

Tropical Cyclone Clara 20/04/1975 – 26/04/1975

(i) General

“Clara” was the tenth cyclone of the season to operate in the Northwestern Australian Region. It moved into the Region about midway between Cocos Island and Christmas Island and continued in a southsoutheasterly direction until it dissipated about 220 km west of Kalbarri.

At no stage was “Clara” of more than moderate intensity and no damage to shipping or any other installation was reported.

(ii) Development

Most of the data relating to the development of cyclone “Clara” was obtained from interpretation of the cloud photographs transmitted from the satellites ESSA 8 and NOAA 4. “Clara” developed from a circulation on the southern side of a broad convective cloud band which was associated with the Inter-Tropic Convergence Zone (ITCZ). Two days after this organisation began “Clara” reached an estimated minimum central pressure of about 985 mb.

Another feature of the surface synoptic situation prevailing while “Clara” was operating was the mobile high pressure cell which moved into the central Bight area on 23rd April. In the wake of a high cold front approached the west coast of Australia from the southwest. “Clara” apparently weakened while moving into the low level trough which preceded the front.

In the upper troposphere, winds in the vicinity of the cyclone were generally northwesterly as reported by several aircraft. This wind direction was consistent with those deduced from the various satellite photographs. All photographs showed the high cloud located on the poleward side of the system centre and gradually being sheared from it. Information from the middle troposphere near the cyclone was limited. However, before relaxing, a zonally oriented low pressure trough may have interacted with “Clara” on 21st and 22nd April.

(iii) Features of the Track (fig. 10.1)

“Clara” had a lifetime of six days but during the last two it was decaying and its effects were minimal. In this period it travelled about 2400 k in a generally southsoutheasterly direction and at a fairly constant speed of about 17 km/h. There are no unusual features to the track.

“Clara” assumed its southsoutheasterly track at the time when an intense anticyclone moved into the Bight region. The cyclone moved into the area of falling pressures on the western edge of the high and ahead of an eastward moving cold front. The upper

wind flow may have been a contribution to the movement of the cyclone as both possessed northerly and westerly components. However it seems as though the upper level ventilation above the cyclone was more instrumental in suppressing “Clara’s” development than in providing a positive steering mechanism.

(iv) Rainfall

The only records of rainfall associated with “Clara” came from Cocos Island and Christmas Island during the cyclone’s early stage. Rainfall totals for the 24 hour periods ending at 0001 GMT are given in Table 10.1. The heavy falls of rain which occurred on 22nd and 23rd April at Christmas Island were probably the result of convective activity associated with the feeder bands of the cyclone passing over the Island.

Table 10.1 Rainfall totals (mm) for 24 hour periods ending at 001 GMT at Christmas Island and Cocos Island during Tropical Cyclone “Clara”

Station	Date 20	Date 21	Date 22	Date 23
Christmas Island	3	29	37	45
Cocos Island	6	15	1	-

(v) Winds

The earliest confirmation of the satellite evidence that development was occurring came from the surface observations at Christmas Island. An increase in the wind speed occurred on 20th April with the winds backing to the north and reaching about 45 km/h by 210000 GMT. A series of reports from the ship “Surennes” at Christmas Island provided a continuous though distant on the developing system.

It was estimated by means of the Dvorak Dvorak technique that the maximum winds associated with “Clara” probably exceeded 90 km/h, however no reports received from locations near the centre of the mature cyclone. The only reports of winds exceeding gale force came from the ship “Neptune Jasper” at 240600 and 240900 GMT. At the time the ship was about 250 km to the east of the cyclone centre. All the other reports were from locations at least 360 km from the centre.

(vi) Sea and Swell

Rough seas and a heavy swell were generated early in “Clara’s” development. The ship “Surennes” at Christmas Island reported seas of 3 m and a 5 m northnorthwesterley swell continuously from 210600 to 211500 GMT.

The only other reports of rough seas and a heavy swell came from the ship “Neptune Jasper” which from 240600 to 250000 GMT experienced seas of 3 to 4 m and a swell of 4 to 5 m.

(vii) Satellite Analysis

“Clara” first appeared as a circulation to the southern side of a broad band of cloud associated with ITCZ on 20th April. Prior to this date the cloud band was evident but no definite circulations within it could be determined. As “Clara” moved southsoutheastward it gradually became a more intense system. The system centre moved under the Central Dense Overcast (CDO) which also became more extensive. At no time was an eye visible but some narrow feeder banding was apparent on 22nd and 23rd April.

The system was estimated to be T 4 in the Dvorak scheme in the photograph from ESSA 8 at 230254 GMT. This maximum intensity occurred three days after the system reached the T 2 stage. On 24th April considerable change had occurred in the cloud pattern as most of the higher level clouds had been blown ahead of the low level cloud which later indicated the cyclone centre. On 25th April only remnants of the system remained.

A summary of data taken from the satellite photographs is given in Table 10.2.

Table 10.2 Data from Satellite Photographs

Satellite Name	Orbit Number	Date/Time (GMT)	Estimated posn. of centre °S	Estimated posn. of centre °E	Final T No.	Min. Sea Level Pressure (mb)
ESSA 8	29080	200215	9.0	100.7	2	1003
	29093	210306	12.0	101.3	3	994
	29105	220203	15.4	104.8	3.5	988
	29118	230254	18.5	105.5	3.5	988
	29130	240150	22.4	107.0	3	994
	29143	250047	25	108.3	1.5	1003
	29155	260144	27.5	111.5	-	1005