

Tornadoes and Waterspouts

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Tornadoes (over land) and waterspouts (over sea) are intense columnar vortices in the shape of funnel clouds with very strong winds and very low pressure near the centre. They usually develop from intense thunderstorms and are severe localized phenomena which may be accompanied by heavy rain or severe squalls.

In Hong Kong, tornadoes and waterspouts are relatively infrequent and on average there is only one report of tornado or waterspout about every one to two years. According to the records of the Hong Kong Observatory, there were nine days with reported tornadoes and 32 days with reported waterspouts in Hong Kong from 1982 to 2014 and 1959 to 2014 respectively, with all of them occurring in the months of May to October (Figure 1). Figure 2 shows that more tornadoes have occurred over the western part of the territory and more waterspouts over the southern part of the Hong Kong waters.

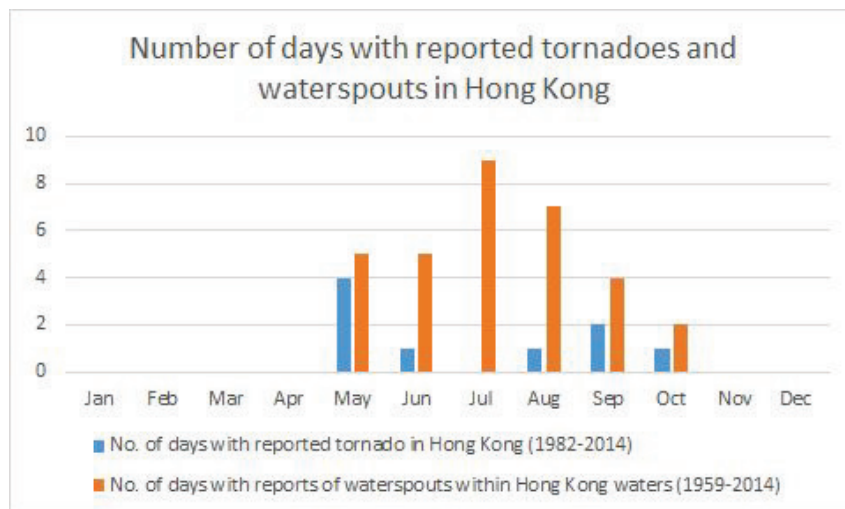


Figure 1 Monthly total of the number of days with reported tornado and waterspout in Hong Kong

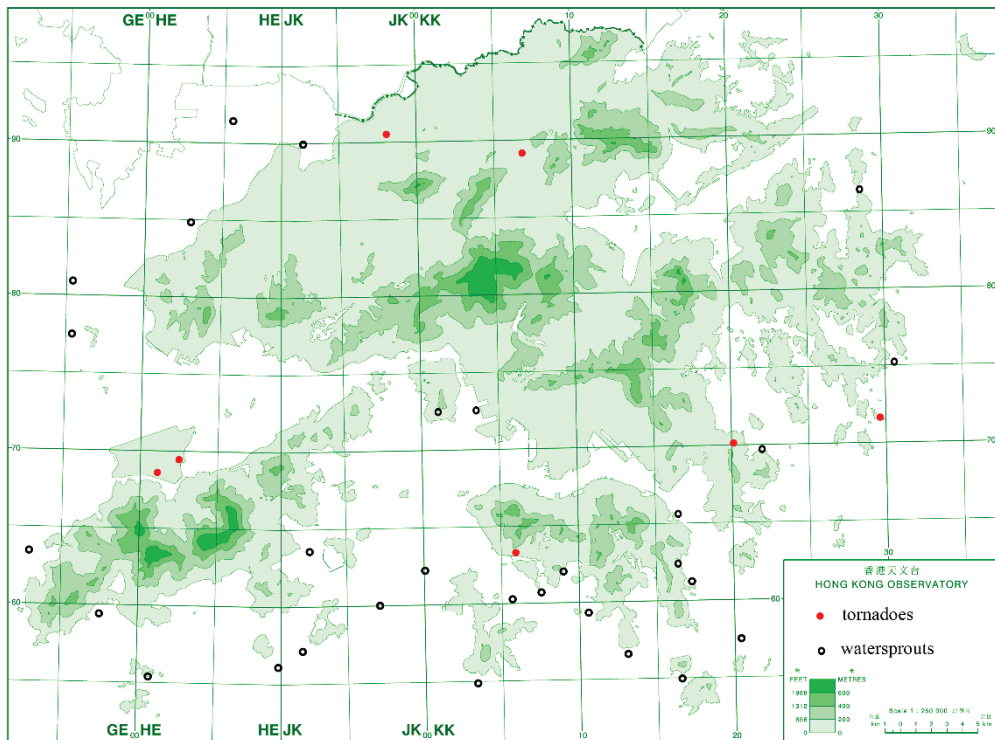


Figure 2 Locations where tornadoes and waterspouts have been reported in Hong Kong (Note: there are a few cases where the detailed locations are not available)

Occurrences of tornadoes in Hong Kong are mostly associated with unstable weather. One such case occurred on 6 September 2004 at the Hong Kong International Airport. With a trough of low pressure lying over the coast of Guangdong, there were thundery showers over Hong Kong that day. A tornado developed amidst the thunderstorms and struck the Hong Kong International Airport at around 5:55 p.m. (Figure 3). In a span of just a few minutes, gusts in excess of 60 km/h overturned a van, injuring one person. Some cargoes were tossed towards a cargo plane while it was being refueled, damaging a fuel pipe and causing oil spill.



Figure 3 A tornado over the Hong Kong International Airport on 6 September 2004

Waterspouts also form under unstable weather situations. On 27 July 2010, a trough of low pressure along the south China coast brought heavy showers and squally thunderstorms to the region. A funnel cloud was observed by the Observatory's staff at the Airport Meteorological Office in Chek Lap Kok (Figure 3) at about 8:45 a.m. Thereafter, reports were received from the Government Flying Service and a number of citizens about the sighting of at least three waterspouts over Deep Bay. Fortunately, no casualties nor damages were reported.



Figure 4 A funnel cloud observed at the Observatory's Airport Meteorological Office in Chek Lap Kok near Deep Bay at around 8:45 a.m. on 27 July 2010

Information on the occurrence of tornadoes and waterspouts is very useful for real-time weather monitoring and for studying the climatology of such phenomena. Ship masters are encouraged to report to the Hong Kong Observatory on the sighting of waterspouts over the sea, in particular information such as the estimated distance and direction of the waterspout from the ship, the diameter of the funnel cloud, photographs of the waterspout, as well as the prevailing weather conditions.