

## **Tropical Cyclone Deidre 20/12/1973 to 25/12/1973**

### (i) General

"Deidre" was the fifth tropical cyclone of the 1973-74 season and the third to develop in the vicinity of Cocos Island. At no time did it cross land but during its developing stage the cyclone passed within 25 km of Cocos Island. "Deidre" moved generally westsouthwestward and was located west of 80°E by 26 December where it was renamed "Dalida" by the Mauritius Meteorological Service. The system was approaching maturity as it moved out of the Northwest Australian Region. No damage attributable to cyclone "Deidre" was reported by Cocos Island or ships at sea.

### (ii) Development

The tropical low which developed into cyclone "Deidre" was first detected some 250 km northnortheast of Cocos Island on 20 December. Gradually strengthening winds and falling pressures at Cocos Island provided synoptic evidence that the system was moving and deepening. At 221445 GMT the ship "British Unity" reported that it was passing through the cyclone with winds of Beaufort Force 10 to 12 (95 km/h to 118 km/h or greater) and the barometer reading had fallen to 985 mb. Thereafter "Deidre" continued to develop slowly until it reached maximum intensity on 26 December. It then began to degenerate and on 31 December was a weak low in the New Amsterdam Island area. This development curve was deduced mainly from the satellite cloud photographs as after 23 December there were no ship reports from the cyclone affected area.

The first anticyclonically curved isobar outside the mature cyclone on 26 December was 1010 mb.

### (iii) Features of the Track (Fig. 5.1)

"Deidre" was an identifiable system for about ten days and for the first five days it was located within the Northwestern Australian Region. In those five days it travelled a distance of about 2000 km. The track displayed no unusual features.

From its first location some 250 km northeast of Cocos Island the cyclone moved in a southerly direction but then after about 24 hours it veered towards a more westerly direction. This took the system past the northern side of Cocos Island. A westsouthwesterly trajectory was maintained until "Deidre" entered the Mauritius Region when it gradually reoured towards the south.

"Deidre" was quite slow moving in its incipient stages but after 22 December it travelled at a fairly constant rate of about 24 km/h while it developed.

Coincident with cyclone "Deidre's" veering to the west a major anticyclone became established near 37°S 95°E. With only minor fluctuations this anticyclone persisted while "Deidre" was an active system. No significant upper level movement of troughs and ridges was detected in the vicinity of the cyclone.

(iv) Rainfall

The only rainfall reporting station affected by "Deidre" was Cocos Island. Between 190001 GMT and 240001 GMT Cocos Island received a total of 127 mm of rain. All of this was probably attributable to cyclone "Deidre" as its cloud mass covered the Island until 24 December.

(v) Winds

Gale force winds were probably generated near the centre of the cyclone from 22 December. The first report of such winds was at 221445 GMT when the ship "British Unity" near 11.1°S 94.5°E reported westerly winds of Beaufort Force 10 to 12 (95 km/h to 118 km/h or greater). This ship must have been very close to the centre and in the band of maximum wind. At the same time Cocos Island some 280 km to the eastsoutheast reported a northeasterly wind of 35 km/h. At 222200 GMT the ship "Caprella" near 12°S 92°E reported southwest winds of about 75 km/h. No other reports of winds exceeding gale force were received but it is estimated using the Dvorak technique that the sustained winds probably reached 150 km/h by 26 December as "Deidre" moved out of the Northwestern Australian Region.

(vi) Seas and Swell

On 21 December Cocos Island reported rough seas and a moderate swell. Although the swell remained moderate for a further 24 hours the seas became moderate and then slight. The ship "British Unity" provided the only other report of seas and swell above moderate. In its report dated 221445 GMT the seas are mentioned as "very rough" and the swell "very heavy". This sea state is consistent with the winds then being experienced.

It is estimated that rough seas and a heavy swell would have been generated by cyclone "Deidre" from 22 December until it moved out of the Region.

(vii) Analysis of Satellite Photographs

The earliest indication that a system was developing to the northnortheast of Cocos Island was provided by photographs from satellites ESSA 8 and NOAA 2. Thereafter the development and movement of cyclone "Deidre" were monitored daily by further satellite photographs.

A summary of the satellite photograph analysis is given in Table 5.1. "Deidre" was a system which developed only slowly, about 0.5 T Number per day in Dvorak's scheme. It did not reach its peak intensity until at least six days after first becoming a T 2 system.

Table 5.1

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		
ESSA 8	22979	200252	10.0	98.0	2	1003
	22992	210343	11.8	96.6	2	1003
	23004	220239	12.0	96.2	3	994
	23017	230331	13.5	92.0	3.5	988
	23030	240421	13.7	88.1	4	981
	23042	250324	15.2	83.7	4.5	973
	23055	260410	16.0	78.7	5	964