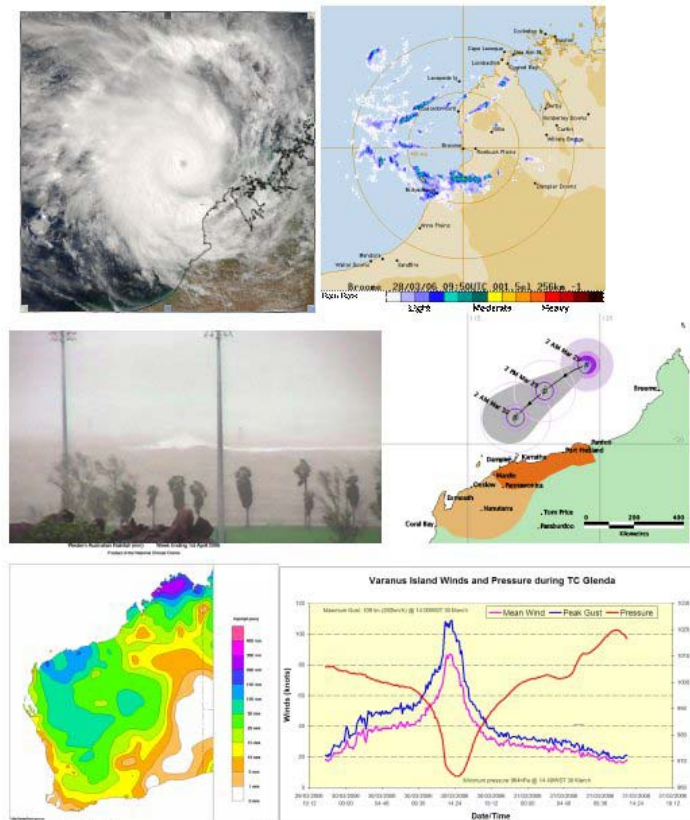




Australian Government

Bureau of Meteorology

Tropical Cyclone Season Summary Western Australian Region 2005 – 2006



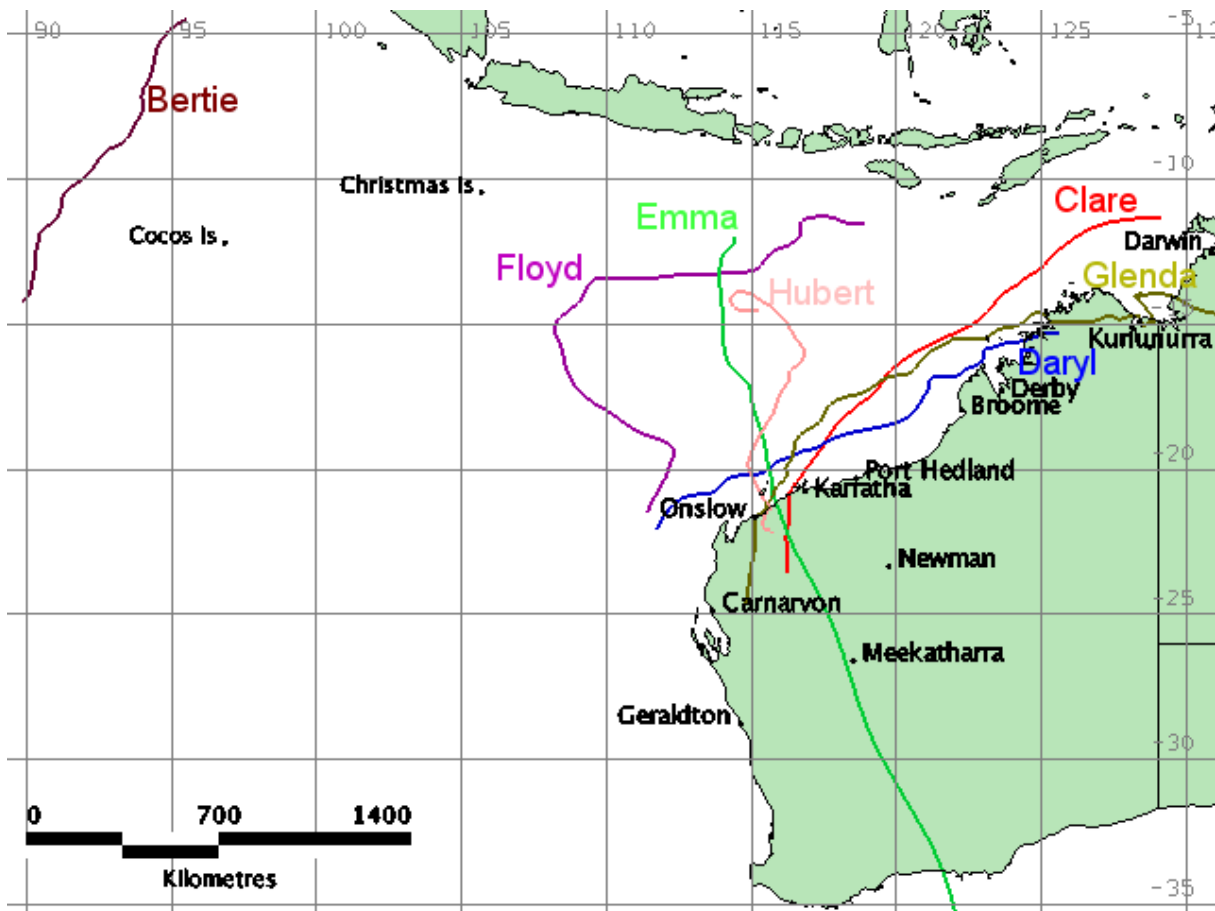
Images from TC *Glenda*. Clockwise from top right: radar image showing centre to northwest of Broome, forecast map, wind and pressure observations from Varanus Is, weekly rainfall map, photo of rough seas off Pilbara coast, MODIS high resolution satellite image

Season Overview

There were seven tropical cyclones in the Perth TCWC area of responsibility. Of these six occurred off the northwest coast and four directly impacted the Pilbara coast. *Clare*, *Emma*, *Glenda* and *Hubert* all crossed the coast between Onslow and Dampier.

The most significant of these were *Clare* in January and *Glenda* in March. During *Clare*, downed power lines and flooding disrupted power and telecommunication to many parts of the Pilbara including Dampier and Karratha. Heavy rains during *Clare* and *Emma*, caused widespread flooding over many parts of the state including areas well to the south. *Glenda* was a small and intense system that threatened Karratha and Dampier but weakened and moved to the southwest before crossing the coast near Onslow. Damage at Onslow was generally minor. Although *Emma* was a weak category 1 system, it did cause considerable rainfall across the Pilbara, Gascoyne and Murchison regions in particular produced a significant flood on the Murchison River.

Figure 1. Tracks of tropical cyclones, 2005-06 in Perth TCWC area of responsibility.



Severe Tropical Cyclone *Bertie* 19-24 November 2005

An early season tropical low developed in the central Indian Ocean on 18 November and reached tropical cyclone intensity on the 19th near 6S 94E. *Bertie* moved to the south southwest reaching category 3 intensity on the 21st and then category 4 before weakening late on the 23rd as it moved west of 90E into La Reunion's area of responsibility and was renamed *Alvin*. There was no known impact from *Bertie*.

Severe Tropical Cyclone *Clare* 6 -10 January 2006

A tropical low formed northwest of Darwin and moved roughly parallel to the coast at speeds of 20-25 km/h reaching cyclone intensity on the evening of the 7th off the northwest Kimberley coast. *Clare* then intensified to category 3 before the Pilbara coast west of Dampier in the early hours of Tuesday 10 January. Dampier experienced very destructive winds for a period on Monday evening as the eye wall passed over the town. Karratha narrowly escaped the eye wall but still experienced destructive winds (category 2 intensity) for over seven hours and gale force winds for sixteen hours. Estimated maximum winds near the time of coastal impact were 140 km/h (75 knots) gusting to 195 km/h (105 knots). The highest recorded sustained winds speeds were 131 km/h (71 knots) at Legendre Island while Karratha recorded wind gusts to 143 km/h (77 knots). Fortunately the storm surge peaked close to low tide preventing any significant storm surge impact

Communities in the path of the cyclone escaped major structural damage although many properties sustained minor damage. Fallen power lines and flooding disrupted power and telecommunication to many parts of the Pilbara including Dampier and Karratha.

Many roads were cut by floodwaters including the Northwest Highway. The remains of *Clare* continued to move south producing heavy rain and some flooding through the Gascoyne and inland parts of the Southwest Land Division in the following days. Flooding was particularly significant in the area around Lake Grace in the Great Southern district where 224 mm of rain was recorded in a 24-hour period on 12-13 January. The flood was one of the worst in the town's history. The Greenough River in the Midwest region also flooded and only a sandbagging effort prevented floodwaters inundating the town of Walkaway south of Geraldton.

Tropical Cyclone *Daryl* 17 - 23 January 2006

A low moved off the West Kimberley coast and supported by strong monsoonal flow reached cyclone intensity north of Cape Leveque late on 18 January. *Daryl* reached category 2 intensity on the 19th northwest of Broome and maintained this strength for the next few days while following a track parallel to the coast. Although it threatened the Pilbara coast, *Daryl* remained offshore and weakened to below cyclone intensity on the 22nd north of Northwest Cape. The greatest impact was to the offshore oil and gas industry which suffered economic losses associated with evacuations and reduced production.

Tropical Cyclone *Emma* 26 February - 1 March 2006

Emma was a monsoonal-type low reaching category 1 intensity before crossing the coast near Mardie on 28 February, then moving to the south southeast and eventually passing near Esperance late on 1 March. The main impact was rainfall, initially in the Karratha/Dampier region and then over inland areas.

Heavy rainfall occurred as ex-TC *Emma* moved across WA. Six occupants were lucky to escape when their two vehicles were washed away on a flooded creek crossing south of Karratha. People from Yarraloola homestead were airlifted as floodwaters on the Robe River rose about them. Mileura Homestead on Ero Creek, about 70 km northwest of Meekatharra, was flooded, apparently for the first time in 120 years. Strong winds brought down power lines and damaged vegetation in the Goldfields including Kalgoorlie where a couple narrowly escaped injury when a tree fell on their car while they were driving.

The heavy rain in the headwaters of the Murchison River caused the highest recorded flood along the river (previous highest was 1960). More than 20 pastoral properties reported significant damage and heavy infrastructure losses combined with significant scouring of the Murchison floodplain. The pre-1900s Berringarra, Manfred and Billabalong homesteads and Murchison House sustained extensive damage. Floodwaters peaked at Kalbarri at about midnight on 15 March. Although the sandbar was washed away and riverside and low-lying parts of the town were flooded, a significant sandbagging exercise protected the town centre from inundation.

Severe Tropical Cyclone *Floyd* 18 - 27 March 2006

Floyd was a small cyclone that reached category 4 intensity on 23 March before rapidly weakening. Cyclone advices were issued for the western Pilbara and upper west coastal areas as *Floyd* approached but the system weakened and remained offshore without impacting coastal parts. *Floyd* did have an economic impact as some resource companies evacuated offshore oil and gas installations.

Severe Tropical Cyclone *Glenda* 25 - 31 March 2006

Severe Tropical Cyclone *Glenda* was a small and intense system that developed very rapidly after moving off the northwest Kimberley coast. *Glenda* reached category 5 intensity on the 28th but weakened as it approached the Pilbara coast. Although threatening to cross the coast near the populated Dampier/Karratha region close to the time of high tide as a Category 4 system, *Glenda* took a more SW course towards Onslow and weakened before finally crossing the coast near Onslow at 10pm 30 March as a marginal category 3 system. Very destructive winds were recorded on the coast at Mardie prior to crossing.

A total of 206mm of rain fell at Onslow in the 24 hours to 9am Friday 31 March, representing the sixth wettest day on record for the town. Other centres in the Pilbara also recorded cumulative rainfall totals of over 200mm. This was sufficient to cause problems

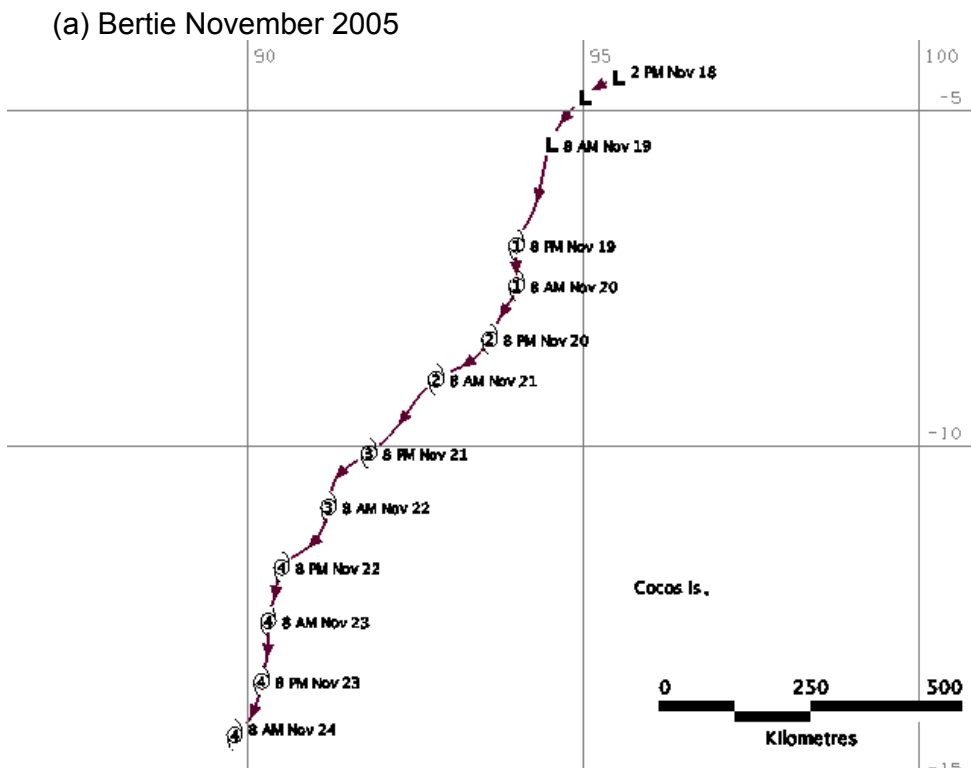
for transport although generally *Glenda* produced less than average rainfall for a land-falling tropical cyclone.

The weakening of TC *Glenda* prior to impact on Onslow, together with the preparedness of the town helped to avert major damage.

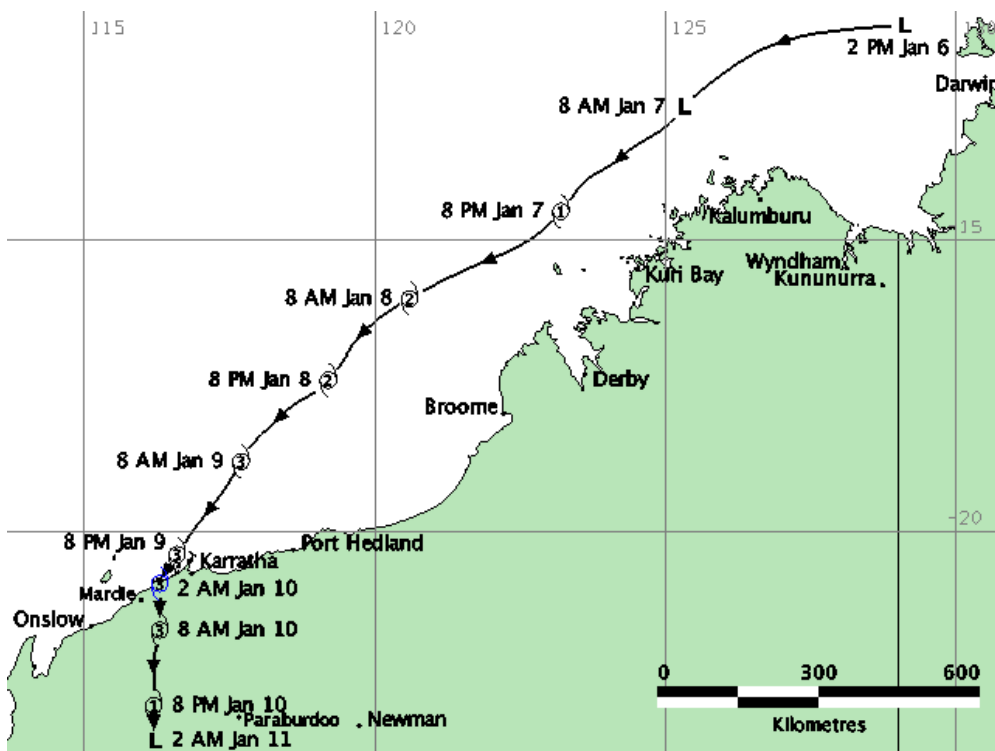
Tropical Cyclone Hubert 2 - 7 April 2006

A low formed well north of the Pilbara coast early in April reaching cyclone intensity on the 5th. *Hubert* intensified to category 2 on the 6th as it moved southwards towards the west Pilbara coast. It passed near Barrow Island and then moved onto the Pilbara coast just west of Mardie on the evening of the 7th as a category 1 cyclone. *Hubert* was not a strong rain-producing system, although a few sites registered over 100 mm.

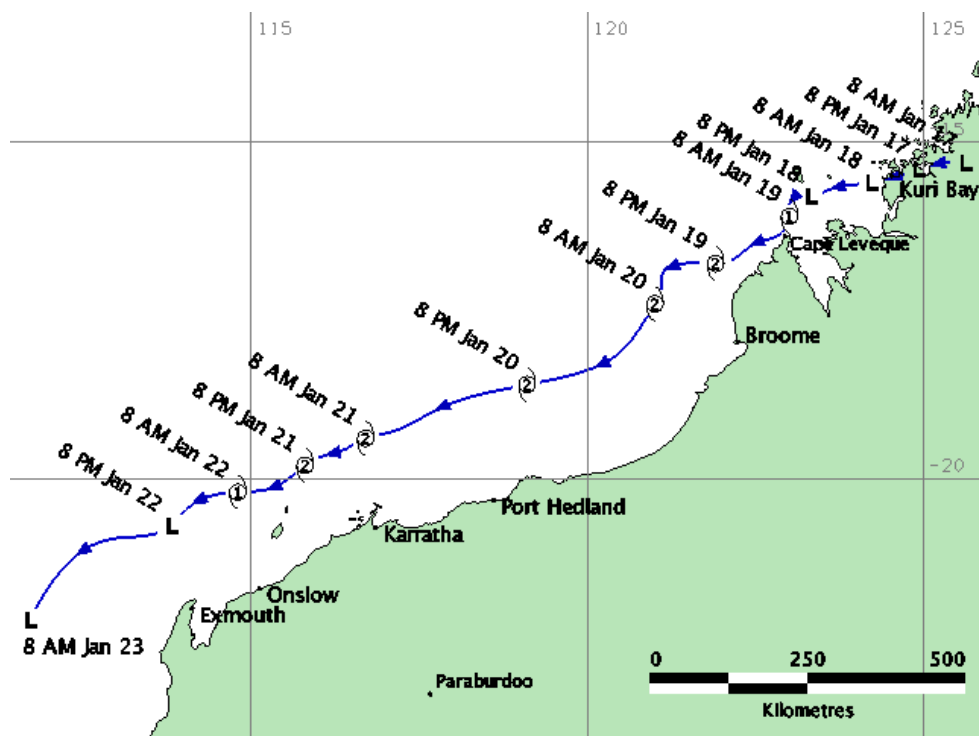
Figure 2. Tracks of individual cyclones.



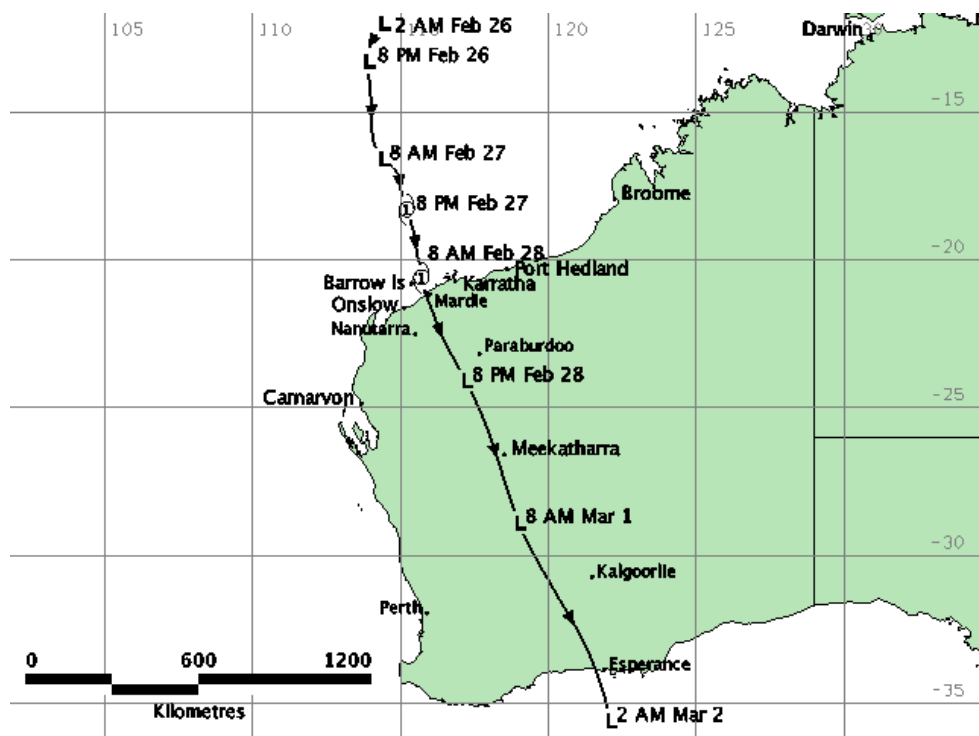
(b) Clare January 2006



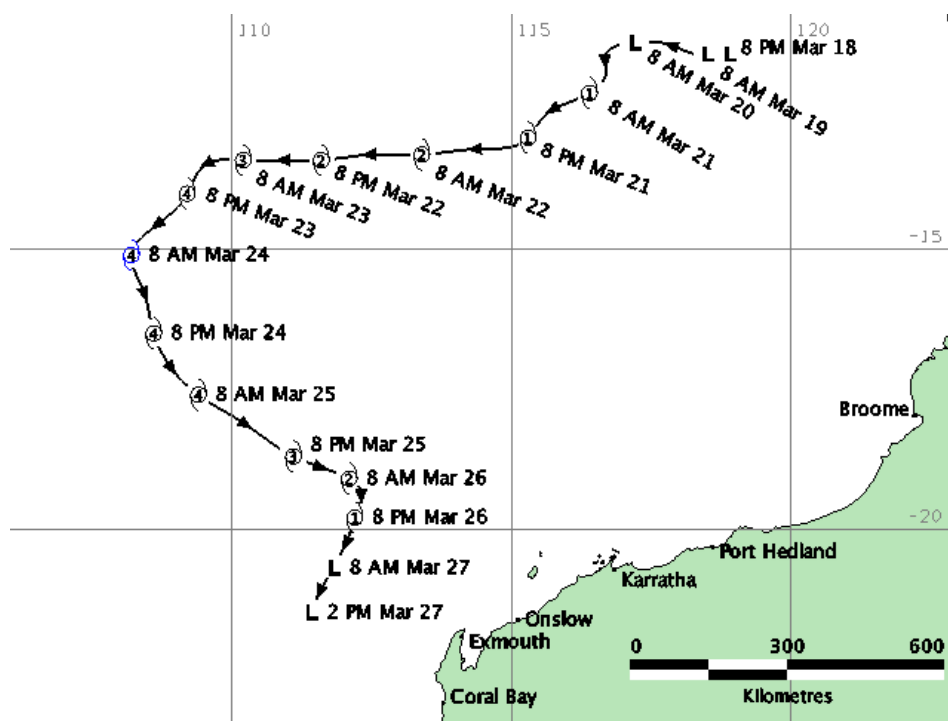
(c) Daryl January 2006



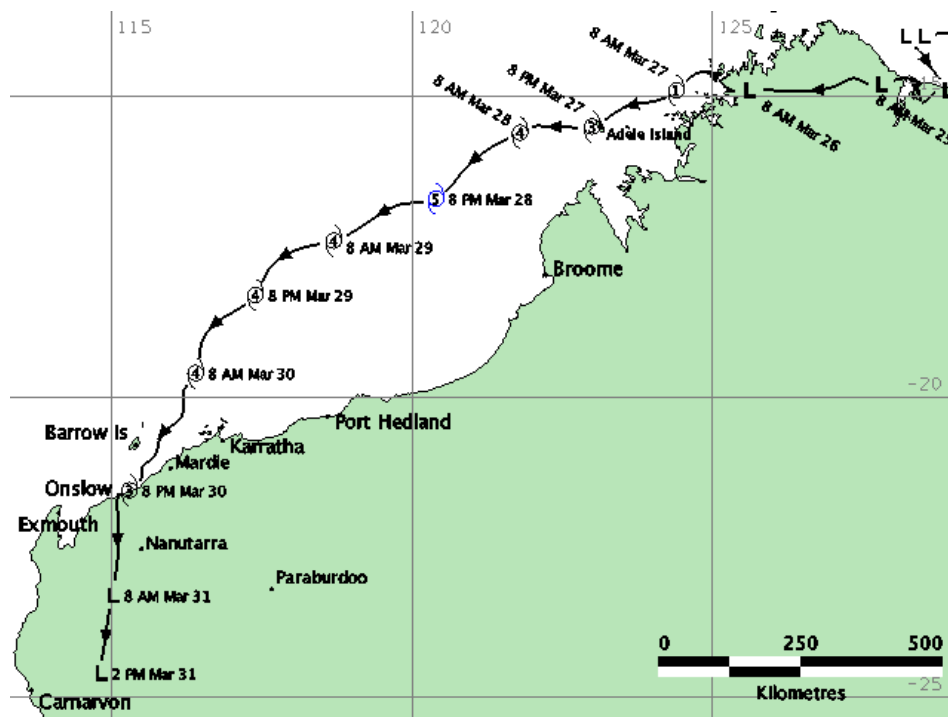
(d) Emma February 2006



(d) Floyd March 2006



(e) Glenda March 2006



(f) Hubert April 2006

