kaikohe	19.5	1.2	1973	2nd-highest
Waipara West	18.5	0.4	1973	2nd-highest
Lake Tekapo	15.5	0.9	1927	2nd-highest
Cromwell	18.2	1.2	1949	2nd-highest
Reefton	17.7	1.0	1960	3rd-highest
Tara Hills	16.7	0.9	1949	3rd-highest
Kerikeri	20.6	0.5	1981	4th-highest
Whangarei	20.3	0.6	1967	4th-highest
Motu	16.5	1.1	1990	4th-highest
Auckland (Mangere)	19.8	0.9	1959	4th-highest
Gisborne	20.4	0.9	1905	4th-highest
Motueka	19.0	0.9	1956	4th-highest
Kaikoura	16.6	0.8	1963	4th-highest
Secretary Island	14.4	-0.3	1985	3rd-lowest
Mean minimum temperature				
Whatawhata	10.7	1.4	1952	2nd-highest
Hawera	9.2	0.4	1977	2nd-highest
Kaikohe	11.9	0.7	1973	4th-highest
Stratford	8.2	0.7	1960	4th-highest
Lauder	4.1	0.5	1924	4th-highest
Turangi	5.7	-0.9	1968	Lowest
Winchmore	4.4	-1.4	1928	Lowest
Martinborough	7.0	-0.7	1986	2nd-lowest
Appleby	5.6	-1.8	1932	2nd-lowest
Le Bons Bay	7.9	-0.3	1984	2nd-lowest
Waione	7.9	-0.5	1991	3rd-lowest
Hanmer Forest	2.6	-1.0	1906	3rd-lowest
Balclutha	4.8	-0.8	1964	3rd-lowest

During 2015 several record and near-record extreme temperatures occurred. On 21 December a warm north-westerly resulted in several December high temperature records being broken, with the temperatures in Cheviot, Dunedin and Nugget Point also making the annual rankings.

At the other end of the extremes, on 24 June Tara Hills recorded -21°C, it's coldest temperature on record and the 4th-lowest temperature on record for all stations in New Zealand. Additionally on this day, Timaru recorded -7.7°C, its 4th-lowest temperature on record with records going back all the way to 1885.

Table 4: Near-record or record high or low annual temperature extremes for 2015.

Location	Temperature (°C)	Date of occurrence	Year records began	Comments
Highest extreme maximum temperatures				
Cheviot	36.1	Dec-21st	1982	Highest
Reefton	33.2	Jan-25th	1960	3rd-highest
Lumsden	29.3	Dec-2nd	1982	3rd-highest
Dunedin (Musselburgh)	34.5	Dec-21st	1947	Equal 3rd-highest
Nugget Point	30.7	Dec-21st	1970	4th-highest
Waione	32.6	Jan-24th	1991	Equal 4th-highest
Waipara West	35.2	Jan-26th	1973	Equal 4th-highest
Lowest extreme maximum temperatures				
Waione	4.9	Jul-9th	1993	Lowest
Tara Hills	-9.0	Jun-24th	1949	Lowest
Wairoa	6.4	Jul-9th	1972	Lowest
Lake Tekapo	-4.1	Jun-23rd	1928	Lowest
Dargaville	9.4	Jul-9th	1951	2nd-lowest
Whitianga	9.8	Jul-9th	1971	2nd-lowest
Takapau Plains	3.8	Jul-9th	1972	2nd-lowest
Balclutha	3.8	Jul-7th	1972	2nd-lowest
Warkworth	9.8	Jul-9th	1966	Equal 2nd-lowest
Dunedin (Musselburgh)	3.9	Jun-22nd	1947	Equal 2nd-lowest
Kaitaia	9.6	Jul-10th	1971	3rd-lowest
Ngawi	6.9	Jul-8th	1972	3rd-lowest
Castlepoint	6.5	Jul-8th	1972	Equal 3rd-lowest
Secretary Island	5.9	Jul-6th	1989	Equal 3rd-lowest
Campbell Island	0.4	Sep-6th	1991	Equal 3rd-lowest
Kaikohe	10.0	Jul-9th	1973	4th-lowest
Te Puke	8.6	Jul-8th	1973	4th-lowest
Gisborne	6.9	Jul-9th	1940	4th-lowest
Nugget Point	3.5	Jul-18th	1972	4th-lowest
Highest extreme minimum temperatures				
Ranfurly	18.3	Jan-05th	1975	Highest
Farewell Spit	19.3	Jan-29th	1972	Equal highest
Secretary Island	17.7	Jan-26th	1988	2nd-highest
Alexandra	18.5	Jan-11th	1983	Equal 3rd-highest
Campbell Island	11.9	Jan-26th	1991	4th-highest
Waipara West	21.0	Dec-3rd	1973	Equal 4th-highest
Balclutha	14.7	Jan-5th	1972	Equal 4th-highest
Lowest extreme minimum temperatures				
Tara Hills	-21.0	Jun-24th	1949	Lowest
Martinborough	-4.3	Jul-14th	1986	Lowest
Greymouth	-2.6	Jul-9th	1947	Lowest
Warkworth	-2.3	Jul-12th	1966	2nd-lowest
Takapau Plains	-5.4	Jul-14th	1962	2nd-lowest

Lake Tekapo	-15.0	Jun-24th	1925	2nd-lowest
Secretary Island	0.9	Jul-7th	1985	Equal 2nd-lowest
Kaitaia	0.4	Jul-12th	1948	3rd-lowest
Balclutha	-6.1	Jul-13th	1964	3rd-lowest
Cheviot	-6.3	May-29th	1982	4th-lowest
Timaru Aero	-7.7	Jun-24th	1885	4th-lowest

Section 7: Annual Sunshine – A sunny year up and down the country with several new records set.

Blenheim was the sunniest location in 2015, recording 2814 sunshine hours, followed by Whakatane (2785 hours) and Lake Tekapo (2737 hours). It was a sunny year across New Zealand with nine sites experiencing their sunniest year on record.

Table 5: Near-record or record sunshine hours for the year 2015.

Location	Sunshine (hours)	Percent of normal	Year records began	Comments
High records or near-records				
Kaitaia	2363	109	1985	Highest
Te Kuiti	2075	121	1962	Highest
Turangi	2250	113	1976	Highest
Gisborne	2556	115	1905	Highest
Takaka	2515	104	1985	Highest
Greymouth	2172	126	1947	Highest
Cheviot	2466	127	1983	Highest
Lake Tekapo	2737	114	1928	Highest
Dunedin (Musselburgh)	2100	125	1980	Highest
Dannevirke	2131	113	1963	2nd-highest
Balclutha	2155	133	1964	2nd-highest
Nelson	2602	105	1948	4th-highest
Invercargill	1854	110	1913	4th-highest

Section 8: 2015 climate in the six main centres

Of the six main centres, for 2015 as a whole, Auckland was the warmest, Tauranga was the sunniest, Christchurch was the driest, Hamilton was the wettest and cloudiest, and Dunedin was the coldest.

Table 6: 2015 climate in the six main centres.

Rainfall			
Location	**Rainfall (mm)**	**% of normal**	**Comments**
Auckland[a]	960	85%	Near normal
Tauranga[b]	844	71%	Below normal
Hamilton[c]	1147	95%	Near normal
Wellington[g]	703	74%	Below normal
Christchurch[e]	455[5]	77%	Below normal
Dunedin[f]	695	94%	Near normal
Temperature			
Location	**Mean temp. (°C)**	**Departure from normal (°C)**	**Comments**
Auckland[a]	16.0	0.6	Above average
Tauranga[b]	15.2	0.3	Near average
Hamilton[c]	13.7	0.1	Near average
Wellington[d]	13.1	0.2	Near average
Christchurch[e]	11.8	0.2	Near average
Dunedin[f]	11.2	0.1	Near average
Sunshine			
Location	**Sunshine (hours)**	**% of normal**	**Comments**
Auckland[a]	2151	106%	Near normal
Tauranga[b]	2341[6]	100%	Near normal
Hamilton[h]	2094	105%	Near normal
Wellington[d]	2193	104%	Near normal
Christchurch[e]	2186[7]	103%	Near normal
Dunedin[f]	2100	125%	Above normal

[a] Mangere [b] Tauranga Airport [c] Hamilton Airport [d] Kelburn [e] Christchurch Airport [f] Musselburgh [g] Wellington Airport [h] Ruakura

[5] Missing one day of data
[6] Missing four days of data.
[7] Missing four days of data

Section 9: Significant weather and climate events in 2015

This section contains information pertaining to some of the more significant weather and climate events that occurred in 2015. Note that a more detailed list of significant weather events for 2015 can be found in the *Highlights and extreme events* section of NIWA's Monthly Climate Summaries. These summaries are available online at http://www.niwa.co.nz/climate/summaries.

Drought and low rainfall

2015 started off very dry with below normal soil moisture levels observed for the majority of the country through January and February. It was particularly dry in Central and north Otago, Canterbury and Marlborough and as a result a drought was officially declared in those areas on 12 February. While soil moisture levels recovered in most places over winter, the intensification of El Niño during the second half of the year meant that soil moisture levels around the country began to decrease again in October. As of 1 January 2016, soil moisture levels were below normal for the time of year for the entire country with the exception of the Auckland region and Coromandel where soil moisture levels were near normal.

Spring 2015 was a particularly dry season in New Zealand, with Turangi, Martinborough, Wellington, Stratford and Blenheim all recording their lowest spring rainfall totals on record. Several other locations also experienced near-record low rainfall during spring.

Floods and high rainfall

On 14 May, torrential rain caused flooding in Kapiti, Porirua, and Lower Hutt areas. A slip blocked the road and rail link between the Kapiti Coast and Wellington, closing SH 1 between Paekakariki and Pukerua Bay. SH 2 was closed at Petone, and Paekakariki Hill Road was also closed. All commuter train services across the Wellington region were cancelled and Wellington Railway Station was closed. Thousands of Kapiti and Hutt Valley residents were trapped in Wellington city and forced to find alternative accommodation for the night. At least 20 homes were evacuated in Raumati Beach, and a number of schools were closed throughout the region. The Hutt River burst its banks and flooded High Street in Lower Hutt, threatening cars and stores. The Waikanae River also burst its banks, and floodwaters affected Tawa and Porirua.

On 3 June, Dunedin was inundated by very heavy and prolonged rainfall, which resulted in significant flooding, loss of electricity, evacuations and road closures throughout the city and nearby areas. The worst-hit areas included low lying coastal areas, Kaikorai Valley, Brighton, Mosgiel and North East Valley. Numerous slips were reported along Otago Peninsula, while New Zealand Army's Unimog trucks were involved in evacuating pupils from Abbotsford School. The Fire Service responded to 345 callouts, and a Mayoral Fund was established to help flood-affected residents. Dunedin (Musselburgh) received 113 mm of rainfall in the 24 hours to 9 a.m. on 4 June – its second-highest 1-day rainfall total for June on record. This was additionally its second-highest 1-day rainfall total on record for all months (records began in 1918).

The worst flood on record for Whanganui occurred over 20-21 June, and a state of emergency was declared. On 20 June, heavy rain continued for the Kapiti Coast, Wairarapa, Manawatu and Whanganui areas, causing widespread slips, flooding, and road closures. More than 100 households in Whanganui were evacuated on the 20th, mostly on the eastern banks of the Whanganui River, with hundreds more self-evacuating. The Whanganui River breached its banks around midnight on the 20th, spilling floodwaters into Whanganui's CBD.

Table 7: Record high monthly extreme 1-day rainfall totals were recorded in 2015 at:

Location	Extreme 1-day rainfall (mm)	Date of extreme rainfall	Year records began	Ranking
January				
None observed				
February				
None observed				
March				
Westport	111	5th	1944	Highest
April				
Palmerston North	91	8th	1928	Highest
Secretary Island	164	25th	1985	Highest (4th-highest)
May				
Paraparaumu	116	13th	1951	Highest (Highest)
June				
Levin	63	19th	1949	Highest
Whanganui (Airport)	79	19th	1937	Highest
Hokitika	211	18th	1866	Highest (2nd-highest)
Dunedin (Airport)	87	3rd	1962	Highest (2nd-highest)
Lumsden	29	3rd	1982	Highest
July				
None observed				
August				
None observed				
September				
Gisborne	104	20th	1937	Highest
October				
None observed				
November				
None observed				
December				
None observed				

Note that rainfall rankings in brackets are all-month rankings

Temperature extremes

On 13 April a series of cold fronts passed northwards over New Zealand. At 11.15 a.m. it was just 0.7°C in Queenstown and snowing, whereas in Gisborne it was 21.2°C, demonstrating the considerable difference in temperatures of the air masses preceding and following the cold front. Queenstown only reached a maximum temperature of 3.8°C. This is its lowest ever daily maximum temperature for April, in records which began in 1871.

From 23-26 June, record-low temperatures for New Zealand were recorded. A high pressure system combined clear skies with a southerly flow, resulting in very cold temperatures for many parts of the country. In particular, sites in the Mackenzie Country and Central Otago dropped to well below freezing. In the early morning of 23 June, Lake Pukaki recorded -19.8°C. A number of other sites also recorded temperatures below -10°C. During the second night of very cold temperatures on 24 June, Tara Hills (near Omarama) recorded a minimum temperature of -21.0°C, which is the lowest temperature officially recorded in New Zealand in 20 years (excluding high altitude stations). This temperature is also the fourth-lowest temperature ever recorded in New Zealand (excluding high altitude stations). The maximum temperature at Tara Hills on 24 June was just -9.0°C, its lowest maximum temperature on record. Overnight on 24-25 June, temperatures in the central South Island plunged to well below freezing for the third consecutive night. Tara Hills recorded -19.7°C and Lake Pukaki observed -16.3°C. Temperatures remained well below freezing for the central South Island overnight on 25-26 June. Omarama recorded -15°C and Pukaki recorded -12°C. During this period, three out of the 10 lowest temperatures ever recorded in New Zealand were experienced (excluding high elevation alpine sites). For further information regarding this cold spell, please refer to NIWA's June 2015 Monthly Climate Summary.

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 high-20s. Most notable was Kaikoura, which reached 31.8°C on 7 October.

On 21 December north-easterly winds combined with the foehn effect brought high temperatures to eastern areas of the South Island. Record high December temperature was experienced in Christchurch, Timaru and Dunedin as well as many other locations.

Table 8: Extremes of high daily maximum temperature in 2015 were recorded at:

Location	Extreme maximum (°C)	Date of extreme temperature	Year records began	Ranking
January				
None observed				
February				
None observed				
March				
Takaka	30.4	1st	1978	Highest

April				
Puysegur Point	23.2	6th	1978	Highest
Cheviot	30.4	7th	1982	Highest
Waipara West	29.6	7th	1973	Highest
May				
Appleby	25.0	7th	1932	Highest
Hanmer Forest	24.7	6th	1906	Highest
Cheviot	26.5	6th	1982	Highest
Waiau School	27.0	6th	1974	Equal highest
June				
Kaitaia	20.8	2nd	1985	Highest
Paraparaumu	20.0	2nd	1953	Highest
Reefton	19.0	2nd	1960	Highest
Haast	17.7	2nd	1949	Highest
Ranfurly	18.6	9th	1975	Highest
Lumsden	18.8	9th	1982	Highest
Cromwell	21.0	9th	1949	Highest
Lauder	21.0	9th	1924	Highest
Tiwai Point	17.8	9th	1970	Highest
Dunedin (Musselburgh)	20.6	9th	1947	Equal highest
July				
Appleby	19.1	27th	1932	Highest
August				
Christchurch (Riccarton)	23.8	3rd	1863	Highest
September				
None observed				
October				
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
November				
Kaikohe	25.8	26th	1973	Highest
Whatawhata	27.1	25th	1952	Highest
Hastings	31.7	26th	1965	Highest
Cheviot	31.3	26th	1982	Highest
Te Puke	27.4	9th	1973	Equal highest
Auckland (Mangere)	26.8	26th	1959	Equal highest
December				
Cheviot	36.1	21st	1982	Highest (Highest)
Leigh	30.2	22nd	1966	Highest
Christchurch	36.0	21st	1863	Highest
Orari Estate	35.4	21st	1972	Highest
Timaru	34.3	21st	1885	Highest
Dunedin (Musselburgh)	34.5	21st	1947	Highest (Equal 3rd highest)
Lumsden	29.3	2nd	1982	Highest
Tiwai Point	29.0	2nd	1970	Highest

Nugget Point	30.7	21st	1970	Highest (4th highest)
Dunedin (Airport)	33.1	21st	1962	Highest

Note that temperature rankings in brackets are all-month rankings

Table 9: Extremes of low daily maximum temperature in 2015 were recorded at:

Location	Extreme low maximum (°C)	Date of extreme temperature	Year records began	Ranking
January				
None observed				
February				
Invercargill	9.6	5th	1905	Lowest
Secretary Island	10.9	5th	1989	Lowest
Puysegur Point	10.9	5th	1978	Lowest
Haast	10.5	5th	1949	Lowest
Manapouri	10.5	5th	1973	Equal lowest
March				
Farewell Spit	15.3	17th	1972	Lowest
April				
Puysegur Point	8.2	13th	1978	Lowest
Ranfurly	4.2	13th	1975	Lowest
Dunedin (Airport)	5.8	13th	1972	Lowest
Manapouri	4.5	13th	1973	Lowest
Queenstown	3.8	13th	1871	Lowest
Lumsden	4.2	13th	1982	Lowest
Alexandra	7.2	13th	1983	Lowest
South West Cape	7.3	12th	1991	Lowest
Ohakune	6.7	14th	1972	Equal lowest
May				
Motueka	7.8	30th	1972	Lowest
June				
Tara Hills	-9.0	24th	1949	Lowest
Wanaka	-1.0	24th	1972	Lowest
Dunedin (Musselburgh)	3.9	22nd	1947	Equal lowest
July				
Cape Reinga	10.8	10th	1971	Lowest
Kaitaia	9.6	10th	1971	Lowest (3rd-lowest)
Port Taharoa	8.7	8th	1974	Lowest
Waione	4.9	9th	1993	Lowest
Ngawi	6.9	8th	1972	Lowest (3rd-lowest)
Wairoa	6.4	9th	1972	Lowest (Lowest)
Hicks Bay	8.1	8th	1972	Equal lowest
August				
Le Bons Bay	3.0	9th	1984	Lowest

September				
Port Taharoa	10.6	20th	1974	Lowest
October				
None observed				
November				
Masterton	9.1	4th	1943	Lowest
Martinborough	9.0	4th	1986	Lowest
Ngawi	9.6	4th	1972	Lowest
Gisborne	11.7	5th	1940	Lowest
Wellington (Airport)	9.9	4th	1972	Lowest
Cheviot	8.4	4th	1982	Lowest
Hanmer Forest	6.5	4th	1972	Equal lowest
Waipara West	9.2	4th	1973	Equal lowest
December				
None observed				

Note that temperature rankings in brackets are all-month rankings

Table 10: Extremes of low daily minimum temperature in 2015 were recorded at:

Location	Extreme minimum (°C)	Date of extreme temperature	Year records began	Ranking
January				
None observed				
February				
Le Bons Bay	4.7	6th	1984	Lowest
Lumsden	-0.6	26th	1982	Lowest
March				
None observed				
April				
Mokohinau	9.1	14th	1994	Lowest
Whangaparaoa	7.5	14th	1982	Lowest
May				
Turangi	-5.4	29th	1968	Lowest
Waione	-6.1	29th	1991	Lowest
Mahia	3.7	26th	1990	Lowest
Wallaceville (Upper Hutt)	-4.9	26th	1939	Lowest
Appleby	-7.0	29th	1932	Lowest
Blenheim	-5.1	26th	1932	Lowest
Cheviot	-6.3	29th	1982	Lowest (4th-lowest)
Christchurch (Airport)	-6.4	29th	1863	Lowest
Te Kuiti	-3.1	29th	1959	Equal lowest
Le Bons Bay	0.2	25th	1984	Equal lowest
June				
Appleby	-11.0	24th	1932	Lowest (Lowest)

Tara Hills	-21.0	24th	1949	Lowest
July				
Kerikeri	-0.7	12th	1981	Lowest
Warkworth	-2.3	12th	1966	Lowest (2nd-lowest)
Takapau Plains	-5.4	14th	1962	Lowest (2nd-lowest)
Waione	-5.5	14th	1991	Lowest
Martinborough	-4.3	14th	1986	Lowest (Lowest)
Greymouth	-2.6	9th	1947	Lowest (Lowest)
Appleby	-9.7	31st	1932	Lowest
August				
Appleby	-7.6	10th	1932	Lowest
Tiwai Point	-3.0	12th	1970	Lowest
Lumsden	-7.1	11th	1982	Equal lowest
September				
Napier	-2.2	8th	1868	Lowest
October				
None observed				
November				
Kerikeri	3.2	3rd	1981	Lowest
Warkworth	2.7	14th	1966	Lowest
Te Kuiti	-0.1	13th	1959	Lowest
Turangi	-3.7	6th	1968	Lowest
Hicks Bay	2.9	14th	1969	Lowest
Hawera	-0.2	6th	1977	Lowest
Appleby	-1.2	5th	1932	Lowest
Christchurch (Airport)	-2.7	5th	1863	Lowest
Tiwai Point	-0.6	19th	1970	Lowest
December				
None observed				

Note that temperature rankings in brackets are all-month rankings

Table 11: Extremes of high daily minimum temperature in 2015 were recorded at:

Location	Extreme high minimum (°C)	Date of extreme temperature	Year records began	Ranking
January				
Secretary Island	17.7	26th	1988	Highest (2nd-highest)
Ranfurly	18.3	5th	1975	Highest (Highest)
February				
None observed				
March				
South West Cape	15.9	2nd	1991	Highest
Secretary Island	17.7	2nd	1988	Equal highest

April				
Masterton	18.4	8th	1992	Highest
Castlepoint	19.0	8th	1972	Highest
Hawera	17.6	8th	1977	Highest
Farewell Spit	18.1	8th	1972	Highest
Reefton	17.8	8th	1972	Highest
Nelson	18.3	8th	1943	Highest
Blenheim	17.6	8th	1972	Equal highest
May				
Te Puke	17.2	8th	1973	Highest
Whatawhata	17.9	8th	1952	Highest
New Plymouth	17.4	7th	1944	Highest
Masterton	17.2	7th	1992	Highest
Wairoa	18.2	8th	1972	Highest
Stratford	15.2	8th	1972	Highest
Hawera	16.1	7th	1977	Highest
Farewell Spit	16.3	7th	1972	Highest
Reefton	16.0	7th	1972	Highest
Puysegur Point	16.4	6th	1978	Highest
Blenheim	18.3	7th	1972	Highest
Kaikoura	16.0	7th	1972	Highest
Cheviot	17.5	7th	1982	Highest
Waipara West	19.7	7th	1973	Highest
Le Bons Bay	15.4	7th	1984	Highest
Paraparaumu	16.5	7th	1972	Equal highest
Arthurs Pass	11.0	7th	1973	Equal highest
Culverden	16.8	7th	1930	Equal highest
June				
Masterton	13.8	20th	1992	Highest
Stratford	13.4	20th	1972	Highest
Reefton	11.2	10th	1972	Highest
Puysegur Point	13.2	9th	1978	Highest
Wanaka	10.9	9th	1972	Highest
Ranfurly	10.7	9th	1975	Highest
July				
None observed				
August				
Whatawhata	14.4	4th	1952	Highest
Stratford	12.6	4th	1972	Highest
Hawera	13.2	4th	1977	Highest
Whanganui	14.1	4th	1972	Highest
Reefton	10.9	4th	1972	Highest
September				
Lumsden	13.4	16th	1982	Highest
Cheviot	13.0	16th	1982	Equal highest
October				
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
November				
Kaikohe	18.5	28th	1973	Highest
Whangarei	19.0	28th	1967	Highest
Whitianga	18.8	28th	1971	Highest
Whakatane	17.9	28th	1975	Highest
Rotorua	17.0	28th	1972	Highest
Motu	14.9	28th	1990	Highest
Waiau	21.6	27th	1974	Highest
Cheviot	20.9	27th	1982	Highest
Waipara West	20.3	27th	1973	Highest
Lincoln	20.7	27th	1881	Highest
Orari Estate	18.8	27th	1972	Highest
Timaru	17.1	27th	1885	Highest
Kerikeri	18.7	28th	1981	Equal highest
December				
Cheviot	21.4	22nd	1982	Highest

Note that temperature rankings in brackets are all-month rankings

Strong winds

For 'central New Zealand' for the year as a whole, 2015 was less windy than the climatological average (Figure 3[8]), with 34 'windy days'. January experienced no days with wind above this threshold, and March and December both only had one day. The four windiest years in this record are: 1988 (1st, 65 days), 2002 (2nd, 55 days), 1982 (3rd, 54 days), and 2014 (4th, 53 days). The windiest two months of 2015 by this measure were October (7 days, a very strong south-westerly month with pressures much below normal south of Chatham Islands), followed by June (6 days, with a south-westerly flow pattern, similar to but not as intense as October).

For 'southern New Zealand' for the year as a whole (and the 60km/hr threshold), 2015 was well above the 1981-2010 climatological average, with 30 'windy days'. This was the second equal most windy year since 1960 (tied with 1997, and just behind 1988). June and October were the windiest months of 2015 by this measure. The October 2015 total of 8 'windy' days was the highest in the record (since 1960) for October, and equal highest with September 1972 for any month of the year. The October monthly average Christchurch minus Campbell pressure gradient was also the highest on record since 1941.

[8] In these graphs, a 'windy day' is defined as one where the daily mean wind speed exceeding 60 km/hr. Thus, it is a broad measure, and also won't capture southerlies or local wind enhancements. Two indices are used: Z1 (Auckland minus Christchurch) and Z2 (Christchurch minus Campbell Island). These are referred to as "Central NZ" and "Southern NZ" in the figures.

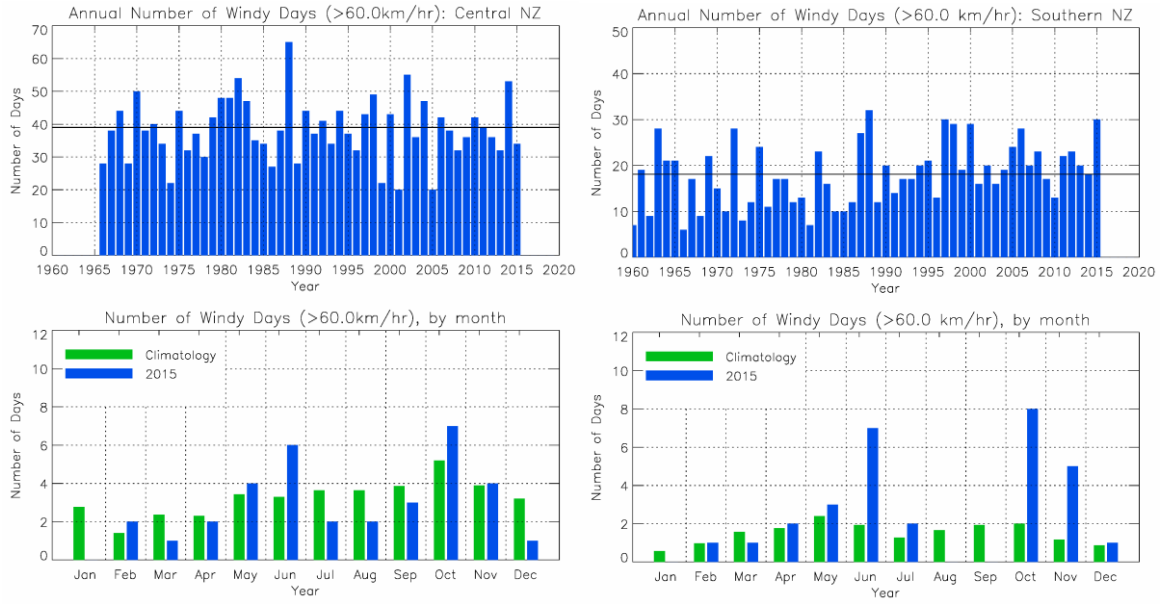

Figure 3: (Top) Annual umber of 'windy days' per calendar year, 1966 to 2015, with horizontal line indicating the 1981-2010 average (39.0 days for Central NZ and 18.1 days for Southern NZ); (Bottom) Number of 'windy days' by month, comparing the months of 2015 (blue histogram) with the 1981-2010 average (green).

On 6 March a wind gust of 126 km/hr was recorded at Farewell Spit. This was the highest gust on record for this location since records began in 1973.

On 16 and 17 March, ex-Tropical Cyclone Pam passed east of the country and was associated with strong winds and heavy rain in northern and eastern parts of the North Island. On 16 March, about 2200 Auckland and Northland properties lost power as strong winds brought down trees onto power lines. On 17 March, all schools in the Gisborne region were closed due to the forecast impact of ex-Tropical Cyclone Pam. Over 100 people in the East Cape area were evacuated from their homes as a precaution, particularly in low lying coastal townships as high seas were expected to cause flooding and damage. Ferry services in Gulf Harbour and Whangaparaoa, Auckland, were cancelled for the morning due to expected high winds and ocean swells. Power was out to several communities around the East Cape and Mahia Peninsula. A local state of emergency was declared on the Chatham Islands. Waves in excess of 9 m were recorded in the western Bay of Plenty and the East Cape/Gisborne area.

On 18 July, approximately 9000 customers in Northland, Auckland, Coromandel Peninsula and Bay of Plenty were without power as a result of strong winds causing trees to fall onto power lines. The strong winds felled trees, tore off roofs, smashed boats into sea walls and twisted traffic lights in parts of Auckland. One family was evacuated from their west Auckland home after wind brought a tree down on their house. At Ardmore Airport, two light aircraft were flipped upside down by the wind. Waterspouts and mini tornadoes were reported farther south at Mount Maunganui.

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. A dust storm struck in Twizel, where the strongest winds were replaced by rain and thunder during the afternoon. Approximately $680,000 in insurance claims were lodged with rural insurance companies, and these included damage to houses, farm buildings and irrigators.

On 27 November, strong winds occurred in many areas of the country. In Wellington, at least a dozen flights were cancelled or diverted and the *East by West* ferry services to Eastbourne were cancelled. At least seven helicopters were used to fight a forest fire at Whareama (east of Masterton), with strong winds meaning conditions were too dangerous for fire fighters to tackle the blaze from the ground. Numerous roads were closed and power was out across parts of the Southern Lakes and Central Otago, where there was considerable damage to vegetation (mostly downed trees) resulting from strong winds.

On 10 December a forest fire ignited in Marlborough and continued to burn for several days. Warm and dry north-westerly winds as well as prolonged dry conditions contributed to the spread of the fire which was the largest in the region in 15 years.

Table 12. Maximum wind gust extremes in 2015 were recorded at:

Location	Maximum wind gust (km/hr)	Date of maximum wind gust	Year records began	Ranking
January				
None observed				
February				
Lincoln Rd, Auckland	76	18th	1994	Highest
March				
Mokohinau	124	15th	1994	Highest
Hicks Bay	145	16th	1975	Highest
Farewell Spit	126	6th	1973	Highest
April				
Dannevirke	83	28th	1961	Highest
Tauranga	93	30th	1973	Equal highest
Motu	76	27th	1991	Equal highest
May				
None observed				
June				
South West Cape	167	9th	1991	Highest
July				
Secretary Island	128	25th	1994	Highest
August				
None observed				
September				
None observed				

October				
Tara Hills	107	4th	1985	Highest
Gore	122	4th	1987	Highest
South West Cape	172	7th	1991	Highest
November				
Puysegur Point	170	27th	1986	Highest
Manapouri	87	26th	1991	Equal highest
December				
Cape Reinga	141	29th	1974	Highest
South West Cape	176	21st	1991	Highest

Note that rankings in brackets are all-month rankings

Snow

On 13 April and 14 April, an unseasonable fall of snow to very low elevations occurred in the lower South Island. The polar outbreak saw snow fall to approximately 100 metres above sea level in some areas. Flights due to arrive at Queenstown Airport were cancelled or diverted because of snow on the runway. In Dunedin, bus services on some of the hill routes were suspended on the morning of 14 April after overnight snow. Snow fell to low levels on Banks Peninsula near Christchurch, and forced the temporary closure of Dyers Pass Road. In the North Island, snow fell to approximately 600 metres above sea level on the Central Plateau.

On 24 and 25 May, a cold southerly blast hit the country and caused snowfall throughout most of Otago, Southland, as well as the mountain passes and relatively high-elevation settlements in Canterbury. Up to 30 cm of snow was reported in Arrowtown, with 10-25 cm reported in Queenstown, Cromwell and Wanaka. Snow briefly fell to sea level in Dunedin but didn't settle at that elevation, however up to 10 cm was reported in the hill suburbs. Snow fell down to 300 m above sea level in Hawke's Bay, and heavier falls were reported on the Napier-Taupo Road.

On 18 and 19 June, heavy snow fell across Otago and inland Canterbury. Much of the heaviest snowfall occurred in the Mackenzie Country, where approximately 60 cm of snow was recorded at Tekapo Airport, and 70 cm of snow was recorded on the plains around 10 km north-west of Omarama. Over 4500 homes lost power, including the townships of Darfield, Horarata, Coalgate, Sheffield, Springfield, Lake Coleridge, Kirwee and Glentunnel. Mt Cook Village also lost power, where around 1 m of snow was reported.

Tornadoes and waterspouts

On 14 May, a tornado ripped through Mt Maunganui, damaging homes and buildings, pulling down fences and sending trampolines flying. About 20 homes had roofs lifted and 11 had significant damage. Part of the roof and grandstand of Baypark Stadium was severely damaged. Earlier, a reported tornado ripped the roof off a house and damaged at least three more properties at Coopers Beach in the Far North.

On 13 December several tornadoes were seen on the Canterbury Plains. One tornado lifted a silage wagon off the ground and threw it onto a nearby tractor in Carew.

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Note for editors:
Climate measurements have been made in New Zealand for about 150 years, with reasonable coverage of reliable data from at least 1900. NIWA makes its raw climate data publicly available for free on-line. Journalists are advised, however, to take extreme care when interpreting trends from raw data to ensure they have not been compromised by changes in site location, urbanisation, exposure, or instrumentation over time. If in any doubt, please call us.