

New Zealand's hottest summer on record

Temperature	Hottest summer on record. The nation-wide average temperature for summer 2017-18 was 18.8°C (2.1°C above the 1981-2010 from NIWA's seven station temperature series which began in 1909). Summer temperatures were well above average (>1.20°C above the summer average) across all regions.
Rainfall	Highly variable from month to month and heavily impacted by two ex-tropical cyclones during February. Summer rainfall in the South Island was above normal (120-149%) or well above normal (>149%) over Canterbury, Marlborough, Nelson, and Tasman, and near normal (80-119%) to below normal (50-79%) around Otago, Southland, and the West Coast. North Island summer rainfall was above or well-above normal around Wellington and much of the upper North Island, and near normal or below normal over remaining North Island locations including Taranaki, Manawatu-Wanganui, Hawke's Bay, and Gisborne.
Soil moisture	As of 28 February, soils were wetter than normal for the time of year across the upper North Island and the central and upper South Island. Soil moisture was near normal elsewhere, although parts of Hawke's Bay, Gisborne, and Southland had slightly below normal soil moisture.

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Overview

Summer 2017-18 was New Zealand's hottest summer on record. Overall, the season was characterised by mean sea level pressures that were higher than normal to the east and southeast of New Zealand, and lower than normal over and to the west of the country. This pressure pattern delivered more frequent warm northerly and northeasterly winds than normal, consistent with La Niña conditions. Additionally, the persistence of high pressure over the Tasman Sea (another feature of La Niña) during November and early December had prevented the mixing of cool, deeper ocean water with the surface resulting in anomalously warm sea surface temperatures (SSTs) in the region. This combination of high SSTs and an increased frequency of northerly winds delivered unprecedented warmth to the country during summer. The nation-wide average temperature for summer 2017-18 was 18.8°C (2.1°C above the 1981-2010 summer average from NIWA's seven station temperature series which began in 1909). This makes summer 2017-18 the hottest summer

on record for New Zealand, topping the historical record formerly held by the summer of 1934-35 (which was 1.8°C above the 1981-2010 summer average).

The season got off to a hot start with nearly the entire country observing well-above average (>1.20°C of average) warmth during December 2017. This was the second-warmest December on record at 18.1°C (2.4°C above the 1981-2010 December average from NIWA's seven station temperature series) and 38 locations recorded record high mean December temperatures. Most of the country received below normal (50-79% of normal) or well below normal (<50% of normal) rainfall during December. By the end of the month, soils were significantly drier than normal for the time of year across a large portion of the North Island, Tasman and northern West Coast, interior Canterbury, and much of Southland and interior Otago. Near normal to above normal soil moisture was observed along the east coast of the North Island, coastal Marlborough, and Westland to Fiordland.

January 2018 was the hottest month on record for New Zealand (20.3°C; 3.1°C higher than the 1981-2010 January average). All but a handful of stations recorded well above average temperatures throughout the country during January 2018 and 94 locations observed their highest mean January temperatures on record. Several tropical airmasses in January led to elevated rainfall levels throughout much of the top half of the South Island, as well as many areas of the North Island. Rainfall was below normal (50-79% of normal) or well below normal (<50% of normal) for much of Southland, Otago, and Hawke's Bay.

February 2018 was characterised by the passage of ex-tropical cyclones Fehi and Gita which brought significant amounts of rainfall to parts of the country. Rainfall was well above normal (>149% of normal) across much of the upper North Island, Wellington-Wairarapa, the upper South Island, Canterbury and Otago. Elsewhere, rainfall was above normal (120-149% of normal) or near normal (80-119% of normal). In terms of temperatures, above average (0.51°C to 1.20°C above average) to well above average temperatures were observed across the North Island and upper South Island, near average (+0.50°C to -0.50°C of average) in the middle and lower South Island, and below average (0.51°C to 1.20°C below average) in parts of Otago and southern Canterbury.

Further Highlights:

- Fifty-four locations across New Zealand recorded their hottest summer on record, thirty-nine their second-hottest and nine their third-hottest.
- The highest temperature was 38.7°C, observed at Alexandra on 30 January.
- The lowest temperature was 0.2°C, observed at Mt Cook (Airport) and Tekapo on 20 December.
- The highest 1-day rainfall was 297 mm, recorded at Upper Takaka on 17 January.
- The highest wind gust was 165 km/hr, observed at Akitio on 19 December.
- Of the six main centres in summer 2017-18, Auckland was the warmest, Dunedin was the coolest and driest, Wellington was the sunniest, and Hamilton was the wettest and least sunny.

For further information, please contact:

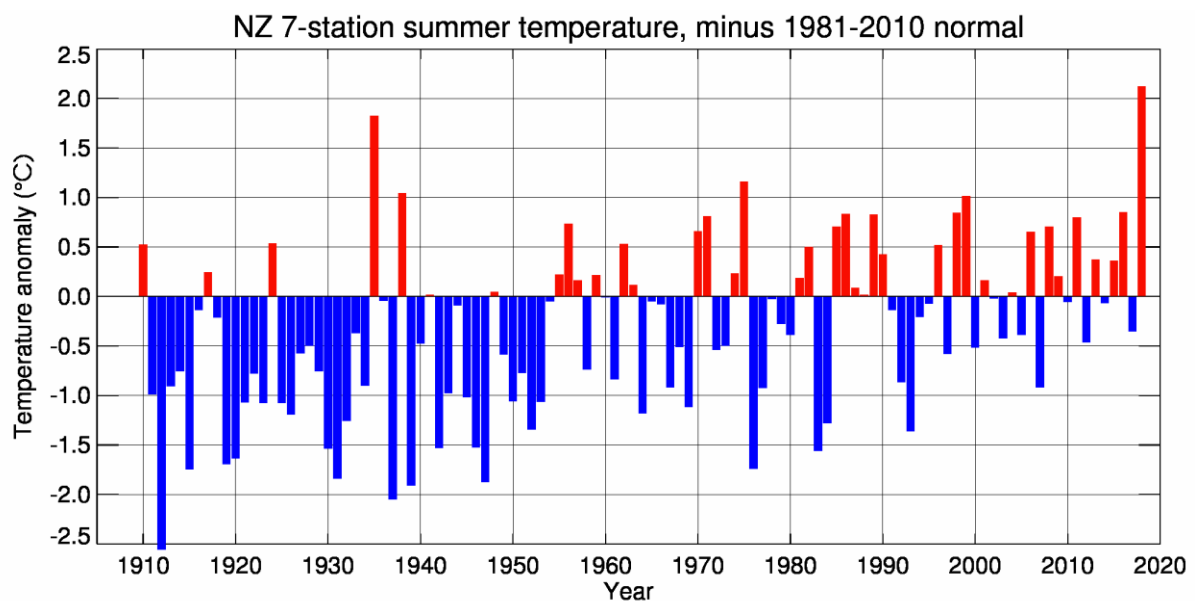
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Temperature: Record-breaking warmth

The nation-wide average temperature in summer 2017-18 was 18.8°C (2.1°C warmer than the 1981-2010 summer average, using NIWA's seven-station temperature series which begins in 1909). This makes the summer of 2017-18 the hottest summer on record and the only summer on record to have a nationwide temperature more than 2.0°C above the 1981-2010 average. The previous hottest summer was that of 1934-35 which had a mean temperature of 18.5°C (1.8°C warmer than the 1981-2010 summer average). Both of these summers were highly anomalous as no other summer in the 109 years on record has managed to reach as much as 1.25°C above the 1981-2010 summer average. Although summer 2017-18 was the hottest on record, the summer of 1934-35 was more anomalous when compared to the climatology of the time. In fact, that summer was so unusual that Edward Kidson (Director of NZ Met Service in the 1930s) wrote a Meteorological Office Note in 1935 about the exceptional summer of 1934-35 and declared the national temperature anomaly was 4.9°F (i.e. 2.7°C hotter than the summer climatology of the day).



Historical nation-wide summer temperature anomalies (degrees above or below the 1981-2010 normal) from NIWA's seven-station temperature series which begins in 1909. The summer of 2017-18 has claimed the record of New Zealand's hottest summer formerly held by the summer of 1934-35.

Summer temperatures were well above average (>1.20°C above the summer average) across all regions of the country, and very few stations fell into the category below this, recording temperatures which were above average (0.51°C to 1.20°C above average). There were 54 locations which broke mean summer temperature records, and a significant amount of locations which ranked

between second- and fourth-hottest summer on record. The largest mean summer temperature anomaly was experienced at Masterton where temperatures were 3.2°C above average. Meanwhile, Leigh observed the highest mean temperature overall for summer 2017-18 at 21.8°C (2.6°C hotter than average).

Many record or near-record high mean maximum (daytime) and mean minimum (night-time) temperatures were also observed across all regions of the country. Notably, eight locations recorded mean summer maximum temperatures which were at least 3.0°C hotter than average. This includes Leigh, Levin, and Westport which each received mean daytime maximums which were 3.4°C hotter than average. Meanwhile, a further seven locations observed mean summer minimum temperatures which were also at least 3.0°C warmer than average. Of these, the most extreme was Masterton where mean night-time minimum temperatures were 3.6°C warmer than average.

Record¹ 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				
Cape Reinga	20.0	1.3	1951	Highest
Kerikeri	20.4	1.5	1945	Highest
Whangarei	21.2	1.6	1967	Highest
Leigh	21.8	2.6	1966	Highest
Whangaparaoa	21.1	1.9	1982	Highest
Auckland (Western Springs)	21.1	2.0	1948	Highest
Tauranga	21.0	1.9	1913	Highest
Whakatane	20.5	2.0	1974	Highest
Rotorua	19.1	2.0	1964	Highest
Taupo	19.1	2.5	1949	Highest
Motu	17.6	2.4	1990	Highest
Auckland (Airport)	21.4	1.9	1959	Highest
Pukekohe	20.3	2.0	1969	Highest
Whatawhata	20.3	2.3	1952	Highest
Hamilton (Airport)	20.0	2.0	1946	Highest
Port Taharoa	20.4	1.5	1973	Highest
Te Kuiti	20.3	2.3	1959	Highest
Taumarunui	19.8	2.2	1947	Highest
New Plymouth	19.6	2.3	1944	Highest
Lower Retaruke	19.2	2.1	1966	Highest
Masterton	20.1	3.2	1906	Highest
Dannevirke	19.2	2.3	1951	Highest
Ngawi	20.4	2.2	1972	Highest

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.

Hicks Bay	19.9	1.6	1969	Highest
Gisborne	21.0	2.3	1905	Highest
Hastings	21.0	2.7	1965	Highest
Waipawa	19.3	1.7	1945	Highest
Wairoa	21.6	2.9	1964	Highest
Paraparaumu	19.7	2.8	1953	Highest
Upper Hutt	18.3	1.7	1939	Highest
Stratford	18.2	2.7	1960	Highest
Hawera	18.8	2.6	1977	Highest
Ohakune	16.8	1.9	1962	Highest
Waiouru	15.8	2.2	1962	Highest
Farewell Spit	20.0	2.6	1971	Highest
Arapito	18.8	2.5	1978	Highest
Greymouth	18.0	2.3	1947	Highest
Haast	16.8	2.5	1949	Highest
Milford Sound	17.1	2.3	1934	Highest
Secretary Island	16.8	2.4	1985	Highest
Puysegur Point	15.9	2.5	1978	Highest
Motueka	19.6	2.4	1956	Highest
Waiau	19.1	2.4	1974	Highest
Cheviot	18.3	2.2	1982	Highest
Akaroa	19.8	2.9	1978	Highest
Ranfurly	16.7	2.4	1897	Highest
Dunedin (Musselburgh)	16.7	2.0	1947	Highest
Te Anau	16.5	2.4	1963	Highest
Manapouri (West Arm Jetty)	16.1	2.3	1971	Highest
Lumsden	16.3	2.1	1982	Highest
Lauder	18.1	2.6	1924	Highest
Invercargill	16.0	2.3	1905	Highest
Tiwai Point	16.1	2.1	1970	Highest
South West Cape	14.8	2.1	1991	Highest
Kaitaia	20.8	1.7	1948	2nd-highest
Kaikohe	19.6	1.3	1973	2nd-highest
Dargaville	20.9	2.1	1943	2nd-highest
Mokohinau	21.3	1.8	1994	2nd-highest
Auckland (Whenuapai)	20.8	2.2	1945	2nd-highest
Whitianga	20.7	2.0	1962	2nd-highest
Paeroa	20.9	1.8	1947	2nd-highest
Te Puke	20.1	2.1	1973	2nd-highest
Hamilton (Ruakura)	20.1	2.0	1906	2nd-highest
Castlepoint	19.2	1.8	1972	2nd-highest
Martinborough	19.4	2.1	1986	2nd-highest
Levin	20.3	3.1	1895	2nd-highest
Wellington (Airport)	19.6	2.1	1962	2nd-highest
Whanganui	20.5	2.7	1937	2nd-highest
Takaka	19.1	2.2	1978	2nd-highest
Westport	18.8	2.8	1937	2nd-highest
Reefton	19.1	2.7	1960	2nd-highest

Franz Josef	16.7	1.9	1953	2nd-highest
Nelson	19.8	2.5	1862	2nd-highest
Blenheim	19.4	1.9	1932	2nd-highest
Brothers Island	17.7	1.6	1997	2nd-highest
Kaikoura	17.7	1.5	1963	2nd-highest
Medbury	18.3	1.7	1927	2nd-highest
Mt Cook (Airport)	16.1	2.2	1929	2nd-highest
Rangiora	17.9	1.8	1965	2nd-highest
Christchurch (Airport)	18.4	1.8	1863	2nd-highest
Lincoln	18.1	1.8	1881	2nd-highest
Le Bons Bay	16.3	1.5	1984	2nd-highest
Tara Hills	17.4	1.9	1949	2nd-highest
Wanaka	19.0	2.5	1955	2nd-highest
Oamaru	16.2	1.3	1967	2nd-highest
Dunedin (Airport)	17.0	2.3	1962	2nd-highest
Manapouri (Airport)	16.5	2.5	1963	2nd-highest
Queenstown	18.2	2.5	1871	2nd-highest
Five Rivers	16.2	2.1	1982	2nd-highest
Clyde	18.8	2.1	1978	2nd-highest
Roxburgh	17.5	1.9	1950	2nd-highest
Balclutha	16.0	1.4	1964	2nd-highest
Nugget Point	15.4	1.8	1970	2nd-highest
Takapau Plains	17.9	1.6	1962	3rd-highest
Mahia	19.2	1.4	1990	3rd-highest
Wellington (Kelburn)	18.9	2.4	1927	3rd-highest
Hokitika	17.7	2.3	1866	3rd-highest
Richmond	19.8	2.3	1862	3rd-highest
Hanmer Forest	17.2	1.9	1906	3rd-highest
Lake Tekapo	16.2	1.9	1927	3rd-highest
Cromwell	19.1	2.1	1949	3rd-highest
Alexandra	18.9	1.6	1929	3rd-highest
Whangarei	20.8	1.4	1967	4th-highest
Napier	20.3	1.9	1870	4th-highest
Waiouru	15.1	1.6	1962	4th-highest
Arthurs Pass	14.9	2.2	1973	4th-highest
Culverden	18.2	1.5	1928	4th-highest
Waipara West	18.5	1.4	1973	4th-highest
Orari Estate	17.0	1.3	1972	4th-highest
Gore	16.5	2.6	1907	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				
Mokohinau	23.6	1.8	1994	Highest
Whangaparaoa	24.5	1.7	1982	Highest
Whitianga	25.4	2.0	1962	Highest
Motu	22.4	2.4	1990	Highest
Auckland (Airport)	25.1	1.9	1959	Highest
Te Kuiti	25.7	2.1	1959	Highest
Ngawi	24.2	2.2	1972	Highest
Hicks Bay	23.1	1.7	1969	Highest
Hastings	26.1	2.7	1965	Highest
Waipawa	25.5	1.9	1945	Highest
Palmerston North	25.1	2.6	1928	Highest
Wellington (Airport)	22.9	2.2	1962	Highest
Stratford	22.6	2.3	1960	Highest
Hawera	22.9	2.7	1977	Highest
Whanganui	24.8	2.8	1937	Highest
Farewell Spit	23.7	2.4	1971	Highest
Westport	22.9	3.4	1937	Highest
Arapito	23.7	2.9	1978	Highest
Reefton	25.2	2.9	1960	Highest
Greymouth	21.5	2.1	1947	Highest
Franz Josef	21.5	2.1	1953	Highest
Haast	20.6	2.5	1949	Highest
Secretary Island	20	2.4	1985	Highest
Motueka	25.2	2.5	1956	Highest
Brothers Island	20	1.6	1997	Highest
Kaikoura	22.1	2.3	1963	Highest
Cheviot	24.3	2.3	1982	Highest
Ranfurly	23.5	2.3	1897	Highest
Oamaru	20.4	1.4	1967	Highest
Queenstown	24.7	3.1	1871	Highest
Lumsden	22.9	3.0	1982	Highest
Clyde	26.3	3.0	1978	Highest
Tiwai Point	19.9	2.4	1970	Highest
South West Cape	17.6	1.9	1991	Highest
Whangarei	25.6	1.6	1967	2nd-highest
Auckland (Whenuapai)	25.2	1.9	1945	2nd-highest
Te Puke	24.3	1.2	1973	2nd-highest
Rotorua	23.7	1.9	1964	2nd-highest
Auckland (Mangere)	25.0	2.1	1959	2nd-highest
Whatawhata	25.5	2.7	1952	2nd-highest
Hamilton	25.3	1.6	1946	2nd-highest

New Plymouth	23.5	2.4	1944	2nd-highest
Dannevirke	24.2	2.3	1951	2nd-highest
Wairoa	27.1	3.2	1964	2nd-highest
Mahia	22.4	1.2	1990	2nd-highest
Paraparaumu	23.4	2.6	1953	2nd-highest
Levin	24.9	3.4	1895	2nd-highest
Upper Hutt	23.1	1.7	1939	2nd-highest
Takaka	24.7	2.2	1978	2nd-highest
Milford Sound	21.6	2.3	1934	2nd-highest
Puysegur Point	18.5	2.5	1978	2nd-highest
Hanmer Forest	25.5	3.1	1906	2nd-highest
Waiau School	25.7	2.4	1974	2nd-highest
Christchurch (Airport)	23.7	1.8	1863	2nd-highest
Akaroa	25.0	2.8	1978	2nd-highest
Wanaka	25.0	2.0	1955	2nd-highest
Dunedin (Airport)	22.7	2.3	1962	2nd-highest
Dunedin (Musselburgh)	20.1	1.9	1947	2nd-highest
Five Rivers	22.3	2.5	1982	2nd-highest
Invercargill	21.2	2.9	1905	2nd-highest
Balclutha	21.3	1.6	1964	2nd-highest
Paeroa	25.8	1.3	1947	3rd-highest
Masterton	26.2	2.8	1906	3rd-highest
Gisborne	26.4	2.4	1905	3rd-highest
Wellington (Kelburn)	22.2	2.4	1927	3rd-highest
Ohakune	22.4	1.9	1962	3rd-highest
Medbury	24.6	1.5	1927	3rd-highest
Mt Cook (Airport)	22.1	2.4	1929	3rd-highest
Waipara West	24.3	1.1	1973	3rd-highest
Manapouri (West Arm Jetty)	20.9	2.3	1971	3rd-highest
Manapouri (Airport)	22.5	2.4	1963	3rd-highest
Cromwell	26.5	2.8	1949	3rd-highest
Nugget Point	18.8	1.4	1970	3rd-highest
Leigh	25.6	3.4	1966	4th-highest
Taupo	24.5	2.5	1949	4th-highest
Takapau Plains	23.1	1.1	1962	4th-highest
Castlepoint	22.6	1.8	1972	4th-highest
Martinborough	24.9	2.0	1986	4th-highest
Waiouru	20.7	1.7	1962	4th-highest
Richmond	24.7	2.8	1862	4th-highest
Blenheim	25.2	1.7	1932	4th-highest
Te Anau	21.6	1.7	1963	4th-highest
Lauder	25.2	2.9	1924	4th-highest
Low records or near-records				
None observed				

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Kerikeri	16.0	2.1	1945	Highest
Dargaville	16.9	2.2	1943	Highest
Mokohinau	19.0	1.9	1994	Highest
Auckland (Whenuapai)	16.4	2.4	1945	Highest
Auckland (Western Springs)	16.9	1.9	1948	Highest
Whitianga	16.3	2.5	1962	Highest
Paeroa	16.0	2.1	1947	Highest
Whakatane	16.6	3.0	1974	Highest
Rotorua	14.5	2.0	1964	Highest
Taupo	13.6	2.5	1949	Highest
Motu	12.9	2.6	1990	Highest
Auckland (Airport)	17.7	1.9	1959	Highest
Pukekohe	15.8	2.0	1969	Highest
Whatawhata	15.1	2.0	1952	Highest
Hamilton (Airport)	14.8	2.5	1946	Highest
Port Taharoa	17.4	2.3	1973	Highest
Te Kuiti	14.9	2.5	1959	Highest
New Plymouth	15.6	2.1	1944	Highest
Lower Retaruke	13.8	2.7	1966	Highest
Masterton	14.1	3.6	1906	Highest
Dannevirke	14.2	2.3	1951	Highest
Waipawa	13.1	1.5	1945	Highest
Paraparaumu	16.0	2.9	1953	Highest
Palmerston North	15.1	2.2	1928	Highest
Levin	15.6	2.7	1895	Highest
Wellington (Kelburn)	15.6	2.5	1927	Highest
Upper Hutt	13.5	1.7	1939	Highest
Stratford	13.8	3.0	1960	Highest
Ohakune	11.3	1.9	1962	Highest
Whanganui	16.2	2.6	1937	Highest
Takaka	13.4	2.2	1978	Highest
Farewell Spit	16.4	2.8	1971	Highest
Arapito	14.0	2.1	1978	Highest
Hokitika	13.7	2.2	1866	Highest
Reefton	13.1	2.4	1960	Highest
Haast	13.0	2.4	1949	Highest
Milford Sound	12.5	2.4	1934	Highest
Secretary Island	13.5	2.4	1985	Highest
Puysegur Point	13.3	2.5	1978	Highest

Motueka	13.9	2.3	1956	Highest
Kaikoura	14.1	1.6	1963	Highest
Cheviot	12.2	2.0	1982	Highest
Waipara West	12.7	1.7	1973	Highest
Akaroa	14.6	3.0	1978	Highest
Orari Estate	12.0	2.1	1972	Highest
Oamaru	12.2	1.9	1967	Highest
Wanaka	12.9	3.0	1955	Highest
Ranfurlly	9.9	2.5	1897	Highest
Dunedin (Musselburgh)	13.3	2.1	1947	Highest
Te Anau	11.4	3.1	1963	Highest
Manapouri (West Arm Jetty)	11.4	2.5	1971	Highest
Five Rivers	10.1	1.7	1982	Highest
Roxburgh	11.8	2.7	1950	Highest
Invercargill	10.8	1.7	1905	Highest
Nugget Point	11.9	2.1	1970	Highest
South West Cape	12.0	2.3	1991	Highest
Kaitaia	17.0	2.1	1948	2nd-highest
Whangarei	17.4	2.0	1967	2nd-highest
Leigh	18.0	1.7	1966	2nd-highest
Tauranga	17.3	2.5	1913	2nd-highest
Te Puke	15.9	3.0	1973	2nd-highest
Taumarunui	14.2	2.4	1947	2nd-highest
Takapau Plains	12.8	2.1	1962	2nd-highest
Martinborough	13.9	2.1	1986	2nd-highest
Ngawi	16.5	2.1	1972	2nd-highest
Hicks Bay	16.7	1.6	1969	2nd-highest
Gisborne	15.6	2.2	1905	2nd-highest
Hastings	15.9	2.8	1965	2nd-highest
Wairoa	16.1	2.5	1964	2nd-highest
Mahia	16.1	1.6	1990	2nd-highest
Wellington (Airport)	16.3	2.0	1962	2nd-highest
Hawera	14.7	2.5	1977	2nd-highest
Waiouru	10.8	2.6	1962	2nd-highest
Westport	14.6	2.2	1937	2nd-highest
Greymouth	14.5	2.5	1947	2nd-highest
Nelson	15.4	2.0	1862	2nd-highest
Blenheim	14.3	2.1	1932	2nd-highest
Brothers Island	15.5	1.6	1997	2nd-highest
Culverden	12.7	2.6	1928	2nd-highest
Waiau	12.6	2.4	1974	2nd-highest
Mt Cook Village	10.3	2.0	1929	2nd-highest
Rangiora	12.8	2.1	1965	2nd-highest
Lincoln	13.1	1.9	1881	2nd-highest
Le Bons Bay	12.9	1.7	1984	2nd-highest
Waimate	12.1	1.9	1908	2nd-highest
Tara Hills	10.5	2.0	1949	2nd-highest

Manapouri (Airport)	10.4	2.6	1963	2nd-highest
Lumsden	9.7	1.3	1982	2nd-highest
Alexandra	12.3	2.1	1929	2nd-highest
Gore	11.2	2.1	1907	2nd-highest
Tiwai Point	12.4	1.8	1970	2nd-highest
Kaikohe	15.8	1.8	1973	3rd-highest
Whangaparaoa	17.8	2.1	1982	3rd-highest
Auckland (Mangere)	17.6	2.0	1959	3rd-highest
Castlepoint	15.8	1.8	1972	3rd-highest
Franz Josef	11.8	1.7	1953	3rd-highest
Richmond	14.8	1.7	1862	3rd-highest
Medbury	12.1	1.8	1927	3rd-highest
Christchurch (Airport)	13.2	1.8	1863	3rd-highest
Timaru	12.6	1.4	1885	3rd-highest
Queenstown	11.7	2.0	1871	3rd-highest
Lauder	10.9	2.3	1924	3rd-highest
Balclutha	10.7	1.2	1964	3rd-highest
Hamilton (Ruakura)	14.2	1.5	1906	4th-highest
Cape Campbell	15.2	1.5	1953	4th-highest
Arthurs Pass	10.2	2.3	1973	4th-highest
Ashburton	11.9	1.5	1928	4th-highest
Clyde	11.3	1.2	1978	4th-highest
Low records or near-records				
None observed				

Rainfall: Two ex-tropical cyclones in February bring significant rainfall

Summer 2017-18 was a contrasting season for rainfall, particularly due to the impacts of ex-tropical cyclones Fehi and Gita during February.

The season got off to a relatively dry start with most of the country receiving calm weather and below normal (50-79% of normal) or well below normal (<50% of normal) rainfall during December. During January, several rainfall events occurred, delivering above normal (120-149% of normal) or well above normal (>149% of normal) rainfall levels to much of the top half of the South Island, as well as many areas of the North Island. Notably, Upper Takaka received 297 mm of rainfall in just one day (17 January) which is the highest one-day rainfall amount on record at this site and was the highest 1-day rainfall recorded in New Zealand during the summer. Below normal or well below normal January rainfall was experienced for much of Southland, Otago, and Hawke's Bay. In contrast, February was the wettest month of the season as the passage of ex-tropical cyclones Fehi and Gita over the country brought significant amounts of rainfall and contributed to rounds of flooding, especially across the upper and eastern South Island (see *Highlights and extreme events* section for more details). Rainfall was above or well above normal across much of the country during February however parts of Gisborne, Hawke's Bay, Manawatu-Whanganui and Southland were

somewhat sheltered and observed near normal (80-119% of normal) or even slightly below normal (50-79% of normal) rainfall.

For the summer as a whole, the South Island received above or well above normal summer rainfall over Canterbury, Marlborough, Nelson, and Tasman, where the impacts of the ex-tropical cyclones were most intense. Notably, Appleby and Waipara recorded their wettest summer on record, observing 276% and 211% of normal summer rainfall, respectively, while several other South Island stations observed near-record amounts. Meanwhile, Otago, Southland, and the West Coast received normal to below normal amounts of rainfall. In the North Island, above or well above normal rainfall was observed over much of Northland, Auckland, and Wellington, as well as parts of the Waikato and Bay of Plenty regions. Normal or below normal rainfall was observed over remaining North Island locations including Taranaki, Manawatu-Wanganui, Hawke’s Bay, and Gisborne. No stations in the North Island recorded their wettest summer on record although some locations received near-record amounts including Auckland (North Shore) and Hamilton (Ruakura) which received 202% and 220% of their normal summer rainfall respectively.

By the end of February, soil moisture levels were well above normal for the time of year across the upper and central North Island as well as the upper and eastern South Island. In the Grey and Buller Districts as well as Otago, where medium-scale adverse drought events had been declared in January, soil moisture levels had recovered to near or above normal. Meanwhile, soil moisture levels in Southland, and the eastern North Island remained below normal for the time of year.

Record or near-record summer rainfall totals were recorded at:

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
High records or near-records				
Appleby	595	276	1932	Highest
Waipara West	319	211	1973	Highest
Auckland (North Shore)	477	202	1966	2nd-highest
Hamilton (Ruakura)	545	220	1905	2nd-highest
Motueka	660	243	1943	2nd-highest
Blenheim	324	207	1927	2nd-highest
Kaikoura	417	280	1898	2nd-highest
Ashburton	362	215	1909	2nd-highest
Akaroa	368	222	1977	2nd-highest
Takaka	814	195	1976	3rd-highest
Farewell Spit	539	216	1874	3rd-highest
Low records or near-records				
South West Cape	254	82	1991	4th-lowest

Summer climate in the six main centres

Temperatures were well above average (>1.2°C above average) in all main centres during summer 2017-18. Tauranga, Hamilton, and Dunedin observed their hottest summer on record while the remaining centres experienced near-record warmth. Rainfall in Christchurch was well above normal (>149% of normal) during summer. Tauranga, Hamilton, Wellington, and Dunedin observed above normal rainfall (120% to 149% of normal), while Auckland received near normal (80% to 119% of normal) rainfall. Of the six main centres in summer, Auckland was the warmest, Dunedin was the coolest and driest, Wellington was the sunniest, and Hamilton was the wettest and least sunny.

Summer 2017-18 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland ^a	21.3	+2.0	2 nd -hottest summer on record
Tauranga ^b	21.0	+1.9	Hottest summer on record
Hamilton ^c	20.0	+2.0	Hottest summer on record
Wellington ^d	18.9	+2.4	3 rd -hottest summer on record
Christchurch ^e	18.4	+1.8	2 nd -hottest summer on record
Dunedin ^f	16.7	+2.0	Hottest summer on record
Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland ^a	316	114%	Near normal
Tauranga ^b	318	123%	Above normal
Hamilton ^c	330	127%	Above normal
Wellington ^d	305	133%	Above normal
Christchurch ^e	274	218%	Well above normal
Dunedin ^f	245	120%	Above normal
Sunshine			
Location ²	Sunshine (hours)		
Auckland ^a	648		
Tauranga ^b	625		
Hamilton ^g	608 ³		
Wellington ^d	668		
Christchurch ^e	657 ³		
Dunedin ^f	618 ³		

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

² Tauranga, Wellington and Christchurch record sunshine using Campbell-Stokes manual sunshine recorders, whereas Auckland, Hamilton and Dunedin record sunshine with high-precision electronic sensors.

³ Missing 1 day of data

Highlights and extreme events

This section contains information pertaining to some of the more significant highlights and extreme events that occurred during summer 2017-18. Note that a more detailed list of significant weather events for summer 2017-18 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

January temperatures were very high throughout the month, and periods of exceptional heat resulted in dozens of stations observing record or near-record high daily maximum and daily minimum temperatures. Several locations observed temperatures among the highest ever recorded in New Zealand during January:

- Alexandra: 38.7°C on 30 January – New Zealand's 12th highest temperature on record overall and 3rd warmest January temperature on record. This was New Zealand's hottest January temperature in 39 years, or since Ruatoria reached 38.9°C in January 1979.
- Clyde; 37.6°C on 30 January – New Zealand's equal 9th-highest January temperature on record. In addition, this was Clyde's highest recorded temperature since records began in 1978.
- Middlemarch; 37.4°C on 30 January – New Zealand's 11th- highest January temperature on record.
- Cheviot; 37.3°C on 30 January – New Zealand's 12th-highest January temperature on record.
- Waiau; 37.0°C on 25 January and 30 January – New Zealand's 15th-highest January temperature on record.

From 14-16 January, Invercargill recorded three consecutive days above 30°C, which is unprecedented in records going back to 1905. The city had never previously recorded consecutive days above 30°C. On 14 January, the city observed a maximum temperature of 32.3°C; its second-highest temperature on record for any month (the highest temperature recorded was 33.8°C on 2 January 1948). Invercargill recorded a total of 4 days above 30°C during January 2018. In the 112 years of records prior to this month, the city had exceeded 30°C just 14 times during January.

On 30 January, Masterton recorded 35.4°C, which was the highest temperature observed in the North Island during January 2018. This was Masterton's highest recorded temperature for any month, in records which began in 1906.

During January 2018, Queenstown observed 24 days when the maximum temperature exceeded 25.0°C, considerably more than the January average of 10 days. This was Queenstown's highest monthly total of days exceeding 25.0°C; its previous record was 22 days observed in January 2008. On 29 January Queenstown's temperature reached 35.2°C. This was Queenstown's highest recorded temperature for any month, in records which began in 1871 (previous highest temperature was 34.1°C on 2 January 1948).

On 1 February, the temperature soared into the mid-30s in and around Christchurch and gusty northwesterly winds contributed to two wildfires. Two helicopters and five ground crews battled one blaze near Cass Bay, Canterbury.

On 11 February, a warm and very humid air mass covered much of the country. The dew point temperature at Wellington (Kelburn) was 22.0°C at 6.00 p.m. This is Wellington’s highest dew point temperature on record.

The dew point – a measure of humidity – failed to drop below 19°C in Auckland from February 10-15, making it a rare 115-hour period of very high humidity.

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				
Thames	30.5	Jan-27th	1946	Highest
Masterton	35.4	Jan-30th	1906	Highest
Haast	29.4	Jan-5th	1949	Highest
Milford Sound	28.4	Jan-15th	1934	Highest
Secretary Island	27.9	Jan-11th	1985	Highest
Kaikoura	34.8	Feb-1st	1963	Highest
Waiau	37.0	Jan-25th	1974	Highest
Tara Hills	34.8	Jan-29th	1949	Highest
Ranfurly	33.7	Jan-30th	1897	Highest
Dunedin (Airport)	35.0	Jan-16th	1962	Highest
Queenstown	35.2	Jan-29th	1871	Highest
Lumsden	32.3	Jan-14th	1982	Highest
Cromwell	36.6	Jan-29th	1949	Highest
Clyde	37.6	Jan-30th	1978	Highest
Winton	35.0	Jan-14th	1951	Highest
Balclutha	35.1	Jan-31st	1964	Highest
Nugget Point	34.2	Jan-31st	1970	Highest
South West Cape	27.3	Jan-14th	1991	Highest
Stratford	28.2	Jan-30th	1960	Equal highest
Alexandra	38.7	Jan-30th	1992	Equal highest
Mokohinau	27.8	Dec-22nd	1994	2nd-highest
Whangaparaoa	29.2	Jan-24th	1982	2nd-highest
Kopua	31.6	Jan-31st	1962	2nd-highest
Hanmer Forest	36.7	Jan-30th	1906	2nd-highest
Arthurs Pass	29.7	Jan-28th	1978	2nd-highest
Medbury	35.7	Jan-25th	1927	2nd-highest
Cheviot	37.3	Jan-30th	1982	2nd-highest
Wanaka	35.2	Jan-27th	1955	2nd-highest
Five Rivers	31.2	Jan-15th	1982	2nd-highest
Lauder	35.8	Jan-29th	1924	2nd-highest
Invercargill	32.3	Jan-14th	1905	2nd-highest

Leigh	29.8	Feb-19th	1966	Equal 2nd-highest
Manapouri (West Arm Jetty)	29.5	Jan-28th	1971	Equal 2nd-highest
Auckland (Mangere)	29.6	Jan-12th	1959	3rd-highest
Te Kuiti	30.9	Jan-26th	1959	3rd-highest
Ngawi	32.6	Jan-30th	1972	3rd-highest
Levin	30.9	Jan-29th	1895	3rd-highest
Hawera	28.3	Feb-17th	1977	3rd-highest
Farewell Spit	28.7	Jan-23rd	1971	3rd-highest
Pelorus Sound	29.6	Jan-27th	1982	3rd-highest
Brothers Island	26.1	Jan-29th	1997	3rd-highest
Tiwai Point	30.2	Jan-15th	1970	3rd-highest
Whatawhata	30.8	Jan-28th	1952	Equal 3rd-highest
Whitianga	31.0	Jan-24th	1962	4th-highest
Palmerston North	32.1	Jan-29th	1918	4th-highest
Mt Cook Village	32.1	Feb-16th	1929	4th-highest
Akaroa	34.0	Feb-1st	1978	Equal 4th-highest
Lake Tekapo	32.7	Jan-30th	1925	Equal 4th-highest
Ophir	35.0	Jan-29th	1924	Equal 4th-highest
Low records or near-records				
Oamaru	10.2	Feb-21st	1972	Equal lowest
Wanaka	9.1	Feb-21st	1972	3rd-lowest
Alexandra	10.5	Feb-21st	1930	Equal 4th-lowest
Roxburgh	10.5	Feb-21st	1950	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				
Kaitiāia	22.2	Feb-20th	1948	Highest
Mokohinau	22.4	Feb-20th	1994	Highest
Leigh	22.1	Feb-19th	1966	Highest
Whangaparaoa	21.4	Feb-19th	1982	Highest
Auckland (Whenuapai)	22.1	Feb-13th	1951	Highest
Paeroa	22.2	Feb-13th	1971	Highest
Te Puke	21.4	Feb-13th	1973	Highest
Whakatane	22.4	Feb-20th	1975	Highest
Rotorua	20.8	Feb-13th	1972	Highest
Port Taharoa	22.1	Feb-13th	1974	Highest
New Plymouth	21.6	Feb-12th	1944	Highest
Masterton	21.3	Feb-13th	1943	Highest
Hicks Bay	21.7	Feb-12th	1972	Highest
Mahia	20.8	Feb-21st	1990	Highest
Paraparaumu	20.7	Jan-25th	1972	Highest
Palmerston North	20.6	Feb-12th	1940	Highest
Wellington (Kelburn)	20.2	Feb-1st	1931	Highest

Whanganui (Spriggens Park)	22.0	Feb-1st	1972	Highest
Farewell Spit	20.4	Jan-26th	1972	Highest
Greymouth	19.8	Jan-25th	1972	Highest
Okarito	18.8	Jan-16th	1983	Highest
Milford Sound	20.5	Jan-16th	1935	Highest
Secretary Island	19.2	Jan-24th	1988	Highest
Puysegur Point	21.0	Jan-31st	1978	Highest
Brothers Island	19.3	Jan-30th	1997	Highest
Akaroa	21.8	Feb-1st	1978	Highest
Le Bons Bay	20.2	Dec-09th	1984	Highest
Wanaka	21.1	Jan-25th	1972	Highest
Te Anau	19.6	Jan-25th	1973	Highest
Manapouri (West Arm Jetty)	18.3	Jan-30th	1972	Highest
Balclutha	21.5	Jan-28th	1972	Highest
Nugget Point	17.2	Jan-28th	1972	Highest
South West Cape	17.7	Jan-31st	1991	Highest
Motu	18.7	Feb-13th	1990	Equal highest
Whatawhata	21.5	Feb-13th	1952	Equal highest
Castlepoint	22.0	Feb-13th	1972	Equal highest
Wellington (Airport)	21.0	Feb-1st	1972	Equal highest
Hawera	20.9	Feb-12th	1977	Equal highest
Cape Reinga	20.9	Feb-20th	1971	2nd-highest
Kerikeri	22.2	Feb-20th	1952	2nd-highest
Whangarei	22.1	Feb-13th	1967	2nd-highest
Auckland (Western Springs)	22.1	Feb-13th	1971	2nd-highest
Rotorua	20.5	Feb-13th	1972	2nd-highest
Hamilton Airport	21.8	Feb-13th	1946	2nd-highest
Te Kuiti	22.1	Feb-13th	1959	2nd-highest
Ngawi	24.1	Jan-31st	1972	2nd-highest
Palmerston North	20.4	Feb-12th	1940	2nd-highest
Levin	21.2	Feb-12th	1950	2nd-highest
Stratford	20.0	Feb-12th	1972	2nd-highest
Taihape	18.7	Jan-26th	1973	2nd-highest
Westport	19.9	Feb-1st	1966	2nd-highest
Haast	19.1	Jan-25th	1949	2nd-highest
Oamaru	18.6	Jan-29th	1972	2nd-highest
Dunedin (Airport)	21.5	Jan-16th	1972	2nd-highest
Manapouri (Airport)	19.1	Jan-31st	1973	2nd-highest
Whitianga	21.9	Feb-13th	1971	Equal 2nd-highest
Tiwai Point	17.8	Jan-28th	1972	Equal 2nd-highest
Kaikohe	20.7	Feb-11th	1973	3rd-highest
Tauranga	21.8	Feb-12th	1941	3rd-highest
Auckland (Airport)	22.3	Feb-13th	1961	3rd-highest
Pukekohe	21.6	Feb-13th	1969	3rd-highest
Ohakune	18.1	Feb-12th	1972	3rd-highest
Arapito	19.6	Feb-1st	1978	3rd-highest
Kaikoura	20.4	Dec-10th	1972	3rd-highest

Arthurs Pass	15.4	Jan-16th	1978	3rd-highest
Alexandra	18.2	Jan-17th	1992	3rd-highest
Waipawa	20.4	Feb-12th	1945	Equal 3rd-highest
Takaka	19.5	Jan-27th	1978	Equal 3rd-highest
Whitianga	21.8	Feb-13th	1971	4th-highest
Lower Retaruke	19.4	Feb-1st	1972	4th-highest
Martinborough	20.8	Feb-13th	1986	4th-highest
Waiau	21.2	Feb-1st	1974	4th-highest
Rangiora	20.5	Dec-10th	1972	4th-highest
Wanaka	19.8	Jan-31st	1972	4th-highest
Five Rivers	17.7	Dec-5th	1982	4th-highest
Tapanui	20.9	Jan-15th	1900	4th-highest
Upper Hutt	19.4	Feb-17th	1972	Equal 4th-highest
Low records or near-records				
None observed				

Rain and slips

As of 1 December, a Water Alert Level 1 was declared in Waikato District, Hamilton, and Waipa due to a 20% increase in water consumption across the region. This was mostly attributed to people filling swimming pools and using sprinklers due to the warm weather. On 8 December this was increased to Alert Level 2 in Hamilton, after the city had its highest ever December water-use day.

On 4 December, Level 4 water restrictions were put in place in Napier due to critically low reservoirs, but by 5 December the restrictions were eased back to Level 2 after an “overwhelmingly positive response” from residents.

On 11 December, the Tasman District Council initiated Stage One water restrictions for users on the Waimea Plains as the Waimea River dropped down to “trigger levels” at Wairoa Gorge.

Several lengthy dry spells came to an end on 12-13 December as a front finally brought rainfall to parts of the South Island and lower North Island. The dry spell at Christchurch Airport reached 47 days, the longest on record there. In the lower North Island, dry spells in Wellington (30 days), Paraparaumu (35 days), and Martinborough (35 days) ended on 13 December. In Whanganui, a 42-day dry spell came to a close on 19 December.

On 13 December, heavy rain in Timaru produced over 26 mm, more than three times the amount the town received in all of November. Due to blocked stormwater drains, a number of commercial and residential properties had flooding problems, primarily in the Washdyke area.

On 16 December, Tauranga instituted a total ban on using residential sprinklers and restricted watering to between 5-8 a.m. and 7-10 p.m. due to concern over the city’s reservoir levels.

On the evening of 18 December, heavy rain brought some street and driveway flooding to parts of Rotorua, including Owhata and Lynmore. Blocked drains allowed the water to reach “car tyre level”. Heavy rain then moved east into the Tauranga area, causing house flooding in the 15th Avenue to

Greerton area. It was reported that Fraser Street between 13th and 15th Avenues was “very deep underwater.” Around 1000 homes lost power in the Tauranga suburb of Welcome Bay.

On Boxing Day morning, a front moving across the North Island brought localised flooding to the Wellington region. About a dozen calls came in to Fire and Emergency due to surface flooding. Wellington Airport received 15.8 mm of rain in one hour—more than had fallen in the previous 48 days combined.

On 5 January, heavy rain caused surface flooding in low lying areas about the Coromandel Peninsula. The rain caused slips which contributed to the closure of SH25 from Thames to Manaia, and the Waioeka Gorge in the eastern Bay of Plenty. The Pauanui water treatment plant was shut down temporarily due to excessive amounts of dirt and sediment in the river affecting the ability to produce clean drinking water. In Auckland, matches at the ASB Classic tennis event were suspended for two days by the persistent wet conditions. Farther south, SH1 north and south of Kaikoura was closed due to flooding and slips.

On 23 January, a heavy downpour on Auckland’s North Shore caused flash floods, with two people rescued from their vehicles after becoming stranded in floodwaters. A local wastewater system was overwhelmed by the deluge, and swimmers were warned to avoid Milford and Castor Bay beaches due to sewage contamination. The rain was heaviest in the hour between 8 a.m. to 9 a.m., when North Shore recorded a torrential 62.4 mm of rain. Heavy downpours of rain caused flooding for some offices in the central business area of Whangarei. Seven Rangipo residents were rescued from their home at the base of Mt Tongariro after flash flooding struck their property.

Prolonged dry conditions prompted the Government to declare a medium-scale adverse drought event for the Grey and Buller districts on 10 January. This drought classification was extended to include Otago and Southland on 30 January. The lack of meaningful rainfall and persistent high temperatures saw elevated fire hazard conditions throughout Southland and Otago, particularly during the second-half of the month. As of 30 January, Central Otago volunteer fire brigades reported responding to 208 callouts during January alone; which is as many as would typically be attended during an entire year.

Impacts from ex-Tropical Cyclone Fehi

On 1 February, approximately 115 tourists became stranded at Fox Glacier as heavy rain and damaging winds from ex-Tropical Cyclone Fehi impacted the West Coast. Roads between Haast and the Fox Hills were then cleared the following day, 2 February, allowing travel to begin again. Greymouth was impacted by heavy rain and gales, which led to power cuts, closed schools, and closed shops in the CBD. A state of emergency was declared in the Buller District, West Coast. The Westland Milk Factory in Hokitika stopped production and dozens of farmers in the region had to dump milk because of power cuts and impassable roads. A state of emergency was also declared in Dunedin due to rain and flooding. Wastewater overflows contributed to the flood situation. Welfare centres were opened in Dunedin due to the adverse weather. The floodwaters began to recede by the evening.

The Nelson region was also particularly hard-hit by ex-Tropical Cyclone Fehi. Evacuations took place in Ruby Bay due to storm surge that inundated many homes in the area. In Monaco, police used a

Nelson Surf Rescue inflatable boat to help people off the peninsula. Numerous roadways were closed about Nelson and flights were suspended at Nelson airport after a nearby stream burst its banks, flooding the airport's access road. Rocks Road was closed due to waves crashing overtop of it.

Furthermore, roads in Christchurch's suburbs of New Brighton, Aranui, Opawa, and parts of the CBD were closed due to flooding.

On the afternoon of 3 February, flash flooding in the Waitakere Ranges led to the death of two teenagers. The two were from a group of five that attempted to cross the swollen river beneath the Cascades Falls around 5:00 pm. A band of very heavy rain pushed onshore the western Auckland region during the late afternoon – it had been associated with remnant energy from ex-Tropical Cyclone Fehi that had impacted the South Island the day prior.

On 13 February, heavy rain contributed to flooding in the Opotiki District of the Bay of Plenty. Opotiki mayor John Forbes said that about 20 percent of the town was flooded and damage to the roads could cost Opotiki District Council \$1 million. Opotiki District Council reported that the Otara River, which runs through the town, recorded its highest-ever level.

On 13 February, heavy rain across the Far North District in Northland led to flooding and slips, particularly around the Mangamuka Ranges. A slip blocked State Highway 1 near Rangiahua, making the roadway impassable. State Highway 11 in the Bay of Islands was also closed. In addition, the Ministry of Education said 16 schools in Northland and one early childhood centre had closed due to the inclement weather.

Impacts from ex-Tropical Cyclone Gita

A state of emergency was declared in Christchurch, the Selwyn District, the Grey District, the Buller District, the New Plymouth District, and the Nelson-Tasman region, as ex-Tropical Cyclone Gita approached.

On 20 February, more than 40 schools and 17 early learning centres at the top of the South Island were either closed or closed early due to the forecast of heavy rain and wind from ex-Tropical Cyclone Gita. Numerous schools closed across the lower North Island and upper and eastern South Island on Wednesday 21 February. State Highway 6 from Westport to Greymouth closed due to surface flooding and strong winds. State Highway 60 from Riwaka to Takaka, State Highway 1 near Kaikoura, and Route 70 were also closed for a time. Between 4:00 am and 6:00 pm, 148.4 mm of rain was recorded in Motueka-Riwaka. In other words, that is 173% of the February normal rainfall in just 14 hours. This led to the Little Sydney Stream, Riwaka River, and Motueka River bursting their banks, flooding, and localised evacuations across the region – the towns most affected included Motueka, Takaka, Marahau, Upper Moutere, and across the Riwaka Plains. 4000 homes also lost power in the region and a horse got trapped in the flooding Moteuka River. Takaka Hill Road, shut by slips isolating about 6000 locals and tourists in Golden Bay, was expected to remain closed for days.

Between 4:00 am 20 February and 10:00 am 21 February, 202.0 mm of rain was recorded in Kaikoura. That amount is nearly four times the monthly normal, 28% of the annual normal rainfall, and was more rain in less than 24 hours than had fallen in November, December, and January combined. Furthermore, 53.6 mm fell between 4:00-5:00 pm on the 20th, which was the wettest hour on record in Kaikoura and over a month's worth of rain in a single hour. This led to flooding across various areas in the Kaikoura District and a car got swept off the road on State Highway in Hapuku north of the town. Some residents living alongside Christchurch's Heathcote River evacuated their homes as the waterway threatened to burst its banks. South of Christchurch, a portion of Speechlys Bridge on State Highway 1 between Geraldine and Fairlie was washed out.

Elsewhere, two lanes of Auckland's Tamaki Drive were closed due to surface water as waves spilled over the seawall onto the road during high tide. State Highway One was closed between Pukerua Bay and Paekakariki after it sustained seawall damage overnight due to storm surge during high tide. Debris also covered the roadway.

Between 20-21 February, Fire and Emergency New Zealand had responded to more than 400 weather-related callouts between 2:00 pm on Tuesday and 5:00 am Wednesday. Taranaki, Tasman, and the West Coast were the busiest areas, with many callouts due to flooding of homes and businesses, roofs lifting, and fallen trees and power lines.

On 22 February, flooding during high tide forced the evacuation of five houses in Paraparaumu and Raumati South between 2:00 am and 4:00 am as remnant energy from ex-Tropical Cyclone Gita passed through the region.

On 25 February, four helicopters were used to fly stranded tourists out of Doubtful Sound (Fiordland) after a 25 metre slip cut off Wilmot Pass Road. Between 24-25 February, 281 mm of rain fell in nearby Milford Sound.

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
Pakawau	187	Jan-12th	1984	Highest
Upper Takaka	297	Jan-17th	1995	Highest
Kaikoura	164	Feb-20th	1898	Highest
Waipara West	117	Feb-20th	1973	Highest
Akaroa	158	Feb-20th	1977	Highest
Waituna	76	Jan-2nd	1984	2nd-highest
Takaka	223	Jan-17th	1976	2nd-highest
Farewell Spit	125	Jan-12th	1882	2nd-highest
Hokitika	197	Jan-11th	1866	2nd-highest
Paroa	139	Jan-10th	1964	2nd-highest
Oamaru	62	Feb-20th	1950	2nd-highest
Murchison	66	Jan-10th	1997	3rd-highest
Kowhitirangi	185	Jan-11th	1965	3rd-highest

Motueka	126	Feb-20th	1956	3rd-highest
Tapawera	74	Jan-12th	1992	3rd-highest
Nelson	116	Feb-11th	1862	3rd-highest
Woodend	52	Dec-13th	1981	3rd-highest
Lake Tekapo	72	Feb-20th	1925	3rd-highest
Opouriao	127	Jan-4th	1962	4th-highest
Orari Estate	104	Feb-20th	1897	4th-highest
Oamaru	54	Feb-20th	1950	4th-highest
Clyde	43	Feb-20th	1978	Equal 4th-highest

Wind

On 5 January, strong winds brought down trees in Rotorua. A woman died after a tree fell onto the car she was occupying. Dozens of flights at Auckland, Tauranga, Gisborne and Rotorua were delayed or cancelled due to the stormy weather. The strong winds downed powerlines which resulted in 800 customers in Tauranga and Coromandel losing power. A combination of wind and high tides brought seawater inundation to the Northern Motorway and Tamaki Drive in Auckland, forcing the temporary closure of these roads. The Thames Coast Road (SH25) was closed after sustaining considerable damage from large waves.

On 23 January, very strong wind gusts were observed in Hawke's Bay, associated with passing thunderstorms. Napier Airport recorded a maximum wind gust of 111 km/h – its highest summer wind gust on record.

Impacts from ex-Tropical Cyclone Fehi

On 1 February, State Highway 6 from Greymouth to Westport was closed due to fallen trees and strong winds. Similarly, State Highway 8 between Roxburgh and Millers Flat in Otago was also closed. 6500 Hokitika residents were without power due to wind and rain impacts from ex-Tropical Cyclone Fehi. Transpower warned that the town could have a "long spell" off the grid. Strong northeast winds, the passage of ex-Tropical Cyclone Fehi to the southwest, and king tides, all combined to cause coastal inundation along Auckland's east coast. This led to the closure of Tamaki Drive during the morning. Winds up to 140 km/h in Wellington led to the cancellation of nine flights out of the city.

Impacts from ex-Tropical Cyclone Gita

On 20 February, due to the forecast of high winds from ex-Tropical Cyclone Gita, Air New Zealand cancelled all flights in and out of Wellington from 2:45 pm until midnight. It also cancelled services in and out of Hokitika, Nelson, New Plymouth, and Queenstown for a time. KiwiRail's TranzAlpine rail service between Greymouth and Christchurch was cancelled for both the 20th and 21st of February due to expect impacts from ex-Tropical Cyclone Gita. Strong winds from ex-Tropical Cyclone Gita across the Taranaki region led to power cuts in 23000 properties. The pipeline from the New Plymouth water treatment station to the Mangorei Reservoir was ruptured by a falling tree and residents were urged to conserve water and only use the bare minimum. Fallen trees and traffic

accidents were also reported, and sections of State Highway 3 from Urenui to Waitara were closed for tree removal.

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
Kaikohe	154	Feb-1st	1986	Highest
Dargaville	106	Jan-5th	1997	Highest
Motu	104	Jan-5th	1991	Highest
Napier	111	Jan-23rd	1973	Highest
Hawera	130	Feb-20th	1986	Highest
Whakatane	95	Jan-5th	1974	Equal highest
Kaitaia	100	Feb-7th	1972	2nd-highest
Auckland (Whenuapai)	96	Jan-4th	1972	2nd-highest
Whanganui	109	Feb-20th	1977	2nd-highest
Waiouru	113	Feb-1st	1970	3rd-highest
Westport	119	Feb-20th	1973	3rd-highest
New Plymouth	104	Feb-20th	1972	Equal 3rd-highest
Wanaka	83	Jan-31st	1992	Equal 3rd-highest
Auckland (Western Springs)	74	Jan-5th	1994	4th-highest
Whakatane	89	Jan-5th	1974	4th-highest
Rotorua	91	Jan-5th	1972	4th-highest
Baring Head	137	Feb-1st	1991	4th-highest
Richmond	96	Feb-1st	1972	4th-highest

Snow and ice

On 1 February, Mt Hutt staff reported 5cm of snow as ex-Tropical Cyclone Fehi passed the South Island leading to an outbreak of cold, southerly winds.

On 21 February, the Crown Range was dusted with snow as a cold southerly pushed into the South Island in ex-Tropical Cyclone Gita's wake. The Remarkables ski area near Queenstown reported 50 cm of snowfall, with drifts up to 1 metre deep.

Lightning and hail

On 18 December, a lightning strike brought down powerlines on Wairau Road in Hillcrest on Auckland's North Shore, closing the road in both directions.

On 26 January, more than 11,000 lightning strikes were recorded across New Zealand, predominantly about the Bay of Plenty, Waikato, and southern Marlborough. The strikes ignited tree fires in the Ohauti Hills behind Tauranga.

On 18 February, the West Coast observed around 9000 lightning strikes as a frontal boundary moved up the South Island. The heavy rain associated with these thunderstorms caused flooding and slips.

Cloud and fog

On 10-11 February, Wellington Airport saw numerous flights delayed or cancelled due to low clouds and dense fog. A moist and humid sub-tropical airmass created ideal meteorological conditions for fog to form.

For further information, please contact:

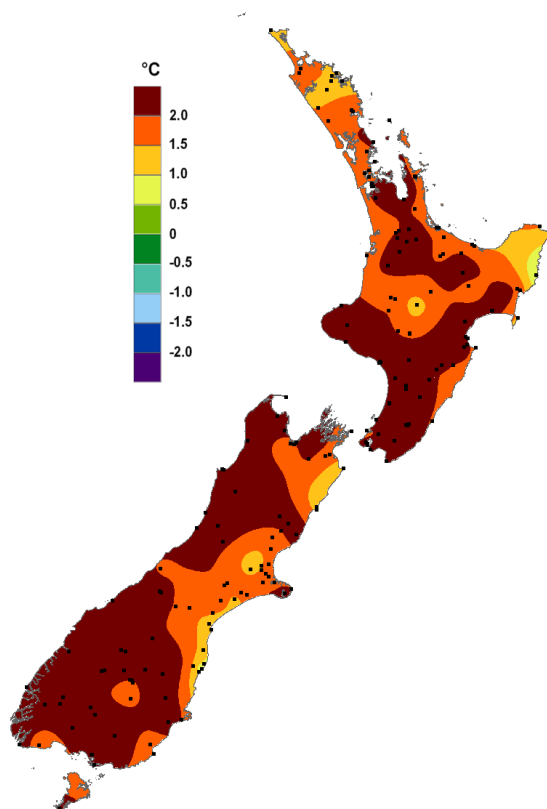
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Summer 2017-18 mean temperature, expressed as a departure from the 1981-2010 average (%).

Summer 2017-18 was New Zealand's hottest summer on record using NIWA's seven-station series (which extends back to 1909). Many locations across the country recorded record or near-record high mean summer temperatures.

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