

CLIMATOLOGICAL TABLE—Summary of the Records of Temperature, Rainfall, and Sunshine for December 1976—continued
LATE RETURNS AND CORRECTIONS—continued

Station	Height of Station Above M.S.L.	Air Temperatures in Degrees (Celsius)								Rainfall (in millimetres)					Bright Sunshine
		Means of		Mean of A and B	Difference From Normal	Absolute Maximum and Minimum				Total Fall	No. of Rain Days	Difference From Normal	Maximum Fall		
		A Max.	B Min.			Maximum	Date	Minimum	Date				Amount	Date	
Campbell Island, September 1976	Metres 15	°C 7.8	°C 3.7	°C 5.8	°C +0.3	°C 10.5	10	°C -0.3	8	mm 90	28	mm -12	mm 19	10	Hrs 48
Campbell Island, October 1976	15	8.1	3.2	5.7	-0.5	10.4	28	-1.2	25	89	28	-28	16	10	64
Campbell Island, November 1976	15	9.8	3.9	6.9	-0.3	12.7	18	-3.0	10	56	20	-51	31	5	94
Totokoitu, Rarotonga, November 1976	9	27.4	21.4	24.4	..	29.9	29	17.5	6	269	20	..	94	24	..
Scott Base, Antarctica, November 1976	16	-8.6	-17.5	-13.1	-1.1	-2.4	9	-27.9	1

The "normal" refers to the present site of the instruments. Standard period for normals is 1941-1970. No normals are available for stations with only short records.

*Indicates that the sunshine recorder is not located at the station but is in the near vicinity.

A rain day is a day with rainfall equal to or greater than 0.1 mm.

Where the extremes of temperature and rainfall have occurred more than once during the month, the date of the first occurrence is given.

NOTES ON THE WEATHER FOR DECEMBER 1976

General—In December barometric pressures were low over New Zealand, with a high frequency of winds from a westerly quarter. The rainfall was more than normal over much of the country. Cloudy conditions prevailed over the greater part of the country. Grass growth in some areas was good but haymaking and shearing conditions in other areas were poor. Hail storms on the 22nd caused widespread damage to apple and pear orchards in the Nelson province.

Rainfall—Rainfall was above the normal December value throughout the whole of the South Island and in parts of the North Island, especially east of the ranges. It was more than twice the normal value in Otago, Nelson, Wellington, and parts of Marlborough and southern Wairarapa. In the remaining areas of the North Island it was at least half of the normal. Exceptionally heavy rainfalls of 200-300 mm were recorded in the Wellington/Hutt Valley area on the 20th. 85 mm of rain was recorded in six hours at Kelburn and this is the highest value recorded since measurements began in 1928. At Taita (Hutt Valley) 258 mm was recorded in a twelve hour period. It is estimated that damage caused by major flooding and many slips in these areas could reach a total value of approximately 30 million dollars.

Temperatures—Temperatures were close to normal over most of the country. In some areas of the North Island and parts of Canterbury they were below normal by $\frac{1}{2}$ °C. Coastal districts from Dunedin to Invercargill and some inland areas were 1°C warmer than normal.

Sunshine—Sunshine was above normal by 25 to 75 hours in places north of Auckland. Kaitiaki with 264 hours had its highest December total in 25 years of observations. In Wellington, South Canterbury, and parts of Otago and Westland, sunshine was below normal by up to 65 hours. The Wellington total of 174 hours was the lowest for at least 40 years.

Weather Sequence—The depression which had been almost stationary over the Tasman Sea during the last three days of November moved over central New Zealand on the 1st and 2nd of December, bringing some rain to most districts.

From the 3rd to the 9th a disturbed westerly airstream flowed over the country. Disturbances in this flow brought occasional rain to many South Island places, but only scattered light falls to the North Island. A slow-moving cold front crossed the North

Island on the 9th and was accompanied by moderate rain. Behind this front an anticyclone moved from the Tasman Sea onto New Zealand.

Over most of the country the weather was settled from the 10th to the 13th, as a ridge of high pressure lay northwest-southeast across New Zealand.

Late on the 13th a cold front moved from the west onto the South Island. As this front moved slowly over the country a depression developed on it on the 14th but by the 15th the whole system lay to the east of New Zealand. Rainfalls of over 30 mm were recorded in many western areas with the passage of this front, while eastern areas received about 5 to 10 mm.

The ridge of high pressure that had covered the country from the 10th to the 13th was re-established on the 15th and it persisted until the 17th.

On the 17th a cold front moved slowly westward onto the South Island. The rainfall accompanying it was confined to the West Coast on the 17th where 20-50 mm was recorded. By midnight on the 18th the front had still not crossed the South Island and a depression had formed on the front to the west of the North Island. This depression moved south-eastwards across central New Zealand on the 19th while a second depression moved eastwards over the North of the North Island on the 20th. A very small scale convergence area in the Wellington District on the 20th produced exceptionally heavy rainfall. Falls in the region of 250-300 mm in 24 hours were recorded in the Wellington/Hutt Valley area.

From the 21st to the 25th a depression lay to the east of the North Island and a cold southerly flow covered the South Island and the south of the North Island. On the 22nd a cold front in this southerly flow brought a period of heavy rain to many eastern areas north of Banks Peninsula and to the Cook Strait area.

On the 25th a ridge of high pressure like the one that had been over the country from the 15th to the 17th, became established over the South Island. This ridge moved northeastwards to lie to the north of the North Island by the 28th. A disturbed westerly airstream began to spread onto New Zealand on the 27th and persisted over the country for the rest of the month. Disturbances in this flow brought some rain to all parts of the country except for parts of Gisborne and Hawkes Bay. On the West Coast over 150 mm of rain was recorded in some places over the last four days of the month.

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