WEATHER ON WINGS

January 2006

香港天文台
HONG KONG OBSERVATORY

Dial-a-Weather 187 8200
HomePage http://www.hko.gov.hk
http://www.weather.gov.hk

Message from the Editors:

Starting from this issue, Weather on Wings will merge with the Newsletter for the Friends of the Observatory「談天說地」 and the Newsletter for Hong Kong Voluntary Observing Ships to form a single newsletter. We hope that this will provide the readers with a more comprehensive report of the services provided by the Observatory and its latest development.

Headline

A Most Meaningful Christmas Present - Civil Service Outstanding Service Award

WONG Yang-tze, LEUNG Wing-mo

In the Civil Service Award Scheme in 2005, the Hong Kong Observatory won the top honour in the Departmental Award for Service Enhancement in the small department (less than 1000 staff) category. The Observatory's Electronic Maintenance Team (Radiation) also won a merit award under the Innovation/Application of Technology category.

To compete for the Departmental Award for Service Enhancement the Observatory put together a team consisting of representatives from the Scientific Assistant and Scientific Officer grades to make presentations to the adjudication panel. The team focused on the new services introduced by the Observatory in recent years, with particular emphasis on the Observatory's effort in enhancing the content of services and the means of delivery, and in promoting its public image.

For the Innovation/Application of Technology Award, colleagues of the Electronic Maintenance Team explained their work in setting up an automatic upper-air sounding system, designing a next-generation radiological monitoring system for fresh water, as well as enhancing efficiency through application of new technologies such as mobile telephony, global positioning system (GPS) and geographical information system (GIS).

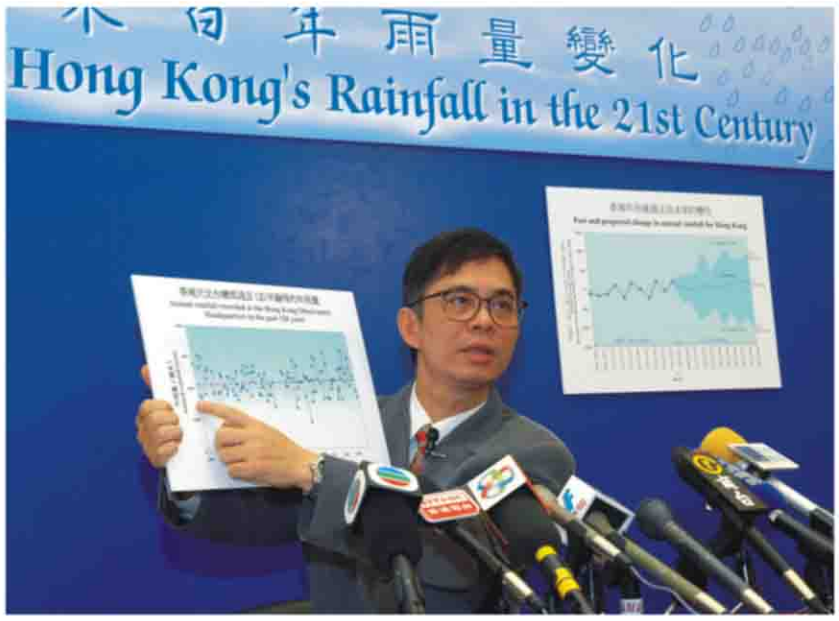
The Observatory's Director (3rd right, front) and staff sharing the excitement of being the crowned champion with the Secretary for Civil Service, Mr Joseph Wong (4th right, front)

During the adjudication for the departmental award, professional consultants visited the Observatory to examine different facets of its work, while an adjudication panel interviewed the Observatory's representatives. The adjudication panel was impressed by the accomplishments of the Observatory and the enthusiasm of the Observatory's representatives, and the Observatory emerged as the champion.

One of the team members, Mr Wat Kam-sing, remarked after the prize presentation ceremony, "What really counts in the competition for the Departmental Service Enhancement Award is actual achievement. The fact that we won the award is a reflection of our care for the public, and our initiative and effort to improve our service. This award is not only a recognition of the importance of our work, but also gives fresh impetus for us to excel."

Projected Rainfall in Hong Kong in the 21st Century - More Extremes

LEUNG Yin-kong



Acting Director of the Hong Kong Observatory, Mr YEUNG Kai-hing announced the results of a recent study on the projected change in Hong Kong's rainfall in the 21st century

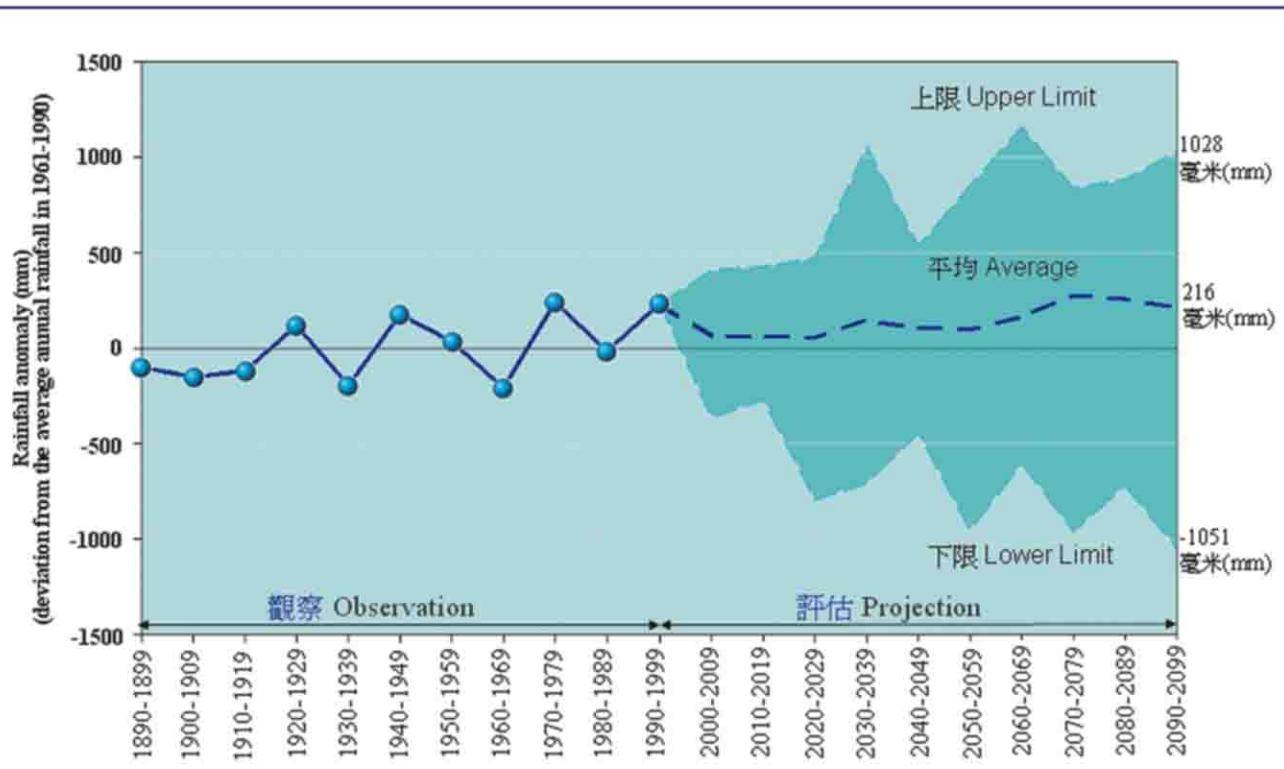
Global warming has become a hot topic recently. It induces changes in the atmospheric circulation and gives rise to more extreme weather events, which in turn affect the ecological environment.

Rainfall is an important weather element. The long-term change in rainfall is a key consideration in planning for disaster mitigation and water resource management. In view of this, the Observatory carried out a study on the projected changes in Hong Kong's rainfall in the 21st century and announced the results through the media in August 2005. The study made use of the results of simulations of the future climate by supercomputers at major climate centres in the world. Combined with the observed rainfall in Hong Kong, southern China and central China, a projection of the rainfall in Hong Kong was made using the technique of statistical downscaling.

Results of the study revealed that the annual rainfall in Hong Kong would increase at a rate of about 1% per decade in the 21st century, about the same rate as in the past 120 years. In the last 10 years of this century, the average annual rainfall at the Hong Kong Observatory Headquarters would be about 2430 mm, or 216 mm more than the climatological normal.

The year-to-year variability in Hong Kong's rainfall would also increase in the 21st century. In the past 120 years, the highest annual rainfall recorded at the Hong Kong Observatory Headquarters was 3343 mm. In the 21st century, it is expected that there would be 6 years with annual rainfall exceeding this value. In this century, we also expect to see 3 years with annual rainfall less than 901 mm, the lowest annual rainfall on record. The highest annual rainfall of 3343 mm was recorded in 1997, a year in which Hong Kong was plagued by severe flooding and numerous landslides triggered by rainstorms, and the Red and Black rainstorm warnings were issued on many occasions. The lowest annual rainfall of 901 mm was recorded in 1963. Water was rationed that year, and supplied to the public only once every four days. The classic scene of people queuing for water and the yell to people living downstairs to turn off the water taps is vivid memory of those who lived through that difficult year.

The number of days with heavy rain would also increase. Towards the end of this century, the number of days in a year with heavy rain is likely to increase to 6.5, from 5.5 in the latter part of the last century.



Past and projected change in annual rainfall for Hong Kong

January 2006

Development of Tsunami Warning Systems

WONG Wing-tak

Delegates from the State Oceanic Administration Mr. Wei WU and Prof. Xuejia SONG, and from the Hong Kong Observatory Dr. W T Wong, at the 20th Session of the International Coordination Group for the Tsunami Warning System for the Pacific (ICG/ITSU-XX)

On 26 December 2004, a major earthquake of magnitude 9 in the Indian Ocean off the west coast of northern Sumatra generated a huge tsunami that affected coastal communities around the Indian Ocean, killing more than 200,000 people. To some countries, it was the deadliest natural disaster in modern time.

After the disaster, many countries called for the establishment of a tsunami early warning system for the Indian Ocean. The Tsunami Warning System for the Pacific that has been in existence for forty years aptly serves as a model. The Intergovernmental Oceanographic Commission (IOC) under the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the World Meteorological Organization (WMO) jointly organized expert missions to the Indian Ocean countries and proposed plans to enhance their disaster reduction capabilities. Mr. K H Yeung, Assistant Director of the Hong Kong Observatory, represented WMO in the mission to Myanmar and Pakistan in June 2005.

After extensive discussions among relevant countries, IOC decided on 30 June 2005 to establish the Indian Ocean Tsunami Warning and Mitigation System. IOC further decided to set up tsunami warning systems for the Northeast Atlantic, the Mediterranean, and the Caribbean Seas. A global tsunami warning system is also in the pipeline.

Tsunami is a high-impact but low-probability hazard. To sustain an effective and reliable detection and warning system for a hazard that seldom occurs is difficult. In this regard, the WMO Global Telecommunication System (GTS) used by meteorological services worldwide for daily exchange of meteorological data was appropriately chosen to be the backbone for exchange of tsunami information. It is also more effective to put tsunami under the same integrated warning and mitigation system that serve other natural hazards such as typhoons.

The 2nd Session of the Joint WMO/IOC Technical Commission on Oceanography and Marine Meteorology (JCOMM) held in Halifax, Canada in September 2005 expressed its support to the tsunami warning systems in different ocean and sea basins. JCOMM is also planning to set up mechanism to pass tsunami information to ships at seas under the Global Maritime Distress and Safety System (GMDSS).

The 20th Session of the International Coordination Group for the Tsunami Warning System for the Pacific (ICG/ITSU) was held in Chile in October 2005. The China delegation comprises experts from the State Oceanic Administration, the China Earthquake Administration and the Hong Kong Observatory. To emphasize the mitigation aspect, ICG adopted a new name "the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS)". In addition to coordinating development of the tsunami warning system, promoting public awareness and preparedness will also be a major task of the group.

Hong Kong's World-Renowned Aviation Weather Services

CHOY Boon-leung

58 aviation weather experts from 37 countries/territories in the Asia Pacific region participated in an international seminar hosted by the Hong Kong Observatory on 22-25 November 2005. Organized by the World Meteorological Organization (WMO) in collaboration with the International Civil Aviation Organization (ICAO), the Seminar on Quality Management in the Provision of Meteorological Services to Aviation was held to assist countries in Asia and the southwest Pacific to set up a quality management system for their aviation weather service.

Aviation meteorological experts exchanging views with Mr B L Choy (1st left), Scientific Officer of the Observatory during their visit to the Airport Meteorological Office

This was the first WMO seminar held in this part of the world on quality management of aviation weather services. The 4-day seminar featured expert presentations as well as experience-sharing sessions. Mr S T Chan and Miss S Y Lau of the Observatory were among the lecturers at the seminar.

Speaking at the reception to welcome the overseas participants, the Permanent Secretary for Economic Development and Labour (Economic Development) Ms Sandra Lee said, "The Hong Kong International Airport is the world's No. 1 cargo airport and it has also been rated the best airport by passengers. In seamless cooperation, the Hong Kong Observatory and the Civil Aviation Department work very hard to ensure the safe and smooth operation of aircraft at the Hong Kong International Airport in all weather conditions. Quality weather service for aviation calls for team work at international level. By hosting this seminar, the Observatory is doing a great job to foster international cooperation in assuring the quality of aviation weather service in the region."

Ms Sandra Lee and Mr C Y Lam talked to aviation experts

Mr M Waikai from the Cook Islands said, "I thank the Observatory for organizing the seminar, and showing us what an excellent aviation weather service is like." He further remarked, "The seminar highlights the benefits and challenges of setting up quality management systems in countries with different economic and technological capability. It is a great forum for exchanging experience and it enables the participants to identify the best possible way to implement quality management system in their countries."

Science in the Government

LAM Hok-yin

In January 2006, a campaign titled "Science in the Public Service" which was initiated by the Hong Kong Observatory and co-organised by 30 departments of the Hong Kong SAR Government commenced. This campaign aims to present to the public the scientific work of government departments and to showcase the applications of science in our daily life.

Lasting one year, the campaign will feature a series of activities including a joint exhibition, public lectures, visits, an essay competition, a symposium, roving exhibitions, talks at schools and an awards presentation ceremony as the end-of-campaign event in late 2006.

The joint exhibition will be held at the Exhibition Galleries, G/F, the Hong Kong Central Library at Causeway Bay from 13-17 January 2006. Participating departments will bring out the theme message of "Science in the Public Service" through a variety of exhibits and interactive displays. The aim is to inform the public about how science and technology are applied in providing public services. The exhibition will also be an excellent source of information for those interested in joining the essay competition which will begin immediately after the launch of the campaign. Members of the public are also invited to attend a series of lectures at the Lecture Theatre of the Central Library on 14 and 15 January 2006. Details of the campaign can be found at the following website http://www.science.gov.hk.

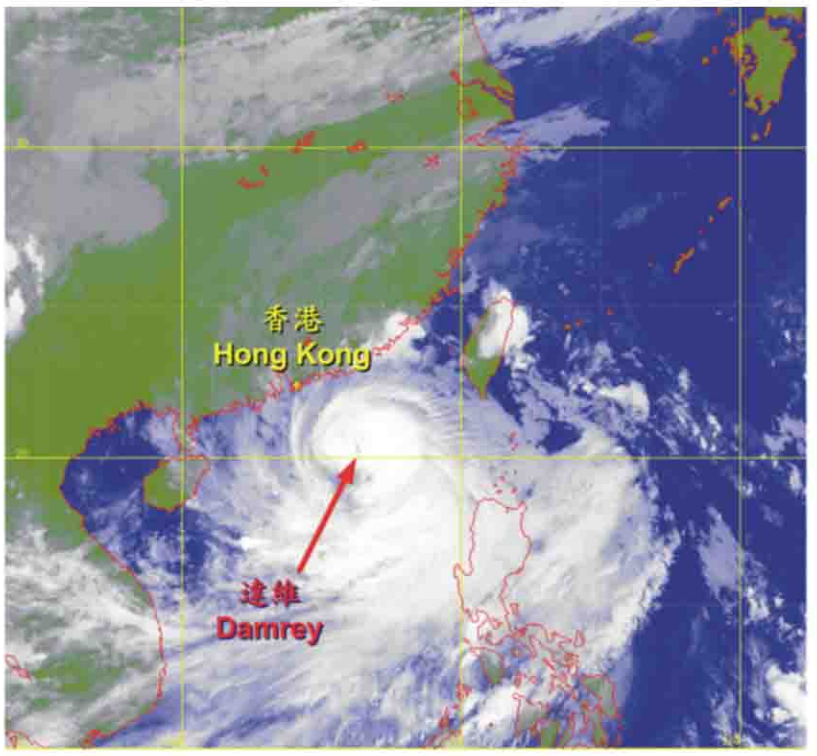
Products & Services

Real-time Imageries from the Japanese MTSAT-1R Satellite

SO Chi-kuen

From July 2005, members of the public can look at real-time imageries from the Multi-functional Transport Satellite-1R (MTSAT-1R) through the Hong Kong Observatory's website. MTSAT-1R is a new-generation satellite of the Japan Meteorological Agency (JMA).

MTSAT-1R was launched in February 2005 to replace the Geostationary Operational Environmental Satellite-9 (GOES-9) which was jointly operated by Japan and USA. After a series of tests, MTSAT-1R was put into operations in late June. This satellite is located some 36,000 kilometres above the Equator at 140°E, where JMA's former satellite Geostationary Meteorological Satellite-5 (GMS-5) once operate. At this position, the satellite is stationary relative to the Earth, enabling it to take cloudy imageries of the same area of the globe round-the-clock.



Infra-red imagery of MTSAT on 23 September 2005, showing Tropical Storm Damrey over the northern part of the South China Sea

In addition to taking images in the visible spectrum, MTSAT-1R can also take pictures in four different infra-red (IR) frequencies, one more than GMS-5. This extra IR imagery enables the detection of low clouds and fog as well as determination of the sea surface temperature. The resolutions of the MTSAT-1R imagery are 1 and 4 kilometres for the visible and infra-red channels respectively, higher than those of GMS-5. It can therefore reveal more detailed structures of cloud systems.

MTSAT-1R covers Asia, the western Pacific, Australia and part of the Indian Ocean. It provides cloud imageries of the northern hemisphere at half-hourly intervals. This enables weather forecasters to monitor the development of hazardous weather systems such as tropical cyclones and rainstorms closely.

The Observatory's website provides animation of MTSAT-1R imageries to show the movement of clouds. Aviation users can make use of the Observatory's Aviation Meteorological Information Dissemination System (AMIDS) to obtain cloud imageries from this satellite to assess the en-route weather conditions.

Green Island Automatic Weather Station Goes Green

KWOK Yuen-ha

Situated at the western edge of the Victoria Harbour, Green Island was a Tropical Cyclone and Monsoon Warning Signal Station from the early 20th century to the 1990s to serve vessels going in and out of the harbour. The Marine Department started collecting wind data on the island in the mid-20th Century. In 1989, the Observatory established an automatic weather station on the island to replace manual measurements. Data have since been transmitted to the Observatory's Headquarters automatically. Currently, wind information from Green Island is broadcast by radio stations during weekends and on public holidays for the benefit of water sports enthusiasts.

The Observatory has been using solar energy to power automatic weather stations since 1980s. For some stations, the wind serves as a supplementary energy source in the past few years to ensure a stable supply of electricity to the station in cloudy or overcast weather. The Green Island Automatic Weather Station, powered by both solar and wind energy, is the first of its kind in the Victoria Harbour. It is a testimony to the Observatory's endeavour to conservation through application of green technology.

Mr Edwin Ginn, Senior Scientific Officer of the Observatory, introduced to the media the application of renewable energy at the Green Island automatic weather station

Supporting Zhang Jian in his Feat to Swim Across Lingding Yang

LAM Ching-chi

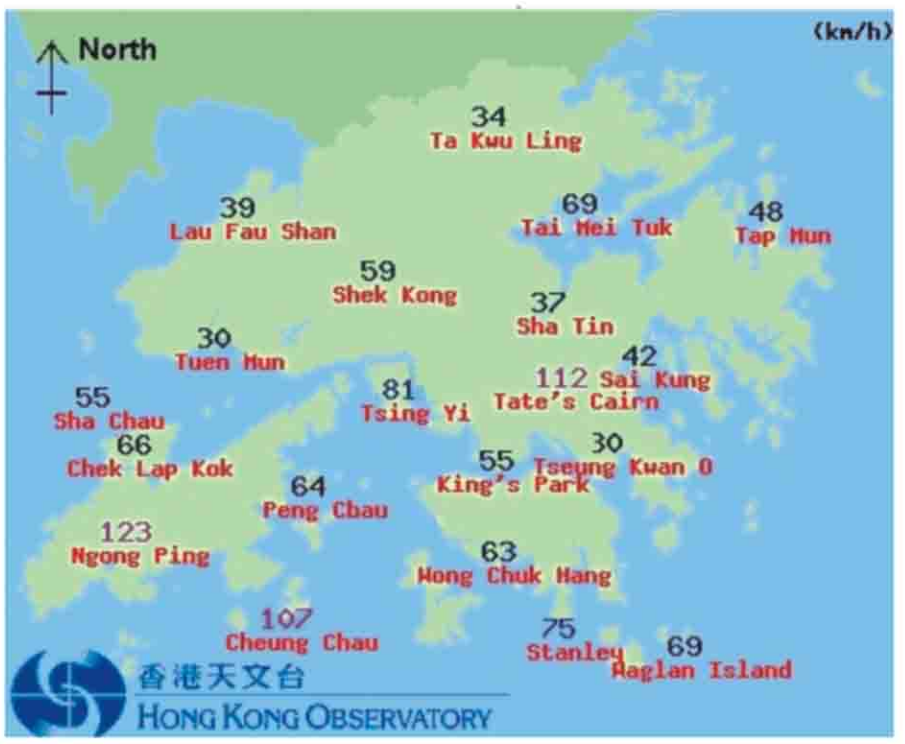
The Observatory provided special weather forecasts in September 2005 to the Chinese athlete, Mr. Zhang Jian, in his feat to swim across the Lingding Yang from Hong Kong to Macao.

September is usually the peak of the tropical cyclone season in Hong Kong. The swim was originally scheduled to take place in the Mid-Autumn Festival on 18 September, but had to be postponed because of the approach of Tropical Storm Vicente. It was re-scheduled to 22 September, the only window before another tropical cyclone Damrey would bring deteriorating weather to the Pearl River Estuary. The journey started off on the morning of 22 September from Tai O in Lantau Island and ended at Coloane Island in Macao. The weather was fine with light to moderate northerly winds, and the sea surface temperature was about 28 degrees Celsius – quite an ideal condition for the cross-channel swimming. The swim was completed in about eleven hours, some three to four hours shorter than planned.

The Organizing Committee of the event thanked the Observatory for providing reliable and professional weather services, which they considered were very important to the success of Mr Zhang's endeavour.

A Further Enhancement in Weather Service in 2005 - Provision of Gusts Information

LAM Ching-chi



Peak gusts (in km/h) displayed on the "Regional Weather in Hong Kong" webpage during the passage of Damrey in September 2005

2005 has been a prosperous year as far as the Observatory's weather services is concerned. Thanks to the introduction of a number of new weather information services, the number of clients reaches an all-time high – an increase of more than 20% compared with the previous year. The last new addition in the year is the launch of wind gusts information.

Regional gusts information is provided in the Observatory's website (http://www.weather.gov.hk/wxinfo/ts/index_e_gust.htm), the PDA website (http://pda.hko.gov.hk/gustehk.htm), as well as the Dial-a-Weather System. The information is useful to members of the public in planning outdoor activities. For owners of small vessels and operators of wind-sensitive industries such as container terminals and depots, the information can help them to take timely preventive actions to minimize losses due to strong gusts.

In adverse weather conditions, drivers on highways and flyovers as well as people engaging in outdoor activities should guard themselves against violent gusts, flying debris and falling objects. The public should also be careful when opening windows. Operators of small vessels should take precautions to prevent their boats from capsizing in violent gusts.

The new service is most welcomed by the container terminal operators. The Chairman of the Hong Kong Container Terminal Operators Association Limited (HKCTOA), Mr. Alan Lee, said, "The enhanced gust information is very useful for the operations of container terminals. I very much appreciate the effort of the Observatory in providing the automatic gust alarm service and in conducting seminars to explain to us the weather producing high gusts."

The Pamphlet "Dangers of the Sea"

WONG Mei-shing

In view of the South Asian tsunami in December 2004 and accidents in the summer of 2005 in which people were swept away by sea waves in Hong Kong, the Observatory published the pamphlet "Dangers of the Sea" in August 2005. The pamphlet aims to promote public awareness on natural disasters, and explains the various hazardous natural phenomena associated with the sea as well as precautions against them.

Facing the South China Sea, Hong Kong is vulnerable to hazards from the sea. Huge waves are whipped up by high winds associated with tropical cyclones or strong monsoon winds while heavy swells can be produced by distant tropical cyclones a thousand kilometres away. People who are at the sea or near the shore might get hurt or even lose their lives if they are not vigilant of the potential dangers.

In recent decades, a number of coastal engineering projects have much reduced the risk of coastal inundation and attack by waves on coastal facilities. Timely weather forecast and warnings have also greatly reduced related casualties. Regrettably, because of a general lack of understanding of swells, lives were lost every now and then. The accidents in Ham Tin Wan and in Shek O in 2005 in which people were carried away by waves were two such sad examples. Understanding the dangers of the sea and taking necessary precautions against them can prevent the recurrence of these unfortunate accidents.

The pamphlet "Dangers of the Sea" is available at the Hong Kong Observatory Resource Centre at Units 2304-2309, 23/F Miramar Tower, 132 Nathan Road, Tsim Sha Tsui, Kowloon (telephone no. 2926 8250).

It is also accessible at the Observatory website at:

http://www.weather.gov.hk/publica/gen_pub/sea_e.pdf

Seminar on Thunderstorms and Weather Information Service for Outdoor Workers

LAM Ching-chi

Ms Queenie LAM Ching-chi, Scientific Officer, spoke at the seminar on "Weather and Outdoor Work - Forecasting and Warning of Squally Thunderstorms"

The Observatory organised a number of activities to promote the new lightning location information service. One of them was a seminar for people from the container terminal industry, property management companies, golf clubs, oil companies, the Hong Kong Jockey Club, and the Hong Kong Sports Institute. The seminar, titled "Weather and Outdoor Work - Forecasting and Warning of Squally Thunderstorms", was delivered on 22 August 2005 at the Lecture Theatre, Hong Kong Central Library.

The seminar covered the characteristics of thunderstorms, and the precautionary measures to be taken when the Thunderstorm Warning was in force, the Observatory's new lightning location information service, and how the Observatory's weather information can help decision-making regarding outdoor activities.

Over 160 people attended the seminar, including the windsurfing world champion LEE Lai-shan, pregnant at the time, and attentively accompanied by her husband WONG Tak-sum. The participants found the seminar informative and the weather information services provided by the Observatory very useful for planning outdoor activities.

The Observatory Organized a Public Course on Earthquake and Tsunami

YEUNG Pui-yi

A severe earthquake in the Indian Ocean triggered a huge tsunami that devastated coastal communities in South Asia in December 2004. Although the risk of Hong Kong being affected by a damaging earth tremor or a significant tsunami is very small, the fact that Hong Kong people travel frequently makes earthquakes and tsunamis a cause for concern. In 8 October 2005, the Observatory organized a training course for the public to promote basic knowledge about earthquakes and tsunamis, and the precautionary measures against these natural disasters.

Mr Chan Ying-wa, Scientific Officer, who gave lectures at the course said, "Public education is crucial to the prevention and mitigation of natural disasters. This course enables the public to have a better understanding of the relationship between earthquake and tsunami. It also increases their awareness and preparedness towards such natural disasters."

One of the course participants, Miss Chan, said, "The course is very informative. I now understand the different facets of earthquakes and tsunamis. The course is a success."

Mr CHAN Ying-wa, Scientific Officer, spoke on earthquakes and tsunamis

Braving the Weather to Build the Peng Chau Automatic Weather Station

KWOK Yuen-ha

To enhance the weather service for tourists, the Observatory provides information on the weather at Peng Chau through its "Regional Weather" webpage.

Located over the southwestern part of Hong Kong, Peng Chau overlooks Penny's Bay and the Hong Kong Disneyland in Lantau. The tranquil environment of Peng Chau with its flora and fauna makes it a popular tourist destination especially those who love natural scenery. The weather information at Peng Chau provided by the Observatory includes temperature, relative humidity, wind speed and wind direction. Real-time images are also available for the public to see the weather conditions there (http://www.weather.gov.hk/wxinfo/ts/index_e_webcam.htm).

Mr IP Chi-wing, Radar Specialist Mechanic, installing an automatic camera at Peng Chau

In order to complete the installation of the automatic weather station as early as possible, Mr IP Chi-wing, Radar Specialist Mechanic, and his colleagues had to work hard, even on days with very unpleasant weather. Mr Ip said, "We competed with the weather to finish the job. During showers, we packed up our equipment and took shelter without delay. When it stopped raining, we worked in the oppressive heat under the sun. To meet the tight schedule, we often had to take afternoon tea for lunch."

"After days of braving the weather, the automatic weather station was finally up and running. When the first weather image was received at the Observatory Headquarters, we were jubilated. When I returned home from work that day, I accidentally spotted a swallow's nest at the ceiling of a house. My emotion suddenly overwhelmed me as I watched the swallows work hard to build a nest for their litter. My work at the Observatory is as demanding as it is challenging. When I return home and see the lovely face of my son, I instantly forget all the hassles of my work."

The weather information at Peng Chau can be found at: http://www.weather.gov.hk/wxinfo/ts/index.htm

This new service is also available at the PDA website of the Observatory: http://pda.weather.gov.hk/regione.htm.

Catching Lightning One By One

LEE Lap-shun

"A clap of thunder out of the blue" and "Struck on the head by five thunders" are two common Chinese sayings. Is it true that thunder and lightning can be counted one by one? Indeed, cumulonimbus clouds can produce many lightning strokes within a short time, and the strokes are detected by the Observatory's lightning location system that started operation in summer 2005. The system calculates the time of occurrence and location of lightning, and carries out statistical analyses of the lightning events.

Since mid-August 2005, the Hong Kong Observatory provides through its website hourly information on lightning within the territory of Hong Kong for the day as well as for the preceding three days. This gives the public a better feel about lightning activity. The hourly information, together with the real-time lightning location map, will enable them to assess the threat of lightning and take appropriate precautions. The lightning location information, at http://www.weather.gov.hk/wxinfo/llis/index.htm, has been well received since its inception, and the page hits exceeded 850,000 in a span of 6 months.

WeatherTone - a Pilot Project on Delivery of Weather Information through SMS

Emily FOK

In view of the increasing demand for timely weather information and the popularity of mobile phones in Hong Kong, the Observatory collaborated with the Hong Kong Wireless Development Centre (HKWDC) to explore the delivery of weather information via Short Message Service (SMS). Through a mobile service provider, members of the public can choose to receive the latest weather information in the form of short messages via their mobile telephones.

HKWDC appointed the Telewide Enterprises Ltd. (Telewide) as the service provider for this SMS pilot project which is coined "WeatherTone". WeatherTone covers various types of weather warnings issued by the Observatory, including those for tropical cyclones, rainstorms, thunderstorms, strong monsoon, fire danger, very hot weather, very cold weather, frost, landslips and flooding in the northern New Territories. The content of the message is provided by the Observatory as a free public service, while the dissemination of short messages is a charged service of the mobile telephone service provider. The amount of service charge will depend on the number of types of weather warnings to be subscribed. Members of the Friends of the Observatory have been invited to try the service in December 2005 before rolling it out to the public in early 2006.

Weather and Shenzhou VI Mission

LEE Kwok-lun

Astronauts Colonel Fei Junlong and Colonel Nie Haisheng sharing their space experience with Hong Kong people (picture courtesy of Information Services Department)

The visit of the delegation of Shenzhou VI manned spacecraft mission to Hong Kong in November 2005 rekindled public interest in space missions. Although the orbit of Shenzhou VI spacecraft was in space, i.e. outside the earth's atmosphere, the weather condition was crucial to the success of the mission. In particular, the transportation of the spacecraft, launching and re-entry were weather-sensitive operations.

Transportation of the 50-metre rocket-cum-spacecraft assembly from the assembling area to the launch tower was a daunting task requiring detailed planning and calculation for each step of the 1,500-metre journey. This was also the longest period of time during which the spacecraft was exposed to the elements. Winds at the lowest level of the atmosphere was a critical factor because while the spacecraft at the top of the structure was fully loaded, the rocket had yet to be filled with liquid propellant, rendering the structure as a whole unstable. Immediately prior to lift-off, the wind conditions from 8 to 15 kilometres above ground level became critical. If winds were too strong, or if the windshear was excessively large, it would displace the trajectory of the spacecraft. Besides the wind, cloud amount, visibility and rain also affect lift-off.

The ideal conditions would be generally fine weather during the 10-day period from lift-off to re-entry. The upper-level winds was a determining factor on the landing position of the re-entry module, and hence the safety of the astronauts. The challenge to weather forecasters was therefore to find a "window" where all the above weather conditions, given their relative weights and importance, would be generally satisfied.

A Rare Visitor at the Airport - Funnel Cloud

WU Chung-wai

A weather phenomenon rare in Hong Kong showed up at the Hong Kong International Airport on the morning of 24 August 2005. A funnel cloud was spawned in thunderstorms associated with a trough of low pressure approaching from the north. It was first spotted over the western part of the south runway at around 9:25 a.m.. Mr S T Chow, the Observer on duty that morning, witnessed the whole event, said excitedly, "The funnel cloud, about 1,000 to 2,500 feet in height, moved from west to east." On receiving the report, I immediately notified the Airfield Duty Manager of the Airport Authority to prepare for a possible tornado onslaught to the airport. Fortunately, the funnel cloud did not extend to the ground and did not mature into a tornado. The funnel cloud dissipated in around 5 minutes.

A funnel cloud observed by Mr S T Chow of the Airport Meteorological Office at the Air Traffic Control Tower

The Weather in "Golden Week" Holidays - MODIS's View

SO Chi-kuen

The National Day of China on 1 October marks the beginning of a week-long holiday known as the "Golden Week". During this period, a large number of mainland visitors will flood into Hong Kong. In 2005, the Golden Week brought a bonus of clear blue skies to Hong Kong in addition to the large number of mainland consumers.

Since late 2004, the Hong Kong Observatory has been monitoring visibility by utilizing the Aerosol Optical Depth (AOD) images taken by the MODerate Resolution Imaging Spectro-radiometer (MODIS), which is a sensor onboard the Earth Observing System (EOS) satellites operated by the U.S. National Aeronautics and Space Administration (NASA). AOD is a measure of the transparency of the atmosphere. Higher values of AOD indicate higher concentration of suspended particulates (also called aerosol), implying lower atmospheric transparency and poorer visibility, i.e., the region is shrouded in haze.

The visibility in Hong Kong is related to both the amount and the movement of suspended particulates in

the Pearl River Delta region, which can be observed on MODIS images readily. Figure 1 shows a MODIS image on 30 September 2005, one day before the start of the Golden Week. The blue and green zones represent areas with lower concentration of suspended particulates and higher visibility. The red and yellow zones indicate higher concentration of suspended particulates, lower visibility and probably haze. The predominantly red colour in parts of the Pearl River Delta (PRD) indicated generally hazy conditions. In Hong Kong, local winds were light easterlies on that day, marginally fending off the haze in the PRD and the visibility was above 6 kilometres.

Winds turned to the west in the following two days, shifting the haze previously over PRD towards Hong Kong (the red zone in Figure 2). The visibility in Hong Kong dropped abruptly to around 4 000 metres on 2 October. Thereafter, the red zone shrank noticeably during the following few days and most parts of Hong Kong were in blue (Figure 3), indicating a decrease in concentration of the suspended particulates and improvement in visibility. Indeed, the visibility in Hong Kong on 4 October was over 10 kilometres, reaching 20 kilometres occasionally. Thanks to this, tourists enjoyed their holidays in Hong Kong under a clear blue sky.

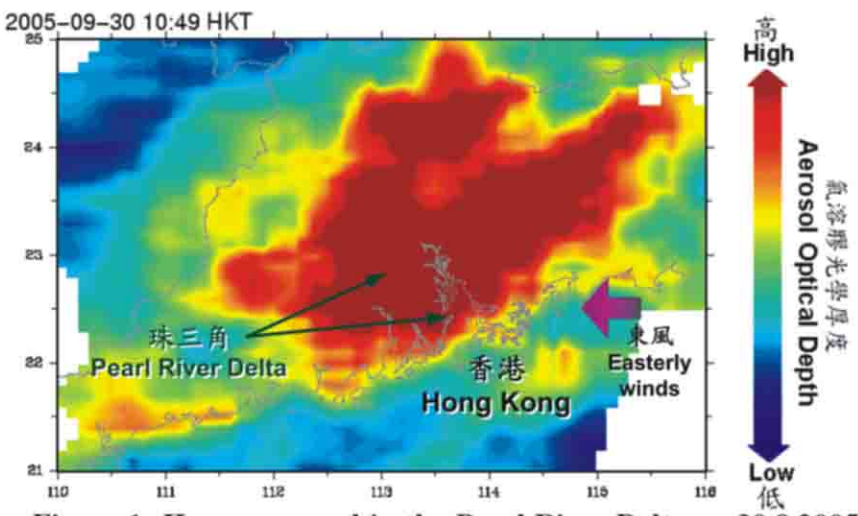


Figure 1: Haze appeared in the Pearl River Delta on 30.9.2005

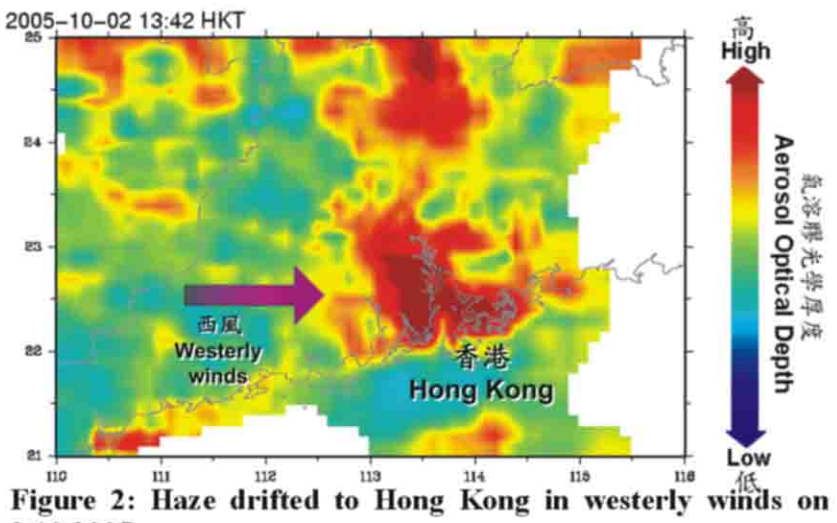


Figure 2: Haze drifted to Hong Kong in westerly winds on 2.10.2005

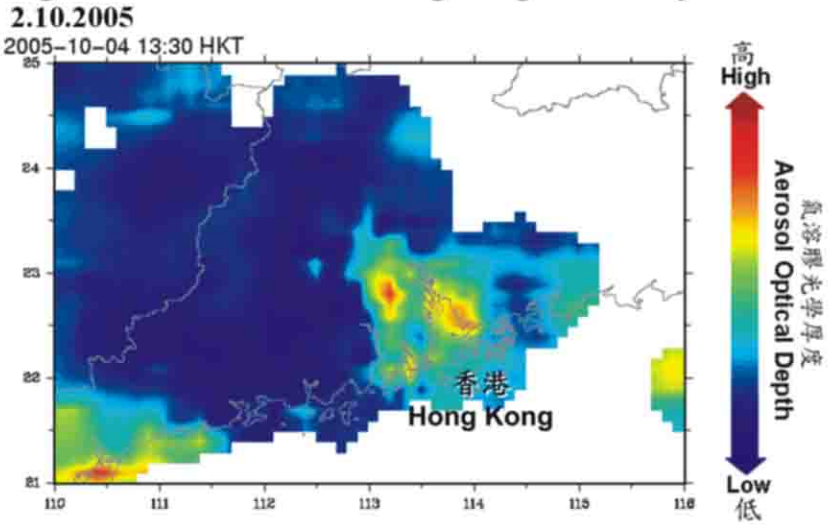
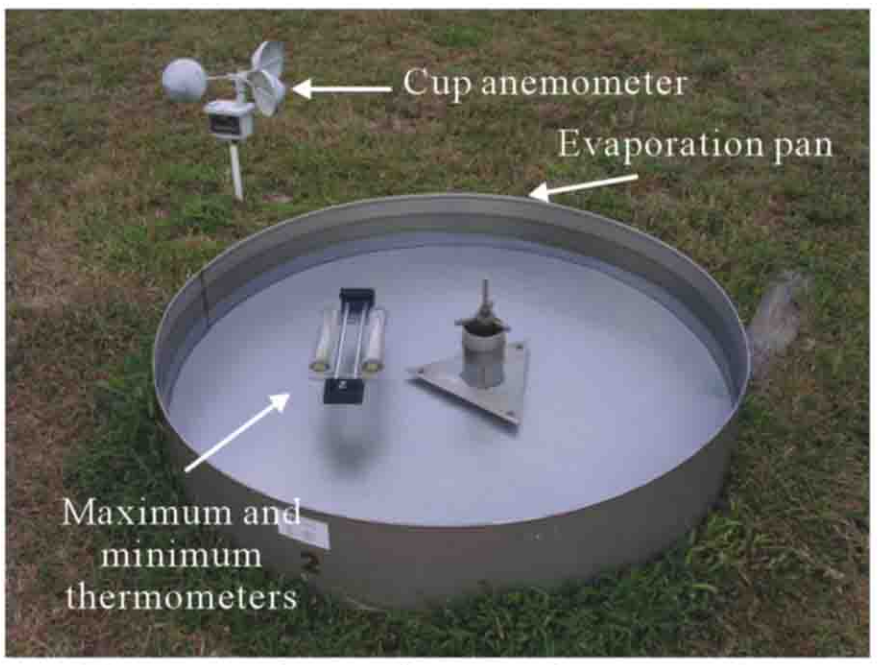


Figure 3: The haze thinned out and visibility in Hong Kong improved on 4.10.2005

Evaporation and its Long Term Trend in Hong Kong

LI Sun-wai



The evaporation pan for measuring evaporation

Water is fast becoming a scarce commodity due to the world's increasing population and rapidly developing economies. Understanding the amount of water evaporating from the surface of water bodies, and how its rate is changing is essential to effective management of water resources.

Evaporation, the process where liquid water turns into water vapour, takes place when the relative humidity is below 100%. It is affected by meteorological conditions such as temperature, humidity, sunshine duration, global solar radiation and wind speed.

The Observatory began measuring evaporation daily at King's Park Meteorological Station in 1958 using evaporation pans. These pans, which are circular stainless steel pans of diameter 1207 mm and depth 254 mm, are filled with water and placed horizontally on wooden beams lying flat on a lawn. A pair of thermometers is put in the water to measure the maximum and minimum temperature of the water in the pan in a day. Measurements of evaporation and related meteorological parameters are conducted every morning.

Since the 1970s, evaporation at King's Park showed a generally declining trend, similar to what happened in most other parts of the world. The 10-year mean value of evaporation in the 1990s dropped by 27% when compared with that of the 1970s. Among the various meteorological parameters, the change in wind speed over that period was most significant. Wind speed has dropped by 57%, largely attributed to the increase in high-rise buildings around King's Park in the recent years. Another important cause for the decreasing evaporation is the decrease of solar radiation in the past few decades, a phenomenon commonly known as global dimming.

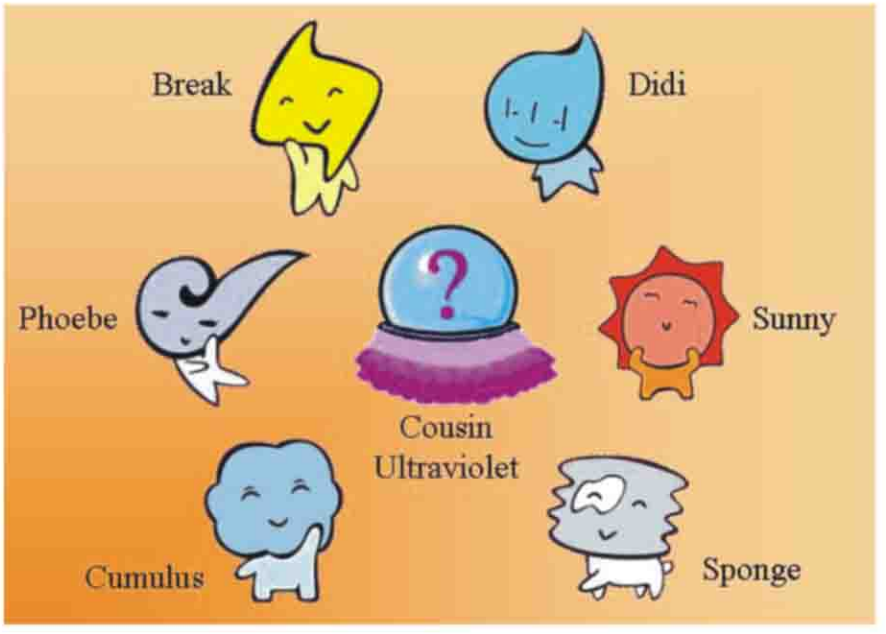
Taming of the Shrew - Cousin Ultraviolet

LEE Lap-shun

In the Weather Family, Sunny has always been the most lively and charming member. Lately, he was a little unhappy because he had been thinking about his Cousin Ultraviolet back in her home-town. Taking the cue, Phoebe-the-Wind suggested to Sunny to take Cousin Ultraviolet to the Earth. Upon hearing the suggestion, Sunny knitted his brow and uttered with concern, "My Cousin Ultraviolet carries strong energy and she is sometimes too direct and blunt. I am afraid she would hurt people." Break-the-Thunder suddenly got a hunch and came up with an idea, "We can send Cumulus-the-Cloud, Didi-the-Rain and Sponge-the-Fog to keep her company. This may help her get along well with Mankind and other earthly creatures."

Sunny took the advice and brought Cousin Ultraviolet from space to Earth early next morning. Soon after entering the upper atmosphere, he noticed that ozone and aerosols in the air helped reduce her energy, so Sunny became less worried. Soon after, they met other members of the Weather Family. Cumulus was eager to greet Cousin Ultraviolet. He rushed forward to shake hands with her, unknowingly reduced her energy further. Then, Didi and Sponge one by one helped Cousin Ultraviolet to remove her baggage and energy. In no time, Ultraviolet turned into a tender and gentle lady, and was warmly welcomed by people outdoor.

However, by mid-day, Cousin Ultraviolet lost her temper unexpectedly. The energy she discharged rose drastically. To make matters worse, Cumulus naughtily turned himself into broken clouds. As if this was not bad enough, his silvery edge reflected Cousin Ultraviolet's energy to the ground. The creatures on Earth hurriedly dived for cover. A beach crab, having taken in the extra energy reflected by the sand, got sunburnt immediately. It looked like he needed a new shell.



The Weather Family welcoming the new member: the mysterious, moody but otherwise gentle Cousin Ultraviolet

At last, after all the commotion in the afternoon, came dusk. Cousin Ultraviolet had enough fun and her energy died down. Everything went back to normal. But, what about tomorrow? Will Cousin Ultraviolet be moody or gentle? Everyone will have to wait and see how she and Cumulus, Didi and Sponge get along.

Editor's note: The above story dramatizes and personifies the factors affecting the Ultraviolet Index forecast to be launched by the Hong Kong Observatory in 2006. These factors, including ozone, aerosols, cloud amount, cloud type, rain and mist, will all affect the amount of ultraviolet reaching the surface of the earth.

The Introduction of the Leap Second

NG Shuk-kiu

At 7:59:59 a.m. on 1 January 2006 Hong Kong Time, i.e. the New Year's Day, a leap second was added to the Coordinated Universal Time (UTC). The Hong Kong standard time, which is exactly eight hours ahead of UTC, was delayed by one second. The time sequence was as follows:

Hong Kong Time	
Start	07h 59m 59s on 1 January 2006
After one second	07h 59m 60s on 1 January 2006
After two seconds	08h 0m 0s on 1 January 2006

UTC is a stable and even time scale based on the frequency of atomic oscillations in atomic clocks. This is the current international time scale for civil use. The astronomical time scale based on the Earth's rotation is another common time scale. As a result of atmospheric circulation and other geophysical events on Earth, the rate of the Earth's rotation is uneven and is slowing down. Difference between the two time scales arises. The purpose of introducing leap second is to reconcile the two time scales so that their difference is kept to within 0.9 second.

If no leap second adjustment is made, our time will eventually deviate from astronomical observations. The times of sunrise and sunset may even be reversed after tens of thousands of years.

A total of 23 leap seconds have been introduced in UTC since its adoption in 1972. All of them are positive leap seconds, suggesting that the rotation rate of our Earth is slowing down. The last time adjustment for leap second was made was 1 January 1999.

Use of Aircraft Radar to Monitor Inclement Weather

CHENG Cho-ming

Inclement weather not only affects the daily life of the general public, it also poses a threat to aircraft in flight. Accurate detection and tracking of inclement weather is therefore crucial to aviation safety. Nowadays, commercial aircrafts are equipped with radars to detect adverse weather like thunderstorms. When thunderstorms occur on the intended route of an aircraft, pilots will try to change course to avoid the thunderstorms and the associated turbulence and windshear.

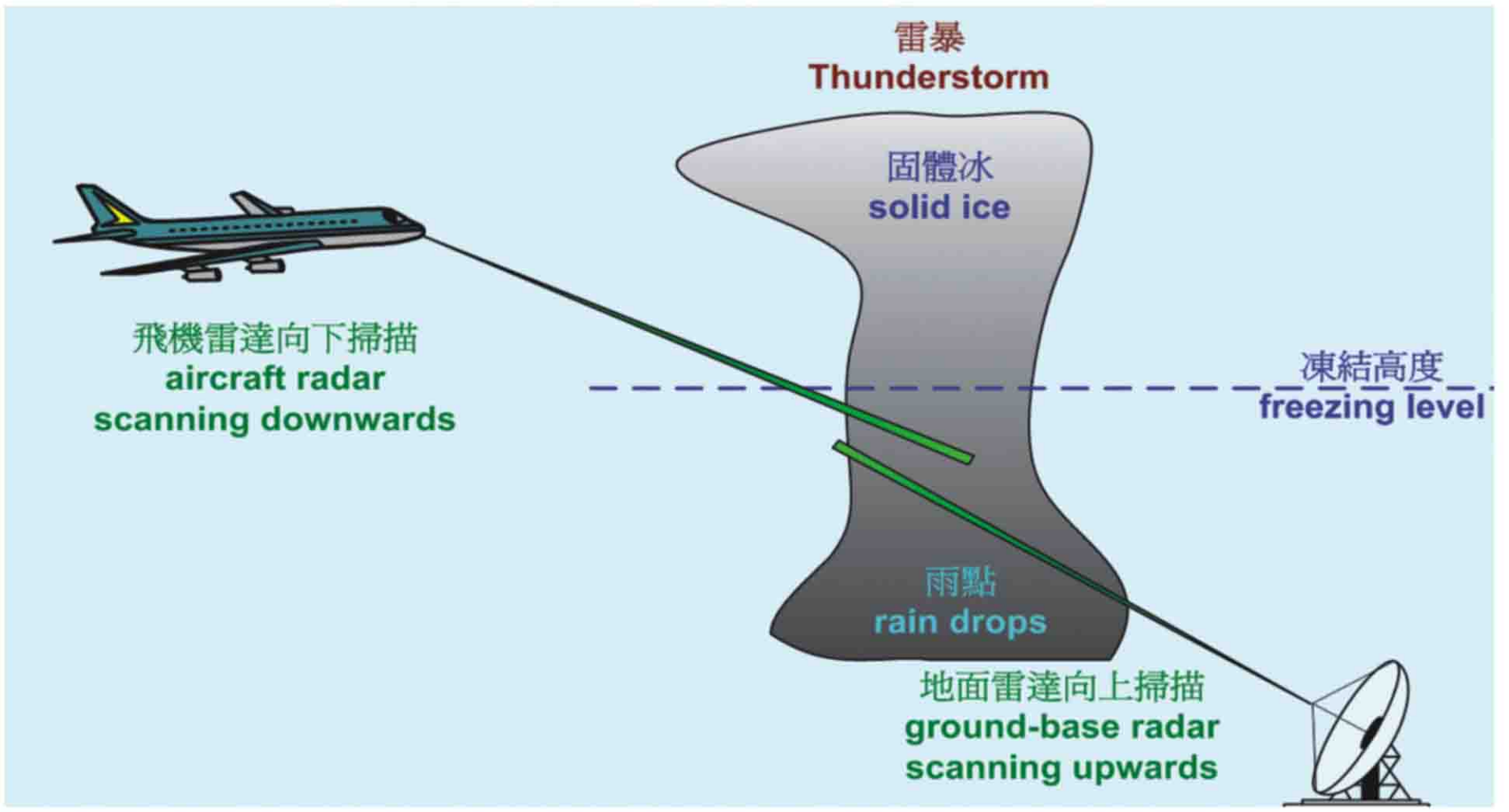
Both aircraft radars and ground-base weather radars locate thunderstorms by detecting raindrops in the atmosphere. However, they differ in their design and mode of operation. Aircraft radar is installed in the nose of an aircraft and because of limited space, its antenna is smaller than that of a ground-base radar. With a smaller antenna, the aircraft radar operates at a higher frequency. In terms of performance, the use of higher operating frequency means that the aircraft radar is capable of detecting raindrops of smaller size and is therefore more sensitive in rain detection. However, it also means that the electromagnetic wave that it sends out is more susceptible to attenuation in the rain. That is, for rain of the same intensity, the detectable range of aircraft radar is shorter.

Ground-base radar operates by pointing its antenna upwards at thunderstorms whereas the aircraft radar looks down while in flight. Aircraft radar images at different tilt angles look quite different. The reason lies in the structure of a thunderstorm. A mature thunderstorm can tower to a height exceeding 10 kilometers, well above the freezing level (several kilometres in altitude). The radar detects both the solid ice particles from frozen raindrops near the top of a thunderstorm and liquid raindrops in the lower part of the thunderstorm. But as the weather radar is more efficient in detecting raindrops than ice particles, the radar display shows weaker signals from ice particles than those from raindrops. To point to the raindrops at the lower part of the thunderstorm, pilots need to adjust the tilt angle of their aircraft radar appropriately. If the radar has not detected the raindrops, pilots may be misled into thinking that the thunderstorm had weakened or dissipated.

Some advanced aircraft radars are now designed to perform scans at different tilt angles automatically. They are programmed to detect thunderstorms and the associated turbulence and windshear, thereby helping the pilots in monitoring inclement weather.

What is " freezing level " ?

Air temperature generally falls with height. That is, the higher you go, the colder you will get. The height at which air temperature drops to 0 degree Celsius is the freezing level. In the tropics, the freezing level is usually several kilometers aloft. Air temperature below this level will be higher than 0 degree Celsius and the condensed water is in liquid state, i.e. raindrops. When these water droplets are carried above the freezing level by the upward air current, usually they would freeze to solid ice particles.



Different scanning strategy of aircraft radar and ground-base radar

World-first Application of Automatic AMDAR Observations for Windshear Reporting

Sandy SONG

AMDAR stands for "Aircraft Meteorological DAta Relay", through which aircraft weather observations measured onboard are transmitted automatically to weather services. AMDAR is a World Meteorological Organization (WMO) programme, which aims to enhance aviation safety and efficiency through promoting upper-air weather observations using aircraft observations.

The Hong Kong Observatory made the world's first attempt to apply AMDAR weather observations to windshear monitoring. AMDAR weather reports contain wind and temperature information measured along the aircraft flight path. The high frequency of AMDAR reports (especially during take-off phase) as well as the availability of such weather reports in near real-time help monitor windshear in and around the airport, supplementing pilot reports of windshear.

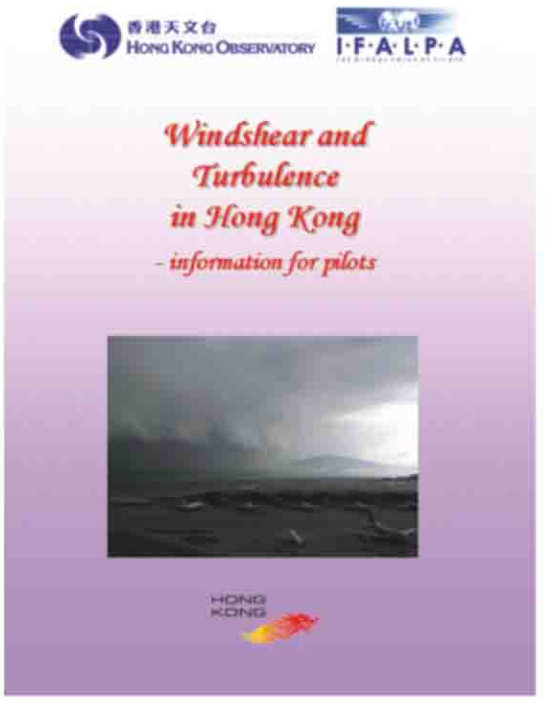
Since 2004, the Hong Kong Observatory started operational reception and dissemination of automatic AMDAR weather reports made by computers onboard of a commercial aircraft. Through the collaboration among the Observatory, Cathay Pacific Airways and the Civil Aviation Department, additional AMDAR reports were received from five more Cathay Pacific aircrafts since September 2005. At present the Observatory receives about 1000 AMDAR weather reports daily directly from these aircrafts.

In 2005, experiments were conducted in applying AMDAR observations for low-level windshear monitoring. Headwind changes experienced by aircraft during arrival and take-off were computed from AMDAR reports received and compared with the high density raw data recorded on the aircraft. Result indicates that these AMDAR reports are useful in monitoring low-level windshear.

Starting from early 2006, these automatic AMDAR observations will be used in operational windshear reporting to alert pilots of the arriving aircraft at the Hong Kong International Airport (HKIA). Pilots would make necessary preparation for landing on receiving such alerts.

New Edition of Windshear Booklet is Now Available

CHAH Sai-tick

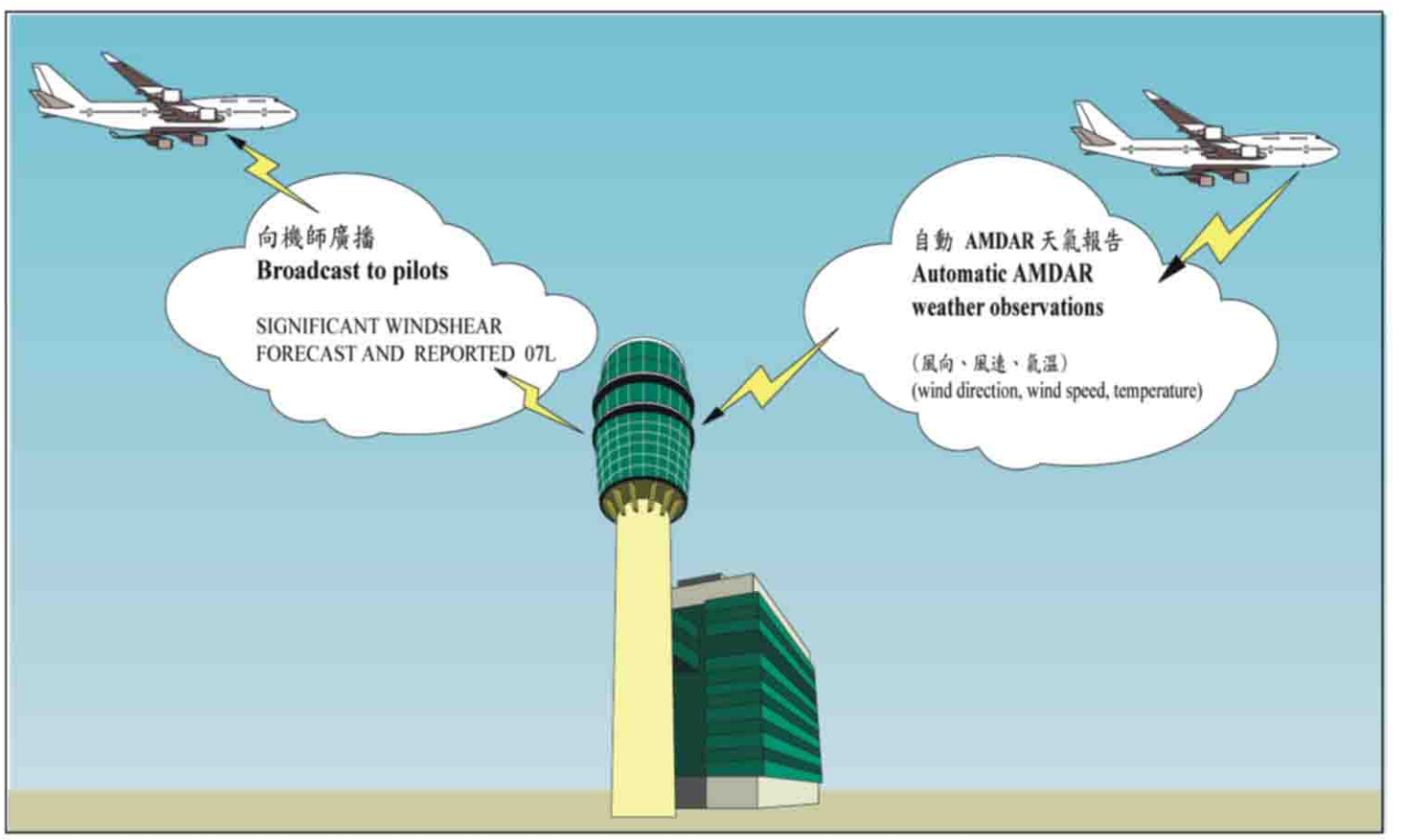


The booklet "Windshear and Turbulence in Hong Kong - information for pilots"

The booklet "Windshear and Turbulence in Hong Kong - information for pilots", jointly published by the International Federation of Air Line Pilots' Associations and the Hong Kong Observatory in 2002, has recently been revised to incorporate the latest developments of the windshear and turbulence alerting services for the Hong Kong International Airport. Among other things, this second edition of the booklet covers new topics including the differences between windshear and turbulence, a case study using LIDAR (LIght Detection And Ranging) data which demonstrates the transient and sporadic nature of windshear, and changes in the phraseology of warnings and alerts of windshear and turbulence since the last edition.

Interested readers are welcome to download an electronic copy of the booklet at the following address:

http://www.weather.gov.hk/aviat/articles/WS-turb-booklet-eng-2ndEd.pdf.



Automatic AMDAR observations transmitted from aircraft are used in operational windshear reporting to alert pilots of the arriving aircraft at HKIA

Operational Use of Automatic LIDAR Windshear Alerts

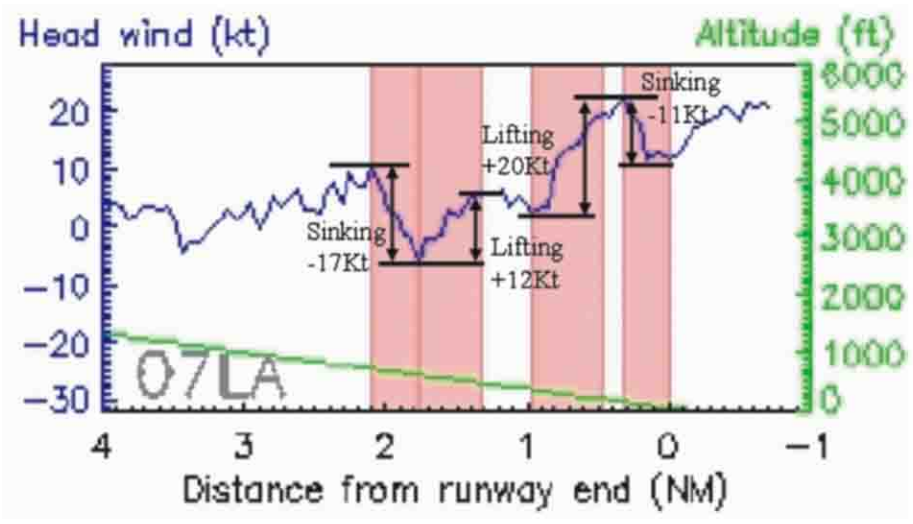
CHAN Pak-wai

Starting from December 2005, the LIght Detection And Ranging (LIDAR) System at the Hong Kong International Airport (HKIA) automatically generates windshear alerts for operational use. The alerts are made available on the Windshear and Turbulence Warning System (WTWS) for relay to the pilots by air traffic controllers.

The LIDAR measures the speed of the wind using an eye-safe laser beam, similar to a laser gun used by the police for detecting speeding vehicles. However, instead of tracking speeding cars, the LIDAR follows the movement of tiny particles in the air. The LIDAR was introduced to HKIA in mid-2002 for airport weather alerting, the first of its kind in the world.

Since 2002, the LIDAR has become an indispensable tool for aviation weather forecasters in warning windshear in non-rainy weather conditions. The automatic generation of LIDAR based windshear alerts starting December 2005 is another step forward. Using a method developed in-house by the Observatory, LIDAR measurements along the glide paths of HKIA are analyzed to detect significant changes in the headwind and issue alert .

"In the last two years, the Observatory spared no effort in developing its own methods to detect windshear using the LIDAR data," said Mr C M Shun, head of the Windshear and Turbulence Alerting Team. "The methods were fine-tuned and evaluated with reference to pilot reports. We are happy to see that the automatic LIDAR alerts are eventually put into operation to enhance aviation safety."



Headwinds (blue line) measured by the LIDAR during a windshear event along the glide path (07LA - approach corridor to north runway from the west in this case). The significant changes in headwind (marked by arrows) are successfully captured by the automatic windshear detection algorithm (highlighted in red).

Our Partners

Disaster Reduction at Local and International Level - From "Safer Living" to the Asian Conference on Disaster Reduction

MOK Hing-yim, WONG Mei-Shing

Speakers shared experience with the audience during the Seminar (1st left: Mrs Hilda Lam, Senior Scientific Officer of the Observatory)

A highlight of the "Safer Living" campaign jointly organized by the Observatory, the Security Bureau, the Civil Engineering and Development Department, the Drainage Services Department, the Information Services Department and the Hong Kong Red Cross, was the seminar "Safer Living Reducing Natural Disasters" held on 17 October 2005 at the Central Library. The seminar aimed at enhancing the knowledge and awareness of professionals in their work to prevent and mitigate natural disasters. Lecturers came from the World Meteorological Organization, the United Nations Development Programme, the International Red Cross, the Chinese University of Hong Kong and various departments of the government. They discussed and shared their experience in respect of administration, management, warning of inclement weather, and engineering aspects of disaster prevention. The Chairman of the Hong Kong Red Cross, the Hon. Sir Ti Liang Yang delivered an opening address while the Director of the Hong Kong Observatory, Mr C Y Lam, presented a concluding speech.

Some 200 participants from government departments, tertiary education institutes, professional bodies, non-governmental organizations, and representatives from Macao and the Mainland were present in the seminar.

This seminar was the second of its kind after the "Symposium on Natural Disaster Planning and Preparedness" in 2004. Lately, strengthening various aspects of disaster prevention and mitigation,

Director of the Hong Kong Observatory, Mr. C.Y. Lam, presented at the Asian Conference on Disaster Reduction

including public education and campaign to promote such awareness, have become priority jobs in many countries. The Observatory has spared no effort in these areas. The TV documentary "Meteorology Series III" and the Tropical Cyclone Naming Contest in 2005 were just two of the outreach programmes to help members of the public to understand more about hazardous weather and how to prevent them from developing into disasters.

On the international scene, Mr C Y Lam participated as an invited expert in the Asian Conference on Disaster Reduction held in Beijing, 27-29 September 2005. He gave a presentation on "Disaster Risk Management – the Weather Perspective" which discussed the general principles as well as how Hong Kong coped successfully with potential disasters through a combination of engineering measures, weather warnings, contingency plans and the active involvement of the community.

Mr Lam also served as the co-chairman of the thematic sessions on "Comprehensive Disaster Management". He presented the summary report for the theme at the closing plenary session on 29 September, which adopted the Beijing Action Plan for Disaster Risk Reduction in Asia.

"Weather Diary" Prize Presentation Ceremony

LEUNG Wai-hung

A prize presentation ceremony for the "Weather Diary", a school activity jointly organized by the Observatory and the Hong Kong Education City (HKedCity), was held on 5 November. A number of schools and students received prizes for their outstanding performance in the activity.

Lasting one month, "Weather Diary" was held during May and June 2005. More than 1500 students from about 250 schools participated in the activity, making more than 32,000 weather observations. To encourage active participation and taking quality weather observations, two awards, i.e. the "Most Actively Participating School" award and the "Best Weather Diary" award, were set up.

The Observatory examined all the weather observations made by students. The results showed that most of the students' records matched the actual weather conditions, meaning that the students have grasped the basic skills of weather observation. The analyses also showed that there were, in some situations, large changes in weather in space and time in Hong Kong. Details are available at the websites of HKO and HKedCity:

http://www.hko.gov.hk,

http://www.hkedcity.net/project/weatherdiary2005.

Mr C Y Lam, Director of the Observatory, said in the prize-presentation ceremony, "We are pleased to contribute to education in Hong Kong through this activity. Apart from acquiring meteorological knowledge, the activity also provided the opportunity for students to develop the habit of observing the sky, getting in touch with nature and caring for the environment."

Mr Lam Li-ming, teacher of SKH Bishop Baker Secondary School was delighted that his school won the "Most Actively Participating School" gold prize. He said that he highly recommended the activity to the students, as it enabled them to learn through practice. The "Best Weather Diary" winner, Miss Ng Yin-ni, felt very encouraged when she won the award, adding that she learned a lot of meteorological knowledge during the activity. She also said that she would like paying attention to weather changes more closely in the future.

Group photo of invited guests and prize winners

Assistant Director Mr K H Yeung Lending a Hand to Pakistan after the Severe Earthquake in October 2005

WONG Mei-Shing

Mr K H Yeung (2nd left) discussing his proposal with the Director-General of the Pakistan Meteorological Department and his assistants

At the request of the World Meteorological Organization (WMO), Mr K H Yeung, Assistant Director of the Observatory, visited the Pakistan Meteorological Department on 8-10 November 2005 to draw up a proposal to enhance its meteorological and seismological services in support of relief and reconstruction work after the disastrous earthquake of 8 October 2005. The mission arose from a request to WMO by the Pakistan Government. Also taking part in the mission was WMO director in charge of the voluntary cooperation programme, Dr Tokiyoshi Toya.

An earthquake of magnitude 7.6 struck the hilly regions of northern Pakistan on 8 October 2005. It killed 79,000 people, injured 65,000 and damaged tens of thousands of houses. The approaching winter threatened the lives of many survivors living in tents, and also posed a hazard to relief operations in particular to helicopters trying to land on snow-covered grounds. The Pakistan Meteorological Department was issuing 3-day forecasts for earthquake affected areas, which were accessible on the two WMO websites on world city forecasts (http://www.worldweather.org/) and on severe weather information (http://severe.worldweather.org/), both managed by the Hong Kong Observatory. There was also a link to the forecasts from the Observatory's homepage (http://www.weather.gov.hk/contente.htm).

ICAO Regional Meetings

SHUN Chi-Ming

I attended two annual meetings of the International Civil Aviation Organization (ICAO) for the Asia/Pacific Region in Bangkok in July and August this year. As in the past few years, I chaired the group discussions on aviation meteorology in the technical meeting in July and reported on the outcomes at the higher-level meeting in August. What was different in July this year was that we presented a total of seven papers – a record high since the Observatory attended the first meeting in 1997. In these papers, we made five proposals, all related to the uplink and downlink of meteorological information to and from aircraft. All our proposals were supported and endorsed by the two meetings. It is hoped that these proposals, when implemented worldwide, will facilitate more effective provision of meteorological support to civil aviation and hence enhancement of its safety, regularity and efficiency.

This year also saw an increasingly active participation by Member States in the aviation meteorology group discussions, leading to more initiatives in further developing this subject in the Region. Among them are a training seminar on quality management system held in Hong Kong in November 2005, a METATM coordination seminar to be held in Bangkok in February 2006 to foster exchanges between the meteorological and air traffic management communities, and a poster to be developed by Hong Kong Observatory as an educational material to assist meteorological offices in the issuance of SIGMET warning messages in respect of tropical cyclones. All in all, we expect 2006 to be another busy but fruitful year for aviation meteorologists of the Region.

Senior Scientific Officer Mr C M Shun (2nd left) photographed with participants of the ICAO regional meeting

The Observatory Conducted its First Training Course on Meteorology for the Media

LEE Kwok-lun

Reporters attending the Observatory's first weather course for the media

About 20 reporters from newspapers as well as television and radio stations attended a course on meteorology organized by the Hong Kong Observatory on 26 and 31 August 2005 respectively.

This was the first training course organized by the Observatory for reporters. The training course was aimed at enhancing reporters' meteorological knowledge to facilitate accurate reporting of weather events by the media.

A participant of the training course said, "I am glad to join the meteorological training course. The course material is useful and practical. The Observatory's professional meteorologists were very thoughtful to have designed a course to meet our operational needs."

Senior Scientific Officer of the Observatory and one of the lecturers, Mr Chan Chik-cheung said the course provided an excellent opportunity for the Observatory to share experiences and exchange ideas with reporters. "It enabled the two sides to understand each others' needs better." Mr Chan said, "I think we share the common goal of delivering accurate weather information to the public."

Visit of our Partners from Transport Department

WONG Mei-Shing

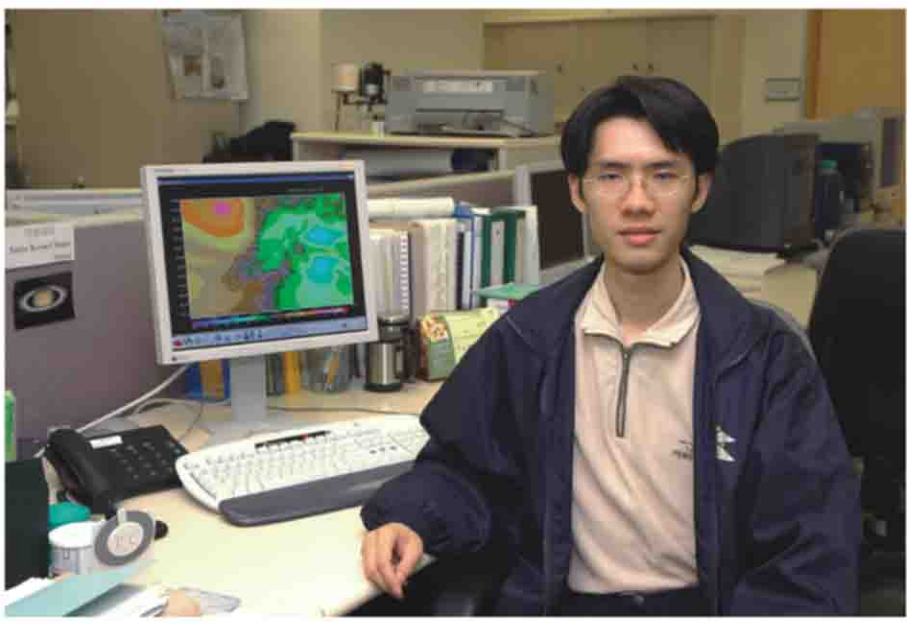
On 9 September 2005, Ms Yip Lai-ching, Deputy Commissioner/Transport Services and Management of the Transport Department visited the Observatory. She was impressed by our studio - tiny yet comprehensive

Training Science Students

CHAN Pak-wai

Chuen has a passion to solve the mystery of the atmosphere using computer models, and his dream was realized at the Observatory.

A final-year undergraduate student studying in applied physics at the City University of Hong Kong, Mr. Szeto Koon Chuen undertook attachment training at the Windshear and Turbulence Alerting Division of the Observatory in 2005 under the Co-operative Education Scheme (CES) of his university. His assignment is to use a numerical model to study terrain-induced airflow disturbances at the Hong Kong International Airport. Computer simulation of airflow over complex terrain is a frontier topic in the meteorological science.



Mr Szeto Koon Chuen enjoys his work on numerical modelling at the Observatory

Chuen wore a big smile when he talked about his work, "We managed to simulate quite well the salient features of the airflow disturbed by terrain, but there are still discrepancies with the actual observations. I guess there are still mysteries to solve and this is the aim of this study."

The Observatory joined the CES of the City University of Hong Kong in 2003. The scheme aims to provide opportunities for students to apply the knowledge they acquire in classroom to real-life situations and equip them with the necessary skills for career development. The Observatory co-operated with other tertiary institutes in Hong Kong to provide similar training to students.

So what does Chuen plan to do after the one-year attachment? " I'll pursue a higher degree in atmospheric numerical modelling," he said with a firm tone. "This year's work at the Observatory laid a solid foundation for my study in this field."

Visits from the Earthquake Administration of Guangdong Province

CHAN Ying-wa

A delegation from the Earthquake Administration of Guangdong Province (EAGP) led by its director Mr Huang Jiantao visited the Hong Kong Observatory in August 2005. The delegation saw the Seismological Laboratory at the Observatory Headquarters, the Keung Shan Seismographic Station in Lantau Island and the site for a Global Positioning System base station for crustal movement monitoring. There was also extensive discussion between the Observatory and EAGP on cooperation in earthquake technology.

A delegation of young technical and management personnel of EAGP also paid a familiarization visit to the Observatory on September 2005. Besides familiarizing with developments in seismic monitoring in Hong Kong, the delegation presented some of their recent work in seismic wave analysis, earthquake detection and earthquake emergency response.

Director of the Earthquake Administration of Guangdong Province, Mr Huang Jiantao (4th left), led a delegation to visit the Observatory in August 2005

Exchanging Experience with Thailand Meteorologists

WONG Mei-Shing

Experts from the Department of Meteorology in Thailand visited the Observatory and shared their experience with our colleagues in September 2005

Showcasing the Observatory's Innovations

CHAN Sai-tick

The Observatory's team at the Innovation Expo 2005

The Observatory took part in the Innovation Expo 2005 at the Hong Kong Convention & Exhibition Centre from 29 September to 2 October 2005. This exhibition-cum-conference event was the concluding event of the Innovation Festival 2005 "Take Wings – City of Innovation" organized by the Innovation and Technology Commission.

Through our exhibits entitled "Innovation in Life Protection: LIDAR and SWIRLS", we showcased to the public two innovative applications of the Observatory, namely the use of the LIght Detection And Ranging (LIDAR) system in windshear alerting at the Hong Kong International Airport and the Short-range Warning of Intense Rainstorms in Localized Systems (SWIRLS) in the warning of imminent heavy rain. These two applications significantly contribute to aviation safety and protection of lives and property against severe rainstorms.

During the exhibition, our booth captured a lot of attention of visitors from different sectors of the community, such as university professors, school teachers, students, entrepreneurs, and district councillors. An aircraft design engineer from Canada was interested in LIDAR-based windshear detection and complimented us on our innovation.

The exhibition was an excellent opportunity for us to meet the public and to present to them our achievements in R&D work.

Fresh Impetus to Meet Challenges of Aviation Forecasting - Encouragement from our Partners in the Aviation Community

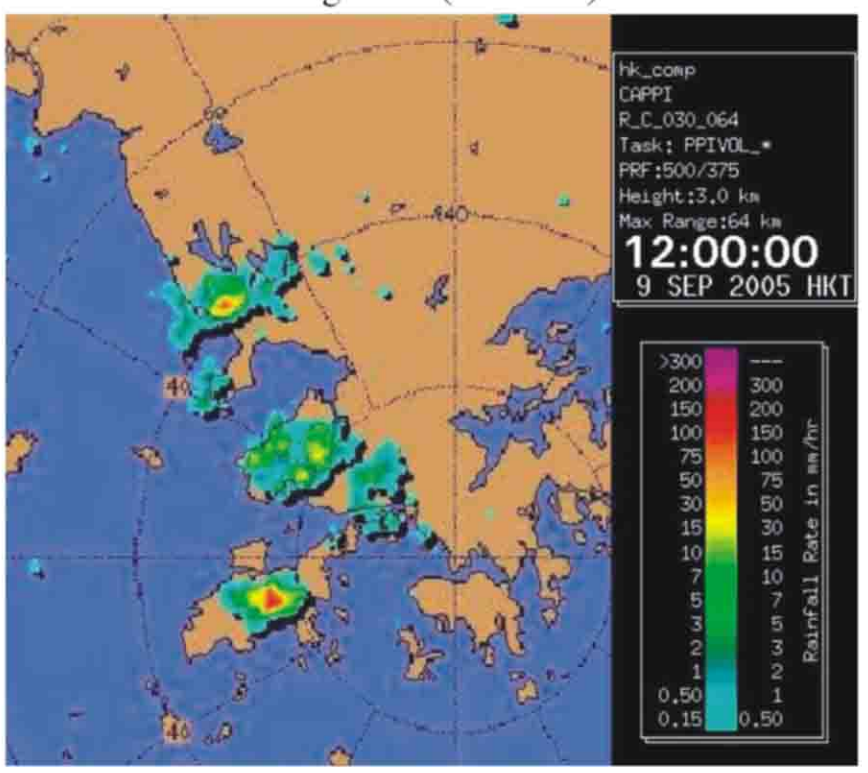
LAU Sum-yee

Life of a weather forecaster has never been easy. Apart from the battles at Chibi (赤壁) and Normandy, few would remember the contribution of an accurate forecast. In aviation, aerodrome forecasts are so much of a routine business that their importance is often overlooked. The fact is, without an aerodrome forecast, a plane cannot take off.

As the accuracy of our forecasts improved over the years, the expectation of the users becomes higher. Correct forecasts are taken for granted. However, it is sometimes beyond the state-of-the-art technology to predict weather changes as precisely as we wish. Of the different type of forecasts, aerodrome forecasts pose the greatest challenge because very fine details such as the exact time when winds will change and thunderstorms will occur over the airport area are required.

Take the case of 9 September 2005 as an example. With a ridge of high pressure covering Hong Kong, generally fine weather was forecast. Indeed, some 8 hours of bright sunshine was recorded at King's Park that day. However, with intense land heating and some local wind convergence, isolated thunderstorms developed and dissipated rapidly over Hong Kong (see Figure) around noon, and affected the airport for about half an hour. For the pilots arriving during that half an hour, we would not be surprised if they considered our aerodrome forecast wrong. The last thing a pilot wants is caught by unanticipated bad weather. In this case, although the forecaster was aware of the possibility of isolated thunderstorms, to pinpoint when and where the thunderstorms would actually developed was beyond the capability of present day meteorology.

Over the years, we did our best to improve our forecast and warning service to the aviation community. I am delighted to learn that this had not gone un-noticed. Mr Ian Fogarty of the Guild of Air Pilots and Air Navigation (GAPAN) remarked at the



Localized thunderstorm development on 9 September 2005 as detected by the radar

Director of the Observatory (first right) chatting heartily with airline representatives before commencement of 24th Meeting of the Liaison Group on Aviation Weather Services

24th Meeting of the Liaison Group on Aviation Weather Services that the weather forecast and windshear warnings had improved significantly since the last liaison meeting. Pilots now had more confidence in our windshear warnings. This vote of confidence is a much treasured encouragement to our strife for excellence. Pilots can rest assured that we will work even harder to provide the best aviation weather service possible.

People

The Observatory Won Community Chest Award 3 Years in a Row

CHOI Siu-chuen

The Hong Kong Observatory has, for three consecutive years, won the Highest Per Capita Contribution Award in the Civil Service Category of the Community Chest Community Assistance Raised by Employees (CARE) Scheme. This testifies to our care for the community not only through the provision of weather services, but also by charitable deeds. A tea gathering to celebrate the award took place at the Observatory Headquarters on 11 August 2005 and Ms Sandra Lee, the Permanent Secretary for Economic Development and Labour (Economic Development), was invited to the gathering to share the happiness with the staff of the department.

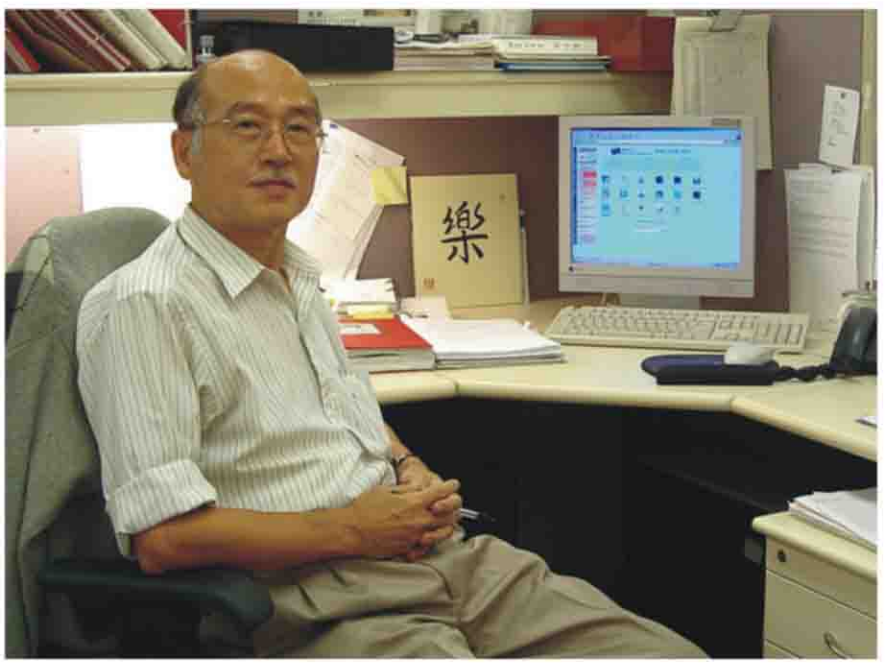
Ms Sandra Lee sharing the happiness with Observatory staff in a tea gathering

The longest-serving Staff of the Observatory Retires

WONG Mei-shing

Mr WONG Kim-po sets a new record as the staff with the longest service in the Observatory. He entered the Hong Kong Observatory as a Scientific Assistant in 1966. In 1975, he undertook on-the-job meteorological training in England and was then promoted to the Experimental Officer rank in 1976. He retired in November 2005 as a Chief Experimental Officer.

During his 39 years of service, he witnessed the dramatic changes in the Observatory which grew from a small staff of around a hundred to some 300 people in 2005. In pace with its growing service, the office area in the headquarters also expanded from the 2-storey 1883 Building to a 7-storey Centenary Building and an office in the nearby Miramar Tower. Mr Wong remember that the public weather service in the old days was confined to a few weather forecasts in a day with only two types of warnings, i.e. warning for tropical cyclones and strong monsoon. Now, there are more than ten different warnings for a variety of weather situations.



Mr Wong Kim-po's motto - Work as a passion

Mr Wong remarked nostalgically that he had a wonderful experience working as a weather observer at Cheung Chau and Cape Collinson. Now, weather observations are made at unmanned automatic weather stations. Mr Wong also observed that telephone enquiries were answered by staff in the past, which became impossible when the number of calls grew, now exceeding 20 millions a year. Mr Wong was proud to be involved in the implementation of the automatic "Dial-a-Weather" System.

Mr Wong has worked in different jobs over the years including telecommunications, information technology, hydro-meteorology, instrumentation, tropical cyclone research, climatology, public weather service and aviation forecasting. When asked to name one thing of the greatest significance in his career, Mr Wong gladly named the development of the Observatory's first-generation meteorological display software in which he played a key role.

As for life after retirement, Mr Wong said that he had no definite plan but would develop a habit to take weather-related photos and share them with us.

Mr Leung Chi-wing Commended by the Secretary for the Civil Service

CHOI Siu-chuen

Our Motor Driver, Mr Leung Chi-wing, was commended under the Secretary for the Civil Service's Commendation Award Scheme in 2005. This is the second time that Mr Leung was commended for his outstanding performance since the Ten Outstanding Drivers Award presented by the Government Land Transport Agency in 2000.

Mr Leung joined the Hong Kong Observatory in 1994 and has since been providing safe and reliable service to the Department. He deserves the laurels that come with the Award. Congratulations!

Mr Leung is good in gardening, making use of his time after work to look after plants in the Hong Kong Observatory Headquarters. The green corner next to the Annex Building where flowers blossom and birds sing is his masterpiece.

Mr Leung Chi-wing received the commendation from the Secretary for the Civil Service

Flight of the Second Kind - An Aviation Forecaster's Experience

SHUM Fu-cheung

I love travelling and have been on countless flights. Nevertheless, the familiarization flight I took on 11 September 2005 was a real eye-opener for me.

As an aviation forecaster, the department arranged a familiarization flight for me onboard a Dragonair plane between Hong Kong and Sabah. I was in the cockpit during the entire flight so that I could observe the effect of weather on aircraft operations and to discuss with the pilots.

I entered the cockpit feeling rather excited. The pilot and co-pilot were busy performing pre-flight checks on instruments and conducting take-off procedures. I sat quietly in the "jump-seat", conscious of not getting in the way of their business. From the time the plane taxied out to the time it reached the standard cruising level, the pilot communicated continuously with the air traffic controller. All these dialogues were made very seriously.

After these busy moments, the pilots were able to spare time to answer questions which I had prepared beforehand. They patiently explained to me how adverse weather such as wind shear, turbulence and thunderstorms would affect the plane's operation. They showed me the flight procedures. I was so attracted to the colourful and sophisticated dials and buttons on the flight deck that I almost forgot to look outside the cockpit's windows at the beautiful cloud formations. The pilot closely monitored the onboard radar scope. When he spotted thunderstorms ahead, he would, as far as possible, make a detour to avoid encountering turbulence. When turbulence was unavoidable, he would alert the passengers through the announcement system to buckle up their seat belts to ensure passenger safety and comfort.

Mr Shum Fu-cheung(centre), Capt. Gordon Lawson (left) and Capt. Andrew Forcuson (right) in the Dragonair plane cockpit

I am most grateful to Dragonair for providing the familiarization flight, and to the flight crew for their hospitality and help. I collected a lot of useful information through observations and speaking with the pilots on aviation weather. The information would be valuable references for improving our service in the future. This is truly an unforgetable flying experience for me.

Observatory Staff Deserving of Praise

Staff of the Observatory receiving words of thank and commendation from the public during the period July-December 2005:

Mrs Hilda LAM	Senior Scientific Officer
Mr LEUNG Yin-kong	Scientific Officer
Mr LEUNG Wai-hung	Scientific Officer
Mr LEE Kwok-lun	Scientific Officer
Ms LAM Ching-chi	Scientific Officer
Mr CHAN Pak-wai	Scientific Officer
Mr LAM Hok-yin	Scientific Officer
Mr HUNG Fan-yiu	Senior Experimental Officer
Ms SHUM Kit-ying	Experimental Officer
Ms CHAN Man-yee	Experimental Officer
Mr WONG Mei-shing	Experimental Officer
Mr LAM Kai-bun	Chief Scientific Assistant
Ms YEUNG Pui-yi	Senior Scientific Assistant
Mr LO Tak-shing	Security Guard

Public Weather Sevice Award Winners, 3rd Quarter, 2005

Best TV Weather Programme Presenter:

Mr LEE Sai-ming

Best Radio Weather Programme Presenters:

Cantonese: Mr CHEE Shiu-chung
Putonghua: Mr CHEE Shiu-chung

Talk by the Postmaster General at the Management Forum

CHOI Siu-chuen

At the Observatory's Management Forum on 12 October 2005, Mr Allan Chiang Yam-wang, Postmaster General, delivered a talk titled "Going to office happily, returning home safely". He shared his management philosophy with the Observatory staff, in particular, on HR management in the Post Office. Mr Chiang emphasized the importance of communication, appreciation, teamwork, staff participation and raising public profile to the smooth implementation of department's policy. Coincidentally, some of these concepts strike a chord with the Observatory's "Happy Business" Programme, and provide food for thought for planning future activities. The transformation of Post Office from a government department to a semi-commercial organisation is a testament to the success of Mr Chiang's management prowess.

The seminar was enthusiastically attended by over 80 participants. They were very much impressed by Mr Chiang's lively presentation and vivid illustration of the otherwise intangible concepts.

Mr Chiang Yam-wang, the Postmaster General, sharing his management experience with staff of the Observatory

A Revelation of Benevolence - World Wide Fund for Nature Flag Day

Winnie YIU

In support of the "Gold Flag Sales Campaign" launched by the World Wide Fund (WWF) Hong Kong in August 2005, the Hong Kong Observatory Volunteer Team once again demonstrated its usual responsiveness, efficiency, and spirit. With the Gold Flag appeal leaflet and donation boxes in our hands, our team visited the workplace of each colleague who all pledged donation. Within a couple of days, the donation boxes were full of charity money. On the WWF Flag Day on 27 August 2005, a number of our staff gave up their free time and teamed up with their family members to sell flags to shoppers and pedestrians under the blazing sun.

Funds raised in the Campaign will be used for conservation and education programmes. The natural environment has degraded to such an extent in the recent decades that we must do something before it is too late. Let's join hands to build a future that we can live in harmony with the Nature.

"Qile" Charity Cakes Drive

Winnie YIU

Facing an aging population, Hong Kong people have been showing more care and concern for the needs of the elderly. 2005 is the tenth anniversary of the "Qile (耆樂, meaning Happy Elderly) Charity Cakes Drive" organized by Haven of Hope Christian Service, a charity organization renowned for its services to the aged and infirm.

The Observatory is committed to be an active and caring department. The Observatory's Volunteer Team again pitched in the Drive this year zealously. With the full support from all staff, some one hundred and thirty tins of Qile Charity Cakes were sold on 27 and 28 October 2005 through internal sale. We are pleased with the fund-raising results which were achieved by the collective effort of our dedicated volunteers and our loving colleagues.

Building Team Spirit - Walking the Talk

WONG Chi-wai

The department organized a workshop on "Building Team Spirit to Give our Competency a Full Play" for staff in early October 2005. Some 30 staff from different grades and ranks attended. The workshop was activity-based to raise the interest of participants. Trainees were asked to discuss what they had learnt after each activity. The workshop covered ways to build an effective team, managing conflicts in teams, building up trust and confidence among team members, and effective team communication.

One of the participants, Ms Leung Man-yee, Scientific Assistant, said, "All trainees participated enthusiastically in the learning activities. We learnt the most essential factors in building an effective team, sharpened our communication skills, and have greater understanding and trust in each other."

Participants demonstrated their team spirit during a workshop activity

House-warming Party for the Newly Refurbished Office of the Graphic Design Division

WONG Mei-shing

The graphic design trio of the Observatory

Mooncake Distribution - Sharing the Joy of the Festival

CHOW Chi-kin

High-spirited Observatory volunteers rallied before setting off

On the eve of Mid-Autumn Festival on 17 September, members of the Hong Kong Observatory volunteer team were on the move again, this time responding to a call from the Salvation Army to take part in its "mooncake distribution" activity. We planned to make home visits and distribute mooncakes to single elderly people in Yau Ma Tei, and at the same time delivering festival greetings and showing our care for them. With the Stand-by Tropical Cyclone Warning Signal Number 1 and the Thunderstorm Warning in force, the weather was less than favourable. Undaunted by the inclement weather, the Observatory volunteers stuck to their original plan. With umbrellas in one hand and mooncakes in the other, we searched through narrow streets and old buildings to look for those senior citizens on our lists. Be they bed-space lodgers or senior people in old buildings, they were all smiles when we approached them. They were pleased not only because of the mooncakes we gave them, but more because of the care we extended to them. Their feelings of gratitude were noticeably reflected on their faces. It came as a surprise to us when we found that some of the elderlies were active volunteers themselves. This shows that volunteering work is meaningful and rewarding and there is no limit on the age for becoming a volunteer. It's for everyone with a caring heart.

Electronic version of "Weather on Wings" is available at the following website:

http://www.weather.gov.hk/publica/wings.htm

The Lucky Knot Campaign

CHAN Man-yee

Chinese knot is a traditional folk handicraft which carries rich connotations. With its symbolization of auspiciousness and reunion, Chinese knot is a perfect gift for expressing good wishes.

The Hong Kong Observatory Volunteer Team (HKOVT) participated in the "Lucky Knot Campaign" organized by the Social Welfare Department in 2005. Volunteers were encouraged to prepare Chinese lucky knots and visit the needy with these meaningful presents to show the support and compassion of the community to them.

As most of our colleagues had no experience in Chinese knotting, HKOVT organized two get-to-know-knotting classes. With the clear demonstration and detailed explanation by Kam Chu and Sui Fong, our knotting teachers, we were able to pick up the techniques of Chinese knot-making speedily. After the classes, our enthusiastic members were all very eager to display their skillfulness in knotting. In no time at all, they completed a total of fifty lucky knots. In December 2005, HKOVT visited Haven of Hope Christian Service nursing home, giving the elderly people their hand-made lucky knots, as well as their love and care to them.

Recently, I noticed that many colleagues who had not attended the lucky knot training class had their lucky knots displaying in their office or tied on their handbags. I later found out that these lucky knots were given to them by the volunteers as a gesture of friendship. This reminds me that it is important not just to care for the people in need, but also care for your family and your friends. Why not take action now to make a lucky knot for someone you care?

(Teach yourself knot-making: http://www.volunteering-hk.org/knot/graph.ppt)

Visit to the New Headquarters of Electrical and Mechanical Services Department (EMSD)

CHAN Man-shing

In October 2005, I joined other Observatory colleagues to a special visit to the new Headquarters building of EMSD in Kowloon Bay. The very moment we got off our coach, I was greatly impressed by the simple but elegant outlook of the building. It also occurred as somewhat mysterious to me that there were five very tall metal containers near the main entrance, and the outer part of the whole building was covered by a curtain-like structure. I was intrigued to find out what they were.

EMSD staff explaining the energy-saving features of their building

Shortly afterwards, we were warmly received by the EMSD staff. The Director of EMSD also personally gave us a briefing on the work of EMSD and the story behind choosing this new building as their new headquarters. Converted from the former Air Cargo Terminal 2 of the Kai Tak Airport, the new EMSD headquarters was designed to be environment friendly from the start. There was no dismantling work in the conversion process, keeping construction waste to a minimum.

We were then led by the EMSD staff to tour around the building. There were many energy-efficient features in the building, including the largest array of photovoltaic panels (over 2,000 pieces) in Hong Kong. The electricity generated, together with those by the wind turbines on the roof, was connected to CLP's distribution network and powered the whole building, thereby saving hundreds of thousands of dollars on electricity consumption. I also found out that the tall metal containers are chiller plants and slurry ice tank which help reduce electricity consumption by providing air-conditioning to the building. In the building, waste water was collected and stored in underground tanks for recycling before reused to flush toilets. All the ceiling lights were installed with sensors. They would automatically turn off when there was no activity in the area. As another measure to conserve energy, the cool air outlets were installed at the ground level so that energy was not wasted to cool the air at the uppermost level of the office. Before we departed, I got the answer for the double-layer curtain structure outside the building - reducing heat from direct sunlight and hence reducing the demand for air-conditioning.

Although it was only a one-hour tour, I appreciated the effort put in by EMSD to protect our living environment. The new EMSD Headquarters building truly lives up to the name of being a "Green Building".

January 2006 Editorial Board: W M Leung K L Lee M S Wong L Y Ma S Y Liu