



LAND & SURVEY
23 SEP 1981
MCDONNELL

SUPPLEMENT

TO THE

NEW ZEALAND GAZETTE

OF

THURSDAY, 10 SEPTEMBER 1981

Published by Authority

WELLINGTON: WEDNESDAY, 16 SEPTEMBER 1981

CLIMATOLOGICAL TABLE FOR JULY 1981

CLIMATOLOGICAL TABLE—Summary of the Records of Temperature, Rainfall, and Sunshine for July 1981—continued

Station	Height of Station Above M.S.L.	Air Temperature in Degrees Celsius								Rainfall in Millimetres				Bright Sunshine Hrs	
		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
	Metres	°C	°C	°C	°C	°C	°C	°C	°C	mm	mm	mm	mm	Hrs	
Ruakura, Hamilton	40	13.9	3.4	8.7	+0.4	17.8	5	-2.6	15	135	18	+18	25	8	145
Whatawhata	104	13.7	4.5	9.1	+0.3	17.0	5	-2.1	14	186	17	+23	34	8	141
Rukuhia	66	13.8	4.6	9.2	+0.6	17.4	5	-1.2	15	153	21	+26	23	8	145
Hamilton Airport	50	14.0	2.3	8.2	+0.4	17.6	5	-4.0	13	159	18	+42	21	8	..
Cambridge	76	13.6	3.4	8.5	..	17.1	5	-4.2	15	141	18	..	17	18	..
Port Taharoa	27	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mohakatino Station Mokau	46	13.5	6.3	9.9	+0.4	16.4	5	0.8	14	177	18	-1	24	30	..
Motunui Tower	34	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Arapuni Power Station	123	13.3	2.6	8.0	+0.0	15.6	6	-2.5	17	214	19	+69	29	18	..
Waikeria	46	13.8	2.6	8.2	..	17.4	5	-4.0	15	187	17	..	31	7	..
Te Kuiti	61	13.4	3.9	8.7	+0.7	16.8	1	-2.0	15	179	21	+24	20	18	122
Wairere	122	12.7	3.5	8.1	..	15.4	1	-3.4	14	201	19	+41	23	2	..
Pureora Forest	549	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Taumarunui	171	12.2	2.6	7.4	+0.2	14.9	6	-3.8	15	194	21	+59	26	8	94
Omata	61	..	..	..	..	..	..	..	..	..	..	..	..	..	..
New Plymouth	55	13.6	6.3	10.0	..	16.0	1	-0.5	16	209	20	..	28	7	..
New Plymouth Airport	27	13.3	6.3	9.8	+0.8	16.1	5	0.2	16	200	20	+37	43	5	135
Tikorangi	77	12.8	6.0	9.4	..	16.0	1	0.8	16	187	21	..	21	2	..
North Egmont	955	6.6	1.6	4.1	..	11.0	1	-1.6	16	818	27	..	96	2	..
Te Wera Forest	180	12.0	2.7	7.4	+0.7	16.2	1	-3.8	14	184	17	+6	22	5	..
Lower Retaruke	223	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Turangi	366	11.0	2.5	6.8	+0.6	15.2	21	-3.8	23	200	19	..	25	2	121
Chateau, Mt Ruapehu	1119	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mangamutu, Pahiatua	116	12.1	3.5	7.8	+0.8	16.7	31	-2.5	1	176	14	+52	32	31	..
Mt Bruce Reserve	305	10.5	3.3	6.9	+0.7	14.2	1	-1.7	23	320	29	..	33	8	..
Waingawa, Masterton	114	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kopua	311	10.6	4.2	7.4	+0.8	16.6	30	-0.2	23	86	19	-13	22	16	..
Waipukurau	137	12.2	4.3	8.3	+1.3	17.4	30	-0.6	2	89	13	+3	27	16	131*
Dannevirke	207	11.5	4.4	8.0	+0.9	16.9	30	-1.6	23	99	20	-8	26	16	91
Porangahau	8	13.4	6.3	9.9	..	18.4	30	2.0	23	85	16	..	26	16	..
Castlepoint	3	13.1	8.1	10.6	+1.2	17.7	30	4.9	10	95	16	-12	23	18	..
Ngaumu Forest	244	11.7	3.5	7.6	+1.5	15.9	30	-1.4	10	146	18	+9	35	16	..
Tauherenikau, Alloa	43	12.5	4.4	8.5	+1.0	17.0	30	0.0	21	123	20	+11	29	5	..
Gladstone, Arahura	116	12.2	3.7	8.0	+1.0	17.2	30	-1.4	23	145	19	+36	39	16	..
Waiorongomai	21	12.0	5.5	8.8	+1.2	15.9	30	0.0	21	202	23	+37	54	5	..
Cape Palliser	10	12.8	8.3	10.6	+1.1	17.4	30	4.5	23	92	21	-27	16	16	..
East Cape	17	14.8	8.3	11.6	+0.3	17.6	25	4.5	18	200	20	+58	50	19	..
Ruatoria	61	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mangatu Forest	182	12.6	5.1	8.9	+0.6	16.9	26	-0.5	18	193	21	+51	54	10	..
Manutuke Gisborne	9	14.2	5.1	9.7	+0.7	18.0	26	0.2	2	141	19	+29	52	10	..
Gisborne Airport	4	14.2	5.4	9.8	+0.6	18.2	26	0.0	18	151	17	+39	50	10	128
Onepoto, Waikaremoana	643	9.0	3.5	6.3	+0.2	14.2	27	0.5	27	296	22	+98	60	10	..
Wharerata Forest	439	..	4.7	..	..	..	..	0.6	21	468	..	..	..	..	..
Esk Forest	427	..	4.4	..	..	..	..	0.0	18	124	17	-44	46	10	..
Kaweka Forest	414	11.2	5.0	8.1	+0.5	17.1	25	1.8	20	120	16	..	36	10	..
Napier Airport	2	14.1	4.9	9.5	..	19.9	6	-1.1	2	64	11	-17	24	10	..
Napier	2	14.1	5.5	9.8	+0.9	18.4	25	-0.7	18	66	11	-13	25	10	130
Hastings	12	14.1	4.6	9.4	+0.9	18.6	25	-0.9	2	83	11	+19	29	10	..
Havelock North	9	13.7	4.0	8.9	+1.3	18.3	6	-1.0	2	86	12	+7	28	16	124
Gwavas Forest	335	11.5	2.5	7.0	+1.1	17.5	25	-0.8	18	116	14	+2	33	10	..
Makaretu	335	..	4.0	..	..	..	..	-1.2	18	82	22	..	24	16	..
Mohaka Forest	286	12.0	4.8	8.4	+0.9	16.6	25	-0.1	18	167	16	+21	67	10	..
Frasertown, Wairoa	8	14.2	5.8	10.0	+1.1	18.5	6	1.0	18	127	22	-13	19	10	..
Wairoa	20	..	5.7	..	..	..	..	1.0	18	176	13	..	67	10	119
Portland Island	78	13.2	9.0	11.1	+0.9	16.6	30	6.0	18	148	16	+26	33	15	..
Kapiti Island	16	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Paraparaumu Airport	7	12.2	5.2	8.7	+0.5	14.7	26	-0.5	22	134	20	+27	41	5	107
Flockhouse, Bulls	9	12.6	3.5	8.1	+0.1	17.1	30	-2.4	20	112	16	+33	14	2	..
Ohakea	48	12.2	5.1	8.7	+0.3	16.6	30	0.4	20	104	17	+23	15	2	122
Wharite Peak	914	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kairanga Palmerston North	15	12.5	3.7	8.1	+0.5	17.1	30	-2.5	21	119	16	..	16	3	108
Palmerston North Airport	45	12.4	4.0	8.2	+0.7	17.2	30	-2.2	20	103	17	+19	18	2	..
Palmerston North D S I R	34	12.3	4.9	8.6	+0.6	17.2	30	-0.7	20	109	17	+18	15	9	89
Foxton	3	..	..	..	..	..	..	..	..	115	17	+31	22	5	..
Waitarere Forest	3	12.4	4.0	8.2	+0.5	16.3	30	-2.6	21	120	15	+36	26	5	..
Levin	46	12.3	4.8	8.6	+0.4	16.0	30	0.0	20	130	19	+23	28	5	104
Taita, Lower Hutt	65	12.0	5.2	8.6	+0.5	15.8	25	0.2	22	193	25	+48	47	5	81
Avalon, Lower Hutt	15	12.0	5.7	8.9	+0.6	15.3	26	0.5	21	186	24	+29	44	5	..
Kelburn, Wellington	125	11.4	6.4	8.9	+0.6	14.6	26	4.0	22	181	21	+41	47	5	108
Somes Island	43	11.7	6.7	9.2	..	15.0	26	2.5	22	177	24	..	35	5	..
Gracefield, Lower Hutt	34	12.0	6.3	9.2	+0.6	15.8	26	1.7	21	181	22	+34	37	5	..
Wainuiomata	82	11.8	4.8	8.3	+0.8	15.5	26	-1.1	22	266	20	..	37	12	..
Wellington Airport	6	12.3	7.0	9.7	+0.8	16.0	26	2.5	21	138	21	+29	43	5	..
Kaitoke	223	10.8	3.4	7.1	+0.8	15.0	1	-1.6	23	235	26	+14	38	5	72
Wallaceville	56	12.1	3.7	7.9	+0.6	15.1	1	-2.6	22	157	25	+22	43	5	86
Cape Egmont	8	13.4	7.4	10.4	+0.4	16.0	1	2.0	16	189	20	+34	38	2	..
Stratford Mountain House	846	6.6	1.2	3.9	+0.2	11.4	24	-1.5	18	757	26	+46	98	2	..

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		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
Metres	°C	°C	°C	°C	°C	°C	°C	mm	mm	mm	Hrs			
Stratford Dem. Farm	311	..	..	..	..	..	..	..	..	..	..	..	..
Manaia Dem. Farm	98	..	..	..	..	..	..	..	..	..	..	..	..
Normanby	122	11.9	6.3	9.1	..	15.5	25	-0.1	16	124	27	17	7	
Patea	43	12.9	7.0	10.0	+0.8	17.0	25	0.5	22	122	17	-23	19	
Ohakune Junction	629	8.1	2.6	5.4	..	12.1	5	-2.6	22	184	21	..	27	
Karioi	648	8.7	2.0	5.4	+0.5	12.8	30	-2.1	2	202	20	+95	46	
Waiouru	823	7.5	0.4	4.0	+0.2	14.2	30	-3.0	14	..	..	..	..
Waiouru Military Camp	823	6.8	1.1	4.0	+0.6	12.5	30	-2.7	2	140	23	+36	15	
Ahu Ahu Valley	85	12.5	3.5	8.0	..	15.7	6	-0.6	22	106	22	..	19	
Taihape	433	10.2	2.4	6.3	+0.3	15.3	30	-2.5	23	99	24	..	18	
Kahui, Taihape	518	9.4	3.1	6.3	+0.0	14.8	30	-1.0	2	96	20	..	14	
Wanganui	22	12.9	6.0	9.5	+0.8	17.5	30	-0.4	22	89	17	+8	12	
Wanganui Airport	9	13.1	5.7	9.4	..	17.0	25	-1.5	22	97	19	..	13	
Farewell Spit	3	13.1	4.3	8.7	-0.4	15.5	26	0.1	15	207	16	+77	81	
Totaranui	10	12.5	4.1	8.3	..	15.4	24	1.0	16	257	15	..	47	
Westport Airport	2	12.4	4.6	8.5	+0.4	13.9	2	0.6	20	247	19	+64	31	
Cobb Dam	823	7.2	-1.6	2.8	-0.2	12.0	1	-5.5	15	286	16	+78	52	
Arapito	20	12.6	4.1	8.4	..	15.3	1	0.3	19	344	17	..	57	
Karamea	5	..	..	..	..	..	..	..	..	..	..	..	..
Lake Rotoroa	443	8.0	-0.1	4.0	..	11.7	24	-5.2	21	306	16	..	54	
Lake Rototoi	634	7.7	-1.1	3.3	+0.3	12.0	24	-7.3	20	208	16	+51	39	
Hokitika Airport	39	11.6	3.1	7.4	+0.3	14.5	24	-2.0	13	358	21	+117	42	
Reefton	198	9.4	0.4	4.9	+0.2	13.5	25	-5.9	20	306	18	+141	38	
Barrytown	30	12.4	6.9	9.7	..	15.0	1	3.5	17	335	19	..	46	
Totara Flat	77	10.4	1.2	5.8	+0.4	13.5	25	-4.0	17	271	18	+114	34	
Greymouth	4	11.8	4.7	8.3	+0.7	13.9	25	0.5	17	277	21	+84	35	
Otira Substation	383	8.6	..	..	..	13.0	25	..	..	561	20	+205	115
Springs Junction	421	7.5	-0.2	3.7	..	11.1	24	-6.5	15	330	17	+155	51	
Hari Hari	45	11.9	1.0	6.5	+0.6	13.9	23	-4.0	13	446	18	+205	104	
Franz Josef	122	..	..	..	..	..	..	..	..	..	..	..	..
Fox Glacier	152	11.0	2.2	6.6	..	13.1	1	-1.4	16	481	18	+167	83	
Milford Sound	3	8.8	1.3	5.1	-0.5	15.4	25	-2.4	17	394	16	+16	54	
Puyssegur Point	43	10.5	5.3	7.9	..	14.5	25	1.5	6	186	26	+13	25	
Stephens Island	187	11.2	7.0	9.1	..	13.5	24	-2.6	20	150	17	+66	65	
Riwaka, Motueka	8	12.0	1.3	6.7	-0.3	15.4	26	-3.3	20	152	15	+7	48	
Tapawera	146	11.0	-0.5	5.3	..	14.2	1	-5.3	20	142	16	..	27	
Appleby	17	11.9	2.0	7.0	-0.2	14.8	26	-2.5	20	99	13	+8	28	
Nelson Airport	2	11.9	1.1	6.5	+0.1	15.0	26	-3.6	20	120	13	+29	32	
Rai Valley	79	11.9	0.5	6.2	+0.2	16.1	26	-5.4	20	222	12	+39	59	
Moutere Hills	110	11.5	4.7	8.1	+0.3	14.7	29	1.2	15	107	12	+3	27	
Blenheim Airport	27	12.8	1.5	7.2	+0.5	16.5	25	-3.9	20	77	11	+6	38	
Blenheim	4	13.1	1.9	7.5	+0.4	17.4	24	-3.4	20	81	10	+15	41	
Waihopai Power Station	262	11.0	0.2	5.6	-0.4	16.2	24	-5.0	20	75	9	-4	27	
Vernon Lagoons	2	13.0	1.6	7.3	+0.5	17.0	24	-3.9	20	67	9	..	35	
Lake Grassmere	2	11.7	5.0	8.4	+1.1	16.4	25	-0.7	21	56	11	-10	28	
Cape Campbell	3	11.8	6.9	9.4	+0.9	14.6	28	3.8	21	80	12	+4	37	
Hanmer Forest	387	9.3	-0.7	4.3	+0.6	17.6	25	-6.0	15	106	15	+2	20	
Molesworth	893	6.5	-3.5	1.5	+0.0	12.4	25	-7.8	15	27	6	-34	7	
Kaikoura Flats	24	12.0	2.4	7.2	..	17.9	26	-2.0	20	66	8	..	18	
Kaikoura	108	11.1	6.0	8.6	+0.8	17.0	25	2.9	20	41	8	-40	17	
Arthurs Pass	738	5.3	-1.0	2.2	..	10.0	25	-6.6	14	156	17	-121	27	
Balmoral Forest	198	11.1	0.4	5.8	+1.3	17.5	25	-4.9	15	42	12	-22	15	
Hawarden	244	..	..	..	..	..	..	..	..	35	..	..	15
Waiau	137	11.8	0.4	6.1	..	18.8	2	-5.3	15	54	13	..	15	
The Hermitage, Mt Cook	765	5.6	-1.2	2.2	+0.3	13.8	24	-5.8	17	274	22	+30	42	
Mt John	1027	..	..	..	..	..	..	..	..	..	..	..	..
Craigieburn Forest	914	6.3	-1.6	2.4	+0.9	12.6	24	-6.0	20	118	12	-6	37	
Lake Coleridge	364	9.6	0.2	4.9	+1.0	16.5	24	-4.0	20	84	17	+3	16	
Highbank Power Station	336	9.5	3.2	6.4	+0.8	15.8	24	-1.7	15	83	17	+4	15	
Hororata Substation	192	11.5	1.0	6.3	+1.8	19.9	24	-4.5	20	60	18	-6	14	
Winchmore	160	10.5	1.4	6.0	+1.3	18.5	24	-3.2	17	101	16	+40	28	
Peel Forest	274	10.3	0.1	5.2	..	17.1	24	-4.4	20	89	19	..	16	
Ashburton	101	11.1	1.6	6.4	+1.2	18.8	24	-4.0	20	85	15	+24	25	
Waipara	64	..	..	..	..	..	..	..	..	..	..	..	..
Ashley Forest	107	11.0	2.9	7.0	+0.8	17.3	2	-1.6	20	56	12	-15	15	
Rangiora	46	11.3	0.8	6.1	+0.7	17.2	2	-3.5	20	48	15	-5	19	
Darfield	195	10.9	2.5	6.7	+1.7	17.1	24	-2.6	15	72	15	+6	16	
Eyrewell Forest	158	10.7	0.4	5.6	+1.0	17.1	2	-3.7	17	60	10	-6	17	
Christchurch Airport	30	11.0	0.3	5.7	+0.3	17.6	25	-3.5	20	58	14	-3	22	
Templeton	46	10.8	1.7	6.3	..	17.9	24	-3.5	20	81	12	..	20	
Christchurch	7	11.6	1.8	6.7	+0.8	18.8	24	-2.8	14	81	13	+23	34	
Bromley, Christchurch	9	10.9	2.9	6.9	+0.5	15.7	26	-2.4	20	61	16	+5	26	
Mt Pleasant	137	11.1	5.4	8.3	+0.8	17.4	24	1.0	20	84	15	+10	26	
Lincoln	11	..	..	..	..	..	..	..	..	..	..	..	..
Akaroa	3	..	..	..	..	..	..	..	..	..	..	..	..
Lake Tekapo	683	5.9	-1.8	2.1	+0.4	13.0	24	-8.2	17	70	15	+17	18	
Lake Pukaki	556	6.4	-0.8	2.8	+1.7	12.4	24	-4.4	17	70	14	..	15	

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		A Max.	B Min.			Maximum	Date	Minimum	Date					Amount	Date
	Metres	°C	°C	°C	°C	°C	°C	mm		mm	mm	mm	Hrs		
Fairlie	304	9.4	-2.2	3.6	..	17.2	24	-5.9	20	60	11	..	16	10	..
Twizel	457	6.5	-3.5	1.5	+0.7	14.0	29	-8.0	17	61	14	..	14	29	..
Ikawai	70	10.4	0.7	5.6	+1.1	18.0	1	-4.0	20	86	12	..	27	5	..
Geraldine	119	10.8	-0.3	5.3	..	17.1	1	-4.2	20	97	15	..	28	11	..
Orari Estate	81	10.4	0.6	5.5	+1.0	18.0	24	-3.3	20	99	18	+41	29	11	..
Temuka	24	10.9	0.7	5.8	+0.8	17.1	24	-3.3	17	100	14	+54	26	11	..
Timaru Airport	26	10.6	0.3	5.5	+0.8	16.8	24	-3.8	20	82	14	+39	18	10	..
Adair	85	10.2	3.1	6.7	+1.0	16.8	24	-0.6	20	79	15	+36	16	10	..
Timaru	17	9.9	1.6	5.8	+0.5	15.0	26	-2.0	17	70	14	+29	13	10	89
Waimate	61	11.0	2.0	6.5	+0.6	17.5	25	-2.6	20	82	14	+39	18	5	..
Kurow	207	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Oamaru Airport	30	10.0	1.9	6.0	+1.0	15.9	24	-1.4	17	70	14	+34	19	5	81
Tara Hills, Omarama	488	7.0	-2.5	2.3	+1.0	13.1	2	-8.2	20	33	12	+5	10	30	92
Lake Hawea	350	7.5	0.8	4.2	+0.5	13.8	24	-3.5	21	79	15	+21	18	30	..
Wanaka	296	8.2	-0.3	4.0	+0.5	13.7	1	-5.7	20	62	17	+9	15	30	..
Queensberry	277	7.8	0.0	3.9	..	14.8	24	-5.2	20	40	17	..	14	30	..
Bendigo	200	8.4	-0.4	4.0	..	15.5	24	-6.8	20	36	17	..	16	30	..
Naseby Forest	610	5.6	-2.7	1.5	-0.1	12.8	1	-8.6	17	101	15	+68	25	10	..
Ranfurly	427	7.3	-1.4	3.0	..	16.1	28	-6.0	20	61	15	..	16	30	56
Herbert Forest	61	10.7	0.8	5.8	+1.0	17.0	1	-3.4	20	105	17	+43	23	10	..
Palmerston	21	10.1	-0.1	5.0	+0.4	18.3	1	-4.7	17	153	18	..	37	30	68
Cherry Farm Hospital	6	10.1	1.7	5.9	+0.5	16.7	1	-1.7	17	131	17	+85	27	30	..
Taiaroa Head	72	9.4	5.3	7.4	+0.6	15.0	1	2.5	15	122	19	+74	19	30	..
Invermay, Taieri	30	9.6	1.6	5.6	..	17.5	24	-3.9	17	208	20	..	41	30	58
Berwick Forest	18	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dunedin Airport	1	10.0	0.2	5.1	+0.7	18.5	24	-4.3	20	136	19	+90	33	30	67
Musselburgh, Dunedin	2	9.8	3.5	6.7	+0.4	15.3	2	0.2	17	163	19	+107	32	30	59
Te Anau	215	8.3	1.3	4.8	+0.9	14.0	25	-4.5	13	70	18	-19	12	2	65
West Arm, Manapouri	232	5.8	1.6	3.7	+0.5	11.0	23	-2.5	16	231	20	..	37	1	..
Borland Burn	183	8.1	-0.5	3.8	..	13.0	1	-6.0	16	106	22	..	26	30	..
Queenstown	329	7.6	0.2	3.9	+0.2	13.2	1	-3.6	20	39	18	-25	11	30	58
Queenstown Airport	349	7.4	-1.8	2.8	+0.0	13.4	1	-7.0	16	33	11	-17	10	30	..
Otama	183	7.5	0.7	4.1	..	14.5	1	-4.4	13	87	15	+39	29	30	..
Cromwell	213	7.9	-1.3	3.3	+0.4	13.9	24	-5.3	9	38	13	+15	16	30	86
Northburn	210	8.4	-1.0	3.7	..	15.2	24	-5.3	20	35	15	..	14	30	..
Clyde Dam	160	8.2	-0.8	3.7	..	14.3	2	-8.1	20	28	16	..	15	30	..
Ophir	305	7.8	-2.4	2.7	+1.0	14.2	1	-7.9	20	40	6	+22	17	30	..
Moa Creek	427	..	..	..	..	..	..	..	..	51	..	+36	20	30	..
Earnsclough	152	8.4	-2.4	3.0	+0.7	15.6	2	-7.1	20	30	12	+12	15	30	..
Alexandra	141	8.2	-1.6	3.3	+0.7	14.5	29	-5.4	20	30	14	+15	15	30	70
Roxburgh Power Station	110	9.0	1.2	5.1	+0.8	15.0	24	-4.0	13	45	7	+20	24	30	..
Beaumont	46	8.8	-0.2	4.3	..	16.2	24	-4.4	5	93	18	+29	32	30	..
Mahinerangi Dam	396	7.6	0.3	4.0	+0.7	14.9	8	-5.5	17	157	19	+96	42	10	..
Tapanui	226	8.5	1.7	5.1	+0.3	14.3	1	-3.0	16	153	20	+87	59	30	..
Taieri Mouth	15	9.7	2.5	6.1	+0.6	16.5	1	-2.7	17	163	18	+110	35	3	..
Tuatapere	27	9.9	1.5	5.7	..	16.5	24	-2.7	12	80	13	..	25	30	..
Otautau	55	9.2	0.5	4.9	+0.2	15.8	1	-4.7	16	112	13	+36	31	30	59
Winton	44	9.4	1.1	5.3	+0.1	15.8	24	-5.3	12	75	13	+27	17	3	72
Gore	123	8.3	1.6	5.0	+1.0	14.4	1	-2.5	13	63	19	..	19	30	72
Hokonui Forest	46	9.2	1.2	5.2	+0.3	14.4	1	-4.0	16	88	18	+22	24	3	..
Woodlands	47	9.3	1.7	5.5	+0.4	14.4	1	-2.6	12	76	24	..	16	3	..
Invercargill Airport	0	9.5	0.9	5.2	+0.3	16.3	24	-3.9	16	78	18	+9	17	3	79
Tiwai Point, Bluff	5	9.7	2.7	6.2	+0.4	16.0	24	-1.5	5	102	21	..	16	30	..
Stewart Island	3	9.5	3.2	6.4	..	15.0	24	-1.9	17	153	27	..	32	30	..
Milton	18	9.1	1.1	5.1	+0.8	15.4	1	-3.1	17	159	20	+108	34	30	..
Finegand, Balclutha	6	9.0	1.6	5.3	+0.7	14.7	1	-2.6	17	126	20	..	35	3	65
Owaka	5	9.6	1.5	5.6	..	15.0	1	-3.8	17	182	19	..	52	3	..
Nugget Point	129	8.6	3.6	6.1	+0.5	13.3	1	0.4	5	148	22	+87	44	3	..
Tautuku	61	9.6	3.0	6.3	..	16.0	24	-1.5	17	121	23	..	27	30	..
Nandi Airport, Fiji	19	28.5	17.1	22.8	-0.8	31.3	10	11.7	24	6	2	..	5	10	249
Rarotonga Airport	7	25.3	19.6	22.5	+0.8	28.6	16	15.3	3	216	14	+119	97	1	151
Totokoitu, Rarotonga	9	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Raoul Island	38	19.0	13.1	17.3	+1.1	21.3	4	9.8	26	94	25	-69	16	9	164
Campbell Island	15	7.5	3.8	5.7	+1.1	10.4	1	-4.9	4	93	31	-14	10	7	8
Waitangi, Chatham Island	44	11.7	6.7	9.2	+1.5	13.7	26	3.2	19	134	26	+55	44	6	90
Scott Base, Antarctica	16	-18.1	-32.5	-25.3	+4.5	-9.7	17	-43.6	28	..	..	..	..	..	..

LATE RETURNS AND CORRECTIONS

Tauranga Airport 06/1981	4	16.1	7.1	11.6	+1.5	19.7	4	1.2	22	202	15	+70	35	6	118
Te Puke 06/1981	91	15.4	6.9	11.2	+1.4	19.1	4	-0.6	22	271	18	..	50	12	90
Ardmore 06/1981	30	16.1	6.9	11.5	+1.2	19.9	4	-2.0	25	164	22	+19	32	12	..
Huntly 06/1981	34	15.2	7.2	11.2	..	19.5	4	-0.8	26	206	..	..	59	2	..
Ruakura, Hamilton 06/1981	40	15.2	5.5	10.4	+1.5	19.3	4	-2.6	25	193	20	+61	24	28	98
Port Taharoa 05/1981	27	17.8	10.4	14.1	+0.4	21.8	9	6.0	24	131	13	..	44	31	..
Port Taharoa 06/1981	27	..	..	..	..	..	..	..	..	200	..	..	..	..	..
Pureora Forest 06/1981	549	10.9	5.2	8.1	+2.1	15.6	3	-4.0	25	283	20	+87	46	7	..

CLIMATOLOGICAL TABLE—Summary of the Records of Temperature, Rainfall, and Sunshine for July 1981—continued

Station	Height of Station Above M.S.L.	Air Temperature 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
		Metres	°C	°C	°C	°C	°C	°C	°C	mm	mm	mm	Hrs		
LATE RETURNS AND CORRECTIONS															
Lower Retaruke 02/1981	223	24.0	11.9	18.0	+1.0	27.4	28	5.6	21	74	12	..	28	12	..
Lower Retaruke 03/1981	223	23.1	12.3	17.7	+2.1	28.1	2	1.1	30	151	14	..	62	5	..
Lower Retaruke 04/1981	223	20.3	8.9	14.6	+2.0	24.4	16	3.1	1	91	15	..	31	29	..
Lower Retaruke 05/1981	223	15.5	3.3	9.4	-0.2	21.9	9	-3.2	25	72	11	..	17	31	..
Lower Retaruke 06/1981	223	13.1	4.8	9.0	+1.8	17.1	15	-4.2	25	234	22	..	35	4	..
Chateau, Mt Ruapehu 02/1981	1119	18.3	7.4	12.9	+0.7	21.8	22	0.5	19	..	..	..	..	..	..
Chateau, Mt Ruapehu 03/1981	1119	16.8	8.0	12.4	+1.7	23.0	1	-0.5	30	..	..	..	..	..	..
Chateau, Mt Ruapehu 05/1981	1119	11.0	1.2	6.1	+0.6	15.5	6	-3.5	14	..	..	..	..	..	..
Mangamutu, Pahiatua 06/1981	116	13.3	5.9	9.6	+2.0	18.2	4	-1.5	21	163	19	+23	38	3	..
Waingawa, Masterton 06/1981	114	12.9	6.1	9.5	+1.9	20.2	3	0.1	26	236	24	+129	71	6	47
Hastings 06/1981	12	15.0	6.6	10.8	+1.8	24.0	3	-1.9	26	140	18	+61	38	13	..
Wharite Peak 06/1981	914	6.8	3.3	5.1	+1.3	12.4	3	-1.0	25	307	27	+104	53	6	..
Foxton 06/1981	3	..	..	..	..	..	..	..	..	114	18	+23	19	3	..
Waitare Forest 06/1981	3	13.8	6.1	10.0	+1.6	17.0	2	-3.0	25	120	19	+34	24	2	..
Stratford Dem. Farm 06/1981	311	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Franz Josef 06/1981	122	12.7	3.0	7.9	+0.9	18.0	14	-1.0	11	289	14	-8	83	26	..
Waihopai Power Station 06/1981	262	11.5	2.3	6.9	+0.5	18.6	3	-2.8	10	94	11	+25	25	26	..
Kaikoura Flats 05/1981	24	13.6	4.2	8.9	..	21.5	11	-0.7	30	156	10	..	103	20	..
Kaikoura Flats 06/1981	24	12.4	4.4	8.4	..	25.1	2	-0.7	25	137	16	..	33	14	..
Ashley Forest 06/1981	107	11.2	4.3	7.8	+1.0	21.7	3	-0.6	25	107	13	+54	32	14	49
Christchurch 05/1981	7	14.0	4.2	9.1	+0.0	24.2	8	-2.5	30	38	11	-46	13	19	..
Christchurch 06/1981	7	11.6	4.5	8.1	+1.8	22.0	3	-0.7	25	95	16	+39	36	21	..
Bromley, Christchurch 06/1981	9	12.1	5.2	8.7	+1.9	20.1	3	-0.2	10	69	19	+16	22	21	..
Akaroa 06/1981	3	12.2	..	..	..	22.4	3	..	..	194	16	..	73	14	..
Kurow 06/1981	207	10.4	1.5	6.0	..	19.2	3	-2.8	25	58	11	..	17	14	..
Berwick Forest 05/1981	18	12.6	1.4	7.0	-0.5	24.2	10	-6.4	20	9	7	-55	3	12	..
Berwick Forest 06/1981	18	10.4	1.6	6.0	+0.8	15.8	3	-4.6	8	47	11	-14	22	2	..
West Arm, Manapouri 06/1981	232	6.4	2.4	4.4	+0.0	11.0	3	-1.5	10	256	16	..	50	18	..
Borland Burn 06/1981	183	8.3	-1.5	3.4	..	15.0	3	-8.0	7	75	21	..	28	2	..
Rarotonga Airport 06/1981	7	25.9	20.9	23.4	+1.0	28.2	23	17.5	13	30	17	-67	7	4	132
Totokoitu, Rarotonga 06/1981	9	25.6	21.0	23.3	..	27.8	23	17.6	27	38	17	..	17	10	..
Raoul Island 03/1981	38	25.1	21.2	23.2	+1.3	26.7	19	18.8	31	217	24	+85	87	13	151
Raoul Island 04/1981	38	23.6	18.6	21.1	+0.4	25.6	15	15.5	27	59	13	-65	30	12	189
Raoul Island 05/1981	38	21.4	16.6	19.0	+0.2	24.6	9	12.7	25	142	16	-3	59	27	130

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 rainday 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.

NEW ZEALAND WEATHER, JULY 1981

General—July was generally milder and wetter than usual throughout New Zealand.

South-easterly winds were more frequent than usual in both the north and south of the country this month, with north-westerlies also being more than usually frequent in the north. There were fewer strong winds than normal for July.

The prolonged spell of wet weather caused a severe shortage of feed in many farming areas, particularly the central and southern North Island. Lambing began towards the end of the month, and calving in some northern areas.

Heavy fog in the Auckland area closed airports at Auckland, Whangarei, Hamilton, Rotorua, and Taupo on the 2nd, and a second fog on the 22nd again disrupted services in the Auckland area.

A small tornado partly demolished a tavern roof in Ohaupo (Te Awamutu) on the 6th.

Rainfall—Rainfalls were above normal for most of New Zealand this month.

Areas receiving less than normal rainfall were: Northland; Auckland, parts of Waikato and western Bay of Plenty, and in the South Island, Kaikoura, northern and central Canterbury and parts of Central Otago. Some stations around Kaikoura recorded less than 50 percent of their normal rainfall.

This has been the wettest July on record for the Dunedin area. The following totals are new maximum July falls in the Dunedin area. They are expressed as percentage of normal and the year recording began follows in brackets: Centrewood 427 percent (1968), Blackstone Hill 424 percent (1915), Burnside 404 percent (1916), Ross Creek 336 percent (1929), Southern Reservoir 340 percent (1954), Dunedin Airport 292 percent (1966). The Botanical Gardens had 346 percent, the highest since 1966 only, and Musselburgh 291 percent, the highest since 1939. Some stations in the Balclutha area also had over 300 percent of normal rainfall this month.

Temperature—Mean temperatures were an average of 0.5°C above the July normal over the whole country.

There were two warm spells, the first at the beginning of the month and the second between the 24th and 30th. During the latter, parts of the South Island recorded mean temperature 4°C to 8°C above average, while temperatures were 2°–4°C above average over the rest of the country.

There was a marked cold spell between the 10th and 18th. This affected most of the country but particularly southern and central areas. Many parts of Otago had heavy snowfalls during this period and mean temperatures were 3°–5°C below average at times. Temperatures remained cool until the 23rd.

Sunshine—Sunshine hours were high in the north of the country and low in the south, with central areas recording close to normal sunshine.

Auckland City recorded 177 hours, its highest July total since records began in 1963, while Dunedin Airport had only 67 hours, its second lowest total for July for the same period. Timaru was also cloudy, recording its third lowest sunshine total for July since 1930.

WEATHER SEQUENCE FOR JULY 1981

A ridge extending from an anticyclone near Lord Howe island covered the North Island and the north of the South Island on the 1st of July. The weather was fine in these districts although a westerly airstream to the south brought some rain to Westland and Fiordland.

Rain spread to all districts except those to the east as two cold fronts within a trough moved across the country on the second and third. By the 4th a high pressure centre had developed to the south-

west of New Zealand and although the trough still covered much of the country, there was a general clearance in the weather.

A depression, with an associated cold front lay in the Tasman Sea on the 5th. Heavy rain fell in most areas, but particularly around the Cook Strait region. Rain continued to fall over much of the country during the next 3 days as the depression, now within a broad trough, moved eastwards.

By the 9th, two low pressure centres had developed to the south-west and east of the South Island, with a trough joining them. Rain fell in Westland and Southland while a front in the central Tasman Sea brought rain to some northern districts. Temperatures were cool.

By the 10th the western low pressure centre was centred in the Tasman Sea and rain fell in all districts except Westland, Nelson, Blenheim and Auckland, with temperatures remaining cool. The whole system continued to move north-west and formed a belt of low pressure across the North Island with centres still to the east and west of the North Island. Cool temperatures continued although rain cleared from all districts except those to the east and about Cook Strait. The system continued moving east and by the 12th lay off East Cape. Although there was some rain in isolated areas to the north and east, the rest of the country had fine, cool weather.

An anticyclone then developed to the south-west of the country bringing fine, cool weather to all districts on the 13th and 14th, although there were isolated falls in southern areas of both Islands.

Two small centres of low pressure developed over Norfolk Island and Stewart Island on the 14th, both with small associated cold fronts. As this system moved eastwards on the 15th, it brought isolated falls of rain, particularly in eastern districts. Temperatures remained cool.

An anticyclone over east Australia extended into the Tasman Sea on the 15th. By the 16th it was centred south of Lord Howe Island with a southerly to south-easterly flow onto New Zealand and rain fell in eastern districts and about Cook Strait.

On the 17th a complex trough, which developed in the southern Tasman Sea, moved onto the South Island with rain over most of the South Island and fine weather to the north. By the 18th two fronts within this trough lay across Cook Strait and the centre of the South Island. Rain began clearing to the South but there were some heavy falls in the North Island. This frontal system moved off the country on the 19th bringing a clearance to most districts except the central North Island and around Wellington.

The anticyclone which had been situated over the western Tasman Sea since the 16th, extended a ridge onto the South Island on the 19th resulting in fine, cool weather everywhere except East Cape and Gisborne which still had some rain. Fine conditions continued until the 23rd as the anticyclone moved onto the country.

Unsettled weather returned as two cold fronts crossed the country over the next 3 days. Many areas had rain, particularly those to the west. The second front crossed the country on the 26th and the rain cleared apart from some eastern areas. The anticyclone which had earlier covered the country still lay to the north east and mild temperatures continued in many areas.

A trough developed south of Australia on the 26th and by the 27th covered most of the Tasman Sea. Fronts within this trough brought rain to most of the country over the next 3 days.

By the 30th a deep depression had developed within this trough and it lay off the west coast of the South Island. Associated fronts lay across Fiordland and along the western coasts of both Islands. The whole country experienced unsettled weather over the next two days as the depression crossed the country to lie east of Banks Peninsula on the 31st.

J. S. HICKMAN, Director.

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