

## **Tropical Cyclone Alice 03/03/1976 to 13/03/1976**

### (i) General

"Alice" was the seventh tropical cyclone to affect the Northwest Australian Region in this season, and the fourth to develop over the Indian Ocean, move westward and dissipate without significantly affecting any land areas.

### (ii) Development

On the morning of 2 March 1976, satellite photos showed a tropical depression had formed near 15°S, 115°E. During the next two days it drifted westwards with little apparent change in intensity. At approx. 041300 GMT there were indications of development from the satellite photos. Intensification continued and at about 051700 GMT the cyclone was named "Alice". From satellite evidence intensification appeared to continue until approximately 071300 GMT. However, in subsequent photographs the cyclone appeared to have weakened as it entrained air associated with a field of stratocumulus. The resulting depression continued to exist and move westwards until finally dissipating near 13.5°S 83°E on 130100 GMT.

### (iii) Features of the Track (Fig. 7.1)

Movement in a westerly direction for the duration of its life was the main feature of this cyclone. The disturbance persisted from 020100 GMT to 130100 GMT and travelled approximately 3800 km. After the depression formed near 15°S 115°E it moved westward at approximately 12 km/h to 14.5°S 108.5°E at 041300 GMT where it became almost stationary and intensified. After 050100 GMT the cyclone moved west at approximately 9 km/h. At 060100 GMT it changed direction to the southwest. This was probably due to interaction with the northwesterly stream ahead of an upper trough.

A change of direction to the west after 071300 GMT suggested that the trough had moved rapidly eastwards leaving the cyclone embedded in the southeasterly stream to the rear of the trough. This was implied by the presence of a stratocumulus field immediately to the west of the cyclone, shown on satellite photos at approx. 070100 GMT. After 081300, the speed of movement of the depression increased to 15 km/h while its direction of movement remained west. This direction and speed persisted until "Alice" dissipated on 13 March.

### (iv) Rainfall

No ship reports were received which were close (within 100 km) to the cyclone centre. Some ships within 500 km reported moderate to heavy showers or rain periods at various times (see Table 7.1).

### (v) Winds

Due to the distances from reporting points, little wind information was received. The maximum reported wind speed was 56 km/h on 061000 GMT from a ship located approximately 250 km southsouthwest of the centre.

Very few reports of upper winds were received. The only information of direct relevance came from several aircraft. They were within 600 km of the centre, on 7, 8 and 9 March and reported wind speeds of 20 m/sec at 250 mb, suggesting a moderately developed outflow at that level.

(vi) Seas, Swell and Storm Surges

Again, lack of proximity to land masses or shipping resulted in little data about seas and swell. Christmas Island reported moderate to very rough seas between 060001 GMT and 081200 GMT. For the duration of the disturbance, a moderate westerly swell was reported from Christmas Island. After 080001 GMT Cocos Island reported a moderate southerly swell, which then persisted until the end of the disturbance. However, only slight seas were reported from Cocos Island.

Ships within 400 km reported seas to a maximum height of 2.5 m. Swell height reports reached a maximum of 6 m, reported from a ship approximately 330-400 km southwest of the centre on the 8th (see Table 7.1).

No storm surges were reported.

(vii) Satellite Photo Analysis

Development occurred fairly normally until approximately 070100 GMT. At that time an upper trough had passed to the east of the system centre, and the cyclone appeared to be moving into a field of stratocumulus produced by ridging in the wake of the trough. This not only inhibited development but changed the cyclone's direction of movement from southwest to westnorthwest. The system was degraded to a depression, which persisted for a number of days. One single reason for this was hard to find. It may have been due to movement out of the stratocumulus field, but this cannot be conclusively deduced from the photos. This system was part of a very extensive area of convective activity at 120100 GMT, which showed definite signs of dissipation by 130100 GMT. A summary of the satellite photo interpretation appears in Table 7.2.

Table 7.1 Selected Ship Reports

Ship	Position		Date/ Time (GMT)	Bearing/ Distance from centre (km)	Wind Direction/ Speed (km/h)	Sea (m)	Swell (m)	Weather	Pressure (mb)
	°S	°E							
Malasia	14.1	107.1	041800	330/180	240/37	2	3	Shower past hour	999.1
Malasia	15.6	108.1	050100	180/110	120/46	2.5	2.5	Rain in area	998.8
Malasia	17.7	104.7	061000	200/250	120/56	-	-	-	1000.0
British Tay	19.2	100.0	072200	240/220	160/46	2	-	Nil	1006.1
British Tay	19.7	100.7	080100	220/400	170/46	2.5	6	Shower in past hour	1007.3
British Tay	20.1	100.9	080400	220/330	170/46	2	6	Shower	1007.9

Table 7.

## 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	5914	020043	15.0	115.4	-	1003
	5927	030139	14.7	112,1	-	1003
	5939	040039	14.5	109.0	1	1003
	5952	050134	14.5	108.2	2	999
	5964	060034	14.7	105.7	3	994
	5977	070129	15.9	105.0	3.5	988
	5990	080224	17.2	102.9	2.5	999
	6002	090124	17.0	100.3	1.5	1003
	6015	100219	15.7	96.7	1.0	1003
	6027	110119	13.9	92.1	1.0	1003
	6040	120214	14	88	-	1006
	6052	130114	13.5	83	-	1007