

Earthquake

The Hong Kong Observatory (HKO) has monitored distant earthquakes since 1921 using long-period seismographs. In 1979, a short-period seismograph network was established for monitoring local tremors. Development and optimization of the seismograph network continues with the advancement in science and technology. Nowadays, HKO has installed broadband seismographs at Po Shan Road, Mid-levels and the HKO's Headquarters, Tsim Sha Tsui to monitor earthquakes worldwide, especially those earthquakes in the South China Sea that will probably generate tsunami. Since 2010, the Po Shan Seismograph Station has been an affiliated broadband station of the Global Seismographic Network. Its recorded seismic waves are provided to various centres around the world via the Incorporated Research Institutions for Seismology (IRIS) in the United States. The Observatory also exchanges real-time data with several hundreds seismic stations around the world through IRIS.

HKO also operates seven short period seismograph stations at Cape D'Aguiar, Cheung Chau, Keung Shan, Lead Mine Pass, Luk Keng, Tsim Bei Tsui and Yuen Ng Fan respectively. This coupled with the seismograph stations at Po Shan and the HKO's Headquarters form a local earthquake monitoring network for determining effectively the epicentre of locally felt earthquakes in Hong Kong's nearby regions. Accelerographs are also installed at some seismograph stations for recording peak ground acceleration during felt earthquake which help to determine the earthquake intensity in Hong Kong.

HKO's earthquake data processing system collects real time seismic waveform data from global and Hong Kong seismograph networks to compute earthquake parameters such as origin time, epicentre and magnitude. HKO also collects earthquake and tsunami information issued by the South China Sea Tsunami Advisory Center, China Earthquake Administration, Earthquake Administration of Guangdong Province, Pacific Tsunami Warning Center (PTWC), Northwest Pacific Tsunami Advisory Center (NWPTAC), West Coast and Alaska Tsunami Warning Center (WCATWC) and U.S. Geological Survey.

For locally felt earthquake and larger earthquake worldwide, HKO will issue quick earthquake messages via social websites and RSS to the public, and also SMS and emails to news agencies, media, related government policy bureaux and departments as well as earthquake and tsunami monitoring centres overseas. In addition, HKO will issue strong earthquake reports and locally felt earthquake reports to the media via the Information Services Department (ISD).

The magnitude of an earthquake is estimated using the amplitudes and periods of earth movement recorded by standard instruments, and is an indication of the amount of energy released at the focus. The Richter Scale is logarithmic. An increase of one step in magnitude corresponds to an approximately 32-fold increase in energy. A difference of two steps in magnitude means a difference of 1000 ($\sim 32 \times 32$) times in energy.

The intensity of an earthquake at a particular locality indicates the violence of earth motion produced there by the earthquake. It is determined from reported effects of the tremor on human beings, furniture, buildings, geological structure, etc. Many places, including Hong Kong, have adopted the Modified Mercalli Scale (MMS) which classifies earthquake effects into twelve grades.

Suggested safety rules during and after the earthquake are as follows:

During the earthquake:

1. Do not panic, keep calm.
2. Douse all fires.
3. If the earthquake catches you indoors, stay indoors. Take cover under a sturdy piece of furniture. Stay away from glass, or loose hanging objects.
4. If you are outside, move away from buildings, steep slopes and utility wires.
5. If you are in a crowded place, do not rush for cover or to doorways.
6. If you are in a moving vehicle, stop as quickly as safety permits, but stay in the vehicle until the shaking stops.
7. If you are in a lift, get out of the lift as quickly as possible.
8. If you are in a tunnel, move out of the tunnel to the open as quickly as safety permits.

After the earthquake:

1. Check for casualties and seek assistance if needed.
2. If you suspect a gas leak, open windows and shut off the main valve. Leave the building and report the gas leaks. Do not light a fire or use the telephone at the site.
3. Turn off the main valve if water supply is damaged.
4. Stay out of severely damaged buildings as aftershocks may cause them to collapse. Report any building damage to the authorities.
5. As a precaution against tsunamis, stay away from shores, beaches and low-lying coastal areas. If you are there, move inland or to higher grounds. The upper floors of high, multi-storey, reinforced concrete building can provide safe refuge if there is no time to quickly move inland or to higher grounds.