

SHORTER CONTRIBUTION

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SEASONAL WINDS AND WEATHER AT JACKSON'S AIRPORT,
PORT MORESBY

by C.A. Glendinning

Weather Office, Port Moresby

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1. INTRODUCTION

The reporting station at Jackson's Airport, Port Moresby, is located at $09^{\circ} 26'S$, $147^{\circ} 13'E$, about three miles from the northwest reaches of Bootless Inlet and four miles from the coast at its nearest point. It is shielded to some extent by coastal hills and the winds experienced at Port Moresby are probably a little stronger.

2. WINDS

The average velocity, in knots, and the percentage frequency of winds from the different directions, computed from observations taken at Jackson's Airport at the synoptic hours 0200, 0500, 0800, 1100, 1700, 2000 and 2300 G.M.T. daily for the years 1952 to 1957, are given in Table 1. Similar figures for the daily maximum gusts for the years 1953 to 1957 are shown in Table 2. It may be observed from Table 1 that for the period May to October the winds are predominantly from ESE to SSE and therefore known as 'Southeasters' and that their average velocity is about 10 knots. Although these 'southeasters' cannot be fully attributed to the trade winds as they are the resultant of the trade wind and sea breeze, they may be compared with the average velocity of 12 knots of the South East Trades of the South Atlantic for the same months. From visual observations of these Southeasters in exposed positions of the Port Moresby town locality, along Ela Beach from Paga Hill and off the coast towards Daugo Island, they would be much stronger than recorded at Jackson's.

By the end of May the Southeasters are usually firmly established, but the highest percentage of calms is recorded in April, just prior to this. In September the Southeasters are at their peak, being 70 percent of all winds, and calms are at their lowest, 19 per-

Table 1. Monthly average velocity in knots (A) and monthly percentage frequency (B) of winds from the different directions, from observations at the synoptic hours 0200, 0500, 0800, 1100, 1700, 2000 and 2300 G.M.T. for the years 1952-1957

	Cal	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
JAN	A	5	6	6	5	-	4	7	9	6	7	4	8	8	8	13	7
	B	37	2	1	4	-	<1	2	2	3	2	8	3	5	5	15	10
FEB	A	5	6	6	5	4	8	7	6	6	6	6	7	7	8	7	6
	B	37	<1	<1	<1	<1	<1	1	1	1	2	3	1	4	5	16	15
MAR	A	5	3	5	3	8	8	5	6	5	6	5	7	8	8	9	8
	B	37	1	1	<1	<1	<1	4	2	4	4	4	4	4	4	14	8
APR	A	4	3	3	5	5	6	9	8	6	6	6	7	7	7	6	5
	B	45	<1	<1	<1	4	1	12	6	4	4	4	1	1	2	6	4
MAY	A	3	4	2	4	5	9	10	10	7	6	6	5	5	6	4	6
	B	40	<1	<1	<1	<1	4	23	14	5	3	2	1	1	<1	2	1
JUN	A	4	4	3	4	4	10	10	10	6	6	6	7	4	5	2	5
	B	31	<1	<1	<1	1	10	32	15	2	2	1	<1	<1	<1	1	1
JUL	A	3	3	3	3	6	9	12	11	7	7	5	<1	0	3	3	3
	B	20	<1	<1	<1	1	11	44	14	2	1	<1	<1	0	<1	<1	1
AUG	A	2	4	4	2	5	8	12	10	8	7	9	7	3	3	3	3
	B	20	<1	<1	<1	1	8	40	16	3	2	<1	<1	<1	<1	1	1
SEP	A	3	5	5	4	4	10	13	13	9	7	7	2	3	4	4	4
	B	19	<1	<1	<1	1	9	42	19	2	1	1	<1	<1	<1	1	1
OCT	A	3	5	5	4	4	8	10	10	8	8	6	6	7	4	3	4
	B	30	<1	<1	<1	<1	4	24	17	6	5	2	<1	<1	<1	3	3
NOV	A	4	5	5	2	5	7	9	10	8	8	8	7	7	5	4	4
	B	37	<1	<1	<1	<1	2	13	11	7	6	4	1	1	1	6	3
DEC	A	6	5	5	4	1	6	9	9	6	7	7	7	6	5	6	6
	B	38	1	<1	<1	<1	1	7	7	7	5	4	2	2	3	7	7

Table 2. Monthly average maximum velocity in knots (A) and monthly percentage frequency (B) of gusts from each direction, from daily maximum gusts for the years 1953 to 1957

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
JAN	A	-	19	-	-	15	-	20	14	13	16	17	22	23	23	20
	B	-	1	-	<1	-	-	3	8	8	12	14	5	11	15	11
FEB	A	14	22	18	20	-	15	19	16	17	14	18	21	23	24	23
	B	2	<1	<1	<1	-	<1	2	2	5	10	13	14	13	23	12
MAR	A	16	-	-	-	-	-	16	13	13	15	17	17	24	27	29
	B	3	-	-	-	-	-	3	7	16	12	7	8	9	28	14
APR	A	-	17	16	-	12	16	19	17	13	14	15	18	22	20	15
	B	-	2	3	-	<1	3	29	9	13	9	4	5	3	7	5
MAY	A	14	-	-	-	-	17	20	23	13	12	14	15	-	10	14
	B	1	-	-	-	-	3	47	13	12	3	2	3	-	<1	1
JUN	A	-	-	-	-	15	21	23	16	16	15	18	-	-	13	15
	B	-	-	-	-	2	19	48	3	3	3	<1	-	-	1	<1
JUL	A	-	-	-	-	16	23	23	26	12	12	13	-	-	-	-
	B	-	-	-	-	<1	4	52	35	2	2	1	-	-	-	-
AUG	A	-	-	-	-	-	26	23	25	19	14	13	-	-	-	10
	B	-	-	-	-	-	2	55	32	<1	2	1	-	-	<1	<1
SEP	A	-	-	-	-	-	24	28	28	17	16	-	21	-	-	-
	B	-	-	-	-	-	8	51	36	2	2	-	<1	-	-	-
OCT	A	19	-	21	22	19	23	23	24	21	17	20	13	-	17	-
	B	<1	-	8	7	6	5	37	20	4	7	<1	<1	-	1	-
NOV	A	23	20	20	25	14	20	21	21	17	18	20	18	-	-	17
	B	1	1	<1	3	2	5	26	21	9	14	7	3	-	-	2
DEC	A	35	18	18	-	-	15	19	20	15	16	16	18	22	20	23
	B	1	3	1	-	-	<1	17	18	7	16	10	4	4	4	6

cent. The percentage of calms also at Jackson's is not truly indicative of the winds at Port Moresby coastal area, where southeasters continue throughout the night with unabated force over exposed positions. The highest average velocity of maximum gusts also occurs in September, at the peak of the southeasters.

The winds during the remainder of the year, November to April, are not so consistent and vary greatly in direction, particularly in the transitory periods between seasons. Even during the "north-westerly" months, January to March, the winds are spread over all points of the compass by sea breeze. The strongest north-westerlies are associated with tropical lows and cyclones in north Australia and in the Coral Sea, and the maximum gusts at this period are usually associated with squalls in this stream.

3. WEATHER

The year's weather at Port Moresby and Jackson's may also be divided into two seasons, the wet season from December to April, and the dry season from May to November. The dry season is characterised by predominantly southeast winds and low rainfall. The lowest rainfall recorded for this period since 1944 has been 742 points in 1957 and the highest 2698 points in 1952 (see Table 3). This season is also characterised by the consistent haze brought in by the southeasters. The haze is most probably of Australian origin but enhanced by salt particles collected during the wind's long run over the ocean and added to locally by the haze from grass fires. At the beginning and end of the southeast season early morning fog patches drift on to the air strip, but usually the visibility is not restricted for any length of time. When the southeasters become well established the occurrence of early morning fogs is rare.

The lowest minimum temperatures are also recorded during this season, from June to August, see Table 4. The maximum daily and monthly evaporation occurs during this period, at the peak of the southeasters.

The wet season is characterised by winds of varying directions. The highest rainfall during this season has been 5334 points in 1945-1946 and the lowest 2290 points in 1948-1949. During a greater part of the wet season a convergence zone lies off the coast of Papua from Abau towards the head of the Papuan Gulf. The activity and direction of movement of the zone varies. Difficulty is experienced in predicting its movement towards the coast. Unfortunately the observing of the movement of the zone towards Jackson's is restricted due to obstruction by coastal hills between Jackson's and the coast to the west and northwest. The arrival of this convergence zone is preceded by a sharp barometric rise and when

Table 3

(1) Dry Season (May to November) Rainfall at Jackson's Airport, Port Moresby

Year	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
Points	1441	1295	903	807	1694	1213	1517	943	2698	1152	883	1217	1164	742	1528

(2) Wet Season (December to April) Rainfall at Jackson's Airport, Port Moresby

Year	<u>1944</u>	<u>1945</u>	<u>1946</u>	<u>1947</u>	<u>1948</u>	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>	<u>1958</u>
Points	3000	5334	3556	3319	2290	3236	3896	2796	2338	3498	3172	4208	4707	2971	

(3) Average Monthly Rainfall at Jackson's Airport, Port Moresby for the period 1944 to 1958

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Points	526	854	672	759	216	183	73	149	167	155	330	654

Table 4

Average lowest monthly minimum temperature (A) and absolute lowest monthly minimum temperature (B) for the years 1943 to 1958 at Jackson's Airport, Port Moresby.

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
A(°F)	70.8	70.6	70.3	69.2	67.0	65.8	66.1	65.8	67.1	68.8	69.1	70.5
B(°F)	68.8	65.8	67.7	62.3	58.1	58.0	57.3	62.0	60.5	66.6	64.1	68.0
	(1949)	(1957)	(1951)	(1946)	(1953)	(1954)	(1946)	(1952)	(1952)	(1951)	(1945)	(1948)

this occurs during the forenoon the diurnal fall of pressure is completely masked. A sharp barometric rise and then steadying ahead of the zone indicates that the zone's movement towards the coast has stopped or that the zone has degenerated and will not influence conditions at Jackson's.

Another phenomenon of note during the northwest months is the squall known as the "guba". This squall descends on the Port Moresby area out of relatively calm overnight conditions and is usually, but not always, accompanied by rain. It is particularly severe in the Fairfax Harbour area of Port Moresby, where from visual observations the squalls may be accompanied by 40 to 50 knot winds. The winds recorded at Jackson's on such occasions are not indicative of the strength of the guba, as Jackson's does not appear to receive the full force of this squall.

During the period December to March, under conditions of light northwest gradient, fogs form over the swamps to the northwest of the airfield and drift down on Jackson's. On many occasions visibility varies considerably in drifting fog and on less frequent occasions visibility is reduced in thick fog until about 21.30 G.M.T. At the beginning and end of the southeast season patches of early morning fog drift on to the strip, but usually the visibility is not restricted for any great period. When the southeasters become well established the occurrence of early morning fogs is rare.