

Meteorological Services for the Yuen Long District

Purpose

This article introduces the work and the services of the Hong Kong Observatory (HKO) relevant to the Yuen Long District.

Climate of the Yuen Long District

2. Yuen Long District is situated at the northwest of the New Territories in an alluvial plain surrounded by hills in three sides and Deep Bay in the northwest. The district is vast in size covering Ping Shan Heung, Ha Tsuen Heung, Kam Tin Heung, Pat Heung, San Tin Heung, Shap Pat Heung, Yuen Long Town and Tin Shui Wai. Among these, Yuen Long Town and Tin Shui Wai are densely populated and developed regions. Hence, the climate of the district is blended with the characteristics of urban and rural climate. On average, the annual mean temperature of the district is 22.9 degree and annual total rainfall is 1,555 millimetres. The rainy season from May to September contributes to about 81% of the annual rainfall.

Monitoring Stations in the Yuen Long District

3. The Observatory has established six Automatic Weather Stations (AWS) in the Yuen Long District which are located at Lau Fau Shan, Wetland Park, Shek Kong, Au Tau, Tsim Bei Tsui and Lok Ma Chau respectively. The AWSs at Lau Fau Shan, Wetland Park and Shek Kong measure various kinds of weather information which are made available to the public through the Observatory's "Regional Weather" webpage and the "Dial-a-Weather" hotline at 187 8200. The AWSs at Au Tau, Tsim Bei Tsui and Lok Ma Chau provide rainfall measurements only.

4. The Lau Fau Shan AWS started operation in 1985. It has been a major outpost for the Observatory to monitor weather coming from the northwest. It collects various meteorological information including air temperature, relative humidity, rainfall, wind speed, wind direction and air pressure. A weather camera was installed in 2008 to provide real-time weather photos to enable the public to appreciate the latest weather conditions near Deep Bay.

5. The Observatory set up an AWS at Wetland Park in 2006, providing weather information including air temperature, relative humidity, rainfall, wind speed, wind direction and air pressure. It is also equipped with a weather camera to provide real-time weather photos to facilitate the public and visitors to appreciate the latest weather conditions in the vicinity of the park.

6. The Shek Kong AWS was established in 1996 to provide measurements of wind direction, wind speed, air temperature, relative humidity, rainfall and air pressure.
7. The Observatory also receives real-time rainfall data from the raingauges operated by the Geotechnical Engineering Office at Yuen Long Tai Tong, Shui Pin Wai Estate and Fairview Park as well as Drainage Services Department's raingauges at Hung Shui Kiu, Shap Pat Heung, Tin Shui Wai, Shek Kong Shui Tsan Tin, Kap Lung, Sheung Tsuen San Tsuen, Ma On Kong, Pat Heung, Ngau Tam Mei and Lok Ma Chau respectively. The information is used as reference for the issuance of rainstorm and landslip warnings as well as the special announcement on flooding in the northern New Territories. Furthermore, the data from the above raingauges serve for the production of rainfall distribution map which is being displayed in the website of the Observatory (<http://www.hko.gov.hk/wxinfo/rainfall/isohyete.shtml>).
8. Tsim Bei Tsui tide gauge station started operation in 1974 to measure tide levels, monitor storm surges and tsunamis, and provide data for monitoring long-term sea level change in Hong Kong. Real-time tidal information from Tsim Bei Tsui tide gauge station is online on the Observatory's website for reference by members of the public.
9. To promote better understanding of weather and climate among the communities and to strengthen cooperation with them, the Observatory, in collaboration with the Department of Applied Physics of the Hong Kong Polytechnic University and the Hong Kong Joint-school Meteorological Association, established a "Community Weather Information Network" (Co-WIN). Co-WIN spans a total of 98 members (up to 31 May 2011) over Hong Kong. In the Yuen Long District, we have six members including Shun Tak Fraternal Association Yung Yau College, Ho Dao College (Sponsored by Sik Sik Yuen), Chiu Lut Sau Memorial Secondary School, HKFYG Lee Shau Kee College, CUHK FAA Thomas Cheung Secondary School and Queen Elizabeth School Old Students' Association Tong Kwok Wah Secondary School. Co-WIN (<http://weather.ap.polyu.edu.hk/index.php>) provides additional information of weather and UV index and helps residents to better understand the weather situation in their vicinity. The Observatory appreciates the assistance from the District Council for the promotion of Co-WIN, so that there will be more community stations joining us to provide extensive weather information for local residents as well as people all over Hong Kong.
10. In order to determine whether the operation of the Guangdong Daya Bay Nuclear Power Station will affect the environmental radiation levels in Hong Kong, the Observatory implements the Environmental Radiation Monitoring Programme (ERMP). Under this programme, the Observatory operates a network of ten stations to monitor the ambient gamma radiation levels in Hong Kong round-the-clock. One of the monitoring stations is located at Tsim Bei Tsui. Members of the public can access the real-time hourly ambient radiation data at these ten stations at the Observatory's webpage (http://www.hko.gov.hk/radiation/ermp/rmn/applet/map/rmn_hourly_e.htm). The ambient gamma radiation levels in Hong Kong may vary due to natural causes, which include geological and meteorological conditions such as rainfall, pressure and

wind. The ERMP also includes a thermoluminescent dosimeter (TLD) network to measure ambient gamma doses accumulated over a long period. The network comprises 27 monitoring points over the territory, with two located at Yuen Long Government Offices and Shek Kong Barracks respectively. Another component of the ERMP is to carry out radioactivity measurements of environmental samples collected from various parts of the territory. These samples include soil samples collected at Yuen Long R.G. Filters, Shek Kong and Pak Nai, as well as underground water sample collected at Kwan Lok San Tsuen. In the very unlikely event of an accident at Daya Bay, HKO will intensify monitoring of radiation levels in Hong Kong. In addition to the fixed ground-based Radiation Monitoring Network, aerial and mobile ground surveys will be conducted to determine whether there is radioactive material over Hong Kong, and if so, the extent of its spread and whether any parts of the territory have been contaminated.

Earthquake and Tsunami Monitoring of the Hong Kong Observatory

11. Tsim Bei Tsui Seismograph Station is located north of Tin Shui Wai facing Deep Bay. Commissioned in 1979, it is at the northwest corner of the Hong Kong Seismograph Network. As the location is less affected by city activities, the station enjoys low noise level, and thus is very suitable for measuring seismic waves.

12. An earthquake of magnitude 2.8 occurred in Deep Bay on 19 Nov 2010. Quite a number of Yuen Long residents reported having felt the earth tremor. The intensity of this earthquake in Hong Kong was IV (four) on the Modified Mercalli Intensity Scale. The vibration was like passing of heavy trucks. No damage was caused.

Special Announcement on Flooding in the northern New Territories

13. A Special Announcement on Flooding in the northern New Territories will be issued by the Hong Kong Observatory whenever heavy rain affects the area and flooding is expected to occur or is occurring in the low-lying plains of the northern New Territories. The special announcement will be updated at appropriate intervals until heavy rain ceases. The special announcement aims at drawing attention to potential flooding in the northern New Territories due to heavy rain. It is intended to prompt the public and relevant parties to take precautionary measures against flooding or flash floods for safeguarding life and properties. The special announcement also alerts the relevant government departments and organizations to take appropriate actions, such as opening of temporary shelters, search and rescue operations, closure of individual schools and relief work.

UV Index Information Service

14. There are many outdoor recreational facilities in the Yuen Long District. People engaging in outdoor activities can make use of the Observatory's UV index and

its forecasting services to assess the intensity of UV radiation and take appropriate protective measures. Relevant UV information is made available to the public through the radio, TV and the Observatory's website.

Enhanced tropical cyclone track webpage

15. The Observatory launched a tropical cyclone track information webpage based on a geographic information platform in July 2010. Users can display tropical cyclone positions and tracks over a detailed map. They can also zoom in or out the map, pan to their area of interest, and view detailed information of the tropical cyclone, including its latitude, longitude, intensity classification and the maximum sustained wind near its centre. Multiple tropical cyclones can also be displayed on the same map.

Location-specific Lightning Alert Service

16. The Location-specific Lightning Alert Service provided by the Observatory can help the public assess the risk of lightning at their locations. People can select their location of interest and a maximum of three alert circles of different sizes on the Observatory's Location-specific Lightning Alert webpage. Alert messages will be automatically generated when lightning is detected within the specified ranges. The District Council and other people in the district can make use of this service when engaging in outdoor activities.

"MyObservatory" Location-specific Weather Service

17. The Observatory launched "MyObservatory", a location-specific weather service, in March 2010. By making use of positioning software to estimate the user's location, this new service provides the latest information from the weather station closest to the user, through the web, personal digital assistance (PDA), iPhone and Android. The information includes temperature, relative humidity, rainfall, wind direction, wind speed and weather photo. Residents in Yuen Long District can acquire latest weather information in the district by using the new service. The page views to "MyObservatory" have exceeded 600 million since its launch.

"Digital Weather Forecast" webpage

18. Although Hong Kong is small, temperatures and winds can vary over different regions. The Observatory launched a "Digital Weather Forecast" webpage in early 2010, providing weather forecast in fine spatial and temporal details. The webpage shows hourly changes in temperature, wind direction and speed for every 10-kilometer square over Hong Kong and the neighbouring Pearl River Delta region. Following the operation of a new generation of computer models at the Observatory, the webpage was enhanced in March 2011 by extending the weather forecast period from one day to three days, and adding time charts and forecasts of relative humidity.

People in the Yuen Long District can make use of this webpage to appreciate the weather changes over their district.

“Rainfall Nowcast for the Pearl River Delta Region” Webpage

19. The Observatory launched the “Rainfall Nowcast for the Pearl River Delta Region” webpage in late 2008. It displays the computer-generated evolution within the next two hours of the forecast rainfall distribution over the Pearl River Delta region, including Hong Kong. The webpage was revamped in June 2010. The new webpage features a four-dimensional (4D) space-time map of the globe with user-selectable geographical information content. Advanced users may also download the forecast information of interest for direct use. Members of the public may make reference to the forecast rainfall maps before they decide on their travel plan.

“Computer Forecast Weather Map” Webpage

20. The “Computer Forecast Weather Map” displays computer-simulated evolution of weather patterns over East Asia and the western North Pacific. Since September 2010, the update frequency of the predictions has been increased from twice per day to four times per day. The products include weather, temperature, mean sea level pressure, relative humidity and winds. These enhancements are made possible through the operation of a new generation of numerical weather prediction models at HKO. The highest resolution of weather models previously run by the Observatory was 20 km. The new suite of models offers a resolution down to 2 km, providing more details on weather systems affecting the territory.

Greater Pearl River Delta Weather Warning Webpage

21. With the rapid development of the Greater Pearl River Delta, people (including those who work or go to school crossing the borders) are traveling more frequently in the region. To provide weather warning information for people on the move in this region, HKO worked together with the Guangdong Meteorological Bureau and the Macao Meteorological and Geophysical Bureau to launch a website displaying real-time weather warnings and forecasts in 11 cities of the Greater Pearl River Delta region. This website also provides a mobile version which allows users to browse the website anytime and anywhere.

Weather Video on YouTube

22. The Observatory produces and uploads short videos about the weather to the YouTube website every week. The videos explain weather systems and geophysical phenomena affecting Hong Kong and provides practical meteorological and relevant scientific knowledge. The YouTube website, launched in 2009, has become increasingly popular with the total number of video views exceeding 1.1 million.

Future Version of World Weather Information Service Website

23. The Observatory launched the future version of the World Weather Information Service (WWIS) in April 2010, providing official weather forecasts for cities around the world, under the auspices of the World Meteorological Organization. Developed by the Observatory, the future version gives Internet users more intuitive and flexible access to the latest official weather forecasts from over 120 countries and territories around the world. It features a versatile ‘fly-over’ function to any part of the world. Users can obtain the latest weather forecast for over 1,300 cities worldwide by a simple click. People can visit this website to readily acquire weather information for planning of travel for business or pleasure. The website was showcased in the MeteoWorld Pavilion at the Shanghai World Expo 2010. The total page visits of the WWIS exceeded 140 million in 2010.

HKO Delivers Weather News on Twitter and Weibo

24. The Observatory launched a service on Twitter (<http://twitter.com>) in 2010 to deliver the latest weather warnings and HKO news. Follow HKO’s account, “HKObservatory”(Chinese) or “ObservatoryHK”(English), to stay connected with us and be informed of the latest weather news.

25. Starting from 23 March 2011, the Observatory delivers latest news and real-time weather warnings on the Weibo website. The official HKO Weibo account is available at <http://t.sina.com.cn/observatoryhk>. On following "HongKongObservatory", you will be kept posted with the latest weather news including the latest warnings in force. The Chinese version of HKO Weibo account is at <http://t.sina.com.cn/hkobservatory> and the account is “香港天文台”.

“Weather Information for Fishermen” website

26. To strive for better weather services for the fishermen, the Observatory launched the beta version of “Weather information for Fishermen” website in December 2010. The website includes relevant weather information for fishermen and this can assist them to better understand the latest weather situation before operation at sea.

Outlook

27. The Observatory will develop and launch new services to meeting the public demand.