

Tropical Cyclone Sue 12/12/1975 to 16/12/1975

(i) General

"Sue" was the third cyclone of the season to operate in the Northwestern Australian Region. It was not an intense cyclone but was interesting because of the easterly component in its movement.

(ii) Development

From satellite photographs it was known that the Intertropic Convergence Zone (ITCZ) was located along 10°S in the region south of Indonesia at this time. "Sue" developed from one of the disturbed areas in the ITCZ on 12 December. It deepened for two days and then quickly dissipated. At no stage was "Sue" more than a weak cyclone although winds exceeding storm force were reported in its decaying stage.

During the lifetime of cyclone "Sue" the prevailing synoptic situation showed an intense subtropical ridge along 34°S with a developing low pressure trough off the west coast of Western Australia. A low pressure trough associated with the ITCZ but slightly southwards of it was also apparent.

The first anticyclonically curved isobar outside the system at maturity was 1008 mb.

(iii) Features of the Track (Fig. 3.1)

The most notable feature of the trajectory described by "Sue" was the continuous easterly component.

"Sue" had a lifetime of four days and in that time travelled a distance of about 2000 km.

The easterly movement of the cyclone is not readily explained for at the time surface ridging was occurring to the south of the system. The upper air evidence of steering is inconclusive for although Aireps at 300 mb and 250 mb indicated westerly winds over the area from 14 December, prior to that time the upper winds were probably southeasterly.

(iv) Rainfall

"Sue" did not pass over land although on 14 December it passed within 90 km of Christmas Island. The rainfall recorded at Christmas Island during the period of "Sue's" activity was 47 mm (12 December), 28 mm (13 December) and 3 mm (14 December).

(v) Winds

Of the ships in the area influenced by cyclone "Sue" only one, "British Tenacity", reported winds exceeding gale force and that on three occasions during one hour. The reports sent from the ship are summarised in Table 3.1.

Using Dvorak's method of cloud photograph interpretation it was estimated that winds of about 75 km/h would have been generated near the centre. This figure is considerably lower than that estimated by "British Tenacity".

At Christmas Island winds did not exceed 60 km/h.

(vi) Seas and Swell

On 13 and 14 December rough or very rough seas and a heavy swell were reported from Christmas Island. This sea action is consistent with the reported and estimated winds associated with the cyclone.

(vii) Satellite Analysis

Immediately prior to the appearance of cyclone "Sue" the Intertropic Convergence Zone (ITCZ) was oriented latitudinally at about 10°S in the region south of Indonesia (NOAA 4 orbit 4888 110212 GMT). On 12 December a convective cloud mass became detached from the southern side of the ITCZ (NOAA 4 orbit 4900 120112 GMT). Some organisation of this system occurred during the next two days but by 14 December it seemed that continued deepening was unlikely for the upper level outflow seemed to be becoming more unidirectional while the low level convective inflow which had never been strong had mostly disappeared (NOAA 4 orbit 4925 140107 GMT). Subsequently the cyclone did weaken becoming no more than a small mass of cumulonimbus on 16 December (NOAA 4 orbit 4950 160102 GMT).

A summary of data derived from the satellite photographs and classified according to Dvorak's method is given in Table 3.2.

Table 3.1 Selected Ship Reports

Ship	Position		Date/ Time (GMT)	Bearing/ distance from centre (km)	Wind Direction/ Speed (km/h)	Sea	Swell	Weather	Pressure (mb)
	°S	°E							
British Tenacity	9.7	113.0	151500	030/70	WNW 110	-	-	-	998
British Tenacity	9.7	113.0	151530	010/70	WNW 120	-	-	-	997
British Tenacity	9.7	113.0	151600	360/70	WNW 110	-	-	-	1000

Table 3.2 Data from Satellite Photographs

Satellite Name	Orbit Number	Date/Time (GMT)	Estimated posn. of centre		Final T No.	Min. Sea Level Pressure (mb)
			°S	°E		
NOAA 4	4900	120112	9.3	100.5	0.5	-
	4913	130207	10.2	103.0	1.5	-
	4925	140107	11.2	105.0	3	994
	4938	150202	11.1	109.9	3	994
	4950	160102	12.0	118.0	2	1003