Australian Government
Bureau of Meteorology

Severe Tropical Cyclone *Chloe*

3 – 9 April 1995

Perth Tropical Cyclone Warning Centre
Bureau of Meteorology

A. Summary

Tropical cyclone *Chloe* was the most intense cyclone to develop in the Australian region during the 1994-95 season reaching category 5 intensity over open waters north of the Kimberley. *Chloe* weakened prior to crossing an uninhabited section of the north Kimberley coast between Kuri Bay and Koolan Island on 8 April. It was a very small cyclone with gale-force winds extending only about 80 km from the centre and displayed the rapid intensification and weakening phases typical of 'midget' tropical cyclones.

Chloe caused vegetation damage in a swath of about 30 km across as it crossed an uninhabited section of the north Kimberley coast between Kuri Bay and Koolan Island

B. Meteorological Description

Intensity analysis
A low initially formed in an active monsoon trough to the east of Timor on 3 April and moved westward, north of an upper-level ridge. Easterly shear and passage over the mountains of Timor initially retarded development, however rapid cyclogenesis followed late on 4 April once the low moved west of Timor over the Savu Sea. During this period, the middle-level ridge was displaced northwards by an amplifying trough over southeast Australia, reducing shear over the developing low. *Chloe* was named at 1100 WST (0300 UTC) 5 April after which it stalled and turned southeastwards in response to strengthening northwesterly flow around 500 to 400 hPa. *Chloe* intensified rapidly to hurricane intensity within 24 hours then further to its peak intensity of 205 km/h (110 knots) at 1400 WST (0600 UTC) 7 April as it moved over the open waters of the Timor Sea.

Late on 7 April, *Chloe* began to weaken under the influence of increasing northwesterly shear and at 1100 WST (0300 UTC) on 8 April the cyclone crossed an uninhabited section of the north Kimberley coast causing a swath of vegetation damage 30 km wide. *Chloe* then weakened rapidly and turned to the southwest in response to low-level northeasterly flow. *Chloe's* central pressure was estimated to have risen from 955 hPa at landfall to 1000 hPa 12 hours later, as its remnants dissipated into a weak tropical low inland of Derby.

Dvorak (1984) satellite intensity analysis of *Chloe* yielded a peak Data T-Number of 7.0 over a six-hour period. This corresponds to a central pressure of 930 hPa using

the empirical pressure-wind relationship derived by Love and Murphy (1985) for small cyclones over the Australian Northern Region, whereas the standard Atkinson and Holliday (1977) pressure-wind relationship would yield a central pressure around 900 hPa for this system. For a given intensity, central pressure estimates vary with cyclone size and environmental pressure, hence the estimated maximum wind (mean or gust) is generally a better measure of intensity than central pressure.

Motion and Structure

In the early stages *Chloe* was located to the north of the ridge at all levels. The ridge pattern was fairly zonal at first but later on 4 April two major troughs came into play, one associated with a cut-off low in the east Indian Ocean and the other due to an amplifying system over southeast Australia. This had the effect of pushing the mid-level ridge north thus *Chloe* moved southwards around the shoulder of the ridge. During this period a second tropical low was moving west southwest across the Bonaparte Gulf and this made determining the synoptic flow affecting *Chloe* difficult. Northeasterly steering developed on 5-6 April *Chloe*'s and then on the evening of 7 April, *Chloe* moved into increasing shear and weakened. On the morning of 8 April *Chloe* began to move south and then south southwest following the 700-850 hPa steering flow, with the upper remnant of *Chloe* moving off in the northwesterlies.

C. Impact

Chloe caused vegetation damage in a swath of about 30 km across as it crossed an uninhabited section of the north Kimberley coast between Kuri Bay and Koolan Island .

D. Observations

There were no reports of significant rainfall associated with TC *Chloe*.

Table 1. Best track summary for *Chloe 3 – 8 April 1995*
Note: Add 8 hours to convert to WST. Refer to best track database for complete track details.

Year	Month	Day	Hour (UTC)	Position Latitude S	Position Longitude E	Max wind 10min knots	Central Pressure hPa	Rad. of Gales nm
1995	04	3	0000	9.1	128.1	20	1005	
1995	04	3	1200	9.2	126.1	20	1005	
1995	04	4	0000	9.5	123.7	20	1005	
1995	04	4	0600	9.7	123.3	20	1005	
1995	04	4	1200	9.9	122.9	25	1000	
1995	04	4	1800	10.1	122.4	25	1000	
1995	04	5	0000	10.2	122.0	35	995	
1995	04	5	0300	10.3	121.6	40	990	
1995	04	5	0600	10.4	121.2	45	985	45
1995	04	5	0900	10.5	120.9	55	980	45
1995	04	5	1200	10.6	120.9	60	975	45
1995	04	5	1500	10.9	121.1	65	970	45
1995	04	5	1800	11.1	121.3	70	965	45
1995	04	5	2100	11.4	121.5	75	960	45
1995	04	6	0000	11.6	121.7	80	955	45
1995	04	6	0300	11.9	121.8	80	955	45
1995	04	6	0600	12.2	121.9	80	955	45
1995	04	6	0900	12.5	122.1	80	955	45
1995	04	6	1200	12.9	122.3	80	955	45
1995	04	6	1500	13.3	122.4	90	945	45
1995	04	6	1800	13.5	122.7	95	935	45
1995	04	6	2100	13.8	123.0	105	925	45
1995	04	7	0000	14.1	123.2	105	920	45
1995	04	7	0300	14.4	123.3	105	920	45
1995	04	7	0600	14.6	123.3	105*	920	45
1995	04	7	0900	14.8	123.4	105	920	45
1995	04	7	1200	15.0	123.6	105	925	45
1995	04	7	1500	15.2	123.8	100	930	45
1995	04	7	1800	15.5	123.8	95	935	45
1995	04	7	2100	15.7	124.0	95	940	45
1995	04	8	0000	16.0	124.1	90	945	45
1995	04	8	0300	16.3	124.2	80	955	30
1995	04	8	0600	16.6	124.2	70	965	25
1995	04	8	0900	16.9	124.1	55	980	20
1995	04	8	1200	17.1	124.0	40	990	15
1995	04	8	1500	17.3	123.8	25	1000	
1995	04	8	1800	17.6	123.6	25	1000	

* The database lists 105 knots as the maximum wind, however as suggested in the text, the maximum wind is likely to be 110 knots (category 5 intensity)

Figure 1. Track of Tropical Cyclone *Chloe*, 3 – 9 April 1995.
All times in WST.