



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

## **Tropical Cyclone *Fiona***

2 - 14 February 2003

Perth Tropical Cyclone Warning Centre  
Bureau of Meteorology

### **A. Summary**

A tropical low developed east of Christmas Island and was declared Tropical Cyclone *Fiona* on 5 February. Favourable environmental conditions allowed the system to reach category 3 strength on 7 February as it moved westwards passing to the south of Christmas Island. *Fiona* peaked in intensity at category 4 at 0600 UTC on 9 February, about 460 km (250 nm) south-southeast of Cocos Islands. The system turned sharply to the south-southeast on 11 February, before weakening below cyclone intensity late the following day.

Although warnings for possible gale-force winds were issued for Christmas Island for 7 February when *Fiona* passed within 210 km (115 nm) south of the Island, *Fiona* did not affect any island communities or cause any known damage.

### **B. Meteorological Description**

#### *Intensity Analysis*

A region of deep convection developed along the monsoon trough on 3 February in the vicinity of 13°S 115°E, about 1100 km (600 nm) north of Karratha. This coincided with an active phase of the Madden-Julian Oscillation. At this time a pre-existing low to the west near 100°E was showing indications of cyclogenesis. Although the western low failed to develop further in the next few days, its westward movement into the central Indian Ocean resulted in the eventual development of Tropical Cyclone *Isha* on 12 February.

The low developed on 4 February with decreasing vertical wind shear as a result of the northward displacement of the upper ridge by a mid-latitude trough across WA. Increased organisation of the deep convection was evident late on the 4th although the low passed close to a buoy (53550 at 11.7°S 112.1°E) that registered a minimum pressure between observations at 2200 UTC 4 February (1005.3 hPa) and 0200 UTC 5 February (1004.6 hPa). The low was estimated to reach tropical cyclone intensity at 0600 UTC 6 February about 650 km (350 nm) east-southeast of Christmas Island.

*Fiona* developed rapidly on 6 February as favourable low-shear conditions continued and microwave imagery indicated tightening curvature late in the

day. This continued on 7 February when an eye became clearly evident and *Fiona* was upgraded to category 3 (severe) with hurricane-force winds. Further intensification then occurred when the eye became better defined and *Fiona* reached maximum intensity around 0600 UTC on 9 February with a Dvorak CI number of 5.5, maximum wind gusts of 120 knots and a central pressure of 935 hPa.

*Fiona* subsequently began to lose some intensity with a decrease in deep convection and the eye became partially cloud-filled. A somewhat ragged eye redeveloped on the 10th but thereafter the system weakened possibly due to cooler, drier air from a strong anticyclone to the south. A decrease in deep convection late on the 10th heralded its weakening phase. Although cold cloud top temperatures on infrared imagery during the 11th suggested a stronger system, the system was clearly losing rotational features. The vertical wind shear rapidly increased late on the 11th and microwave imagery revealed an exposed low level centre. During the 12th strengthening upper level north-westerlies engulfed the system, as they also did to TC *Isha* further to the west, and *Fiona* weakened rapidly. Convection was limited to the southeast quadrant and there were weak circular low level cloud lines near the exposed centre. Winds are estimated to have eased below gale-force by 1800 UTC 12 February.

#### *Motion*

A strong and persisting mid-level ridge to the south initially steered *Fiona* on a steady westward course. During 9 February *Fiona* took on a more southwest course, as stronger mid-latitude westerlies displaced the mid-upper level ridge further north centred to the southeast of *Fiona*. The approach of a vigorous mid-latitude trough on the 10th eroded the ridge to the south and caused a recurvature to the south-southeast from late on 10 February near 90°E. *Fiona* continued along this track during its rapid weakening phase.

#### **C. Impact**

*Fiona* did not affect any island communities or cause any known damage as it was located well out to sea during its lifecycle.

#### **D. Observations**

As *Fiona* passed close to a buoy (53550) a minimum pressure was recorded between observations at 2200 UTC 4 February (1005.3 hPa) and 0200 UTC 5 February (1004.6 hPa).

**Table 1. Best track summary for *Fiona*, 3 - 13 February 2003.**

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
2003	02	3	0000	11.8	117.4	20	1007	
2003	02	3	0600	11.7	117.0	20	1006	
2003	02	3	1200	11.7	116.6	20	1006	
2003	02	3	1800	11.6	116.2	20	1005	
2003	02	4	0000	11.6	115.6	20	1005	
2003	02	4	0600	11.6	114.8	20	1004	
2003	02	4	1200	11.7	113.9	20	1004	
2003	02	4	1800	11.7	113.1	25	1002	
2003	02	5	0000	11.8	112.4	25	1000	
2003	02	5	0600	11.8	111.8	35	995	60
2003	02	5	1200	11.9	111.3	40	990	60
2003	02	5	1800	12.0	110.7	50	985	60
2003	02	6	0000	11.9	110.1	55	980	90
2003	02	6	0600	11.9	109.4	55	980	90
2003	02	6	1200	12.0	108.7	60	975	105
2003	02	6	1800	12.0	108.0	60	975	105
2003	02	7	0000	12.1	107.1	60	975	120
2003	02	7	0600	12.3	106.3	65	970	120
2003	02	7	1200	12.5	105.4	70	965	120
2003	02	7	1800	13.0	104.6	70	965	120
2003	02	8	0000	13.3	103.7	75	960	120
2003	02	8	0600	13.8	102.7	80	955	120
2003	02	8	1200	14.2	101.8	80	955	120
2003	02	8	1800	14.8	100.9	85	950	120
2003	02	9	0000	15.3	100.0	95	940	120
2003	02	9	0600	15.9	98.9	95	935	120
2003	02	9	1200	16.4	97.7	95	940	90
2003	02	9	1800	16.5	96.4	95	940	90
2003	02	10	0000	16.6	95.3	95	940	90
2003	02	10	0600	16.7	94.2	95	940	90
2003	02	10	1200	16.9	93.1	90	945	90
2003	02	10	1800	17.3	92.3	85	950	90
2003	02	11	0000	17.6	91.8	75	960	90
2003	02	11	0600	18.0	91.2	70	965	90
2003	02	11	1200	18.4	91.1	70	965	120
2003	02	11	1800	19.1	90.9	65	970	120
2003	02	12	0000	19.9	90.9	60	975	120
2003	02	12	0600	20.8	91.3	50	985	90
2003	02	12	1200	21.2	91.9	35	995	60
2003	02	12	1800	21.6	92.0	25	1000	
2003	02	13	0000	21.9	92.2	20	1005	

Figure 1. Track of Tropical Cyclone *Fiona* 3 – 13 February 2003  
All times in WST.

