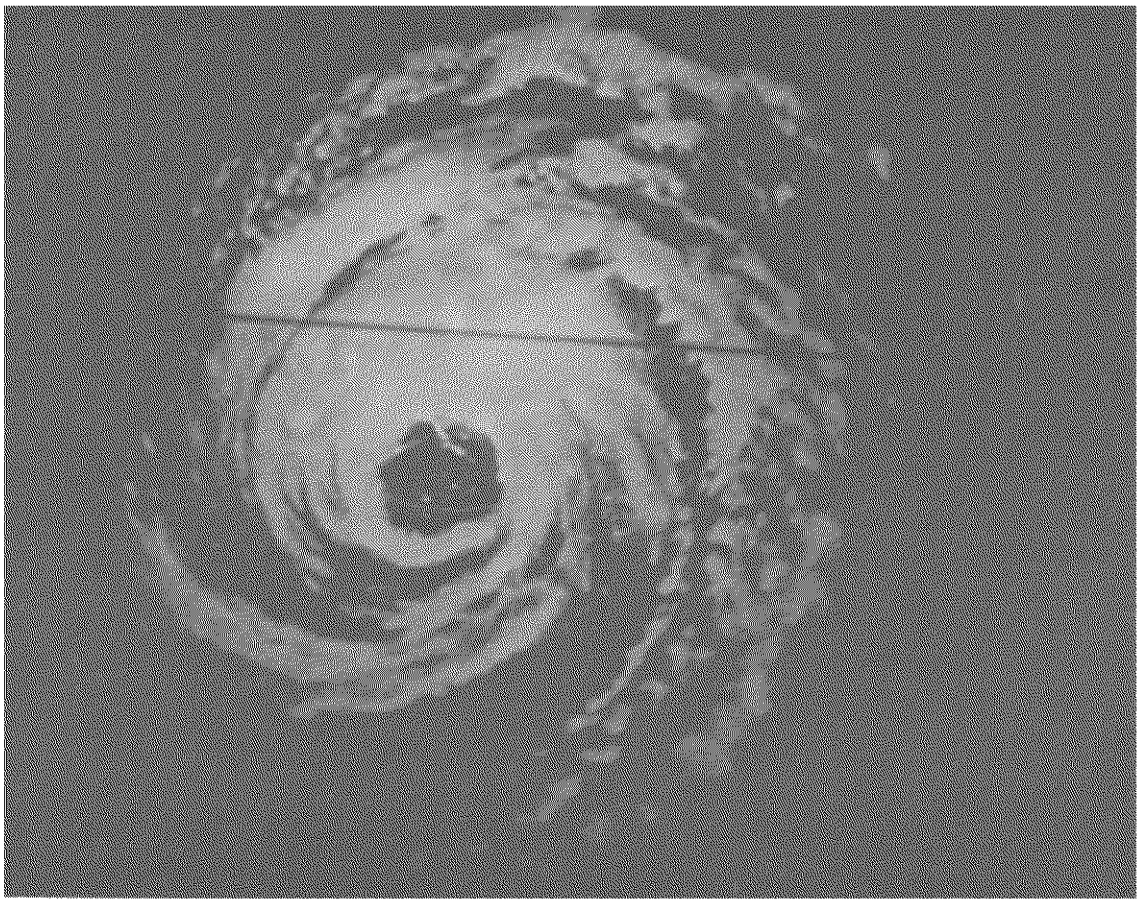
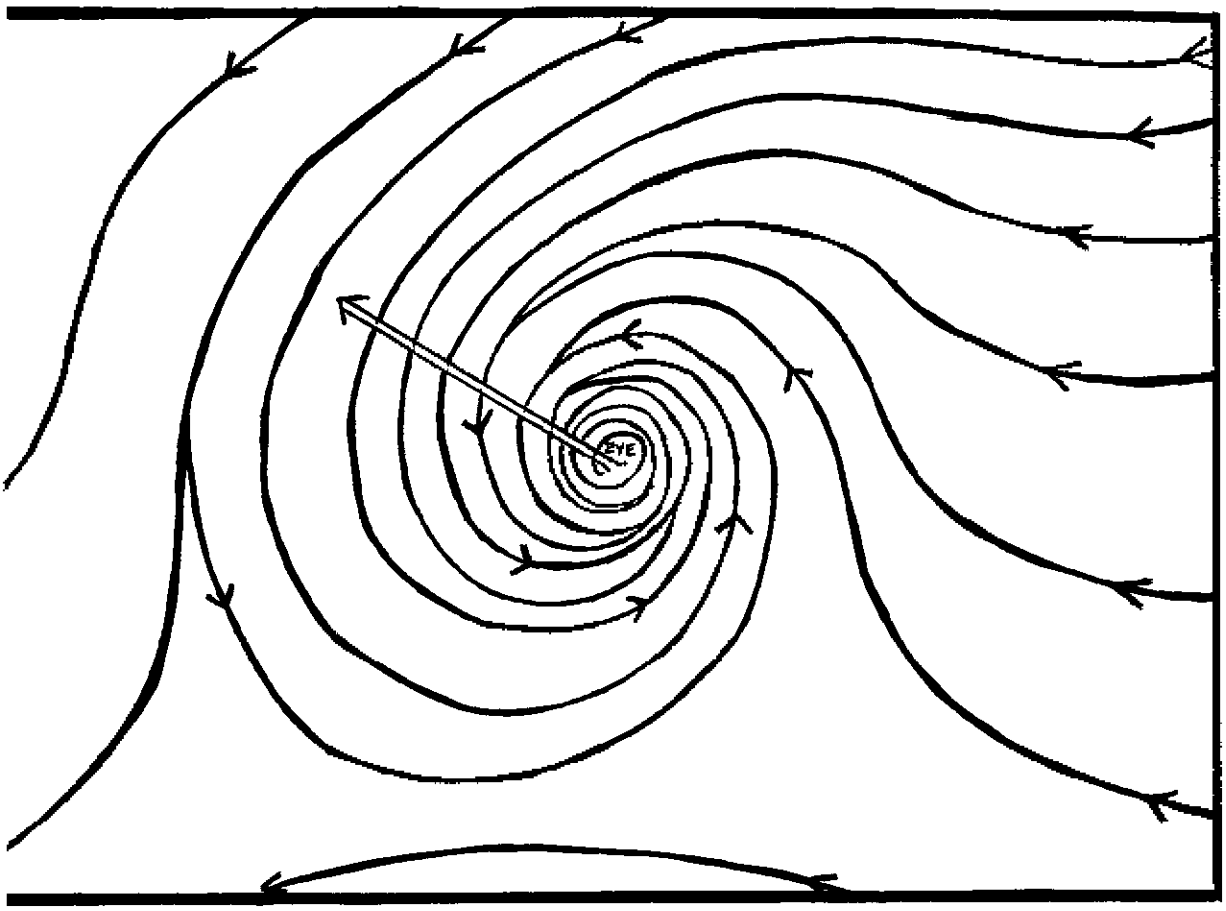
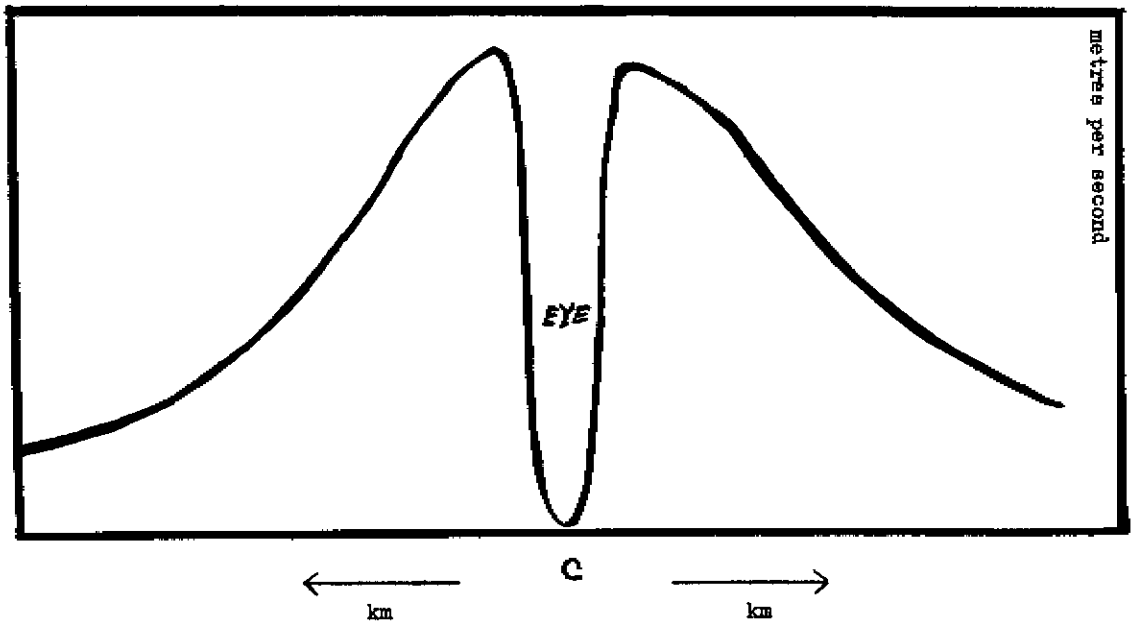


Figure 3.



4a. The eye and wind circulation of a typical tropical cyclone in the northern hemisphere



4b. Wind speed profile across a tropical cyclone (schematic).

Figure 4

Apart from the essential energy source, some other criteria, mainly of a dynamic and thermodynamic nature, have to be satisfied if a tropical cyclone is to form, but the manner in which they interact with one another is not yet fully understood. Provided sufficient meteorological data are available relating to conditions at the surface and in the upper atmosphere, it is a fairly straightforward procedure to delineate the areas of ocean within which a tropical cyclone might come into existence,but it is not yet possible to say where, within the specified area, and when one would form, if at all. However, the forecaster by noting the favourable areas has alerted himself to the possibilities. He would then scrutinize all subsequent meteorological data so that the existence and precise location of a tropical cyclone would be known at the earliest possible time.

2.2.1 Damaging factors

When a tropical cyclone approaches a country, risk of serious loss or damage arises from winds, rainfall, river floods and storm surges, the last two of which have been discussed briefly in the preceding chapter.

2.2.1.1 Winds

When mean wind speeds exceed 120 kilometres per hour (33m/second), i.e. when they reach hurricane force, they are referred to as destructive winds. It should be noted that the destructive power of wind increases with the square of its speed, so that a tenfold increase in wind speed increases its force 100 times. Apart from the direct damage caused by powerful winds, death and injury can also be caused by wind-borne objects. Also, wind damage to buildings and structures can be brought about by

Figure 5. Wind damage caused by a tropical cyclone in Darwin, Australia (Courtesy of the Herald and Weekly Times, Ltd., Melbourne, Australia).