

## **Tropical Cyclone Carol 03/05/1976 to 09/05/1976**

### (i) General

The last tropical cyclone of the 1975/76 season was "Carol". This system developed about a month after its immediate predecessor had filled. As an active tropical system it persisted in the region for four days although its remnants could be tracked for another week. At no stage did "Carol" threaten any land station and no reports of serious effects were received from shipping in the vicinity.

### (ii) Development

As was the case with "Bert" the development of tropical cyclone "Carol" was best documented in the satellite photographs received from the NOAA 4 satellite. On this occasion however the photographs were much more useful as the cloud system associated with "Carol" was generally located in a more central position.

From the available evidence "Carol" followed a typical development curve. It became organised on 3 May, reached its maximum intensity on 5 May and by 9 May had degenerated almost completely. A patch of cloud which could be considered a remnant of "Carol" persisted until 13 May in the general region where the cyclone dissipated.

The cyclone reached its peak intensity of about 988 mb some three days after it first formed. This is fairly normal for a southward moving system.

During its mature stage on 5 May the first anticyclonically curved isobar outside the system was 1010 mb.

### (iii) Features of the Track (Fig. 9.1)

"Carol" operated as a tropical system for six days and in that time travelled a distance of about 1700 km. Its movement was generally southerly until 8 May when it moved towards the westnorthwest. Throughout the six days "Carol" maintained a relatively constant speed of about 12 km/h.

While "Carol" was active the subtropical ridge was oriented along about 35°S latitude eastward of about 80°E longitude. West of that longitude the ridge was weaker allowing southern cold fronts to penetrate farther north. This zone of weakness was associated with an upper low pressure trough which was virtually stationary.

### (iv) Winds

According to reports received the nearest approach of a ship to the cyclone was 490 km. Only one ship "Cornish City" reported winds exceeding gale force and even these are not solely attributable to the influence of the cyclone. The tightening of pressure gradients to the north of the high pressure ridge as the cyclone moved south probably resulted in the increased wind strength. Ships directly influenced by "Carol" reported winds of 37 km/h or less. However, estimates of the wind derived from satellite

photographic evidence suggest that mean winds of about 90 km/h could have been produced near the centre.

(v) Seas and Swells

Rough seas and a heavy swell were probably generated by cyclone "Carol". Cocos Island and ships influenced by the cyclone reported moderate seas and swell. The ship "Cornish City" reported a 4.5-5.0 m swell on 5 and 6 May but this was probably related to the strengthening of the southeasterly winds.

(vi) Satellite Analysis

The analysis of cloud photographs taken by the NOAA 4 satellite provided most of the information regarding the development and movement of "Carol".

By 3 May a cloud mass which had existed near 7°S 90°E since 1 May was becoming organised into a cyclonic system. In the Dvorak scheme of interpretation it was designated T 1 with ongoing development indicated. Over the next three days deepening occurred at about the typical rate reaching a current intensity of 3.5 by 6 May. On the photograph NOAA 4 orbit 6729 060254 GMT the upper level outflow appeared to be more unidirectional across the system and the convective activity ahead of the cyclone had decreased. These factors are indicative of ongoing weakening which subsequently occurred and continued until 9 May when the system was no more than an area of low level clouds. A summary of this data is given in Table 9.1.

Table 9.1 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		
NOAA 4	6691	030201	7.5	92.0	1	1006
	6703	040101	9.5	91.8	2	1003
	6716	050156	11.3	90.0	3	994
	6729	060254	14.1	89.9	3	994
	6741	070151	16.0	90.0	2	1003
	6754	080249	17.3	90.0	1	1005