



Australian Government
Bureau of Meteorology

Tropical Cyclone *Pancho*

23 - 30 March 2008

Linda Paterson
Perth Tropical Cyclone Warning Centre
Bureau of Meteorology
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A. Summary

A low formed in the Indian Ocean during an active phase of the monsoon trough which developed into *Pancho* by 25 March 2008. *Pancho* quickly intensified under favourable conditions as it moved in a south southeasterly direction towards the Western Australian coastline. The system reached category 4 intensity on 26 March before rapidly weakening as it experienced increased wind shear and moved over cooler sea surface temperatures (SST's).

Pancho was associated with heavy rainfall in the west Pilbara and Gascoyne. The remnants of *Pancho* moved further south passing near Perth on 31 March and resulting in heavy unseasonal rain across the southwest. The heavy rain was generally welcomed by pastoralists and farmers.

B. Meteorological Description

Intensity analysis

A low formed in the monsoon trough over the Indian Ocean during 23 March 2008. Initially the low experienced unfavourable shear with the low level centre located well to the east of the mid level circulation. By 25 March the wind shear had decreased and *Pancho* reached tropical cyclone strength by 0900 WDT (0000 UTC) 25 March.

Wind shear remained low and aided by strong upper outflow to the south of the system *Pancho* intensified rapidly following formation. By 26 March *Pancho* had formed a tight circulation and an eye appeared in visible imagery later in the day. *Pancho* reached peak intensity at 0700 WDT (2200 UTC) 26 March as it moved on a southerly track towards the Western Australian coastline (refer Fig. 3). Although microwave imagery showed the eye had expanded by this time convection was more intense and more concentric pattern than earlier.

From 1500 WDT (0600 UTC) 27 March *Pancho* began to weaken rapidly as the effects of increased wind shear and motion over cooler seas surface temperatures took effect. Subsequent microwave imagery showed the convection decreased in the northern quadrants and by the next morning convection persisted only in the

southern quadrants with a low level centre exposed to the northwest. The system weakened to category 1 strength the following day at 2100 WDT (1200 UTC) 28 March and then to a tropical low by 0900 WDT (0000 UTC) 29 March although gales persisted in the southeast semi-circle for some time after.

Motion

Initially *Pancho* was located to the north of the mid-level ridge and its motion was very slow. During 24 March a mid level trough approached from the southwest and began to steer *Pancho* on a more southerly course with an increase in speed. A second, more intense mid level trough formed to the southwest which continued *Pancho* on its south southeasterly path. *Pancho* temporarily took an easterly course towards Shark Bay late on 28 March as it weakened.

Structure

Gales were most extensive in the southern quadrant, extending to about 400 kilometres (200 nm) in the early stages of development and to 360 kilometres (180 nm) at peak development, although the average gale radius was 220 kilometres (120-125 nm) for most of its cyclone stage.

An eye emerged on 26 March then expanded and dissipated on 27 March.

A strong ridge well to the south enhanced the easterly flow and combined with the weakening system to prolong gales on the southern side of the system after it had weakened below cyclone intensity.

C. Impact

Pancho weakened to below cyclone intensity over the ocean. However strong easterly winds were experienced near Monkey Mia on 29 March with some damage reported from the area. Heavy rain was experienced in the west Pilbara and Gascoyne. Heavy rain was also experienced across the southwest of the state as the remnants of *Pancho* passed near Perth on 31 March. Northam recorded 21.6mm in just 19 minutes and local flooding forced the evacuation of a nursing home and resulted in many callouts to the SES. Strong winds fanned duststorms in the central wheatbelt and there were even reports of raining mud. The heavy rain was generally welcomed by pastoralists and farmers. The mid-latitude transition resulted in a deep low that passed just south of Tasmania causing strong winds across southeastern Australia.

D. Observations

Wind/Pressure

Several ships recorded gale-force winds in the southeastern quadrant of the system near the Western Australian coastline during the morning of 28 March.

Rainfall

Heavy rain was recorded about the west Pilbara coast on 25-29 March (refer Fig. 2). Accumulated falls exceeded 200 mm at some stations and some of the higher daily rainfall totals included:

24 hours to 0900 WDT 27 March

Barrow Island 181 mm
Munderoo 157 mm;
Exmouth 119 mm;
Onslow Airport 95 mm;

24 hours to 0900 WST 30 March in the Pilbara

Yalleen 147 mm
Karratha 118 mm

Heavy rain extended into the Gascoyne on 27-28 March and then the Shark Bay region experienced heavy rain from late on 28 March through the 29 March when *Pancho* weakened off the coast. The heaviest falls included:

24 hours to 0900 WST 30 March in the Gascoyne

Tamala 96 mm
Denham 87 mm;

24 hours to 0900 WST 1 April in Southwest Land Division

Mandurah 63 mm
Dwellingup 61 mm

E. Forecast Performance

The first shipping warning was issued for the developing low at 1219 WDT (0319 UTC) 24 March continuing until *Pancho* was downgraded to a tropical low at 1329 WDT (0429 UTC) 29 March. Subsequently a non-tropical cyclone gale warning remained for areas south of the system.

Tropical cyclone advices were not issued for the Western Australian coastline, however a Severe Weather Warning was issued for the southwest Gascoyne district including the Shark Bay region for potential flash flooding and damaging winds on the afternoon of 29 March.

Table 1. Best track summary for *Pancho*, March 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 Gales nm	Rad. of storm force winds	Radius Max. Wind (RMW)
2008	3	23	06	12.0	102.0	40	20	45	1000			
2008	3	23	12	12.1	102.2	40	20	45	1000			
2008	3	23	18	12.3	102.4	40	25	45	1000			
2008	3	24	00	12.5	102.6	25	25	45	998			
2008	3	24	06	12.7	103.1	25	25	45	998			
2008	3	24	12	13.1	103.5	20	25	45	998			
2008	3	24	18	13.4	103.9	25	30	45	996			
2008	3	25	00	13.7	104.2	30	35	50	990	125		30
2008	3	25	06	14.1	104.2	30	50	70	982	125	20	30
2008	3	25	12	14.6	104.1	35	50	70	982	102	20	20
2008	3	25	18	14.9	104.0	25	50	70	982	120	30	20
2008	3	26	00	15.5	104.3	20	55	80	974	120	40	20
2008	3	26	06	16.2	104.7	15	75	105	968	120	50	20
2008	3	26	12	17.2	105.1	15	90	125	940	120	60	15
2008	3	26	18	18.2	105.4	15	90	125	940	125	60	10
2008	3	27	00	19.3	105.8	20	95	135	934	125	60	20
2008	3	27	06	20.6	106.2	20	90	125	940	127	62	20
2008	3	27	12	21.6	106.8	20	85	120	952	125	60	20
2008	3	27	18	22.7	107.4	15	75	105	964	122	60	20
2008	3	28	00	23.6	108.1	20	60	85	974	120	60	25
2008	3	28	06	24.3	108.9	30	50	70	982	112	50	30
2008	3	28	12	24.9	109.3	30	40	55	986	110		40
2008	3	28	18	25.0	110.0	25	35	50	990	90		40
2008	3	29	00	25.0	110.9	15	35 *	50	996			40
2008	3	29	06	25.2	111.3	20	35 *	50	996			40
2008	3	29	12	25.5	111.6	40	30	45	996			
2008	3	29	18	25.7	111.4	45	30	45	996			
2008	3	30	00	26.1	111.3	25	25	45	998			
2008	3	30	06	26.2	111.1	25	25	45	998			

* Note: System below tropical cyclone intensity as gales extend less than halfway around the centre (only in the southeastern semi-circle).

Figure 1. Track of Tropical Cyclone *Pancho* 23 - 30 March 2008.

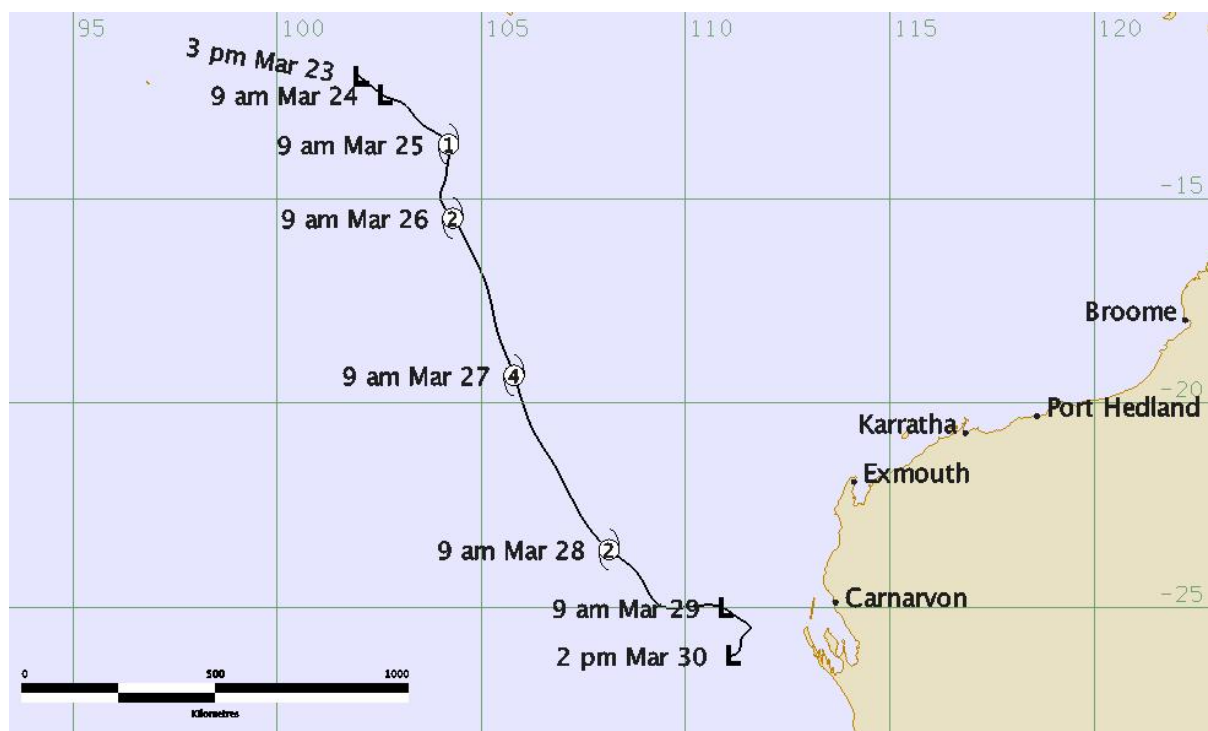


Figure 2. Weekly rainfall to 0900 WST 30 March showing rainfall associated with *Pancho*

Western Australian Rainfall (mm) Week Ending 30th March 2008
Product of the National Climate Centre

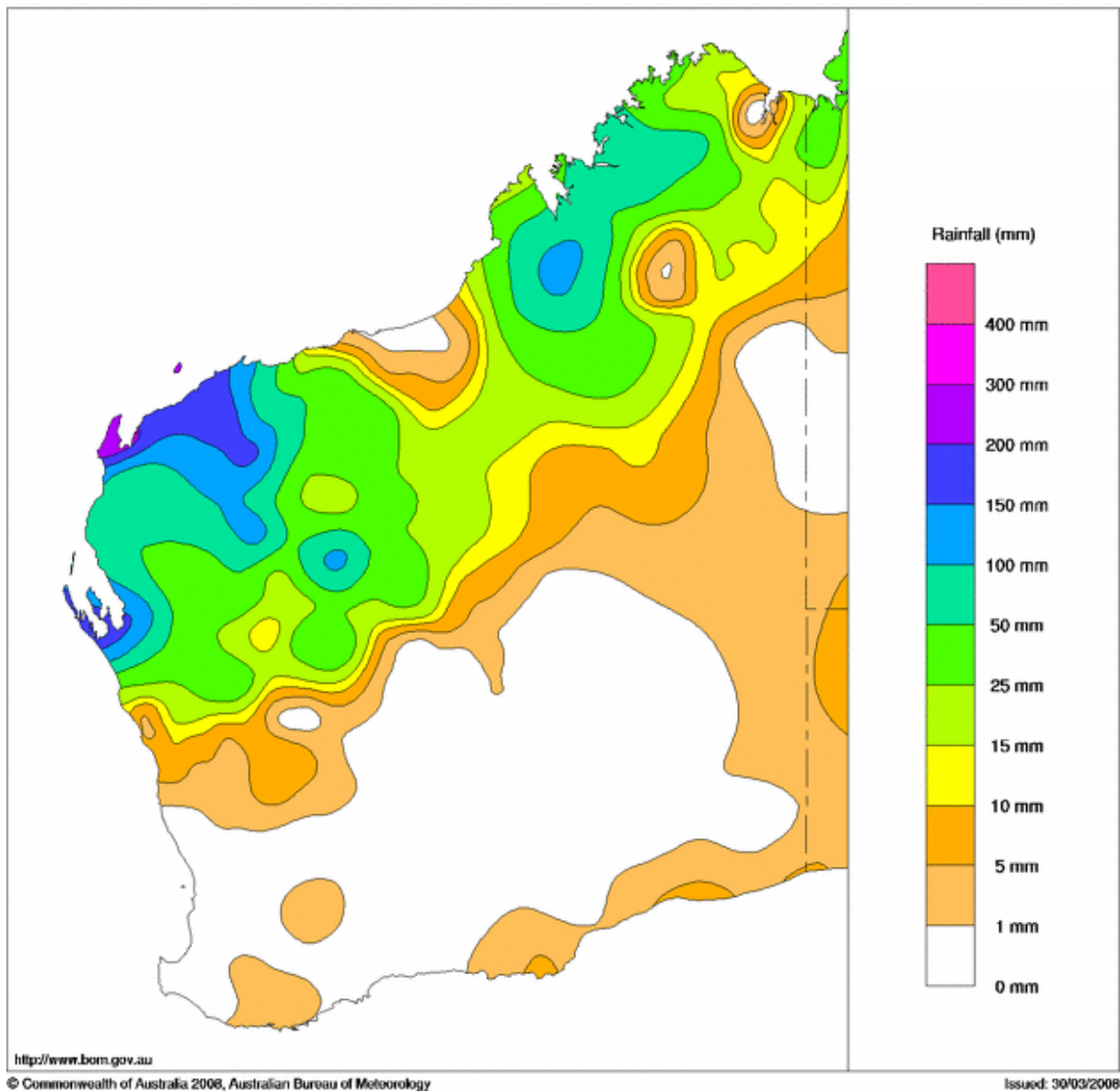
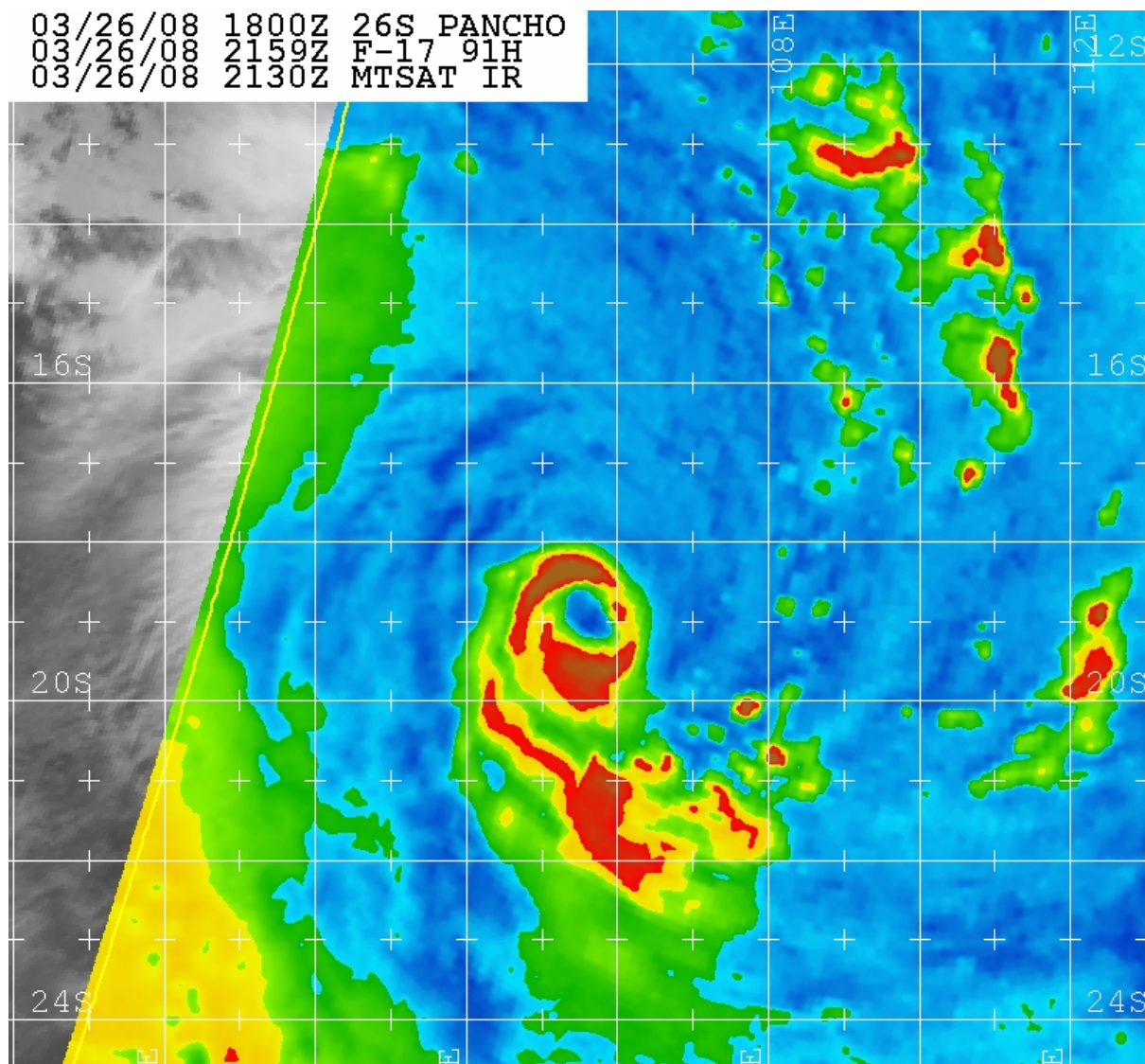


Figure 3. Microwave (AMSRE colour 89GHz) image at 2043 WDT (1143 UTC) 27 March 2008.
(image courtesy of US NRL: <http://www.nrlmry.navy.mil/>)

03/26/08 1800Z 26S_PANCHO
03/26/08 2159Z F-17 91H
03/26/08 2130Z MTSAT IR



Naval Research Lab www.nrlmry.navy.mil/sat_products.html
<-- 91H Brightness Temp (Kelvin) -->

