



Australian Government
Bureau of Meteorology

Tropical Cyclone *John*

9 - 16 December 1999

Perth Tropical Cyclone Warning Centre
Bureau of Meteorology

A. Summary

Tropical Cyclone John was an intense early season cyclone that crossed the Pilbara coast between Port Hedland and Karratha near Whim Creek on 15 December. Extensive damage was done to the Whim Creek hotel. Some damage also occurred in neighbouring areas, however the communities of Dampier, Karratha, Roebourne and Wickham were fortunate to escape the most destructive winds near the centre of the cyclone.

Port Hedland experienced gale force winds for a period of 18 hours and near storm force winds with gusts to 124 km/h were observed for much of the 15 December. A maximum storm surge of 2 m was recorded by Port Hedland Authority at 0600 WST 15 December. At Karratha, on the western side of the circulation, the maximum wind gust recorded was 113 km/h and at Cape Lambert winds averaged 150 km/h for 5 hours with a maximum gust of 210 km/h (Robe River Iron Ore AWS data).

B. Meteorological Description

Intensity Analysis

The formation of Tropical Cyclone *John* was associated with the first cross equatorial northwest surge into the monsoon trough for the season. The low was located near the upper ridge axis beneath an anticyclonic gyre. This provided favourable environment for strong ventilation of the developing circulation. Following formation the cyclone intensified rapidly as it moved to the south southwest towards the Pilbara coast.

John was at its peak intensity (category 5, 915 hPa) in the period just prior to landfall, weakening slightly as it crossed the coast between Port Hedland and Karratha (just to the west of Whim Creek) on 0830 WST 15 December. At the time of coastal crossing it was estimated to have a central pressure between 930 and 940 hPa.

Motion

John formed on the western side of a mid-level ridge axis which stretched from the northern Interior, through the Northern Territory, to west Irian. A strong trough at 500 hPa was located off the west coast during the period 10-12 December but during this period *John* was still under the influence of the ridge and moved in a south southwest direction. Also during this period westerlies associated with this trough extended to

equatorial latitudes and had captured *John*. This trough relaxed but a second trough in the westerlies approached *John* late on the 14 December, capturing it in the westerly flow and causing a change in direction towards the south southeast. The remnants of *John* were swept further to the southeast in a strong northwesterly flow after making landfall.

Structure

The circulation was in a low shear environment throughout its lifetime over water. It was a large system with a radius of gales observed to be approximately 250 km during the time of maximum intensity. It had a large well defined eye in the 24 hour period prior to coastal crossing. The radius of maximum winds was estimated to be 30 km.

C. Impact

Extensive damage was done to the Whim Creek hotel. Some damage also occurred in neighbouring areas.

Until about 10 hours prior to landfall, *John* was moving directly towards the towns of Karratha and Dampier. If *John* had not turned away to the southeast the damage to the communities of Dampier, Karratha, Roebourne and Wickham would have been far worse.

D. Observations

The maximum recorded winds were observed at Cape Lambert with 210 km/h. Port Hedland also recorded winds up to 124 km/h.

A storm surge of 2 m was measured at Port Hedland with the approaching cyclone.

Accumulated falls exceeded 200 mm along the track between Whim Creek and Newman.

Table 1. Best track summary for *John*, 09 - 16 December 1999.

Note: Add 8 hours to convert to WST.

Year	Month	Day	Hour (UTC)	Position Latitude S	Position Longitude E	Max wind 10-min knots	Central Pressure hPa	Rad. of Gales nm
1999	12	9	0700	10.5	122.5	25	1003	
1999	12	9	1000	10.5	122.1	25	1003	
1999	12	9	1600	10.9	121.2	25	1003	
1999	12	9	1900	11.2	121.0	25	1002	
1999	12	9	2200	11.5	120.9	25	1002	
1999	12	10	0400	11.9	120.7	25	1002	
1999	12	10	0700	12.5	120.6	25	1000	
1999	12	10	1000	12.6	120.6	25	1000	
1999	12	10	1600	13.0	120.5	25	1000	
1999	12	10	2200	13.3	120.1	30	998	
1999	12	11	0400	13.5	120.0	30	998	

1999	12	11	0700	13.5	120.0	30	998	
1999	12	11	1000	13.6	119.9	30	998	
1999	12	11	1300	13.6	119.9	35	995	80
1999	12	11	1600	13.7	119.8	35	995	80
1999	12	11	1900	13.8	119.7	50	985	80
1999	12	11	2200	13.9	119.6	50	985	80
1999	12	12	0100	14.0	119.4	55	980	80
1999	12	12	0400	14.2	119.4	60	975	80
1999	12	12	0700	14.5	119.4	60	975	80
1999	12	12	1000	14.8	119.4	60	975	80
1999	12	12	1300	15.1	119.4	60	975	80
1999	12	12	1600	15.3	119.3	60	975	80
1999	12	12	1900	15.6	119.2	60	975	95
1999	12	12	2200	15.9	119.2	65	970	95
1999	12	13	0100	16.3	118.9	70	965	95
1999	12	13	0400	16.6	118.6	70	965	110
1999	12	13	0700	16.8	118.6	70	965	135
1999	12	13	1000	17.1	118.5	70	965	135
1999	12	13	1300	17.3	118.3	75	960	135
1999	12	13	1600	17.5	118.1	85	950	135
1999	12	13	1900	17.7	118.0	95	940	135
1999	12	13	2200	17.9	117.8	100	930	135
1999	12	14	0100	18.2	117.6	110	915	135
1999	12	14	0400	18.5	117.5	110	915	135
1999	12	14	0700	18.9	117.4	110	915	135
1999	12	14	1000	19.2	117.3	110	915	135
1999	12	14	1300	19.5	117.3	110	915	135
1999	12	14	1600	19.8	117.3	110	915	135
1999	12	14	1900	20.1	117.4	100	930	135
1999	12	14	2200	20.5	117.5	95	940	135
1999	12	15	0100	20.8	117.6	85	950	135
1999	12	15	0400	21.2	117.8	75	960	135
1999	12	15	0700	21.6	118.0	65	970	110
1999	12	15	1000	21.9	118.4	65	970	90
1999	12	15	1300	22.1	118.8	60	975	80
1999	12	15	1600	22.4	119.2	55	980	65
1999	12	15	1900	22.7	119.6	50	985	55
1999	12	15	2200	23.1	120.2	40	990	
1999	12	16	0100	23.4	120.6	35	995	

Figure 1. Track of Severe Tropical Cyclone *John*, 9 -16 December 1999.
All times in WST.

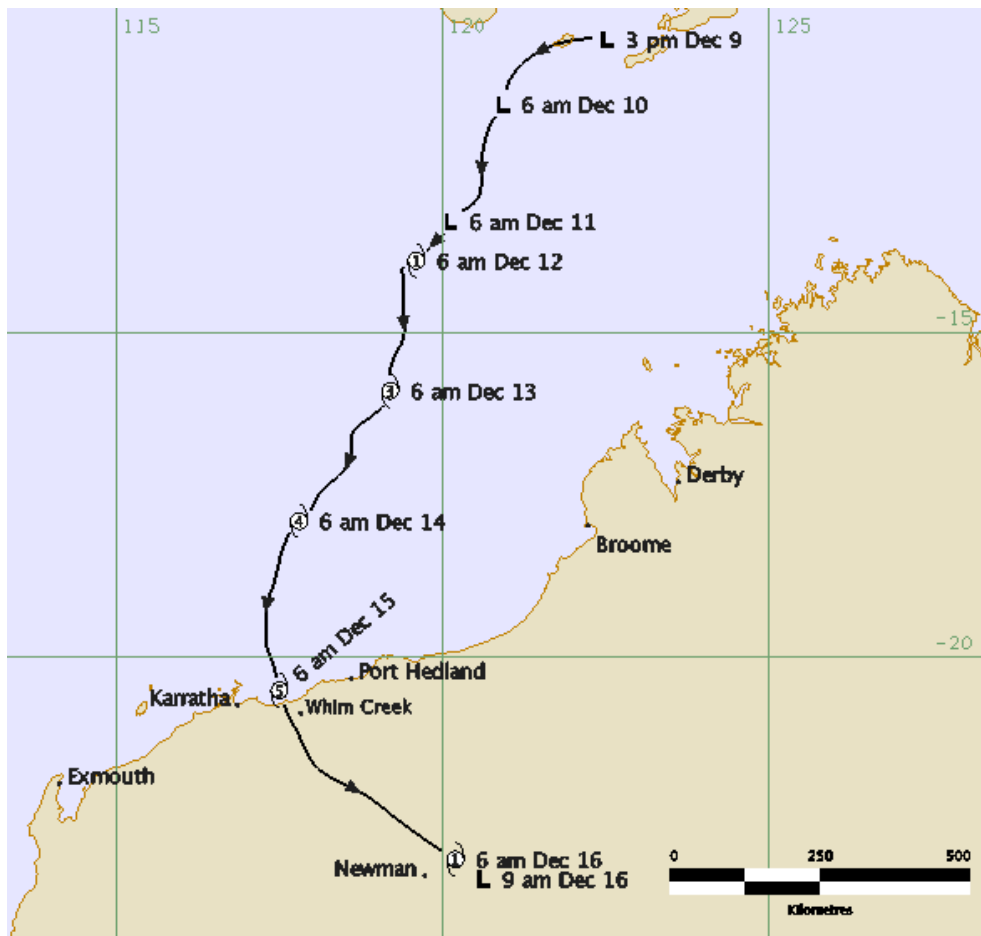


Figure 2. Satellite image at 2330 WST 14 December 1999.

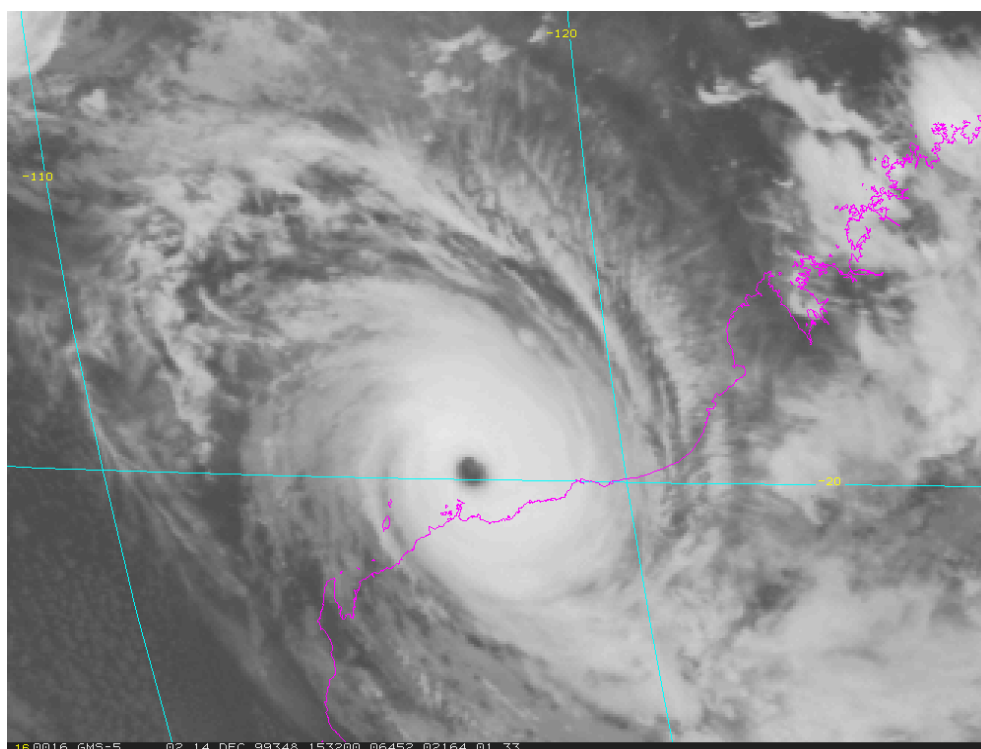


Figure 3. Port Hedland radar image at 0540 WST on 15 December showing the eye of Severe Tropical Cyclone *John* off the Pilbara coast.

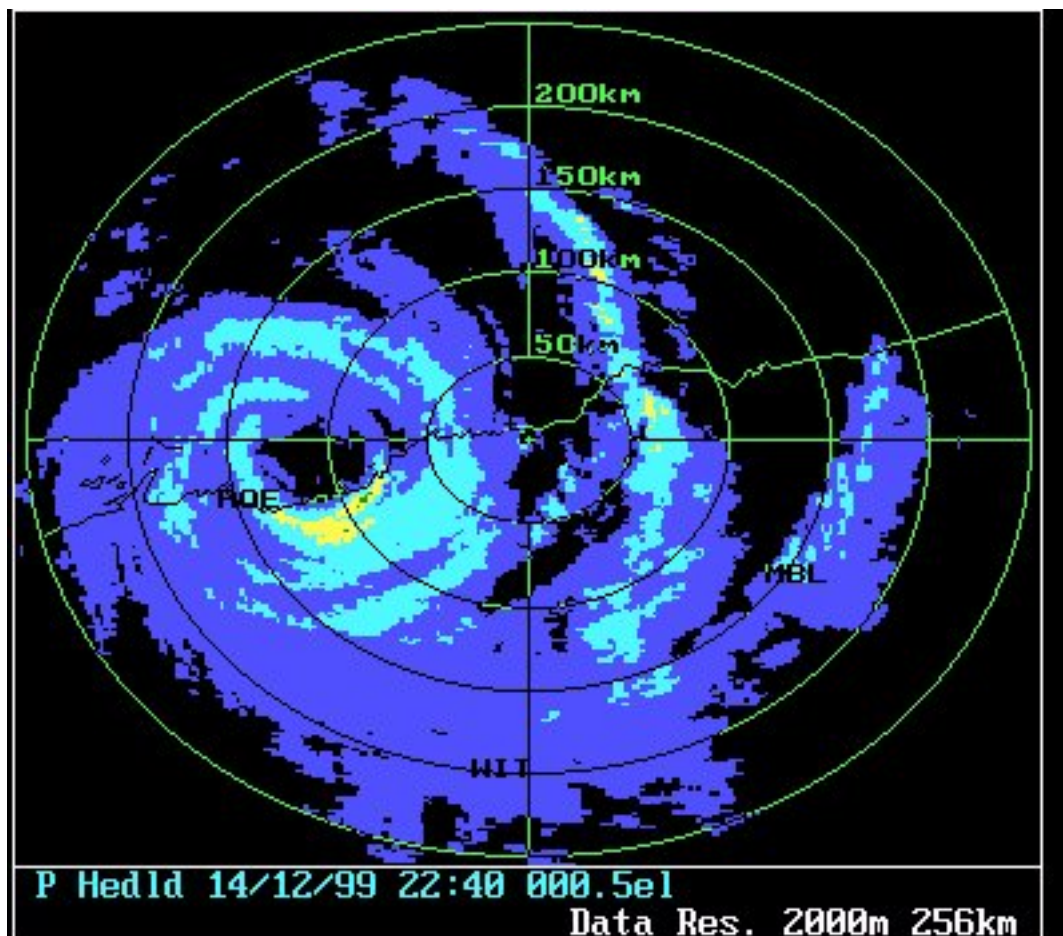


Figure 4. Damage to the Whim Creek Hotel. Photo courtesy of WA Newspapers.

