



Australian Government
Bureau of Meteorology

Severe Tropical Cyclone *Naomi* 15 – 18 December 1993

Perth Tropical Cyclone Warning Centre
Bureau of Meteorology

A. Summary

Naomi was the first tropical cyclone for the 1993/94 season. After genesis early on 16 December the cyclone moved southwards and intensified, crossing the west Kimberley coastline between near Nita Downs and Anna Plains Station, about 130 km southwest of Broome at 1100 WST 17 December. *Naomi* had earlier developed an eye and at the time of landfall the cyclone was estimated to be near peak intensity of 75 knots (category 3).

Moderate to severe property damage occurred at Nita Downs and at nearby Anna Plains Station. Leaves were stripped from trees in a 30 km swathe. There were no injuries.

B. Meteorological Description

Intensity analysis

The precursor to cyclone formation was a broad tropical low located off the northwest Kimberley coast. While the structure of the low appeared to be quite complex in the early stages of development, a dominant centre materialised during 15 December which tracked southwards. This development appeared to coincide with a surge in the southeasterly flow associated with a strong high moving into the Great Australian Bight. There was little evidence of a cross-equatorial surge from the northern hemisphere. Following cyclone formation early on 16 December *Naomi* continued to move southwards and intensified, revealing an eye on infrared imagery in the early hours of 17 December. The cyclone crossed the West Kimberley coastline at 0300 UTC 17 December, about 130 km southwest of Broome. At the time of landfall near Nita Downs and Anna Plains Station the cyclone was estimated to be near peak intensity, with sustained winds of 75 knots but with a radius to gale-force winds of only 35 kilometres. Severe property damage occurred at the Stations.

Motion and Structure

The movement of *Naomi* was largely controlled by a high pressure centre in the middle and upper levels to the east of the cyclone centre. During 14 December a trough at 500 hPa moved across southern WA pushing the high northward to a position near the NT/QLD border. By early on the 16th the 500 hPa trough had moved towards the east coast of Australia with a weak remnant trailing back westnorthwest towards the tropical cyclone. The high had maintained latitude and the cyclone was steered around the western flank of the high. In the following 24 hours the high

became more meridional with a centre remaining east of the cyclone and a second centre forming further south near Forrest. Naomi continued on a generally southward track.

C. Impact

A fishing vessel operating off Broome was caught in the strong easterly flow south of the cyclone and was unable to make progress towards the safety of the shoreline. The cyclone eye subsequently passed over the vessel. Paint was stripped from the exterior surfaces and the life raft was lost overboard, but fortunately the occupants survived. Moderate to severe property damage occurred at Nita Downs and at nearby Anna Plains Station. Leaves were stripped from trees in a 30 km swathe. There were no injuries.

D. Observations

Wind/Pressure

Maximum wind speed reported: La Grange NE 40 knots gust 70 knots at 0900 WST 17 December (cyclone 15nm to west) - estimated using hand held anemometer.

Minimum pressure measured: La Grange 988.9 hPa at 1100 WST 17 December.

Rainfall

There was no report of significant rainfall associated with TC *Naomi*.

Table 1. Best track summary for *Naomi* 15 – 18 December 1993

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
1993	12	15	0000	12.1	120.7	20	1005	
1993	12	15	0300	12.3	120.9	20	1004	
1993	12	15	0600	12.5	121.2	25	1002	
1993	12	15	0900	12.7	121.5	25	1002	
1993	12	15	1200	13.2	121.7	25	1000	
1993	12	15	1500	13.7	121.8	30	998	
1993	12	15	1800	14.3	122.0	30	998	
1993	12	15	2100	14.9	122.0	30	998	
1993	12	16	0000	15.4	121.9	35	995	40
1993	12	16	0300	15.9	121.8	35	995	40
1993	12	16	0600	16.3	121.5	40	990	40
1993	12	16	0900	16.7	121.4	45	985	40
1993	12	16	1200	17.0	121.3	55	980	40
1993	12	16	1500	17.4	121.2	60	975	40
1993	12	16	1800	17.7	121.2	65	970	40
1993	12	16	2100	17.9	121.3	70	965	40
1993	12	17	0000	18.4	121.5	75	960	40
1993	12	17	0300	18.9	121.6	75	960	40
1993	12	17	0600	19.5	121.6	70	965	40
1993	12	17	0900	19.9	121.6	60	975	40
1993	12	17	1200	20.4	121.8	55	980	40
1993	12	17	1500	20.8	122.0	55	980	40
1993	12	17	1800	21.3	122.2	45	985	40
1993	12	17	2100	21.7	122.2	45	985	40
1993	12	18	0000	22.3	122.2	40	990	40
1993	12	18	0300	22.9	122.2	35	995	40
1993	12	18	0600	23.5	122.2	35	995	40
1993	12	18	0900	24.1	122.2	25	1000	

Figure 1. Track of Tropical Cyclone *Naomi*, 15 – 18 December 1993.
All times in WST.

