

## Near average temperatures for most of the country.

<b>Temperature</b>	Spring temperatures were near average ( $-0.50^{\circ}\text{C}$ to $+0.50^{\circ}\text{C}$ ) for much of the country. The exception was parts of Otago and Waikato where temperatures were below average ( $-1.20^{\circ}\text{C}$ to $-0.51^{\circ}\text{C}$ ), and isolated parts of the Bay of Plenty where temperatures were above average ( $+0.51^{\circ}\text{C}$ to $+1.20^{\circ}\text{C}$ ).
<b>Rainfall</b>	Rainfall was well below normal ( $< 50\%$ ) in Nelson and Marlborough, and below normal ( $50-79\%$ ) in eastern parts of Otago and Canterbury, Wellington, Kapiti Coast, Wairarapa and Bay of Plenty. In contrast, rainfall was above normal ( $120-149\%$ ) or well above normal ( $> 149\%$ ) for south-western parts of the South Island.
<b>Sunshine</b>	Spring sunshine was abundant for eastern parts of Otago and Canterbury, Nelson, Wellington and Kapiti Coast where sunshine totals were above normal ( $110-125\%$ ), and in some cases well above normal ( $> 125\%$ ).
<b>Soil moisture</b>	As of 1 December 2014, soil moisture levels were below normal for the time of year for extensive areas of New Zealand, but especially for Nelson, Marlborough, Wellington, southern Wairarapa, the East Cape and Bay of Plenty. Soil moisture levels were above normal in the southern and northern-most parts of the country.

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## Overview

Overall, spring 2014 was characterised by mean sea level pressures that were lower than normal to the south of the Chatham Islands, extending over the country, while higher pressures than normal affected the north Tasman Sea. This resulted in strong westerly-quarter flow anomalies over much of the country. For the season as a whole, temperatures were near average ( $-0.50^{\circ}\text{C}$  to  $+0.50^{\circ}\text{C}$ ) across most of the country. The exception was parts of Otago and Waikato where temperatures were below average ( $-1.20^{\circ}\text{C}$  to  $-0.51^{\circ}\text{C}$ ), and isolated parts inland Bay of Plenty where temperatures were above average ( $+0.51^{\circ}\text{C}$  to  $+1.20^{\circ}\text{C}$ ). Despite mostly near average temperatures for spring overall, there was a noticeable change from September, when many North Island areas observed above average temperature, to November when temperatures were below average for many parts

of the country. The nation-wide average temperature in spring 2014 was 12.2°C (0.1°C above the 1971-2000 spring average from NIWA's seven station temperature series which begins in 1909)<sup>1</sup>.

Rainfall was well below normal (< 50%) in Nelson and Marlborough, and below normal (50-79%) in eastern parts of Otago and Canterbury, Wellington, Kapiti Coast, Wairarapa and Bay of Plenty. In contrast, rainfall was above normal (120-149%) or well above normal (> 149%) for south-western parts of the South Island. Remaining areas of the country typically received near average rainfall (within 20% of average) for the season. At the start of spring soil moisture levels were near normal for large parts of the country. The exception was parts of Taranaki, the West Coast and Tasman as well as the districts of Selwyn, Waimakariri and Timaru, where soils were slightly drier than normal for the time of year. As of 1 December 2014, soil moisture levels were below normal for the time of year for extensive areas of New Zealand, but especially for Nelson, Marlborough, Wellington, southern Wairarapa, the East Cape and Bay of Plenty. Soil moisture levels were above normal in the southern and northern-most parts of the country.

It was a sunny spring for eastern parts of Otago and Canterbury, Nelson and Wellington where sunshine totals were generally above normal (110-125%). In some cases the season was an exceptionally sunny one: well above normal sunshine (> 125%) was observed in south-eastern parts of Otago, eastern parts of North Canterbury, and along the Kapiti Coast. Remaining areas of New Zealand observed near normal spring sunshine totals (within 10% of normal).

#### **Further Highlights:**

- The highest temperature was 31.1°C, observed at Christchurch (Riccarton) on 22 November.
- The lowest temperature was -6.9°C, observed at Middlemarch on 28 September.
- The highest 1-day rainfall was 226 mm, recorded at Milford Sound on 21 November.
- The highest wind gust was 209 km/hr, observed at Cape Turnagain on 18 November.
- Of the six main centres in spring 2014, Auckland was the warmest, Dunedin was the coolest, Christchurch was the driest, Hamilton was the wettest and cloudiest, and Wellington was the sunniest.
- Of the available, regularly reporting sunshine observation sites, the sunniest four centres<sup>2</sup> so far in 2014 (1 January to 30 November) are: Whakatane (2477 hours), Blenheim (2289 hours), Nelson (2283 hours) and Lake Tekapo (2255 hours).

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<sup>1</sup> Interim value

<sup>2</sup> New Plymouth sunshine is still omitted from this ranking while recent instrumentation changes are assessed.

## Temperature: Near average temperatures across most of the country.

Spring was largely an unremarkable season overall temperature-wise, with near average temperatures observed across many parts of the country. Perhaps most notable were locations in the eastern South Island which observed record or near-record low mean minimum air temperatures. This may be attributed to an enhanced cooling at night-time due to clear skies (as confirmed by relatively high sunshine hours recorded in these locations). The nation-wide average temperature in spring 2014 was 12.2°C (0.1°C above the 1971-2000 spring average from NIWA's seven station temperature series which begins in 1909). A relatively warm spell occurred over parts of the country near the end of November. During this time a number of locations observed record or near-record daily maximum and daily minimum spring air temperatures (further details of this event are presented in the *Highlights and extreme events* section).

### Record<sup>3</sup> or near-record mean air temperatures for spring were recorded at:

Location	Mean air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Te Puke	14.5	1.2	1973	2nd-highest
Masterton	13.2	1.1	1992	2nd-highest
Low records or near-records				
Te Kuiti	11.8	-1.3	1959	3rd-lowest
Kaitaia	13.4	-1.1	1967	4th-lowest

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

Location	Mean maximum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Wallaceville	17.9	1.8	1939	Highest
Te Puke	19.2	0.9	1973	3rd-highest
Motueka	19.0	1.2	1956	3rd-highest
Nelson	17.9	1.0	1943	3rd-highest
Christchurch (Riccarton)	18.8	1.6	1863	3rd-highest
Stratford	16.1	0.9	1960	4th-highest
Blenheim	19.1	1.1	1932	4th-highest
Low records or near-records				
Kaitaia	16.9	-1.3	1967	3rd-lowest

<sup>3</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.

Te Kuiti	16.9	-1.1	1959	3rd-lowest
Martinborough	16.9	-0.3	1986	4th-lowest

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

Location	Mean minimum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
<b>High records or near-records</b>				
Campbell Island	4.6	0.6	1991	Highest
Masterton	7.7	1.6	1992	3rd-highest
Te Puke	9.8	1.5	1973	4th-highest
<b>Low records or near-records</b>				
Winchmore	3.3	-2.2	1928	Lowest
Christchurch	4.8	-1.2	1863	Lowest
Te Kuiti	6.7	-1.4	1959	2nd-lowest
Timaru	3.3	-1.4	1885	2nd-lowest
Tiwai Point	5.7	-1.2	1970	2nd-lowest
Wallaceville	6.1	-1.4	1939	3rd-lowest
Dunedin (Musselburgh)	6.2	-1.0	1947	4th-lowest
Alexandra	4.0	-0.8	1983	4th-lowest

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## Rainfall: Very dry for the north of the South Island.

Spring was a particularly dry season for Nelson and Marlborough, where near-record low spring rainfall totals were observed. Nelson received just 39% of normal spring rainfall, and as of 1 December 2014 soils were considerably drier than normal in the area. It was a relatively dry season in Wellington and Christchurch, with both cities receiving approximately three-quarters of normal spring rainfall.

**Record or near-record spring rainfall totals were recorded at:**

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
<b>Low records or near-records</b>				
Blenheim	79	46	1941	2nd-lowest
Nelson	99	39	1941	4th-lowest
Masterton	178	74	1992	Equal 4th-lowest

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

It was a sunny spring for many parts of the country. Five locations observed record or near-record high sunshine hours for the season, with Cheviot receiving 203 more hours of sunshine than normal for the season. The North Canterbury town observed its highest total sunshine hours for spring on record, as did Paraparaumu and Martinborough. Of the available, regularly reporting sunshine observation sites, the sunniest four centres so far in 2014 (1 January to 30 November) are: Whakatane (2477 hours), Blenheim (2289 hours), Nelson (2283 hours) and Lake Tekapo (2255 hours).

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

Location	Sunshine hours	Percentage of normal	Year records began	Comments
High records or near-records				
Martinborough	643	104	1986	Highest
Paraparaumu	682	129	1953	Highest
Cheviot	724	139	1983	Highest
Balclutha	607	128	1964	2nd-highest
Wellington	659	116	1928	3rd-highest

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## Spring climate in the six main centres

Temperatures were below average in Dunedin, with the city observing its fourth-lowest mean minimum air temperature for spring on record (records began in 1947). Christchurch observed its lowest mean minimum air temperature on record (records began in 1863), but warmer than average mean maximum air temperatures resulted in a near average mean temperature there for the season overall. It was a dry winter for Tauranga, with the city receiving approximately half of normal rainfall for the season (note nine days of data are missing). Dunedin enjoyed a very sunny spring, observing 126 more sunshine hours than the spring normal. Of the six main centres in spring 2014, Auckland was the warmest, Dunedin was the coolest, Christchurch was the driest, Hamilton was the wettest and cloudiest, and Wellington was the sunniest.

### Spring 2014 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland <sup>a</sup>	15.0	0.5	Above average
Tauranga <sup>b</sup>	14.6	0.5	Above average
Hamilton <sup>c</sup>	12.8	-0.2	Near average
Wellington <sup>d</sup>	12.5	0.4	Near average
Christchurch <sup>e</sup>	11.1	-0.4	Near average
Dunedin <sup>f</sup>	10.4	-0.6	Below average
Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland <sup>a</sup>	257	99%	Near normal
Tauranga <sup>b</sup>	123 <sup>4</sup>	50%	Below normal
Hamilton <sup>c</sup>	298 <sup>5</sup>	103%	Near normal
Wellington <sup>d</sup>	239 <sup>6</sup>	76%	Below normal
Christchurch <sup>e</sup>	100	74%	Below normal
Dunedin <sup>f</sup>	159	96%	Near normal
Sunshine			
Location	Sunshine (hours)	% of normal	Comments
Auckland <sup>a</sup>	546	105%	Near normal
Tauranga <sup>b</sup>	590	97%	Near normal
Hamilton <sup>e</sup>	484	94%	Near normal
Wellington <sup>d</sup>	659	116%	Above normal
Christchurch <sup>e</sup>	649	109%	Near normal
Dunedin <sup>f</sup>	596 <sup>6</sup>	127%	Well above normal

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

<sup>4</sup> Missing 9 days of data. <sup>5</sup> Missing 2 days of data. <sup>6</sup> Missing 1 day of 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 in spring 2014. Note that a more detailed list of significant weather events for spring 2014 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 13 October north-westerly winds contributed to warm temperatures for the time of year throughout the lower South Island. Maximum temperatures (and departure from average October daily maximum temperature) observed included: Invercargill 23.0°C (+8.7°C), Manapouri 21.0°C (+6.1°C), Lumsden 22.5°C (+7.3°C), Queenstown 22.0°C (+6.7°C), Dunedin Airport 26.0°C (+9.8°C) and Wanaka 22.2°C (+5.9°C).

On 1 and 2 November a strong northwest airflow brought high temperatures to many parts of the country. Temperatures were especially high for the time of year on 2 November, when the maximum temperature reached 28.4°C in Timaru, 27.9°C in Napier, 27.8°C in Gisborne, 27.2°C in Clyde and 24.9°C in Dunedin. Also notable were some very high overnight temperatures recorded on the night of 1 November. Between 6 p.m. on 1 November and 8 a.m. on 2 November, the temperature never dropped below 18.2°C in Balclutha, 19.2°C in Clyde and 20.7°C in Dunedin.

At 10.45 a.m. on 15 November it was 26.2°C in Napier but just 6.2°C in Invercargill. This illustrated the considerable difference in temperature of the airmass in the pre-cold front north-westerly winds over Napier and the post-front south-westerlies in Invercargill.

In spring 2014, the highest temperature recorded was 31.1°C, observed at Christchurch (Riccarton) on 22 November. Middlemarch observed the lowest temperature in spring 2014, with -6.9°C recorded on 28 September.

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

Location	Extreme maximum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Kerikeri	27.3	Nov-25th	1981	2nd-highest
Kaikoura	29.5	Nov-22nd	1963	2nd-highest
Whangarei	26.8	Nov-25th	1967	3rd-highest
Mahia	26.1	Nov-26th	1990	3rd-highest
Te Puke	27.2	Nov-25th	1973	Equal 3rd-highest
Christchurch (Riccarton)	31.1	Nov-22nd	1863	Equal 3rd-highest
Low records or near-records				
Kerikeri	12.5	Oct-10th	1981	Lowest

Port Taharoa	11.9	Sep-1st	1974	3rd-lowest
Martinborough	8.1	Sep-28th	1986	3rd-lowest
Waione	9.8	Sep-28th	1993	Equal 3rd-lowest
Farewell Spit	11.2	Sep-28th	1972	4th-lowest

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

Location	Extreme minimum (°C)	Date of extreme temperature	Year records began	Comments
<b>High records or near-records</b>				
Te Puke	17.8	Nov-26th	1973	Highest
Masterton	17.2	Nov-26th	1992	Highest
Whitianga	18.1	Nov-26th	1971	Equal highest
Kerikeri	18.3	Nov-25th	1981	2nd-highest
Orari Estate	16.0	Oct-23rd	1972	2nd-highest
Blenheim	18.0	Nov-26th	1972	Equal 2nd-highest
Tauranga	18.2	Nov-26th	1941	3rd-highest
Rotorua	16.1	Nov-26th	1972	3rd-highest
Lumsden	16.1	Nov-2nd	1982	3rd-highest
Whangarei	18.5	Nov-25th	1967	Equal 3rd-highest
Waiau	16.2	Nov-22nd	1974	Equal 3rd-highest
Ranfurlly	15.0	Nov-22nd	1975	Equal 3rd-highest
Campbell Island	9.3	Oct-2nd	1991	Equal 3rd-highest
Waipawa	17.7	Nov-26th	1945	4th-highest
Mahia	16.2	Nov-26th	1990	4th-highest
Cheviot	16.5	Nov-22nd	1982	4th-highest
Waipara West	19.0	Nov-22nd	1973	4th-highest
Le Bons Bay	15.7	Nov-22nd	1984	4th-highest
<b>Low records or near-records</b>				
Whangaparaoa	0.9	Oct-7th	1982	Lowest
Rotorua	-2.4	Sep-23rd	1964	Equal 3rd-lowest
Lumsden	-4.1	Sep-20th	1982	Equal 3rd-lowest
Mahia	4.2	Sep-23rd	1990	4th-lowest

### Rain and slips

On 11 September, rain in the South Island brought an end to a long-lasting dry spell. A “dry spell” is defined as a period of 15 days or more with less than 1mm of rain on any one day. The dry spell in Wanaka and Timaru lasted 31 days in total with many other locations also experiencing dry conditions for a comparable length of time.

The highest 1-day rainfall for spring 2014 was 226 mm, recorded at Milford Sound on 21 November.



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

Location	Extreme 1-day rainfall (mm)	Date of extreme rainfall	Year records began	Comments
Hawera	80	Sep-13th	1977	2nd-highest
Patiki	79	Sep-13th	1963	3rd-highest
Secretary Island	126	Nov-20th	1985	3rd-highest

### Wind

On 22 September strong south-westerly winds were recorded in many parts of the country. In Wellington, winds brought down power lines on Grafton Road and closed the *Interislander* ferry service for the day. The storm also forced buses to replace some train services in the capital after the high tide and wind caused water to cover rail tracks just south of Petone. Christchurch was similarly affected with a roof blown off one house and the loss of power to about 400 homes for a short period after a tree branch fell on power lines. In Auckland, strong gusts brought down several trees affecting power lines and leaving 10,000 households without power.

On 6 October strong winds hit parts of Wellington, cancelling several *East by West* commuter ferry services. The Fire Service responded to dozens of callouts, including a roof lifting in Miramar and in Upper Hutt. Strong wind gusts knocked trees and vegetation on to power lines, cutting electricity to about 2100 homes in the capital's northern suburbs and areas further north. A fallen tree also knocked out *Tranz Metro's* overhead electrical lines near Taita, cancelling some services on the Hutt Valley and Melling rail lines and delaying services to Wairarapa during the evening rush hour. Farther north, a tree came down on to a house and caravan in Kawerau, and many roofs were lifted off on the east coast from Whangamata to Papamoa. A strong gust blew a truck into a ditch across the Napier-Hastings expressway. In Tauranga, strong winds and rough seas caused boats to break free of their moorings. Power was knocked out in the Auckland suburbs of Green Bay, Riverhead and Titirangi due to the high winds.

On 29 October strong winds across Canterbury caused power outages to more than 1700 households in Coalgate, Darfield, Greendale and Homebush.

Strong winds on 2 November fanned a large and out-of-control scrub fire near Outram in Otago, forcing the evacuation of at least four homes. A scrub fire in Millers Flat (Central Otago) also forced the evacuation of one property, and took local fire crews 8 hours to bring under control. Farther north, a family of four were trapped in their campervan after it was blown over near Mount Cook Village.

On 15 November, approximately 3600 Canterbury properties were without power after damaging winds brought down trees and power lines. Areas around Darfield, Homebush, Springfield and Hororata were worst affected. The downed power lines also triggered scrub fires in the Selwyn and Waimakariri districts. In Greymouth, a strong burst of wind struck at 5.25 a.m. that lifted roofs and caused damage to the local fire station. Approximately 18,000 homes in Auckland lost power as a

result of the strong winds bringing down power lines, and the *Taste of Auckland* festival was forced to close due to severe wind gusts.

The highest wind gust for spring 2014 was 209 km/hr, observed at Cape Turnagain on 18 November.

**Record or near record spring extreme wind gusts were recorded at:**

Location	Extreme wind gust (km/hr)	Date of extreme gust	Year records began	Comments
Kaikohe	102	Oct-7th	1986	Highest
Auckland (Whenuapai)	109	Oct-29th	1972	Highest
Palmerston North	102	Oct-6th	1991	Highest
Wanganui	109	Oct-6th	1977	Highest
Farewell Spit	115	Oct-3rd	1973	Highest
Rotorua	104	Oct-6th	1972	Equal highest
Hamilton (Ruakura)	83	Sep-22nd	1991	2nd-highest
Baring Head	154	Sep-22nd	1991	2nd-highest
Palmerston North	100	Oct-6th	1991	2nd-highest
Tauranga	106	Oct-6th	1973	3rd-highest
Pukekohe	80	Oct-29th	1986	3rd-highest
Mahia	106	Sep-22nd	1991	3rd-highest
Cape Campbell	122	Sep-22nd	1963	3rd-highest
Kaikoura	150	Oct-6th	1972	3rd-highest
Hamilton (Airport)	85	Oct-6th	1978	Equal 3rd-highest
Napier	107	Oct-6th	1973	Equal 3rd-highest
Taupo	91	Oct-29th	1982	4th-highest
Wanganui	95	Oct-6th	1977	Equal 4th-highest
Wanaka	83	Nov-2nd	1992	Equal 4th-highest

**Lightning and hail**

In the early hours of 29 October, thunderstorms struck across Northland and Auckland.

Approximately 16,000 lightning strikes were recorded, including one which struck an *Air New Zealand* flight travelling from Auckland to New Plymouth. The areas of Kaikohe, Kaeo, Omapere and Waipapa were temporarily without power due to faults caused by lightning strikes.

In the late hours of 29 October and early hours of 30 October the Auckland region was hit by a number of thunderstorms. Large hail stones were reported in Auckland, whilst 600 lightning strikes were recorded from Auckland to Taranaki.

A severe and damaging hailstorm struck parts of the Tasman District on 4 November, with the worst-affected areas around Lower Moutere, Motueka and Riwaka. The worst of the hailstorm lasted approximately 20 minutes and resulted in significant damage to apple and kiwifruit crops: an estimated 15 to 20 orchards were seriously affected with many crops deemed a complete write-off.

In some cases hail nets that were used to protect the orchards collapsed under the weight of hail, with trees subsequently breaking under the weight of the collapsed nets. Thunder, lightning and hail was also reported in central Christchurch in the early evening, with hail the size of small marbles blanketing the ground.

On 5 November New Plymouth was stuck by a hailstorm, with considerable surface flooding resulting from blocked drains. A number of businesses had to temporarily close due to flooding caused by blocked drains overflowing, and widespread damage to multiple buildings (e.g. roof collapses) were reported.

### **Snow and ice**

On 5 November, residents of Hanmer Springs awoke to an unseasonable settling of snow in the township. The snow in the town had melted by 10 a.m. but remained to relatively low elevations on the surrounding hills and mountains. *Mount Hutt* ski area, which by this stage had closed for the season, received approximately 25 cm of fresh snow. Ski area staff described this as the largest snowfall of the year (highlighting what a lean season it had been for the ski area snow-wise).

### **Cloud and fog**

On 10 September several morning flights in and out of Christchurch Airport were delayed and cancelled due to a thick fog.

On 13 September early morning fog delayed domestic flights out of Auckland. The fog lifted by 9am allowing flights to resume.

On 25 November, fog at New Plymouth airport forced the cancellation of numerous flights. The fog persisted for some time, and at midday the temperature in New Plymouth was 16.5°C with humidity at 100%. Fog also forced the cancellation of flights at Wellington, Paraparaumu and Nelson airports.

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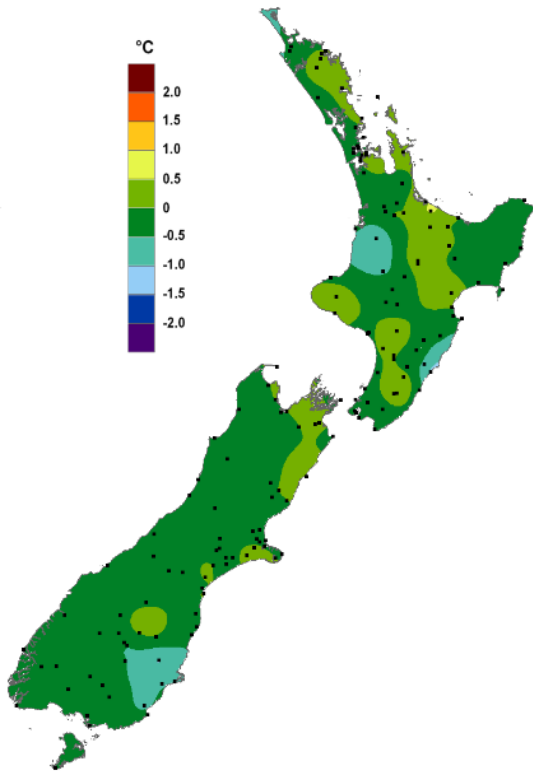
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*Spring 2014 mean temperature expressed as a difference from average, illustrating that mean temperatures were near average (within 0.5°C of spring average – green shades) for most of New Zealand.*

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