

# A-Level Geography Resource Package

[Physical >> Hazards >> Tropical Storms >> Tracking & Monitoring]

The **intensity** of a tropical cyclone is determined by the **strength of the surface winds** near the centre. However, unless there are land stations in the vicinity, or in the rare case of a ship reporting nearby, this kind of information is **not readily available**.

With the scarcity of direct data, the intensity of a tropical cyclone has to be inferred from analysis of **cloud top temperatures** as shown on enhanced **infra-red satellite pictures**.

Over the vast expanse of the oceans, satellite analysis plays an important role in locating the centres of tropical cyclones. Satellite pictures are now received at hourly intervals and form a near real-time observational basis for tracking tropical cyclones.

The appearance of a well-formed eye is a definite indicator of where the storm is. If an eye is absent, it is still possible to obtain a reasonable estimate of the centre location by tracing the spiral rain bands of the storm or by studying the relative motion of cloud features near its centre. If taking place closer to land, radar tracking can also be used to determine features of a tropical storm.

Despite advances in satellite and radar technology, conventional weather chart analysis remains the basic tool of forecasters. During the approach of a tropical cyclone, surface charts are analysed on an hourly basis while charts of higher levels in the atmosphere are drawn on a 6-hourly basis.

The science of tropical cyclone forecasting is by no means perfect. The multitude of contributing factors are so complex that they are as yet not entirely understood or are only crudely represented (sometimes for practical reasons) in the various forecast schemes. The volatile nature of tropical cyclones, with their inherent fluctuation in both motion and intensity, is also partly to blame.

Data and Information provided by the Hong Kong Observatory.

<http://www.hko.gov.hk/informtc/tracking.htm>



**Hong Kong Observatory**  
The Government of the Hong Kong Special Administrative Region

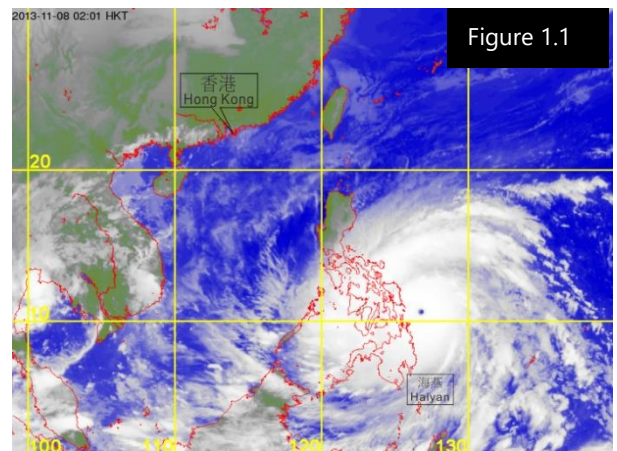


Figure 1.1

Figure 1.1 shows the satellite imagery overlay of cloud movement of Typhoon Haiyan, 2013, over the Philippines. The eye is clearly visible in the centre of the swirling cloud layers.

"Left on its own, a tropical cyclone in the Northern Hemisphere has an inertial tendency to drift towards the northwest. Nevertheless, its motion is more often dominated by external forces. The basic concept here is that the environmental current steers the tropical cyclone. Over the western North Pacific, most of the tropical cyclones form along the southern or southwestern flank of the subtropical ridge of high pressure where the steering current flows to the northwest. This coincides with the **inertial movement tendency** and explains the predominant north-westward storm tracks observed."

**The tendency** of all objects to resist any change in **motion** or direction.