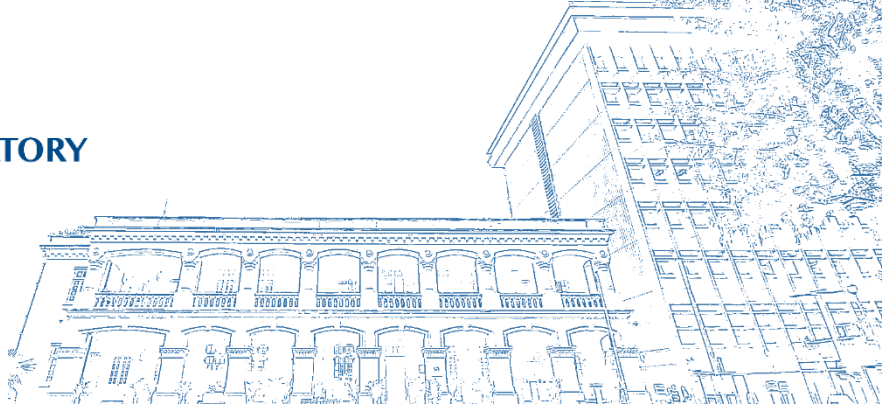
香港天文台
HONG KONG OBSERVATORY



2025

INTRODUCTION

The three main objectives of the Hong Kong Observatory (the Observatory, or HKO) are:

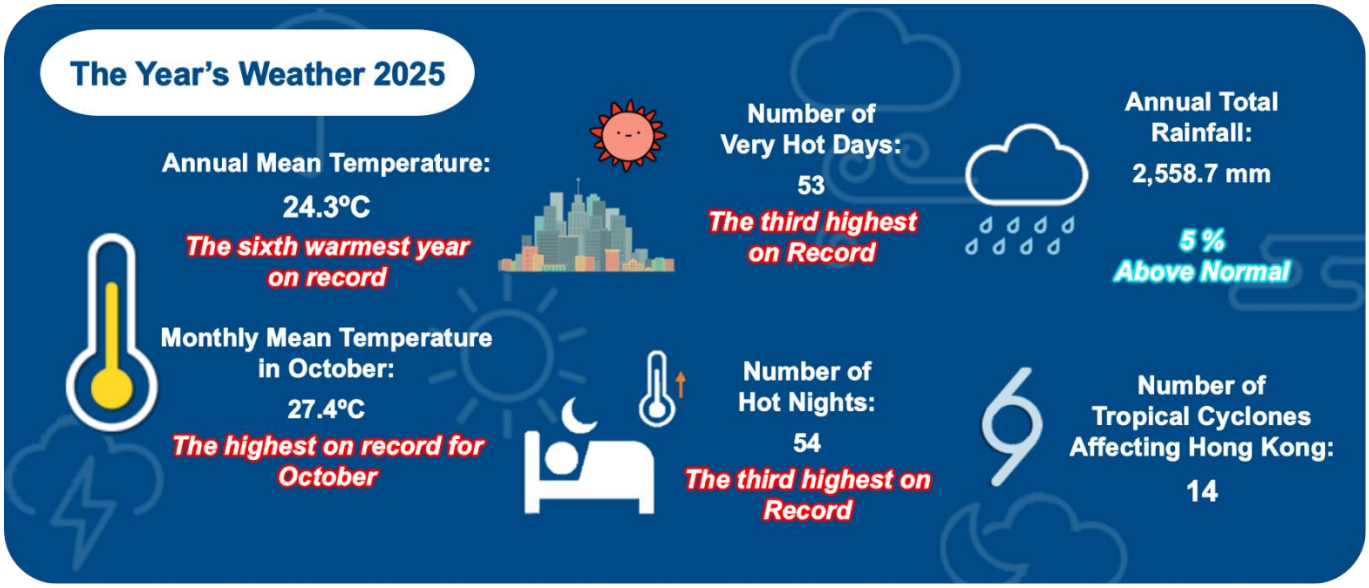
(1) to provide weather forecasts and warnings to meet the public's demand for weather services, and to provide weather services for aviation and shipping in accordance with international standards;

(2) to monitor local environmental radiation levels, assess possible consequences and impacts and advise the Government on counter-measures that may be necessary during nuclear emergencies; and

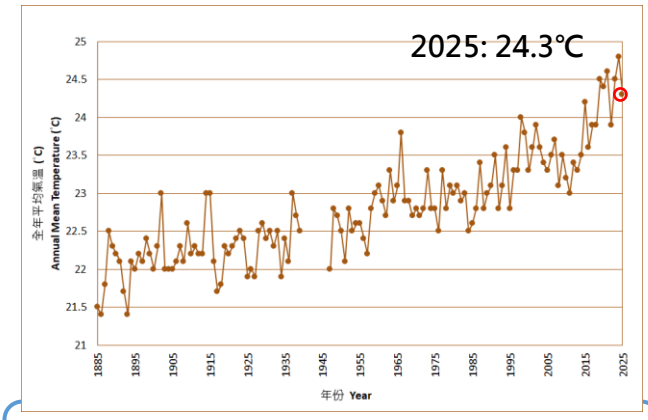
(3) to maintain the Hong Kong time standard and to provide geophysical, oceanographic, astronomical and climatological information and consultative services to the public and business sectors.

During the financial year 2025-26, the department's total expenditure was $445 million and the total revenue was $174 million. As at 31 March 2026, the department had an establishment of 366 posts.

The Year's Weather 2025



The year 2025 was the sixth warmest year in Hong Kong since record began in 1884 with the annual mean temperature reaching 24.3 degrees, 0.8 degrees above the 1991-2020 normal. In October, the monthly mean temperature of 27.4 degrees and monthly mean minimum temperature of 25.6 degrees were both the highest on record. There were 53 Very Hot Days and 54 Hot Nights in Hong Kong in 2025, both ranking the third highest on record.



Long-term time series of annual mean temperature in Hong Kong (1885-2025)

Fourteen tropical cyclones affected Hong Kong in 2025. The Hurricane Signal No. 10 was issued twice in the year during the passages of Typhoon Wipha in July and Super Typhoon Ragasa in September, tying the previous record in 1964. The No. 8 Gale or Storm Signal was issued during the passage of Severe Tropical Storm Tapah in September.

The annual total rainfall in 2025 was 2,558.7 millimetres, about 5 percent above the 1991-2020 normal. The rainfall was concentrated during July to September and the total rainfall during these three months contributed more than 80 percent of the annual rainfall. There were 16 Red Rainstorm Warnings and 5 Black Rainstorm Warnings, breaking the respective highest annual numbers on record. An active southwest monsoon and upper-air disturbances brought heavy showers and squally thunderstorms to the coast of Guangdong on 2 – 5 August. The outbreaks of heavy showers necessitated the issuance of the Black Rainstorm Warning for three times in just four days. The Observatory headquarters registered a record-breaking daily rainfall of 368.9 millimetres on 5 August, the highest daily rainfall in August since records began in 1884. This daily rainfall amount was already more than 80 percent of the normal rainfall in August.

WEATHER SERVICES

WEATHER SERVICES, MESSAGE DELIVERY AND SOCIAL MEDIA

Local Weather Reports Disseminated Within the First 10 minutes of Each Hour
100 %

Total No. of Page Views of the Observatory Websites and the Mobile App MyObservatory
154 Billion

No. of Followers of the Observatory's Facebook Page
~ 430,000

No. of Followers of the Observatory's Instagram Account
~ 130,000

Forecast Accuracy as Verified by Objective Means
90 %

Calls Handled by the Dial-a-Weather Service
3.7 Million

Total Accumulated Views of the Observatory's YouTube Channel
~11.39 Million

The Observatory provides weather forecast and warning services to the public, special users, the shipping and aviation communities to reduce loss of life and damage to property, and to minimise disruption to economic and social activities during hazardous weather.

In 2025, the Observatory fulfilled its performance pledge of issuing at least one weather bulletin every hour of the day, disseminating 100% of the bulletins within 10 minutes after each hour, and attained a forecast accuracy (as verified by objective means) of 90%.

Weather information was enhanced in 2025-26 to meet the needs of the public through:

- Enhancing its services on the HKO website and the "MyObservatory" by increasing the frequency of updating the radar and satellite images, and adding new product layers to enrich information on lower atmospheric rainfall and visibility;

- Enhancing the dissemination of extreme weather alerts by：

  (1) notifying the public of the weather changes through "Special Weather Tips" when the Tropical Cyclone Warning Signal No. 9 might be issued, providing more vivid and eye-catching notifications when Tropical Cyclone Warning Signals No. 9 and 10 were issued via the "MyObservatory", and conducting hourly briefings to the public to provide latest weather information when Black Rainstorm Warning Signals were in force;

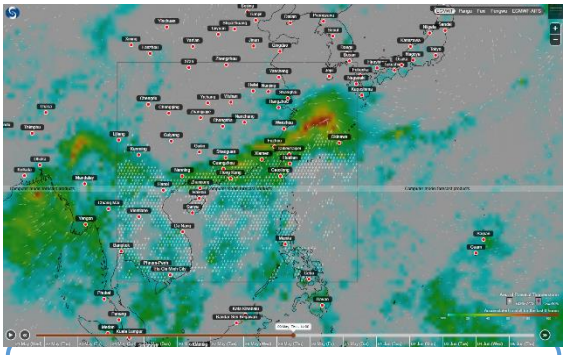
  (2) adding graphical presentation of rainfall categories on the "Regional Information of Heavy Rain and Thunderstorm" webpage and in the "MyObservatory"; and

Addition of graphical presentation of the maximum district rainfall in Hong Kong

  (3) providing information about the potential occurrence of weather phenomena such as tornadoes or waterspouts through "Special Weather Tips";

- Enriching the "MyObservatory" with additional widget to display latest radar imageries, and enhancing the "Dr. Tin" chatbot service to answer questions about searching popular weather imageries such as weather photos, radar imageries, etc., lunar and solar eclipses, the dates of the 24 solar terms, and Gregorian-lunar calendar conversion; and

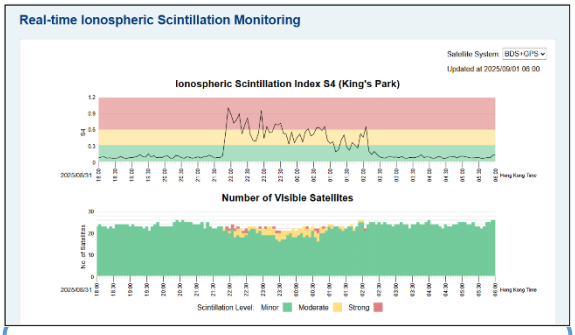
- Enriching the "Earth Weather" on the HKO website and the "MyObservatory" by adding more weather prediction models including artificial intelligence (AI) models and forecast products such as areas of potential thunderstorm;



Forecasts products of
"Area of Potential Thunderstorm"

- Continuously providing support to government users in strengthening overall capacity to cope with extreme weather, and to Labour Department in operating the Heat Stress at Work Warning;

- Installing equipment at the King's Park Meteorological Station to measure ionospheric scintillations and launching the "Real-time Ionospheric Scintillation Monitoring" webpage on the HKO website to facilitate satellite-based operations, including low-altitude economy activities using drones; and



"Real-time Ionospheric Scintillation Monitoring" web page

- Revamping the regional weather webpage on the HKO website to integrate observations from automatic weather stations and the corresponding forecasts.

Moreover, the Observatory implemented a solid-state weather radar for enhancing the operation of HKO's long-range weather radars, and for monitoring of rainstorms and tropical cyclones through measurements of low-level winds and precipitation. Besides, the Observatory continuously serving as the Regional Specialized Meteorological Centre (RSMC) for Nowcasting designated by the WMO in the provision of severe weather nowcasting products, sharing nowcast software or developing technique in AI nowcasting applications, and participating in capacity building activities.

During the year, the Observatory has extended the quality management system on automatic meteorological measurements to include visibility measurements. The Observatory has also implemented more weather prediction models and forecast products on high performance computer system, and procuring additional computing power to meet the increasing demand for weather services against extreme weather.

In 2025, the total number of page views of the Observatory website and mobile weather application "MyObservatory" reached about 154 billion. PC users can install the "Weather Wizard" desktop application to obtain the latest weather information. A personalised website that allows users to customise the information is also available. Besides, users can receive weather warnings and information through the Observatory's Facebook, Instagram, X, Weibo and WeChat. The Observatory's YouTube channel accumulated an annual total of around 11.39 million views. The Dial-a-Weather service (187 8200) handled a total of around 3.7 million calls during the year; and the Observatory's internet time service received about 217 billion visits.

Professional meteorologists of the Observatory produce and host television weather programmes which are broadcasted through major television channels in the mornings and evenings. Weather programmes and educational feature

"Cool Met Stuff" are broadcasted on television, YouTube, Facebook and the "MyObservatory" mobile application.

During the year, the Observatory continued to enhance communication and engagement with the public through social media. The Observatory's Facebook page and Instagram account attracted around 430,000 and 130,000 followers respectively by the end of 2025.

In 2025, a total of 66 government bureaux, departments and relevant organisations subscribed to the services of the Observatory through the Government Weather Information Server (GOWISE). Specialised weather services were also provided to utility companies, public transport operators, engineering contractors and information providers on a cost-recovery basis. A total of 70 clients subscribed to the Observatory's specialised services in 2025, generating a revenue of about $0.8 million.

The Observatory maintains a close surveillance of the weather at and around the Hong Kong International Airport (HKIA) and provides the aviation community with the weather information needed for its operations. Weather service support for the Integrated Airport Centre of the HKIA was strengthened by extending the shift hours of its Aeronautical Meteorological Advisers as and when necessary during tropical cyclone passages. As the Backup Centre of the Asian Aviation Meteorological Centre, the Observatory took over the role of the Main Centre from Beijing for one week every quarter to issue hazardous weather forecasts and advisories to aviation users in the Asian region.

The Observatory installed a new cloud radar at the HKIA to enhance cloud reporting and fog monitoring at the HKIA, and replaced one aging Light Detection and Ranging (LIDAR) System to support the low-level windshear and turbulence warning service for the HKIA. The Observatory introduced probabilistic forecasting for the onset and retreat of sea breezes at the HKIA to enhance runway operation efficiency, and further enhanced the electronic flight bag weather mobile application "MyFlightWx" to provide inflight weather information to flight crews electronically and promoting its use to airlines operating from the HKIA.

The Observatory issues forecasts of wind, weather, waves and swells for the marine community and container terminals. The Observatory will continue to enhance marine meteorological observations through the deployment of buoys, both drifting and moored over the South China Sea, and installation of meteorological equipment onboard more merchant and fishing vessels.

Public Education and External Collaborations

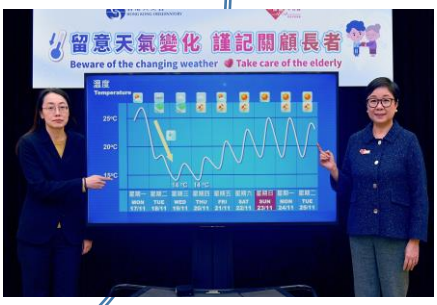
Public Education In 2025-26, the Observatory continued to promote awareness of high-impact weather, the impacts of climate change and the Observatory's services through public education. Noteworthy activities include:

The Observatory has loaned a historic float-type tide gauge to the Hong Kong Maritime Museum for display, providing visitors with an opportunity to explore the history of tide measurement in Hong Kong.

The Observatory, in collaboration with the Hong Kong Meteorological Society, has organised the 2021-2025 Top 10 Mind-boggling Weather and Climate Events Selection to enhance the public's awareness and concern regarding extreme weather and climate change, and to deepen their understanding on climate change and its impact on human lives.

Local Collaborations The collaborations established locally by the Observatory in 2025-26 include:

The Observatory participated in the "Hong Kong Island Disaster and Emergency Preparedness Day 2025" organised by the Fire Services Department. The Observatory promoted knowledge of radiation and nuclear emergency response, as well as the Observatory's work on radiological survey and environmental sample collection.



The Observatory and the Senior Citizen Home Safety Association held a joint press conference in November to remind the public to get prepared for winter.

Regional Collaborations The collaborations established with regional partners in 2025-26 include:

The Guangdong-Hong Kong-Macao Greater Bay Area (GD-HK-MC GBA) Sea Level Centre was jointly set up by the National Marine Data and Information Service, the Observatory and the Macao Meteorological and Geophysical Bureau. The Centre promotes technological innovation and cooperative research on sea level rise and alert of related hazard risks, deepen regional cooperation, and enhance information and data sharing and the ability to respond to climate change in marine areas, contributing to the sustainable development of the GD-HK-MC GBA.

The Observatory and the Shanghai Meteorological Service signed an updated Cooperation Plan on Meteorology and Technology. The Plan enhances areas of exchange and cooperation including multi-hazard early warning, short-term weather forecasting and nowcasting, aviation meteorology, and disaster prevention and mitigation, etc. to promote the development of modern meteorological services and operations in a mega city.

The Observatory commenced round-the-clock weather monitoring and forecast services for various events of the 15th National Games, the 12th National Games for Persons with Disabilities and the 9th National Special Olympic Games. The Observatory stepped up cooperation between counterparts in the GBA, jointly formulating the meteorological collaboration plan to ensure the smooth conduct of cross-boundary events.

The Observatory hosted the 16th Meeting of the Pearl River Delta Working Group on Aviation Meteorology, which focused on discussing recent advancements in aviation meteorology. Participants jointly outlined key priorities for the coming year, with a focus on strengthening aviation weather forecasting capabilities through integrating innovative technologies and regional coordination to support safe and efficient flight operations across the region.

Meteorologists from the China Meteorological Administration, Guangdong Meteorological Service, Macao Meteorological and Geophysical Bureau, Guangxi Meteorological Service, Hainan Meteorological Service and HKO attended the 30th Guangdong - Hong Kong - Macao Meeting on Cooperation in Meteorological Operations and the 38th Guangdong - Hong Kong - Macao Seminar on Meteorological Science and Technology andin Macao.

A total of 24 technical reports were presented at the seminar, with topics covering AI weather prediction models and machine learning applications, satellite remote sensing and data assimilation, tropical cyclone research, as well as high-impact weather event analysis.

International Collaborations The collaborations established with international partners in 2025-26 include:

The Observatory and the Ministry of Water Resources and Meteorology of Cambodia signed a memorandum of understanding on meteorological cooperation to enhance collaboration and exchanges in meteorological science and technologies, covering weather forecasting, aronautical meteorology and weather data exhcange.

The Observatory participated in the Extraordinary Session of the World Meteorological Congress held by the World Meteorological Organization (WMO), focusing on the Technical Regulations in connection with the United Nations' Early Warnings for All initiative launched in 2022, among other key agendas.

The Observatory and the China Meteorological Administration jointly organised an international workshop for the first time under the Voluntary Cooperation Programme of the WMO. The workshop also marked the second international training activity since the establishment of the Meteorological Training Centre for Belt and Road Countries in Hong Kong last year. Around 70 participants from more than 30 countries and territories attended the workshop either in person or online. The workshop covered the latest developments in AI weather forecasting models, the applications of data-driven modelling and the AI techniques in nowcasting etc.

The Observatory participated in the Civil Air Navigation Services Organisation Asia Pacific Conference 2025 to examine how closer integration between aviation and meteorology can enhance safety, efficiency, and resilience in aviation operations across the Asia and Pacific region. HKO joined other parties in signing a Letter of Intent on Strengthening Aviation Meteorology Collaboration during the conference, to enhance cooperation in mitigating weather impacts on air traffic management.

The Observatory organised educational events and outreach activities to engage the public, in particular young people and students, through the 'Science in Public Service Campaign', the 'Public Course on Weather Observation' and the 'Community Weather Information Network', which included workshops, scientific talks, practicals, day camp, quiz competition and guided tours of the Observatory's facilities. The Observatory also conducted public talks, interviews and training courses as well as produced TV weather programmes and educational materials on hazardous weather phenomena.

RADIATION MONITORING AND ASSESSMENT

The Observatory monitors ambient radiation levels in Hong Kong and conducts radiological measurements on air, soil, water and food samples. In the event of a nuclear emergency, the Observatory will notify and advise relevant government departments on the possible consequences in Hong Kong and recommend protective actions. Moreover, the Observatory organises training and exercises on radiation monitoring, assessment and protection for other government departments involved in the Hong Kong contingency plan for nuclear emergencies. The work involves:

- Operating a network of radiation monitoring stations, an aerial radiation monitoring system, two radiological survey vehicles, a radiation laboratory and an emergency radiation data management system;
- Keeping abreast of the latest development on the methodology for nuclear accident consequence assessment; and
- Planning and participating in exercises and drills in response to nuclear emergencies.

In 2025–26, all radiation monitoring and assessment work was carried out satisfactorily. All equipment was maintained in a state of readiness. Exercises, drills and training on radiation monitoring, assessment and protection were conducted. The inter-comparison exercise between Hong Kong and Guangdong on gamma radionuclides measurement of soil, water, food and aerosol samples was carried out. Radiation monitoring of sea water samples in local waters in response to the discharge of nuclear-contaminated water from Fukushima of Japan continued. Outreach activities such as public and school talks were conducted to enhance public education. The school community ambient radiation measurement programme named "Gamma-Go" continued to promote students' understanding of radiation through STEM activities.

TIME STANDARD, GEOPHYSICAL AND CLIMATE SERVICES

The Observatory maintains the Hong Kong time standard, provides time signals for the public and contributes to the International Bureau of Weights and Measures for the determination of the universal standard time. It provides geophysical, oceanographic, astronomical and climatological information, climate projection, seasonal and annual forecast to meet the needs for planning, engineering design and environmental impact assessments.

The Observatory monitors earthquakes and the sea level and releases related information to the public. It also operates a tsunami warning system. The Backup South China Sea Tsunami Advisory Center (Hong Kong) (BSCSTAC), which is set up at the Observatory's Headquarters, takes up scheduled operation from the Beijing Main Centre for a period of time every year in the winter, providing tsunami alert services to nine counties around the South China Sea.

The Observatory also keeps abreast of research and development on international issues such as global climate change and advises the public and government bureaux/departments on the likely implications.

The work of time standard, geophysics and climate services involves:

- Signing the Co-operation Agreement with the National Time Service Center of the Chinese Academy of Sciences to enhance collaboration in time measurement, time-keeping and time services, as well as the exchange of related experiences and technologies;

- Maintaining a network of caesium beam atomic clocks as the Hong Kong time standard and providing time signals for radio broadcasts, automatic telephone answering service and synchronisation of clocks via the Internet;

- Operating seismological, tide and sea level monitoring networks and conducting related analyses;

- Carrying out real-time exchange of seismic data with overseas centres and disseminating earthquake information by various means;

- Compiling climatological and other related data;

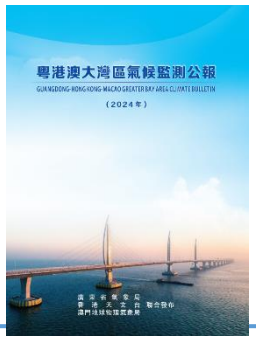
- Conducting studies on climate change in Hong Kong and promoting public understanding; and

- Providing updates on the effects of El Niño, La Niña and other longer-term atmospheric phenomena on Hong Kong.

Initiatives undertaken in 2025-26 include:

- Implementing a new network of earthquake intensity meters over the territory to enhance capability in earthquake intensity analysis;

- Providing scientific support to studies by relevant government bureaux/departments on the mitigation, adaptation and resilience-building measures required in combatting climate change and its impacts including extreme weather events;



Guangdong Meteorological Service, Hong Kong Observatory and Macao Geophysical and Meteorological Bureau jointly compiled the "Guangdong-Hong Kong-Macao Greater Bay Area Climate Bulletin 2024" (Chinese version only). The bulletin covers the climate status of the Greater Bay Area in 2024, as well as major weather and climate events.

- Monitoring climate change-related scientific studies, and providing the latest assessment of climate change and its impacts to support policy making and action planning of relevant government bureaux/departments;

- Enhancing the dissemination of historical extremes by launching the extreme total rainfall of automatic weather stations webpage; and

- Promoting public understanding and awareness of climate change and its impacts through conducting school talks, participating in public fora, producing educational videos, and publishing articles and latest international research findings on global climate change on the HKO website.

PUBLIC OPINION SURVEY

In the public opinion survey conducted in 2025, the public considered that on average 77% of the weather forecasts issued by the Observatory were accurate, and gave an average score of 7.6 (out of 10) to its overall service.

OUTLOOK

The Observatory will further enhance its services in the following aspects in 2026-27:

Weather Services

- Continue to provide early warning and forecasting services, regional weather services, and extended weather outlook;
- Continue to develop and enhance nowcasting and forecasting services on high-impact weather for the public and special users;
- Continue to apply the next-generation of AI and big data technologies to develop prediction systems for high impact weather;
- Continue to conduct meteorological measurements at more sites using small unmanned aircraft;
- Replace another aging LIDAR System to support the low-level windshear and turbulence warning service for the HKIA;
- Launch an upgraded version of the electronic flight bag weather mobile application "MyFlightWx", featuring enriched weather information and an enhanced user interface;
- Continue to enhance capability in monitoring space weather, including installation of additional ionospheric scintillation monitoring stations in support of the development of low-altitude economy;
- Continue to install more microclimate stations to expand the urban weather monitoring network;
- Put on trial a weather service platform to support the implementation of low-altitude economy regulatory sandbox pilot projects;
- Continue to enrich the content of the mobile weather application "MyObservatory" and HKO website;
- Continue to enrich the "Earth Weather" with more forecast products from weather prediction models, including AI models;
- Acquire three sets of Phased Array Weather Radar System (PAWRS) to establish a PAWRS network in Hong Kong, enhancing HKO's ability to conduct territory-wide monitoring and forecasting of high-impact weather events;
- Continue to implement the numerical weather prediction models on the HPC system in support of weather forecast operation;
- Continue to operate the RSMC for Nowcasting by providing AI-based regional nowcast products, supporting nowcasting technique development and capacity building activities, as well as upgrading community version of the nowcasting software;
- Organise additional outreach activities in celebration of the 20th anniversary of the

"Science in the Public Service" Campaign; and

- Continue to organise training for meteorological personnel from the Belt and Road Regions through the Meteorological Training Centre for Belt and Road Countries, in collaboration with the CMA and other international organisations.

Radiation Monitoring and Assessment

- Implement the agreed arrangements between Hong Kong and Guangdong on radiation monitoring and assessment;
- Conduct drills, exercises and communication tests on emergency response in conjunction with other government departments as well as the relevant Guangdong counterparts;
- Organise training on radiation monitoring and assessment;
- Take forward the enhancement of radiation monitoring and assessment facilities, including the Accident Consequence Assessment System; and
- Further promote outreach activities and the Gamma-Go programme to enhance public education on radiation.

Time Standard, Geophysical and Climate Services

- Undertake and support monitoring and assessment of earthquake, tsunami risk and sea level in the region;
- Enhance its earthquake monitoring and intensity analysis as well as tsunami warning capability;
- Enhance tide gauge data network to facilitate the monitoring of and research on sea level;
- Enhance the reliability and resilience of time service provision;
- Monitor and study climate change issues, enhance climate projections, as well as provide relevant government bureaux/departments with latest information and assessment of climate change and its impacts to support their studies;
- Engage various stakeholders to promote the effective use of climate data in support of the emerging needs of different sectors and government bureaux/departments; and
- Conduct outreach activities to promote public understanding of measures required in combatting climate change.