



**Australian Government**  
**Bureau of Meteorology**

## **Tropical Cyclone *Nicholas***

12-15 December 1996

Perth Tropical Cyclone Warning Centre  
Bureau of Meteorology

### **A. Summary**

*Nicholas* was the first cyclone to form off the northwest Australian coast during the season. It formed along the monsoon trough in the Timor Sea region and tracked along a general southerly path reaching cyclone intensity early on 14 December off the northwest Kimberley coast between Adele and Browse Islands. It was near the northwest Kimberley coast during the evening, but weakened to below cyclone strength as it continued southward through King Sound. It passed within 50 kilometres to the west of Derby around 0900 WST 15 December, then continued south and weakened further over the inland west Kimberley during the day. It finally dissipated as a surface circulation during the afternoon of 16 December.

Gale to Storm force winds were experienced by pearling boats sheltering near the entrance to King Sound. There was no damage reported. Heavy rain over the north Kimberley caused local flooding.

### **B. Meteorological Description**

#### *Intensity*

The system began as a weak low on the monsoon trough near Gove on 9 December. Initial development was associated with a broadscale cross-equatorial surge. A low-level centre emerged within the broad monsoonal circulation during the early morning of 13 December. Shear over the genesis region was low due to the proximity of the upper ridge axis. The low then moved steadily south due to a major 500 hPa trough to the southwest of the cyclone and a high to the southeast.

Cyclone strength was reached early on 14 December off the northwest Kimberley coast between Adele and Browse Islands. It passed over Browse Island at midnight on 13 December and passed just to the east of Adele Island during the afternoon of the 14th. It was near the northwest Kimberley coast during the evening, but weakened to below cyclone strength as it continued southward through King Sound. It passed within 50 kilometres to the west of Derby around 0900 WST 15 December, then continued south and weakened further over the inland west Kimberley during the day. It finally dissipated as a surface circulation during the afternoon of 16 December.

*Nicholas* did not intensify significantly as it approached the coast strongly because the influence of increasing shear as it moved to the south of the 200 hPa ridge axis. The shear resulted from 850 hPa northeasterlies combined with strong (30-40 knots northwesterlies) at 200 hPa within 5 degrees south of the cyclone centre. This combined with land influences weakened *Nicholas* rapidly as it entered King Sound.

#### *Motion*

From the time of formation the track of *Nicholas* was almost due south. The important synoptic influences on the motion were a major 500 hPa trough to the southwest of the cyclone and a high to the southeast which became more meridional in character during 13 December. An inspection of the region 5-10 degrees to the southeast of the cyclone centre during Friday (the so-called "steering box" region) would have indicated a westward component in the track. However this seems to have been balanced by the northwest flow on the southwest flank of the cyclone, as indicated by the Port Hedland wind at 500 hPa at 0500 UTC 13 December.

### **C. Impact**

Gale to Storm force winds were experienced by pearling boats sheltering near the entrance to King Sound. There was no damage reported. Heavy rain over the north Kimberley caused local flooding.

### **D. Observations**

#### *Wind/Pressure*

Estimated minimum central pressure: 985 hPa at 0400-0700 UTC 14 December

Estimated average maximum wind speed: 50 knots (90km/h)

Radius to gales: 100 kilometres (southern side), 60 kilometres (northern side)

#### *Rainfall*

Kalumburu: 266 mm in 72 hours to 0900 WST on 16 Dec.

Kuri Bay: 183 mm in 72 hours to 0900 WST on 16 Dec.

Derby Airport: 113 mm, mostly recorded in the 24 hours to 0900 WST 15 December.

**Table 1. Best track summary for *Nicholas* 12 – 16 December 1996**

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 |
|------|-------|-----|------------|---------------------|----------------------|----------------------|----------------------|------------------|
| 1996 | 12    | 12  | 0700       | 11.0                | 124.5                | 25                   | 1002                 |                  |
| 1996 | 12    | 12  | 1300       | 11.5                | 124.2                | 25                   | 1000                 |                  |
| 1996 | 12    | 12  | 1900       | 12.0                | 123.9                | 25                   | 1000                 |                  |
| 1996 | 12    | 12  | 2200       | 12.3                | 123.9                | 25                   | 1000                 |                  |
| 1996 | 12    | 13  | 0100       | 12.7                | 123.8                | 30                   | 998                  |                  |
| 1996 | 12    | 13  | 0400       | 13.0                | 123.8                | 30                   | 998                  |                  |
| 1996 | 12    | 13  | 0700       | 13.3                | 123.7                | 35                   | 996                  |                  |
| 1996 | 12    | 13  | 1000       | 13.6                | 123.6                | 35                   | 996                  |                  |
| 1996 | 12    | 13  | 1300       | 13.9                | 123.6                | 35                   | 996                  |                  |
| 1996 | 12    | 13  | 1600       | 14.2                | 123.5                | 35                   | 994                  |                  |

|      |    |    |      |      |       |    |      |    |
|------|----|----|------|------|-------|----|------|----|
| 1996 | 12 | 13 | 1900 | 14.4 | 123.5 | 40 | 992  | 55 |
| 1996 | 12 | 13 | 2200 | 14.7 | 123.5 | 40 | 990  | 55 |
| 1996 | 12 | 14 | 0100 | 14.9 | 123.5 | 45 | 988  | 55 |
| 1996 | 12 | 14 | 0400 | 15.2 | 123.5 | 45 | 985  | 55 |
| 1996 | 12 | 14 | 0700 | 15.5 | 123.5 | 45 | 985  | 55 |
| 1996 | 12 | 14 | 1000 | 15.9 | 123.5 | 45 | 985  | 45 |
| 1996 | 12 | 14 | 1300 | 16.3 | 123.5 | 45 | 988  |    |
| 1996 | 12 | 14 | 1600 | 16.6 | 123.5 | 40 | 990  |    |
| 1996 | 12 | 14 | 1900 | 16.9 | 123.5 | 35 | 995  |    |
| 1996 | 12 | 14 | 2200 | 17.2 | 123.5 | 35 | 995  |    |
| 1996 | 12 | 15 | 0100 | 17.4 | 123.5 | 35 | 995  |    |
| 1996 | 12 | 15 | 0700 | 17.7 | 123.5 | 35 | 995  |    |
| 1996 | 12 | 15 | 1300 | 18.1 | 123.6 | 30 | 998  |    |
| 1996 | 12 | 15 | 1900 | 18.6 | 123.7 | 30 | 998  |    |
| 1996 | 12 | 16 | 0100 | 19.1 | 123.8 | 25 | 1000 |    |
| 1996 | 12 | 16 | 0700 | 19.7 | 123.9 | 25 | 1000 |    |

Figure 1. Track of Tropical Cyclone *Nicholas*, 12 -16 December 1996

All times in WST.

