

# Seasonal Climate Summary

## A persistently dry summer for all

<b>Rainfall</b>	Rainfall was below normal (50-79% of normal summer rain) for much of New Zealand during summer. Areas that were particularly affected by the dryness include eastern Otago, Canterbury, Marlborough, Wairarapa and parts of the Waikato where well below normal rainfall (<50% of normal summer rain) was observed. The district of Whangarei, coastal Bay of Plenty and southwestern Southland were the only areas of New Zealand to receive near normal rainfall (80-119% of normal summer rain).
<b>Soil moisture</b>	As of 1 March 2015, soil moisture levels were below normal for the time of year for extensive areas of New Zealand, with the exception of Central Otago and northern Southland.
<b>Temperature</b>	Summer temperatures as a whole were above average (0.51°C to 1.20°C) for the majority of the South Island with the exception of Marlborough and coastal parts of Canterbury and Otago where temperatures were in the near average range (-0.50°C to +0.50°C). In the North Island, temperatures were above average for parts of Auckland, Waikato and the Bay of Plenty as well coastal portions of Taranaki and Manawatu-Whanganui. Summer temperatures were in the near average range for the remainder of the North Island.
<b>Sunshine</b>	Summer sunshine was plentiful for much of the South Island as well as Taranaki, Manawatu-Whanganui and the Hawke's Bay where above normal sunshine hours (110-125%) were recorded. Sunshine over the north of the North Island and the Wellington, Tasman, Nelson and Marlborough regions was in the near normal range (90-109%).

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## Overview

During December and January, higher than normal pressures were centred over the Chathams and extended over New Zealand bringing about an anomalous northeasterly airflow. This circulation pattern was characteristic of the summer period of 2014-2015 as a whole despite February bringing slightly more southwesterlies than normal.

The predominance of anticyclones (highs) during summer was reflected in the seasonal rainfall totals with almost the entirety of the country receiving below normal (50-79%) or well below normal (< 50%) rainfall. As a result of this widespread dryness several locations around New Zealand from north to south observed record or near-record low summer rainfall totals. Areas particularly affected by the dryness include eastern Otago, Canterbury and Marlborough where rainfall totals from December to February were consistently well below normal (<50%). Consequently a medium-scale drought event was declared on 12 February for these regions. The Wairarapa has similarly been impacted by the prevalence of dry conditions across all three summer months and is currently under “Watch” by MPI for drought development. The district of Whangarei, coastal Bay of Plenty and southwestern Southland were the only areas of New Zealand to receive near normal rainfall (80-119% of normal summer rain).

Soil moistures around the country have mirrored the trend in summer rainfall and rapidly depleted as we progressed from December to February. As of 1 March 2015, soil moisture levels remain below normal for the time of year for extensive areas of New Zealand, with the exception of Central Otago district and northern Southland.

Temperature-wise, summer got off to a cool start during the first half of December but quickly ramped up during the second half of December and into the particularly warm month of January. National temperatures eased back to near average during February as the frequent northeasterlies experienced during the first two summer months abated and weak southwesterlies ensued. For summer as a whole, temperatures were above average (0.51°C to 1.20°C) for the majority of the South Island with the exception of Marlborough and coastal parts of Canterbury and Otago where temperatures were in the near average range (-0.50°C to +0.50°C). In the North Island, temperatures were above average for parts of Auckland, Waikato and the Bay of Plenty as well coastal portions of Taranaki and Manawatu-Wanganui. Summer temperatures were in the near average range for the remainder of the North Island. The nation-wide average temperature in summer 2014-2015 was 17.1°C (0.5°C above the 1981-2010 summer average, using NIWA’s seven-station temperature series which begins in 1909)<sup>1</sup>

#### **Further Highlights:**

- The highest temperature was 36.4°C, observed at Timaru on 16 January.
- The lowest temperature was -2.4°C, observed at Pukaki on 2 December.
- The highest 1-day rainfall was 194 mm, recorded at North Egmont 1 February.
- The highest wind gust was 178km/hr, observed at Cape Turnagain on 7 December.
- Of the six main centres in summer 2014-2015, Auckland was the warmest, Dunedin was the coolest, Christchurch was the driest, Hamilton was the cloudiest and Tauranga was the sunniest and wettest (wettest in a relative sense as rainfall was below normal for all of the six main centres).

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<sup>1</sup> Interim value

## Rainfall: Very dry for the majority of the country

The prevalence of high pressure over New Zealand from December-February meant that the summer of 2014-2015 was a dry one with the majority of the country experiencing below normal (50-79% of normal) summer rainfall totals. Rainfall during the summer months was consistently well below normal (<50% of normal summer rain) in eastern Otago, Canterbury, Marlborough, Wairarapa leading to a medium-scale drought event declared on 12 February for the affected South island regions. A watch was also put in place over Wairarapa. The district of Whangarei, coastal Bay of Plenty and southwestern Southland were the only areas of New Zealand to receive near normal rainfall (80-119% of normal summer rain).

The widespread dryness produced several record or near-record low rainfall totals for December to February up and down the country. Of particular note, Timaru saw just 47mm of rain this summer (31% of their normal summer rainfall) which is the lowest on record since 1881. Similarly, parts of Christchurch recorded just 34mm of rain this summer or 26% of normal summer rainfall. This is the second lowest rainfall total on record for the area since 1863, the lowest having occurred during the summer of 1907-1908 when 29mm was recorded.

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

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
Low records or near-records				
Motu	219	49	1990	Lowest
Whatawhata	152	50	1952	Lowest
Dannevirke	113	47	1951	Lowest
Ohakune	114	37	1961	Lowest
Orari Estate	49	27	1897	Lowest
Timaru	47	31	1881	Lowest
Waione	108	51	1991	2nd-lowest
Christchurch (Riccarton)	34	26	1863	2nd-lowest
Lake Tekapo	28	21	1925	2nd-lowest
Dunedin (Airport)	99	48	1962	2nd-lowest
Campbell Island	256	76	1992	2nd-lowest
Martinborough	65	43	1924	3rd-lowest
Stratford	193	46	1960	3rd-lowest
Waipara West	58	38	1973	3rd-lowest
Lincoln (Broadfield)	45	33	1881	3rd-lowest
Te Kuiti	148	44	1950	4th-lowest

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

Masterton	91	50	1926	4th-lowest
Mahia	136	64	1990	4th-lowest
Reefton	253	57	1960	4th-lowest
Blenheim	51	35	1941	4th-lowest
Alexandra	85	60	1983	4th-lowest

## Temperature: Variable from month to month but above average as a whole

Summer temperatures got off to a cool start in December but warmed up during the second half of the month, peaked during January and returned to near average in December. As a whole temperatures were above average (0.51°C to 1.20°C) for the majority of the South Island with the exception of Marlborough and coastal parts of Canterbury and Otago where temperatures were in the near average range (-0.50°C to +0.50°C). In the North Island, temperatures were above average for parts of Auckland, Waikato and the Bay of Plenty as well coastal portions of Taranaki and Manawatu-Wanganui. Summer temperatures were in the near average range for the remainder of the North Island. The nation-wide average temperature in summer 2014-2015 was 17.1°C (0.5°C above the 1981-2010 summer average, using NIWA's seven-station temperature series which begins in 1909)

The increased prevalence of winds from the northeasterly quarter this summer kept minimum temperatures fairly mild with Martinborough the only location to experience near-record low mean minimum temperatures. Similarly no new summer low mean temperature records were set.

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

Location	Mean air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Whatawhata	19.6	1.6	1952	Highest
Ranfurly	15.9	1.6	1975	Highest
Te Puke	19.4	1.4	1973	2nd-highest
Stratford	17.0	1.4	1960	2nd-highest
Reefton	18.1	1.7	1960	2nd-highest
Cheviot	16.9	0.9	1982	2nd-highest
Whangaparaoa	19.9	0.7	1982	3rd-highest
Lauder	17.3	1.9	1924	4th-highest
Low records or near-records				
None observed				

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

Location	Mean maximum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Whatawhata	25.1	2.3	1952	Highest
Stratford	22.2	1.8	1960	Highest
Cheviot	23.7	1.6	1982	Highest
Ranfurly	23.3	2.1	1975	Highest
Reefton	24.5	2.3	1960	2nd-highest
Motueka	24.2	1.4	1956	2nd-highest
Te Puke	24.2	1.1	1973	3rd-highest
Masterton	25.2	1.8	1992	3rd-highest
Takaka	23.7	1.2	1978	3rd-highest
Hanmer Forest	24.3	1.9	1906	3rd-highest
Whangaparaoa	23.8	0.9	1982	4th-highest
Puysegur Point	17.1	1.0	1978	4th-highest
Lumsden	20.8	0.9	1982	4th-highest
Lauder	25.0	2.7	1924	4th-highest
Low records or near-records				
None observed				

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

Location	Mean minimum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Te Puke	14.5	1.6	1973	2nd-highest
Ranfurly	8.6	1.2	1975	2nd-highest
Stratford	11.8	0.9	1960	4th-highest
Secretary Island	11.9	0.8	1985	4th-highest
Low records or near-records				
Martinborough	10.7	-1.1	1986	4th-lowest

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## Sunshine: A sunny summer for many parts of the country

Summer sunshine was plentiful for much of the South Island as well as Taranaki, Manawatu-Whanganui and the Hawke's Bay where above normal sunshine hours (110-125%) were recorded. More northeasterlies than normal this summer meant that western parts of the country in particular experienced plenty of sunny days with New Plymouth, Hokitika and Greymouth all recording their sunniest summer on record.

Sunshine over the north of the North Island and the Wellington, Tasman, Nelson and Marlborough regions was in the near normal range (90-109%).

### Record or near-record summer sunshine hours were recorded at:

Location	Sunshine hours	Percentage of normal	Year records began	Comments
High records or near-records				
New Plymouth	887	130	1972	Highest
Hokitika	777	130	1912	Highest
Greymouth	743	136	1947	Highest
Te Kuiti	677	123	1962	2nd-highest
Turangi	703	114	1976	2nd-highest
Cheviot	721	115	1983	2nd-highest
Dunedin	655	130	1980	2nd-highest
Taumarunui	697	125	1947	3rd-highest
Paraparaumu	776	119	1953	3rd-highest
Balclutha	704	141	1964	3rd-highest
Dannevirke	694	115	1963	4th-highest

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## Summer climate in the six main centres

Dry conditions prevailed during the summer months in the six main centres with below normal rainfall recorded at all locations except for Christchurch which experienced well below normal rainfall. Temperatures were above average for Auckland and Tauranga and near average for the remaining four main centres. Sunshine was in the near normal range for all for the six centres with the exception of Dunedin where a truly sunny summer took hold (second sunniest summer on record) and well above normal sunshine hours were recorded. Of the six main centres in summer 2014-2015, Auckland was the warmest, Dunedin was the coolest, Christchurch was the driest, Hamilton was the cloudiest and Tauranga was the sunniest and wettest (wettest in a relative sense as rainfall was below normal for all of the six main centres).

### Summer 2014-2015 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland <sup>a</sup>	20.0	0.8	Above average
Tauranga <sup>b</sup>	19.7	0.6	Above average
Hamilton <sup>c</sup>	18.3	0.3	Near Average
Wellington <sup>d</sup>	16.8	0.3	Near Average
Christchurch <sup>e</sup>	16.7	0.1	Near Average
Dunedin <sup>f</sup>	15.0	0.3	Near Average
Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland <sup>a</sup>	110	50%	Below normal
Tauranga <sup>b</sup>	197	76%	Below normal
Hamilton <sup>c</sup>	150	57%	Below normal
Wellington <sup>d</sup>	156	68%	Below normal
Christchurch <sup>e</sup>	59	47%	Well below normal
Dunedin <sup>f</sup>	115	52%	Below normal
Sunshine			
Location	Sunshine (hours)	% of normal	Comments
Auckland <sup>a</sup>	676	108%	Near normal
Tauranga <sup>b</sup>	751	106%	Near normal
Hamilton <sup>g</sup>	636	98%	Near normal
Wellington <sup>d</sup>	670	98%	Near normal
Christchurch <sup>e</sup>	638 <sup>3</sup>	97%	Near normal
Dunedin <sup>f</sup>	655	130%	2nd-highest on record

<sup>a</sup> Mangere <sup>b</sup> Tauranga Airport <sup>c</sup> Hamilton Airport <sup>d</sup> Kelburn <sup>e</sup> Christchurch Airport <sup>f</sup> Musselburgh <sup>g</sup> Ruakura

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<sup>3</sup> 3 days of missing data

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## Highlights and extreme events

This section contains information pertaining to some of the more significant highlights and extreme events that occurred during summer 2014-2015. Note that a more detailed list of significant weather events for summer 2014-2015 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

On 19 January, several small fires were reported in the upper South Island, including one near Seddon which forced the temporary closure of SH 1 and disrupted train services on the main trunk line.

On 26 January a large fire started near Arthur's Pass, and it required considerable resources to bring under control. The area of land affected was estimated at nearly 500 ha, and SH 73 was forced to close temporarily. High temperatures on subsequent days in the Arthur's Pass area resulted in a number of hot-spots flaring up.

From 25-28 January, Wellington (Kelburn) recorded a four-day "warm spell" (consecutive days with a daily maximum temperature greater than 25.0°C). This is the equal second-longest warm spell for Wellington (Kelburn) in records which began in 1927 (longest warm spell on record is five days, beginning 24 December 1934).

On 5 February several locations observed record or near-record low daily maximum temperatures for summer. This unseasonably cool snap also brought snow to the mountains around Canterbury and Otago overnight.

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

Location	Extreme maximum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Boyle River Lodge	34.0	Jan-25th	1983	2nd-highest
Mana Island	28.6	Jan-29th	1987	Equal 2nd-highest
Whatawhata	30.8	Jan-25th	1952	3rd-highest
Reefton	33.2	Jan-25th	1960	4th-highest
Cheviot	33.6	Jan-4th	1982	4th-highest
Waipara West	35.2	Jan-26th	1973	4th-highest
Arthur's Pass	28.4	Jan-27th	1978	4th-highest
Puysegur Point	24.7	Dec-30th	1978	Equal 4th-highest
Low records or near-records				
Secretary Island	10.9	Feb-5th	1989	Lowest
Mokohinau	15.7	Dec-15th	1994	2nd-lowest
Warkworth	15.9	Dec-14th	1966	2nd-lowest
Whangaparaoa	16.1	Dec-14th	1982	2nd-lowest
Whitianga	15.3	Dec-14th	1971	2nd-lowest



Taihape	11.5	Dec-1st	1972	2nd-lowest
Haast	10.5	Feb-5th	1949	2nd-lowest
Milford Sound	7.7	Feb-5th	1935	2nd-lowest
Cheviot	10.9	Dec-10th	1982	2nd-lowest
Le Bons Bay	9.1	Dec-10th	1984	2nd-lowest
Invercargill	9.6	Feb-5th	1905	2nd-lowest
Balclutha	10.2	Dec-1st	1972	2nd-lowest
Campbell Island	6.7	Feb-5th	1991	2nd-lowest
Turangi	13.0	Dec-1st	1968	Equal 2nd-lowest
Tiwai Point	10.7	Feb-5th	1972	Equal 2nd-lowest
Te Kuiti	15.6	Dec-1st	1959	3rd-lowest
Masterton	11.4	Dec-1st	1943	3rd-lowest
Martinborough	12.3	Dec-1st	1986	3rd-lowest
Hicks Bay	15.1	Dec-14th	1972	3rd-lowest
Invercargill	9.7	Feb-5th	1905	3rd-lowest
Thames	16.5	Dec-14th	1957	Equal 3rd-lowest
Manapouri	10.5	Feb-5th	1973	Equal 3rd-lowest
Rotorua	14.5	Dec-14th	1972	Equal 4th-lowest
Waipawa	12.9	Dec-14th	1945	Equal 4th-lowest
Naseby Forest	8.2	Dec-10th	1983	Equal 4th-lowest
South West Cape	9.9	Dec-11th	1991	Equal 4th-lowest

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

Location	Extreme minimum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Puysegur Point	18.9	Dec-27th	1978	Highest
Balclutha	19.5	Jan-11th	1972	Highest
Ranfurly	18.3	Jan-5th	1975	2nd-highest
Alexandra	18.9	Jan-16th	1992	2nd-highest
Tautuku	18.0	Jan-1st	1976	2nd-highest
Secretary Island	17.7	Jan-26th	1988	3rd-highest
Farewell Spit	19.3	Jan-29th	1972	Equal 3rd-highest
Naseby Forest	15.0	Jan-5th	1984	Equal 3rd-highest
Alexandra	18.5	Jan-11th	1983	Equal 4th-highest
Campbell Island	11.9	Jan-26th	1991	Equal 4th-highest
Low records or near-records				
Kerikeri	4.5	Dec-5th	1981	Lowest
Te Kuiti	1.9	Dec-2nd	1959	Lowest
Turangi	-0.5	Dec-3rd	1968	Lowest
Dannevirke	-1.0	Dec-3rd	1951	Lowest
Martinborough	-1.6	Dec-1st	1986	Lowest
Motueka	1.9	Dec-2nd	1956	Lowest
Appleby	0.9	Dec-2nd	1932	Lowest
Blenheim	-0.3	Dec-2nd	1932	Lowest

Le Bons Bay	3.6	Dec-1st	1984	Lowest
Ophir	-4.1	Dec-2nd	1924	Lowest
Alexandra	-0.1	Dec-2nd	1992	Lowest
Port Taharoa	6.6	Dec-3rd	1973	2nd-lowest
Naseby Forest	-2.1	Dec-2nd	1983	2nd-lowest
Alexandra	0.4	Dec-2nd	1983	Equal 2nd-lowest
Balclutha	0.7	Dec-14th	1964	Equal 2nd-lowest
Mokohinau	12.1	Dec-2nd	1994	3rd-lowest
Auckland (North Shore)	10.4	Dec-2nd	1994	3rd-lowest
Motu	0.1	Dec-3rd	1990	3rd-lowest
Waione	0.6	Dec-3rd	1991	3rd-lowest
Secretary Island	4.8	Dec-1st	1985	3rd-lowest
Pelorus Sound	5.8	Dec-2nd	1982	3rd-lowest
Timaru	0.2	Dec-2nd	1885	3rd-lowest
Queenstown	-0.2	Dec-2nd	1871	3rd-lowest
Lumsden	-0.6	Feb-26th	1982	3rd-lowest
Tiwai Point	2.6	Dec-14th	1970	3rd-lowest
Nugget Point	3.3	Dec-1st	1970	3rd-lowest
Tara Hills	-1.7	Dec-2nd	1949	Equal 3rd-lowest
Kaitia (Airport)	6.8	Dec-4th	1948	4th-lowest
Warkworth	5.0	Dec-3rd	1966	4th-lowest
Taumarunui	1.4	Dec-3rd	1947	4th-lowest
Castlepoint	6.0	Dec-3rd	1994	Equal 4th-lowest
Ranfurly	-1.5	Feb-26th	1975	Equal 4th-lowest

## Rain and slips

On 10 December heavy rain caused surface flooding in parts of the Kapiti Coast, Horowhenua and Manawatu. Caution was advised to motorists travelling on SH 1 between Levin and Manakau and SH 57 near Tavistock Road north of Levin due to flooding.

On 14 December heavy morning rain caused a section of highway between Warkworth and Wellsford to become flooded.

On 17 December, Port Jackson road in the Coromandel was closed due to flooding caused by heavy rain.

On 21 February, Ranfurly recorded half of its monthly rainfall in one day.

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

Location	Extreme 1-day rainfall (mm)	Date of extreme rainfall	Year records began	Comments
Whangapoua	104	Dec-14th	1991	4th-highest
Rings Beach	125	Dec-14th	1986	4th-highest
Hicks Bay	145	Dec-17th	1916	4th-highest

## Wind

On 14 December, 1600 Hauraki Plains and Coromandel Peninsula properties were without power after damaging winds brought down trees and power lines.

On 17 December, damaging winds struck in the Morrinsville and Matamata areas, with reports of tree branches on roads, lifting roofs and downed power lines. Caution was also advised by the NZTA for motorists travelling over the Auckland Harbour Bridge and Mangere Bridge due to strong wind gusts.

On 26 February, a number of small tornadoes were seen in the western Bay of Plenty around Tauranga and Katikati during a thunderstorm.

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

Location	Extreme wind gust (km/hr)	Date of extreme gust	Year records began	Comments
Cape Reinga Aws	128	Dec-16th	1974	3rd-highest
Mokohinau Aws	113	Dec-14th	1994	3rd-highest
Auckland (Henderson)	76	Feb-18th	1994	3rd-highest

## Lightning and hail

On 19 January lightning strikes and hail were reported near the east coast of North Otago.

On 21 January thundery showers brought hail to isolated parts of Hawke's Bay including Hastings and Havelock North. Masterton was also struck by a sudden downpour which caused minor surface flooding on some streets.

On 11 February, a blinding flash similar to lightning lit up the sky over much of New Zealand at about 10 p.m., and a sonic boom was also heard. The flash was caused by a meteor entering the atmosphere.

## Snow and ice

On 1 December an unseasonable snowfall occurred on some mountainous regions of the South Island. Staff at Mount Hutt ski area reported 20 cm of fresh snow.

## Cloud and fog

On 19 December thick fog grounded planes at Auckland Airport, cancelling three domestic flights and delaying 30. The fog lingered till mid-morning.

**For further information, please contact:**

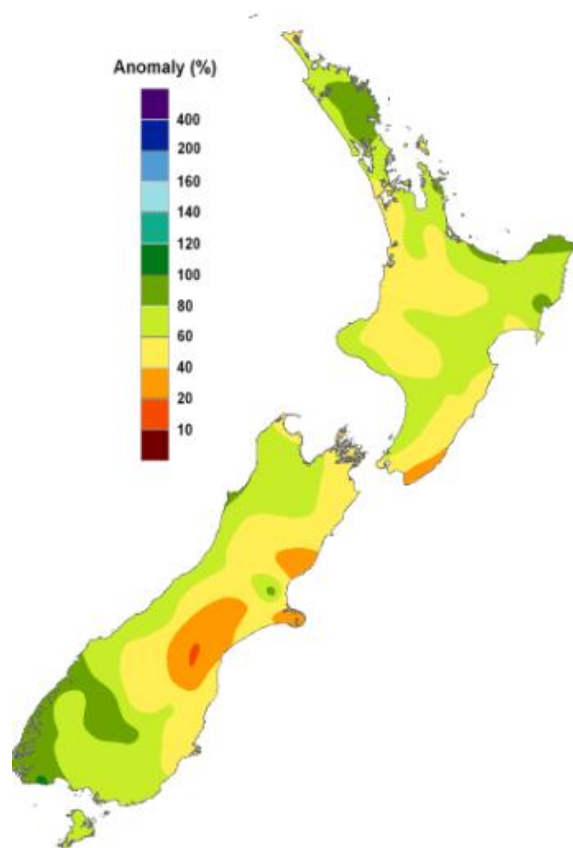
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*Summer 2014-2015 rainfall expressed as a percentage of the 1981-2010 normal (%), illustrating that rainfall totals for the season were below 80% of normal for the majority of New Zealand. Dryness was particularly prevalent for eastern Otago, Canterbury, Marlborough and Wairarapa.*

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