

A wet end to the month for eastern North Island

Rainfall	Rainfall was well above normal (>149%) for many parts of the Bay of Plenty, Gisborne, Hawke's Bay, eastern Manawatu-Wanganui, eastern Marlborough and northern Canterbury. Conversely, Taranaki, western Manawatu-Wanganui, Tasman, Westland, Southland and Otago received below normal rainfall (50-79%).
Temperature	Mean temperatures were below average (-0.51°C to -1.20°C) for virtually the entire country. The exceptions were parts of Northland, Auckland, northern Waikato, coastal Westland and western Southland, where near average (-0.50°C to +0.50°C) temperatures were recorded for the month.
Sunshine	Sunshine was near normal (90-109%) for much of the country. Above normal sunshine (110-125%) was recorded in Nelson, Tasman and Westland.
Soil Moisture	As of 1 October 2015, soils were notably drier than normal in coastal Hurunui, South Canterbury and northern Otago. Soils are now wetter than normal in coastal Hawke's Bay and Gisborne as well in the district of Kaikoura. Elsewhere, soil moisture levels were typically near normal for this time of year.

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Overview

Overall, September 2015 was characterised by air pressures that were higher than normal over the South Island and southwest of New Zealand, and lower than normal to the south and east of the country. This circulation pattern resulted in more south-easterly airflows than normal over New Zealand.

The prevalence of south-easterly winds throughout September was certainly reflected in monthly rainfall totals with many coastal eastern areas receiving well above normal rainfall (>149% of September normal) for the month as a whole. These areas include the Bay of Plenty, Gisborne, Hawke's Bay, eastern Manawatu-Wanganui, eastern Marlborough and northern Canterbury. Conversely, areas west of the Divide were sheltered from the moist airflow and as a result experienced an unusually dry month. Taranaki, western Manawatu-Wanganui, Tasman, Westland, Southland and Otago received below normal rainfall (50-79% of the September normal) with pockets of well below

normal rainfall (< 50% of the September normal) recorded in some of these regions. Rainfall in the Auckland region and northern Waikato was near normal (80-119%).

As of 1 October 2015, soils remained notably drier than normal in coastal Hurunui, South Canterbury and northern Otago. The high rainfall in eastern areas observed over the past month helped to alleviate some of the dryness in soils, which are now wetter than normal in coastal Hawke's Bay and Gisborne as well as in the district of Kaikoura. Elsewhere, soil moisture levels were typically near normal for this time of year.

September saw spring get off to a cool start allowing a number of ski fields around the country to extend their season. Temperatures were below average (0.51°C to 1.20°C below the September average) for virtually the entire South Island with the exception of coastal Westland and western Southland where near average temperatures (between -0.50°C to +0.50°C of the September average) were recorded. North Island temperatures were likewise largely below average with only parts of Northland, Auckland and northern Waikato escaping the brunt of the cold and recording near average temperatures (between -0.50°C to +0.50°C of the September average). The nation-wide average temperature in September 2015 was 9.8°C (0.9°C cooler than the 1981-2010 September average from NIWA's seven station temperature series which begins in 1909)¹.

Sunshine hours during September were largely in the near normal range (90-109% of the September normal) across the country. Despite high rainfall amounts for eastern areas of New Zealand, sunshine hours in these areas during the month of September were in fact near normal (90-109% of the September normal) reflecting the high intensity but short duration nature of the rain that fell. Above normal sunshine (110-125% of the September normal) was recorded across Nelson, Tasman and Westland.

Further Highlights:

- The highest temperature was 25.7°C, observed at Christchurch (Riccarton) on 16 September.
- The lowest temperature was -7.0°C, observed at Hanmer Forest on 8 September.
- The highest 1-day rainfall was 135.4 mm, recorded at Tutira (Hawke's Bay) on 20 September.
- The highest wind gust was 167 km/hr, observed at Cape Turnagain on 4 September.
- Of the six main centres in September 2015, Auckland was the warmest and cloudiest, Christchurch was the coolest, Dunedin was the driest, Hamilton was the wettest and Wellington was the sunniest.
- Of the available, regularly reporting sunshine observation sites, the sunniest four locations so far in 2015 (1 January to 30 September) are: Blenheim (1968 hours), Whakatane (1935 hours), Appleby (1925 hours) and Waipara West (1862 hours).

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¹ Interim value

Rainfall: Wet in Gisborne and the Hawke's Bay, dry for much of the south

Up to 20 September, rainfall was tracking to be drier than normal in the east of the North Island from the Bay of Plenty down to Wairarapa. A stalling low which developed over New Zealand and eventually parked itself to the east of the North Island changed this pattern around over the few days that followed. Flooding was widely reported throughout Gisborne and Hawke's Bay and as a result eastern North Island regions finished off the month as a whole recording above (120-149% of September normal) to well above (>149% of September normal) normal rainfall. One standout location for high rainfall was Napier, which recorded its second highest September rainfall total of 171mm (352% above normal September rainfall). A third of this rain fell over 24 hours on September 20.

Conversely, many inland and western areas were sheltered from the south-easterlies, and as a consequence experienced an unusually dry month. Taranaki, western Manawatu-Wanganui, Tasman, Westland, Southland and Otago received below normal rainfall (50-79% of the September normal) with pockets of well below normal rainfall (< 50% of the September normal) recorded in some of these regions. Rainfall in the Auckland region and northern Waikato was near normal (80-119%).

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

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
High records or near-records				
Te Puke	225	179	1973	2nd-highest
Waione	183	251	1991	2nd-highest
Napier	171	352	1870	2nd-highest
Wairoa	190	215	1964	4th-highest
Low records or near-records				
Campbell Island Aws	56	47	1992	Equal lowest
Secretary Island Aws	216	64	1985	4th-lowest

Temperature: A chilly start to spring for most of the country

September temperatures were largely below average for the entire country (0.51°C to 1.20°C below the September average) with the exceptions being coastal Westland, western Southland, parts of Northland, Auckland and northern Waikato where near average temperatures (between -0.50°C to +0.50°C of the September average) were recorded.

As a reflection of the observed cool month, there were no high records set in terms of mean, mean minimum and mean maximum temperatures during September. On the other hand, a number of locations experienced record or near-record low mean, mean minimum and mean maximum

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

temperatures. The nation-wide average temperature in September 2015 was 9.8°C (0.9°C cooler than the 1981-2010 September average from NIWA's seven station temperature series which begins in 1909).

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

Location	Mean air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
None observed				
Low records or near-records				
Martinborough	8.9	-1.8	1986	Lowest
Te Kuiti	9.7	-1.7	1959	2nd-lowest
Castlepoint	10.0	-1.6	1972	2nd-lowest
South West Cape	7.5	-1.3	1991	2nd-lowest
Mokohinau	13.2	-0.6	1994	3rd-lowest
Takapau Plains	8.0	-1.6	1962	3rd-lowest
Le Bons Bay	7.7	-1.5	1984	3rd-lowest
Balclutha	7.3	-1.5	1964	3rd-lowest
Campbell Island	4.6	-1.1	1991	3rd-lowest
Auckland (North Shore)	12.9	-0.2	1994	4th-lowest
Port Taharoa	11.6	-1.2	1973	4th-lowest
Turangi	8.0	-1.3	1968	4th-lowest
Ngawi	11.0	-1.5	1972	4th-lowest
Mahia	10.6	-1.2	1990	4th-lowest
Cheviot	8.7	-0.8	1982	4th-lowest
Alexandra	7.6	-1.5	1983	4th-lowest

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

Location	Mean maximum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
None observed				
Low records or near-records				
Port Taharoa	14.2	-1.9	1973	Lowest
South West Cape	9.4	-1.9	1991	Lowest
Campbell Island	6.7	-1.3	1991	Lowest
Castlepoint	12.7	-1.8	1972	2nd-lowest
Martinborough	13.3	-2.3	1986	2nd-lowest
Cape Campbell	11.9	-1.6	1953	2nd-lowest
Mokohinau	15.1	-0.5	1994	3rd-lowest
Cheviot	13.7	-1.4	1982	3rd-lowest
Le Bons Bay	10.8	-1.6	1984	3rd-lowest
Kaitaia	15.9	-1.0	1967	4th-lowest
Auckland (North Shore)	16.0	-0.7	1994	4th-lowest
Waione	14.9	-1.6	1991	4th-lowest
Ngawi	13.9	-1.5	1972	4th-lowest

Mahia	13.6	-1.2	1990	4th-lowest
Stratford	12.5	-1.2	1960	4th-lowest
Nugget Point	10.3	-1.6	1970	4th-lowest

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

Location	Mean minimum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
None observed				
Low records or near-records				
Turangi	2.5	-1.9	1968	2nd-lowest
Appleby	2.9	-2.5	1932	2nd-lowest
Le Bons Bay	4.5	-1.5	1984	2nd-lowest
Mokohinau	11.3	-0.7	1994	3rd-lowest
Mt Cook	-0.7	-2.4	1929	3rd-lowest
Invercargill	2.0	-2.0	1905	3rd-lowest
Te Kuiti	4.7	-1.8	1959	4th-lowest
Castlepoint	7.3	-1.5	1972	4th-lowest
Martinborough	4.5	-1.4	1986	4th-lowest
Ngawi	8.1	-1.5	1972	4th-lowest
Winchmore	1.6	-2.2	1928	4th-lowest
Manapouri	0.8	-1.4	1963	4th-lowest
Lumsden	1.6	-1.2	1982	4th-lowest
Tiwai Point	3.9	-1.5	1970	4th-lowest
Campbell Island	2.6	-0.9	1991	4th-lowest

Sunshine: Near normal sunshine for much of the country

Near normal sunshine hours (90-109% of the September normal) were recorded across much of the country. The exceptions were Nelson, Tasman and Westland where above normal sunshine hours (110-125% of the September normal) were recorded. The prevalence of south-easterlies during September was a key driver of the clearer skies in these areas both in terms of sunshine and rainfall.

Of the available, regularly reporting sunshine observation sites, the sunniest four locations so far in 2015 (1 January to 30 September) are: Blenheim (1968 hours), Whakatane (1935 hours), Appleby (1925 hours) and Waipara West (1862 hours).

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

Location	Sunshine hours	Percentage of normal	Year records began	Comments
High records or near-records				
Turangi	174	126	1976	2nd-highest
Blenheim	225	118	1947	2nd-highest
Takaka	211	114	1985	3rd-highest
Cromwell	214	118	1979	Equal 3rd-highest
Low records or near-records				
None observed				

September climate in the six main centres

September temperatures were near average in Auckland, Tauranga and Hamilton and below average in Wellington, Christchurch and Dunedin. It was a wet month for Hamilton where observed rainfall was 162% of normal for the month of September. Meanwhile, Dunedin only received 58% of its September normal rainfall. Of the six main centres in September 2015, Auckland was the warmest and cloudiest, Christchurch was the coolest, Dunedin was the driest, Hamilton was the wettest and Wellington was the sunniest.

September 2015 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland ^a	13.1	+0.1	Near average
Tauranga ^b	11.9	-0.5	Near average
Hamilton ^c	10.9	-0.4	Near average
Wellington ^d	10.6	-1.0	Below average
Christchurch ^e	8.4	-1.0	Below average
Dunedin ^f	8.5	-1.0	Below average
Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland ^a	89	87%	Near normal
Tauranga ^b	92	109%	Near normal
Hamilton ^c	163	162%	Well above normal
Wellington ^d	103	105%	Near normal
Christchurch ^e	55	135%	Above normal
Dunedin ^f	28	58%	Below normal
Sunshine			
Location	Sunshine (hours)	% of normal	Comments
Auckland ^a	147	97%	Near normal
Tauranga ^b	158	91%	Near normal
Hamilton ^g	154	105%	Near normal
Wellington ^d	166	102%	Near normal
Christchurch ^e	151	89%	Below normal
Dunedin ^f	156	115%	Above normal

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

Highlights and extreme events

Rain and slips

On 1 September an active low pressure system brought heavy downpours to the North Island, top of the South Island and the West Coast. Road closures were widespread due to flooding, including SH23 from Hamilton to Raglan, a section of SH25 at Duck Creek south of Pauanui, SH2 through Karangaheke Gorge, SH 60 near Takaka Hill in Nelson, several roads in Thames and one in Whangamata. Additionally serious flooding was reported on SH1 in Northland. In Auckland, the combination of high rainfall and the King Tide closed Tamaki Drive causing traffic to back up for 5 kilometres. The stormy weather in Auckland caused all ferry services to be cancelled, flooding of up to 30 properties and a slip which hit a car in Piha.

On the night of 20 September, a stalling low to the east of the North Island began to direct heavy rainfall to the Gisborne region with many residents waking up to surface flooding. Fallen trees and many slips were widely reported with several roads down to one lane as well as accounts of stranded cars. The town of Te Karaka was cut off on both sides with the closure of State Highway 2 between Napier and Wairoa as well as between Ormond and Opotiki. Gladstone Road Bridge in Gisborne was also out of action. The widespread flooding led to Karaka and Tolaga Bay area schools to be closed. To avoid sewers flowing back on to private property, Gisborne District Council contractors opened the discharge valves to release diluted wastewater to the Taruheru, Waimata and Turanganui rivers from the city sewer network. The extreme flooding in Wairoa left two adults and two children stranded in their car for 18 hours – with just a bottle of water to share. SH38 from Waikaremoana to Frasertown remained closed on 22 September due to flooding at multiple sites

The highest 1-day rainfall was 135.4 mm, recorded at Tutira on 20 September.

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

Location	Extreme 1-day rainfall (mm)	Date of extreme rainfall	Year records began	Comments
Gisborne	104	20th	1937	Highest
Te Puke	68	19th	1973	3rd-highest
Wairoa	69	20th	1967	3rd-highest
Hamilton	59	20th	1935	4th-highest
Takapau Plains	53	23rd	1962	4th-highest
Napier	57	20th	1870	4th-highest
Mahia	40	21st	1990	4th-highest

Temperatures

The highest daily maximum temperature for the country was 25.7°C, observed at Christchurch (Riccarton) on 16 September. This was followed by 23.9°C at Timaru on 16 September, and 23.8°C at Oamaru on 15 September.

The lowest daily minimum temperature for the country was -7.0°C, observed at Hanmer Forest on 8 September. This was followed by -6.1°C at Pukaki Aerodrome on 8 September, and -6.0°C at Middlemarch on 22 September.

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

Location	Extreme maximum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Secretary Island	18.2	24th	1985	Equal 3rd-highest
Westport	20.6	23rd	1937	4th-highest
Milford Sound	19.2	23rd	1934	Equal 4th-highest
Low records or near-records				
Port Taharoa	10.6	20th	1974	Lowest
Campbell Island	0.4	6th	1991	Lowest
Ngawi	9.2	21st	1972	2nd-lowest
Motueka	8.4	1st	1972	2nd-lowest
Nugget Point	4.3	6th	1972	2nd-lowest
South West Cape	5.5	6th	1991	2nd-lowest
Puysegur Point	7.0	5th	1978	Equal 2nd-lowest
Wairoa	9.2	21st	1972	3rd-lowest
Waiau	6.2	20th	1974	3rd-lowest
Le Bons Bay	5.0	20th	1984	3rd-lowest
Hanmer Forest	2.7	20th	1972	Equal 3rd-lowest
Cheviot	6.6	20th	1982	Equal 3rd-lowest
Martinborough	8.8	19th	1986	4th-lowest
Farewell Spit	10.6	19th	1972	4th-lowest
Kaikoura	6.2	20th	1972	Equal 4th-lowest
Dunedin (Musselburgh)	6.1	6th	1947	Equal 4th-lowest
Balclutha	6.0	6th	1972	Equal 4th-lowest

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

Location	Extreme minimum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Lumsden	13.4	16th	1982	Highest
Cheviot	13.0	16th	1982	Equal highest
Ranfurlly	10.6	16th	1975	3rd-highest
Oamaru	14.6	16th	1908	3rd-highest
Nugget Point	11.6	16th	1972	3rd-highest
Low records or near-records				
Napier	-2.2	8th	1868	Lowest
Mahia	2.9	13th	1990	2nd-lowest

Cheviot	-4.1	9th	1982	2nd-lowest
Campbell Island	-2.9	6th	1991	2nd-lowest
Appleby	-2.6	30th	1932	3rd-lowest
Le Bons Bay	0.7	6th	1984	3rd-lowest
Balclutha	-3.2	21st	1964	Equal 4th-lowest
Nugget Point	0.0	6th	1970	Equal 4th-lowest

Wind

On 20 and 21 September strong winds affected northern Taranaki. The strong winds sent trampolines flying, tore roofing off sheds and cancelled flights in and out of New Plymouth. Mangorei School in New Plymouth was closed on 21 September due to safety concerns in the high winds.

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

Location	Extreme wind gust (km/hr)	Date of extreme gust	Year records began	Comments
Cape Campbell	122	10th	1963	2nd-highest
Kaikoura	126	10th	1972	Equal 2nd-highest
Mahia	100	11th	1991	4th-highest

Snow and ice

On 2 September an unexpected 15 cm snow dump in Makarora knocked out power and felled trees.

On 3 September snow fell overnight around Queenstown and Dunedin hill suburbs. The cold blast continued throughout the weekend and brought snow to parts of Otago and Southland.

On 4 September SH94 from Te Anau to Milford Sound closed just after 8am due to snow.

On 11 September a southerly blast brought the total snow level for the 2015 season on Coronet Peak to a new record. The snowfall brought the total for the season to over three metres, surpassing the previous record set in 2010.

Lightning and hail

On 20 September hail hit parts of west and north Auckland.

Cloud and fog

On 14th September a low thin blanket of fog delayed 36 domestic flights and cancelled 12 at Auckland Airport.

For further information, please contact:

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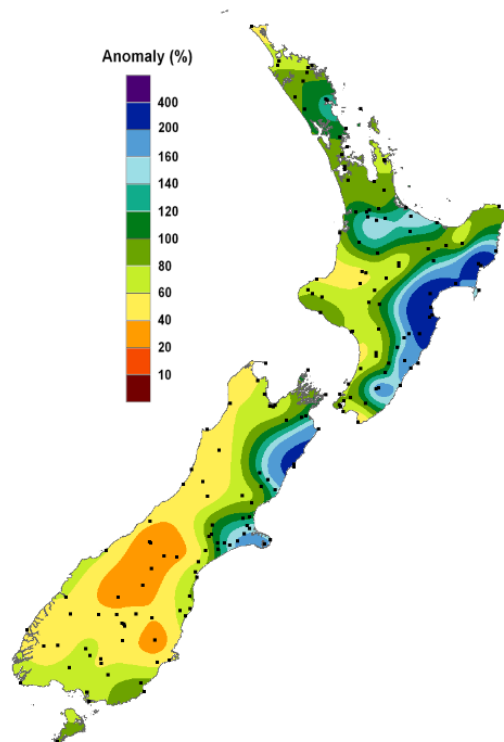
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September 2015 total rainfall, expressed as a percentage of the 1981-2010 normal (%).

Rainfall was well above normal (>149%) for many parts of the Bay of Plenty, Gisborne, Hawke's Bay, eastern Manawatu-Wanganui, eastern Marlborough and northern Canterbury.

Conversely areas west of the Divide including Taranaki, western Manawatu-Wanganui, Tasman, Westland, Southland and Otago received below normal rainfall (50-79%).

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