



Australian Government
Bureau of Meteorology

Tropical Cyclone *Anika*

17 - 22 November 2008

Joe Courtney
Perth Tropical Cyclone Warning Centre
Bureau of Meteorology
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A. Summary

During 17 November a low formed during an active phase of the Madden-Julian Oscillation (MJO) along the monsoon trough in the central Indian Ocean. The low developed quickly and was upgraded to Tropical Cyclone (TC) *Anika* at 0000 UTC (0900 WDT) 19 November. *Anika* moved on a steady east southeast path, passing to the northeast of the Cocos Islands. The system reached category 2 intensity early on 20 November before rapidly weakening later that day. *Anika* was downgraded to a tropical low at 0000 UTC (0900 WDT) 21 November as it moved over cooler seas surface temperatures and was affected by increased wind shear caused by the approach of a mid-level trough.

Anika was the first tropical cyclone of the Australian 2008/09 tropical cyclone season.

B. Meteorological Description

Intensity analysis

Convection increased about a developing low level circulation centre (LLCC) overnight from 17-18 November although moderate northeasterly shear hampered intensification. Convection consolidated during 18 November, however any curvature in the convection was less than 0.5 wrap about the LLCC and cloud top temperatures warmed by 1200 UTC (2100 WDT) demonstrating that the convection was varying diurnally.

Convection improved from 1200 UTC (2100 WDT) 18 November through the overnight period and cyclone intensity is estimated at 0000 UTC (0900 WDT) 19 November. The Dvorak DT at 0000UTC was estimated as being between 2.5 and 3.0, and the FT was biased upwards on the basis of the 2349 UTC (19/0839 WDT) Quikscat that suggested gales particularly north of the centre (see figure 1).

By this stage the shear had fallen to about 10-15 knots. The upper wind flow shows strong northwesterlies to the south of the system associated with a strong mid-latitude upper trough. Over the following days *Anika* tracked into this region of increasing upper northwesterlies although the rapid southeast translation speed partially offset the negative impact of these winds. Indeed the increased upper outflow appears to have contributed to the intensification process during 19

November. *Anika* became more organised later in the day and appears to have peaked in intensity between 1800 UTC (0300 WDT) 19 November and 0000 UTC (0900) 20 November. Microwave imagery showed a clear eye evident (see figure 2) although an eye did not emerge on conventional infra-red or visible imagery. Peak intensity was based on a Dvorak estimate (DT=3.5) corresponding to 50 knot mean winds. This estimate was generally consistent with the 2320 UTC (20/0820 WDT) Quikscat and the 0218 UTC (1118 WDT) Ascet data.

Later on 20 November *Anika* weakened rapidly under the influence of increasing northwesterly shear and sea surface temperatures below 26°C, and winds are estimated to have decreased below gale force by 0000 UTC (0900 WDT) 21 November.

Motion

Persisting northwesterly steering winds, initially a result of monsoonal northwesterlies and then enhanced by deeper level winds associated with a mid-latitude trough, caused *Anika* to move along a steady east southeast track averaging about 12-16 knots for much of its lifetime.

Structure

Anika was a small tropical cyclone with the radius to gales reaching 150 km at its peak. Gales were initially evident in the northern and western quadrants but as the system weakened under increasing NW shear, gales were more prominent in southern quadrants.

C. Impact

Anika remained over open waters throughout its lifetime and did not impact any islands or communities directly.

D. Observations

Although *Anika* passed close by to Cocos Islands on 20 November the strongest mean winds were 26 knot south southeasterlies. There was no significant rainfall reported.

E. Forecast Performance

The first advice was issued for Cocos Island at 0920 UTC (1820 WDT) 18 November as a Flash Warning message. Three hourly advices continued until the warning was cancelled at 0645 UTC (1545 WDT) 19 November. Shipping warnings continued until the system was downgraded to a tropical low at 0000 UTC (0900 WDT) 21 November.

Table 1. Best track summary for *Anika*, November 2008.

Year	Month	Day	Hour (UTC)	Position Latitude S	Position Longitude E	Position Accuracy nm	Max wind 10min knots	Max gust knots	Central Pressure hPa	Rad. of Gale s nm	Rad. of storm force winds	Radius Max. Wind (RMW)
2008	11	17	12	8.1	89.4	40	20	45	1005			
2008	11	17	18	8.4	90.1	40	25	45	1004			
2008	11	18	00	8.9	91.3	30	25	45	1004			
2008	11	18	06	9.5	92.5	25	25	45	1004			
2008	11	18	12	10.1	93.8	20	25	45	1004			
2008	11	18	18	10.5	95.3	25	30	45	1000			
2008	11	19	00	10.9	96.8	25	40	55	995	55		15
2008	11	19	06	11.5	98.0	25	40	55	995	55		15
2008	11	19	12	11.9	99.1	25	45	65	992	70		15
2008	11	19	18	12.7	100.3	20	50	70	990	80	20	15
2008	11	20	00	13.6	101.5	20	50	70	990	80	20	15
2008	11	20	06	14.6	102.7	20	50	70	990	80	20	15
2008	11	20	12	15.1	104.0	20	50	70	990	60	25	20
2008	11	20	18	15.4	105.1	15	40	55	996	45		30
2008	11	21	00	15.7	106.4	15	30	45	1002			
2008	11	21	06	16.4	107.4	15	25	45	1004			
2008	11	21	12	16.8	108.4	25	25	45	1004			
2008	11	21	18	17.0	109.4	25	25	45	1004			
2008	11	22	00	17.2	110.5	25	25	45	1004			

Table 2. Verification statistics: Track and Intensity.

Parameter	0 hr	6 hr	12 hr	18 hr	24 hr	36 hr	48 hr
Count	11	11	11	11	11	7	3
Distance (km)	39	61	76	91	111	161	214
Mean Wind (knots)	1.4	3.2	5.0	4.6	5.9	9.2	13.9

Figure 1. Track of Tropical Cyclone *Anika*, 17-22 November 2008.

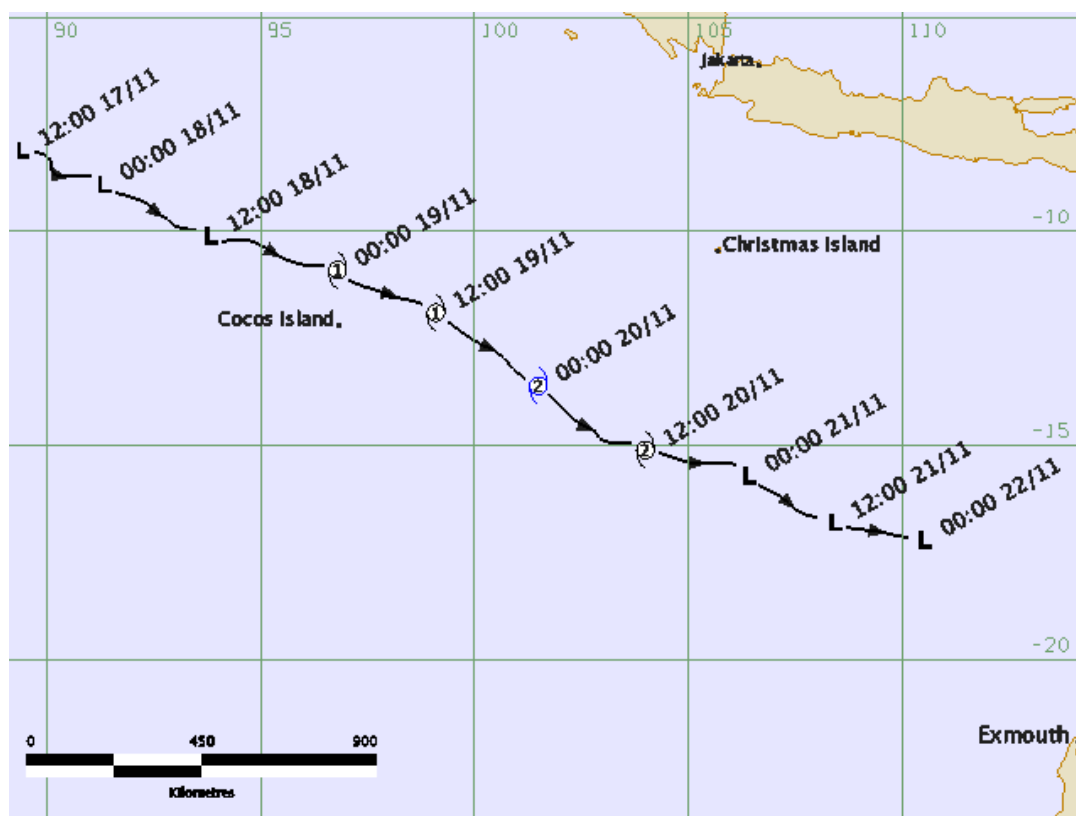


Figure 2. Quikscat BYU High resolution wind speed distribution at 2311UTC 18 November. (image courtesy of US NRL: <http://www.nrlmry.navy.mil/>)

BYU Quikscat Hires Wind Speed Date: 11/18/2008 Storm Center Time: Nov 18 23:11 UTC 2008
File Name: P1B20083232311q.TWO_081119_02S_WRave3 Storm Name: ANIKA Storm Number: 02

0 5 10 15 20 25 30 35 40 45 >50 knots

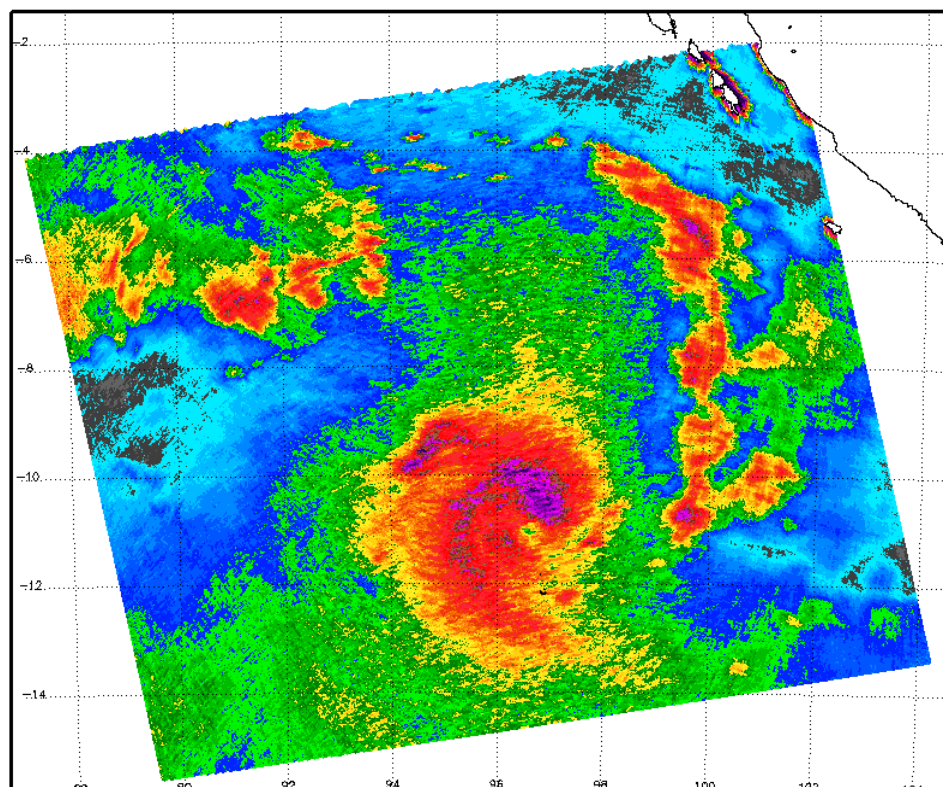


Figure 3. Microwave (SSMIS 91GHz) image at 2220UTC 19 November.
 (image courtesy of US NRL: <http://www.nrlmry.navy.mil/>)

