

## TROPICAL CYCLONES - January 2005 -

### Introduction

Tropical Cyclones are low pressure systems in the tropics that, in the Southern Hemisphere, have well defined clockwise wind circulations with a region surrounding the centre with gale force winds (sustained winds of 63 km/h or greater with gusts in excess of 90km/h). The gale force winds can extend hundreds of kilometres from the cyclone centre. If the sustained winds around the centre reach 119 km/h (gusts in excess 170 km/h), then the system is called a severe tropical cyclone. These are referred to as hurricanes or typhoons in other countries

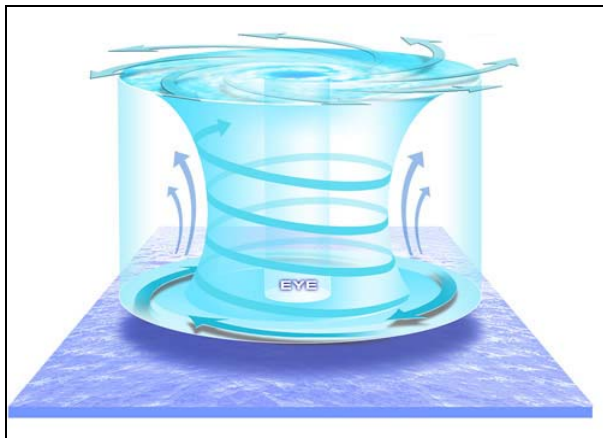


Fig 1. The structure of a cyclone.

Tropical Cyclones derive their energy from the warm tropical oceans and do not form unless the sea-surface temperature is above 26.5°C, although, once formed, they can linger over lower sea-surface temperatures. Tropical cyclones can persist for many days and may follow quite erratic paths. They usually dissipate over land or colder oceans.

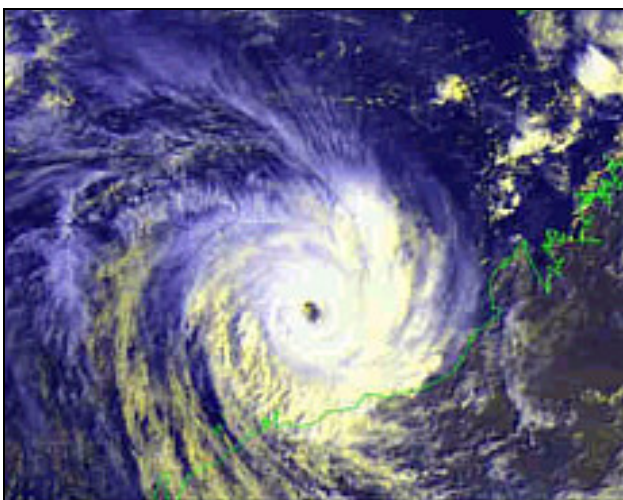


Fig 2. Satellite Image of a tropical cyclone.



Fig 3. A map showing the tracks of cyclones in Australia over the past 70 years (400 have crossed the Australian coast in this period).

### Severity of Cyclones

The severity of a tropical cyclone is described in terms of categories ranging from 1 to 5 related to the zone of maximum winds (Fig 4.) Cyclones produce extreme winds that may exceed 200 km/h. These winds can cause extensive property damage and cause airborne debris to become potentially lethal missiles. It is important to remember that the passage of the cyclone centre or "eye" will produce a temporary lull in the wind but that this will soon be replaced by extreme winds from another direction.

Category	Strongest Gust (km/h)	Typical Effects (indicative only)
1 (Tropical Cyclone)	Less than 125 (Gales)	Negligible house damage. Damage to some crops, trees and caravans. Craft may drag moorings.
2 (Tropical Cyclone)	125-169 (Destructive winds)	Minor house damage. Significant damage to signs, trees and caravans. Heavy damage to some crops. Risk of power failure. Small craft may break moorings.
3 (Severe Tropical Cyclone eg. Roma)	170-224 (Very destructive winds)	Some roof and structural damage. Some caravans destroyed. Power failure likely.
4 (Severe Tropical Cyclone eg. Tracy)	225-279 (Very destructive winds)	Significant roofing loss and structural damage. Many caravans destroyed and blown away. Dangerous airborne debris. Widespread power failures.
5 (Severe Tropical Cyclone eg. Vance)	More than 280 (Very destructive winds)	Extremely dangerous with widespread destruction.

Fig 4. Cyclone severity categories.

## Storm Surge

Cyclones also produce flood rains, which can cause further damage and raises the instance of possible drowning. Stay clear of all storm drains, as flash flooding of these drains is commonplace

The large seas that accompany cyclones are dangerous both for vessels out at sea and those moored in harbours, and serious erosion of adjacent foreshores will occur. Another marine phenomenon that can cause inundation of low-lying coastal areas is the storm surge. This is a raised dome of water about 60 to 80 km across and typically about 2 to 5m higher than the normal tide level. If the surge occurs at the same time as a high tide then the area inundated may be quite extensive.

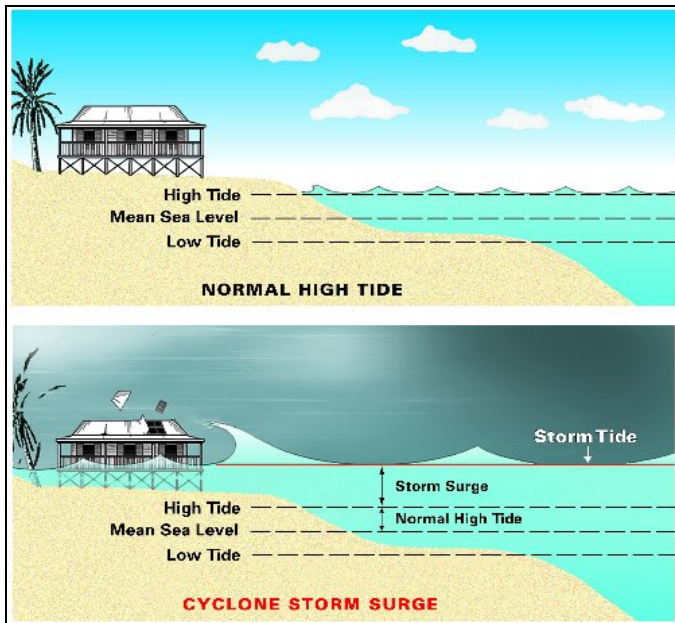


Fig 5. Storm surge resulting from a cyclone.

## WHEN A CYCLONE WATCH IS ISSUED

- Re-check your property for any loose material and tie down (or fill with water) all large, relatively light items such as boats and rubbish bins.
- Fill vehicles' fuel tanks. Check your emergency kit and fill water containers.
- Ensure household members know which is the strongest part of the house and what to do in the event of a cyclone warning or an evacuation.
- Tune to your local radio/TV for further information and warnings.

Check that neighbours are aware of the situation and are preparing.

For more information contact:

Queensland Disaster management Services

<http://www.disaster.qld.gov.au/disasters/cyclones.asp>

Bureau of Meteorology - Cyclone guide

<http://www.bom.gov.au/info/marine/cycpamp.shtml>

Emergency management Centre

<http://www.ema.gov.au/agd/ema/emaschools.nsf/Page/RWPCA72DA4EF61B6FD0CA256C5C00829C23?OpenDocument>

Tropical Cyclone Threat Map

<http://www.bom.gov.au/products/IDQ65002.shtml>

Tropical cyclone bulletin

[http://www.bom.gov.au/cgi-bin/wrap\\_fwo.pl?IDQ20065.txt](http://www.bom.gov.au/cgi-bin/wrap_fwo.pl?IDQ20065.txt)