

A wet month for many and warm on the eastern coasts

Rainfall	September rainfall was well above normal (>149% of the September normal) or above normal (120-149% of the September normal) for large swaths of the North Island, including much of Waikato, western Bay of Plenty, Auckland, Manawatu-Whanganui, parts of Gisborne and Hawke's Bay, much of the northern half of the South Island, along with eastern Otago and western Southland. Below normal rainfall (50-79% of the September normal) was observed in central and southern Hawke's Bay, central Otago, and eastern Southland.
Temperature	September temperatures were near average (-0.50°C to +0.50°C of the September average) across large swaths of the country. Temperatures were above average (+0.51°C to +1.20°C of the September average) in parts of Auckland, Coromandel, northern and central Waikato, Gisborne, Hawke's Bay, southern Manawatu-Whanganui, northern Marlborough, northern Canterbury, and much of Otago. Well above average temperatures (>1.20°C of the September average) were observed in small pockets of Hawke's Bay, central Canterbury, and central Otago.
Sunshine	September sunshine hours were near normal (90-109% of the September normal) for much of the country. Above normal sunshine (110-125% of the September normal) was observed in parts of western Waikato and northern Manawatu-Whanganui, with below normal sunshine (75-89% of the September normal) in the lower North Island, interior Canterbury, and interior Otago. Isolated pockets of well below normal sunshine (<75% of the September normal) were observed in Wairarapa and central Canterbury.
Soil Moisture	As of 1 October 2017, soil moisture levels were near normal for a majority of the country. Soil moisture was slightly higher than normal for some coastal areas from Blenheim to Dunedin, as well as isolated pockets in Hawke's Bay and near Cape Reinga. Soil moisture was lower than normal in southern Hawke's Bay and Central Otago.

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Overview

September was characterised by lower than normal sea level pressure over the Tasman Sea and New Zealand, which resulted in regular bouts of rainfall moving across the country. This included an event

on 6 September which produced heavy rain that trapped two tourists in their car in Waitomo. See the *Highlights and Extreme Events* section for full details.

In terms of temperature, large portions of the country experienced near average readings for the month. However, areas of above average and isolated well above average temperatures were recorded along the east coasts of both Islands, aided by frequent Foehn northwesterlies descending the lee side of the interior ranges and the Southern Alps. In fact, numerous records and near-records for highest maximum extreme temperature and highest minimum extreme temperature occurred on 24-25 September as northwesterlies brought a very warm air mass across the Tasman Sea from Australia, which was further enhanced in the east of both Islands by the Foehn effect.

Despite September being a wet month for many, frequent breaks in the wet weather also brought many partially sunny days. The swing between sun and cloud throughout September evened out so that overall the total sunshine hours were near normal for much of the country.

Further Highlights:

- The highest temperature was 26.6°C, observed at Christchurch (Riccarton) on 15 and 25 September, and at Hastings on 25 September.
- The lowest temperature was -6.4°C, observed at Mt Cook Airport on 4 September.
- The highest 1-day rainfall was 126.0 mm, recorded at Hanmer Forest on 18 September.
- The highest wind gust was 154 km/hr, observed at Akitio on 25 September.
- Of the six main centres in September 2017, Auckland was the warmest, Christchurch and Dunedin were the coldest, Hamilton was the wettest, Dunedin was the driest, Tauranga was the sunniest, and Christchurch was the least sunny.
- Of the available, regularly reporting sunshine observation sites, the sunniest four locations in 2017 so far (1 January – 30 September) are Whakatane (1815 hours), Blenheim (1792 hours), Richmond (1790 hours), and Napier (1744 hours).

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Rainfall: A wet month for large portions of the country

September rainfall was well above normal (>149% of the September normal) or above normal (120-149% of the September normal) for large swaths of the North Island, including much of Waikato, western Bay of Plenty, Auckland, Manawatu-Whanganui, and parts of Gisborne and Hawke's Bay. Above normal to well above normal rainfall was also observed in much of the northern half of the South Island, along with eastern Otago and western Southland.

However, despite the fairly widespread above to well above normal rainfall, there were relatively few locations that received monthly or one-day rainfall records and near-records. This indicates that the rainfall in September was more the result of regular, moderate events versus heavy, extreme events. A notable exception was at Hanmer Forest, which received its highest one-day September rainfall with 126 mm on the 18th of the month, with records dating back to 1905. It was also a notably wet month on Stewart Island, with South West Cape recording its wettest September since records began in 1991.

Conversely, below normal rainfall (50-79% of the September normal) was observed in central and southern Hawke’s Bay, central Otago, and eastern Southland. While not a record, Napier received only 25 mm of rain in September, which is a mere 52% of normal. In Otago, Ranfurly saw 67% of its September normal with 17 mm.

As of 1 October 2017, soil moisture levels were near normal for a majority of the country. Soil moisture was slightly higher than normal for some coastal areas from Blenheim to Dunedin, as well as isolated pockets in Westland, Hawke’s Bay, and near Cape Reinga. Soil moisture was lower than normal in southern Hawke’s Bay and Central Otago.

Record¹ 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				
South West Cape	181	163	1991	Highest
Secretary Island	541	159	1985	2nd-highest
Lower Retaruke	261	170	1966	3rd-highest
Hawera	158	168	1977	4th-highest
Low records or near-records				
None observed				

Temperature: Warm on the eastern coasts

The nationwide average temperature in September 2017 was 11.2°C (0.7°C above the 1981-2010 September average from NIWA’s seven station temperature series which begins in 1909).

September temperatures were near average (-0.50°C to +0.50°C of the September average) across a sizeable portion of the country. Temperatures were above average (+0.51°C to +1.20°C of the September average) in parts of Auckland, northern and central Waikato, Gisborne, Hawke’s Bay, southern Manawatu-Wanganui, northern Marlborough, northern Canterbury, and much of Otago. Well above average temperatures (>1.20°C of the September average) were observed in small pockets of Hawke’s Bay, central Canterbury, and central Otago.

Numerous records and near-records for highest maximum extreme temperature and highest minimum extreme temperature occurred on 24-25 September as northwesterlies brought a very warm air mass across the Tasman Sea from Australia, where at least one 40°C temperature was recorded in interior New South Wales. The maximum temperature reached 25.7°C in Kaikoura on 25 September, its warmest September reading since records began there in 1963. Nearby, Medbury only dropped to 14.7°C on the night of 25 September, which was that location’s warmest September night since 1927. These warm temperatures along the eastern coasts were aided by the Foehn effect, as northwesterly winds compressed and warmed as they descended the lee side of the interior ranges.

¹ 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.

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				
Whitianga	13.6	1.4	1962	2nd-highest
Cheviot	10.7	1.2	1982	2nd-highest
Waipawa	11.3	1.0	1945	3rd-highest
Wairoa	13.3	1.4	1964	3rd-highest
Taupo	10.6	1.5	1949	4th-highest
Masterton	11.9	1.6	1906	4th-highest
Hastings	13.0	1.5	1965	4th-highest
Medbury	10.1	1.2	1927	4th-highest
Waiau School	11.1	2.0	1974	4th-highest
Cromwell	10.5	1.6	1949	4th-highest
Low records or near-records				
None observed				

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				
Whitianga	18.1	1.3	1962	2nd-highest
Waipawa	16.9	1.6	1945	2nd-highest
Cheviot	15.6	0.5	1982	4th-highest
Low records or near-records				
Oamaru	11.6	-2.2	1967	3rd-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				
Medbury	5.4	2.8	1927	Highest
Cheviot	5.8	1.9	1982	Highest
Akaroa	7.8	2.5	1978	Highest
Dunedin (Musselburgh)	7.1	1.2	1947	Highest
Waiau School	6.0	3.3	1974	2nd-highest
Le Bons Bay	7.1	1.1	1984	2nd-highest
Orari Estate	4.9	1.7	1972	2nd-highest
Waimate	5.8	2.3	1908	2nd-highest
Dargaville	10.5	0.9	1943	3rd-highest
Masterton	7.3	3.0	1906	3rd-highest
Farewell Spit	9.6	1.4	1971	3rd-highest
Kaikoura	8.1	1.1	1963	3rd-highest
Culverden	5.6	3.0	1928	3rd-highest
Waipara West	6.6	1.4	1973	3rd-highest

Rangiora	5.4	1.7	1965	3rd-highest
Oamaru	5.9	1.0	1967	3rd-highest
Roxburgh	5.1	2.2	1950	3rd-highest
Ranfurly	2.4	1.3	1897	4th-highest
Low records or near-records				
None observed				

Sunshine: Near normal sunshine hours for most

September sunshine hours were near normal (90-109% of the September normal) for much of the country. Above normal sunshine (110-125% of the September normal) was observed in parts of western Waikato and northern Manawatu-Whanganui, with below normal sunshine (75-89% of the September normal) in the lower North Island, interior Canterbury, and interior Otago. Isolated pockets of well below normal sunshine (<75% of the September normal) were observed in Wairarapa and central Canterbury.

Despite September being a wet month for many, frequent breaks in the wet weather also brought many partially sunny days. The swing between sun and cloud throughout September evened out so that overall the total sunshine hours were near normal (90-109% of the September normal) for much of the country. However, periods of easterly wind flow brought significant cloud and associated rain to Wairarapa and central Canterbury, where well below normal sunshine (<75% of the September normal) was observed.

Of the available, regularly reporting sunshine observation sites, the sunniest four locations in 2017 so far (1 January – 30 September) are Whakatane (1815 hours), Blenheim (1792 hours), Richmond (1790 hours), and Napier (1744 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				
None observed				
Low records or near-records				
None observed				

September climate in the six main centres

September was a wet month for most of the main centres, with above normal or well above normal rainfall observed, except for Auckland and Wellington, where rainfall was near normal. In fact, Tauranga recorded more than double its normal September rainfall. Temperatures were near average in Tauranga and Wellington, but above average in the other main centres. It was a cloudy month in Wellington and Christchurch, where sunshine was below normal and well below normal respectively, while sunshine was near normal elsewhere.

Of the six main centres in September 2017, Auckland was the warmest, Christchurch and Dunedin were the coldest, Hamilton was the wettest, Dunedin was the driest, Tauranga was the sunniest, and Christchurch was the least sunny.

September 2017 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland ^a	13.9	+0.9	Above average
Tauranga ^b	12.9	+0.5	Near average
Hamilton ^c	12.1	+0.8	Above average
Wellington ^d	11.3	+0.5	Near average
Christchurch ^e	10.5	+1.1	Above average
Dunedin ^f	10.5	+1.0	Above average
Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland ^a	97	95%	Near normal
Tauranga ^b	185	218%	Well above normal
Hamilton ^c	194 ²	192%	Well above normal
Wellington ^d	79	80%	Near normal
Christchurch ^e	67	163%	Well above normal
Dunedin ^f	66	136%	Above normal
Sunshine			
Location	Sunshine (hours)	% of normal	Comments
Auckland ^a	157 ³	104%	Near normal
Tauranga ^b	172	99%	Near normal
Hamilton ^g	152	104%	Near normal
Wellington ^d	138	84%	Below normal
Christchurch ^e	121	71%	Well below normal
Dunedin ^f	140	104%	Near normal

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

² Missing 2 days of data

³ Missing 1 day of data

Highlights and extreme events

Rain and slips

On 2 September, heavy rain caused a 15-metre wide slip in Charteris Bay on Banks Peninsula that pushed a garage onto a home, destroying one end of the house and knocking it off its foundation. The kitchen and dining end of the house were “unrecognisable”.

On 6 September heavy rain caused a slip on Rimutaka Hill Road in Wellington, blocking one lane. Another slip closed SH 11 between Paihia and Kawakawa. In Waitomo, two tourists were trapped in their car in Ruakuri Reserve as a nearby river flooded the carpark after 45 mm of rain in three to four hours.

On 18 September, Hanmer Forest received its highest one-day September rainfall with 126 mm, with records dating back to 1905. This was the result of low pressure located near Cook Strait that produced easterly wind flow and associated heavy rain for the upper South Island.

On 25 September, rain caused a large slip across Manchester Street in Wellington, resulting in fallen trees and damaged trolley bus cables. By the morning of 26 September, parts of Lower Hutt were flooded after heavy rain.

The highest 1-day rainfall was 126.0 mm, recorded at Hanmer Forest on 18 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
Hanmer Forest	126	18th	1905	Highest
Gisborne	85	2nd	1937	3rd-highest
Mahia	55	2nd	1990	3rd-highest
Oamaru	31	18th	1950	3rd-highest

Temperatures

On 14 September, the high temperature in Gisborne reached 24°C, the highest temperature recorded there in 152 days. In Napier the temperature reached 24.7°C, which is the average maximum temperature in January. Then on 15 September, Christchurch (Riccarton) recorded a high temperature of 25.3°C, New Zealand’s first temperature of 25°C or warmer since April. These warm temperatures were enhanced by strong Foehn northwesterlies.

On 24-25 September, numerous records and near-records for highest maximum extreme temperature and highest minimum extreme temperature occurred as northwesterlies brought a very warm air mass across the Tasman Sea from Australia, where at least one 40°C temperature was recorded in interior New South Wales. The maximum temperature reached 25.7°C in Kaikoura on 25 September, its warmest September reading since records began there in 1963. Nearby, Medbury only dropped to 14.7°C on the night of 25 September, which was that location’s warmest September night since 1927. These warm temperatures were aided by the Foehn effect, as northwesterly winds compressed and warmed as they descended the lee side of the interior ranges.

The highest temperature was 26.6°C, observed at Christchurch (Riccarton) on 15 and 25 September, and at Hastings on 25 September.

The lowest temperature was -6.4°C, observed at Mt Cook Airport on 4 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				
Takapau Plains	22.2	15th	1962	Highest
Hastings	26.6	25th	1965	Highest
Puysegur Point	20.3	24th	1978	Highest
Kaikoura (Middle Creek)	25.7	25th	1963	Highest
Manapouri, West Arm Jetty	19.8	24th	1971	Highest
Dannevirke	22.5	15th	1951	2nd-highest
Waipawa	23.8	15th	1945	2nd-highest
Mahia	22.0	25th	1990	3rd-highest
Lumsden	22.2	24th	1982	3rd-highest
Blenheim	24.4	24th	1941	Equal 3rd-highest
Manapouri Airport	20.3	24th	1963	Equal 3rd-highest
Whangarei	22.7	25th	1967	4th-highest
Wairoa	25.4	15th	1964	4th-highest
Cheviot	24.1	15th	1982	4th-highest
Five Rivers	21.4	24th	1982	4th-highest
Tiwai Point	21.7	24th	1970	4th-highest
Whangaparaoa	20.5	26th	1982	Equal 4th-highest
Low records or near-records				
Oamaru	6.1	1st	1972	Lowest
Taumarunui	7.4	10th	1947	Equal lowest
Akaroa	7.1	1st	1978	2nd-lowest
Manapouri, West Arm Jetty	2.6	9th	1972	2nd-lowest
Taupo	8.2	10th	1950	Equal 3rd-lowest
Lower Retaruke	7.8	10th	1972	Equal 3rd-lowest
Cape Reinga	11.8	10th	1971	4th-lowest
Warkworth	11.4	9th	1966	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				
Appleby	14.2	26th	1941	Highest
Medbury	14.7	25th	1927	Highest
Waiau School	16.4	25th	1974	Highest
Waipara West	16.7	25th	1973	Highest

Le Bons Bay	13.8	25th	1984	Highest
Wellington (Kelburn)	13.1	25th	1931	Equal highest
Richmond	14.2	26th	1862	Equal highest
Wellington (Airport)	14.3	15th	1972	2nd-highest
Arapito	13.3	26th	1978	2nd-highest
Blenheim	14.7	25th	1972	2nd-highest
Kaikoura	13.4	26th	1972	2nd-highest
Wanaka	11.4	24th	1972	2nd-highest
Lumsden	13.3	25th	1982	2nd-highest
Roxburgh	13.3	25th	1950	2nd-highest
Martinborough	14.6	15th	1986	Equal 2nd-highest
Napier	16.0	26th	1940	Equal 2nd-highest
Wairoa	15.8	26th	1972	Equal 2nd-highest
Hawera	13.7	26th	1977	3rd-highest
Farewell Spit	13.8	26th	1972	3rd-highest
Cheviot	12.8	25th	1982	3rd-highest
Te Anau	11.8	25th	1973	3rd-highest
Palmerston North	14.0	26th	1940	Equal 3rd-highest
Greymouth	12.4	26th	1972	Equal 3rd-highest
Nelson	13.9	26th	1862	Equal 3rd-highest
Masterton	14.2	26th	1943	4th-highest
Mahia	13.9	15th	1990	4th-highest
Palmerston North	13.9	26th	1940	4th-highest
Levin	13.9	26th	1950	4th-highest
Whanganui	15.0	26th	1972	4th-highest
Takaka	13.1	26th	1978	4th-highest
Wanaka	11.2	25th	1972	4th-highest
Whatawhata	14.0	26th	1952	Equal 4th-highest
Port Taharoa	14.5	26th	1974	Equal 4th-highest
Ngawi	15.0	15th	1972	Equal 4th-highest
Gisborne	15.8	26th	1940	Equal 4th-highest
Motueka	12.3	26th	1972	Equal 4th-highest
Low records or near-records				
Puysegur Point	2.0	3rd	1978	2nd-lowest
Kaikoura (Middle Creek)	0.3	17th	1963	3rd-lowest
Mokohinau	7.8	12th	1994	4th-lowest

Wind

On the morning of 6 September a small tornado hit Awatuna in Westland District, ripping the roof off of one building and throwing it about 100 metres. There was also lighter damage to several nearby homes and sheds, along with several damaged road signs. The tornado also cut power and water to the township.

On 15 September, wind gusts in excess of 100 km/h struck parts of the South Island, with at least two houses in Clyde having their roofs badly damaged, along with damage to glass panes, fences, and sheds. 150 students at Clyde School were not allowed to go outside until the wind eased. In Mackenzie District, a campervan was blown off the road by strong winds on SH 8 between Tekapo and Twizel,

although no one was injured. In Wellington, a small twin-engine charter plane carrying the Prime Minister was grounded due to high winds. A number of passenger flights were also delayed at Wellington Airport in the morning.

On 18 September, a house roof in Clarks Beach near Auckland was partially blown off by high winds.

On the morning of 26 September, strong crosswinds forced the cancellation of at least five flights into and out of Wellington, with seven more flights delayed. Ferry services across Wellington Harbour were delayed, and Rimutaka Hill Road was closed for a few hours overnight. In Ruru north of Cambridge, high winds severely damaged a radio transmission mast, taking several radio stations off the air across Waikato.

The highest wind gust was 154 km/hr, observed at Akitio on 25 September.

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
Waiouru	126	26th	1970	Highest
Clyde	117	15th	1983	Highest
Dannevirke	96	26th	1961	Equal 2nd-highest
Mokohinau	117	9th	1994	3rd-highest
Oamaru	96	25th	1984	3rd-highest
Kaikohe	89	10th	1986	Equal 4th-highest
Hamilton	82	16th	1978	Equal 4th-highest

Snow and ice

On the morning of 7 September, SH 7 through Lewis Pass was closed after a truck overturned in heavy snow, causing significant traffic delays. The road was reopened shortly after midday.

On 9 September, Queenstown and Arrowtown received a dusting of snow, with heavier snow at higher elevations. Road closures occurred on SH 1 from Goose Bay to Peketa, Lewis Pass, SH 94 from the Hollyford Valley Road intersection to Chasm Stream Bridge, SH 6 through Haast Pass, and SH 7 from Springs Junction to Reefton. A charter bus leaving the Remarkables ski field skidded into a ditch on Ski Field Access Road due to snowfall, leaving a child seriously hurt and three adults moderately injured.

Lightning and hail

On the night of 5-6 September, 1500 lightning strikes were recorded over New Zealand. Three homes were struck by lightning in Kohekohe, with one suffering 14 holes in its roof and a broken power meter. In Mangakino, a lightning strike hit the town’s telephone exchange, cutting the landline connection. The Pureora Forest Park DOC office was struck by lightning and “burnt to the ground.” In Wellington’s Newlands, Johnsonville and Paparangi suburbs, over 4,000 people lost power due to lightning strikes.

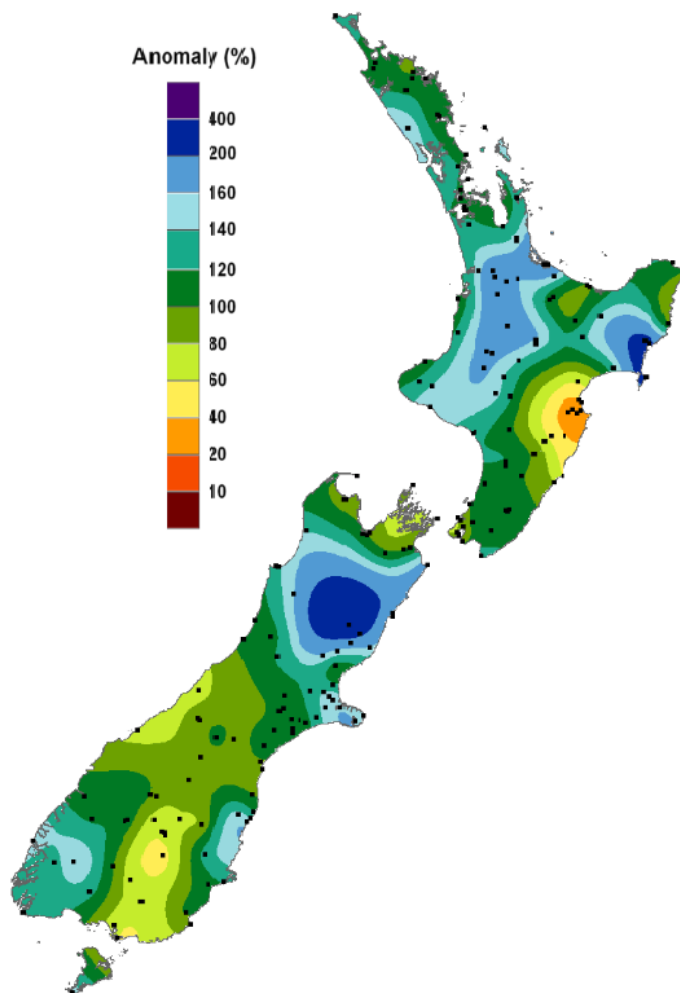
On the night of 24-25 September, upwards of 26,000 lightning strikes were recorded along the West Coast and in the near offshore waters as an active front moved off the Tasman Sea.

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September 2017 rainfall, expressed as a percentage of normal (1981-2010 normal).

September rainfall was well above normal (>149% of the September normal) or above normal (120-149% of the September normal) for large swaths of the North Island, including much of Waikato, western Bay of Plenty, Auckland, Manawatu-Whanganui, and parts of Gisborne and Hawke's Bay. Above normal to well above normal rainfall was also observed in much of the northern half of the South Island, along with eastern Otago and western Southland. Below normal rainfall (50-79% of the September normal) was observed in central and southern Hawke's Bay, interior Otago, and eastern Southland.

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