WEATHER ON WINGS

香港天文台
HONG KONG OBSERVATORY

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Headline

LEE Tsz-cheung

A New Page in Weather Information for Senior Citizens

▲ *Dr CHENG Cho-ming (right), the Assistant Director of the Observatory, and Ms LEUNG Shuk-yee, the Chief Executive Officer of the SCHSA held a press conference.*

With winter approaching, the Observatory and the Senior Citizen Home Safety Association (SCHSA) held a press conference on 3 December 2012 to remind the public, in particular the senior citizens and persons with chronic medical conditions, to prepare for the cold season and to jointly inaugurate a new "Weather Information for Senior Citizens" web page.

The Observatory and SCHSA joined hands to revamp the web page for the senior citizens that would better meet the needs and interests of the elderly for weather information. In the process, the Senior Citizen Home Safety Association invited a group of elderly volunteers to contribute useful ideas and suggestions to the Observatory to enhance the web page and refine the user interface for senior citizens (see the article in page 4 for details). As a gratitude to the elderly volunteers, the Observatory presented electric hand warmers as a warm and cozy gift for the volunteers in the cold season.

Ms LEUNG Shuk-yee, the Chief Executive Officer of the SCHSA, also reminded the public to take initiative to care and provide assistance to the elderly in need, particularly during wintry weather.

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Media Luncheon

Editorial Board

For better communication with media, the Director had a luncheon meeting with media on 16 October 2012. The Director, the Assistant Directors exchanged views with about 30 reporters on that day.

The Director mentioned that since global warming could lead to the melting of the Arctic ice caps, extreme weather events would become more frequent. Citizens should pay attention and raise the awareness in natural disaster prevention and take appropriate measure for climate change.

▲ *The Director (1st right) showing the weather information.*

Hong Kong Observatory Signs Co-operation Agreement with Guangdong Meteorological Bureau

WONG Wai-kin

◀ *Mr SHUN Chi-ming (1st left, front row), Director of the Hong Kong Observatory, signs the "Long-term Co-operation Agreement in Numerical Weather Prediction Technology" with Mr XU Yong-ke (2nd left, front row), Director-General of Guangdong Meteorological Bureau.*

To strengthen co-operation on numerical weather prediction, Mr SHUN Chi-ming, Director of Hong Kong Observatory and Mr XU Yong-ke, Director-General of Guangdong Meteorological Bureau, signed the "Long-term Co-operation Agreement between Guangdong Meteorological Bureau and Hong Kong Observatory in Numerical Weather Prediction Technology" ("Agreement") after the Hong Kong/Guangdong Co-operation Joint Conference on 14 September 2012.

Under the Agreement, the two sides will enhance information exchange in order to improve the accuracy of weather forecast, and further improve meteorological services across the region, providing even better service to users in both places.

Mr SHUN said, "The strengthening of technical exchange in numerical weather prediction between Hong Kong and Guangdong will further improve our capability in the forecasting of severe weather, bringing enhanced weather services and improved capability in disaster prevention and mitigation to better serve the public."

Mr XU said, "Hong Kong and Guangdong are connected geographically and share common weather. Closer co-operation in fostering mutual development is in keeping with the trend. It is also important for meteorologists in Hong Kong and Guangdong to work together to bring about benefits to the communities in the region. The two sides have been working hand in hand in weather services for over 30 years. Today's signing of the Agreement would further our respective strength, raising the competence of weather forecast to benefit the communities of both regions. Our co-operation is also expected to elevate the international influence of the region in the global meteorological arena and serve as a model of regional meteorological co-operation in the country."

Numerical weather prediction (NWP) uses the computer to simulate the changes in weather. Through this "Agreement", the two sides will enhance the exchange of professional knowledge and techniques on NWP. A unified verification platform will be developed to assess the performance of NWP model forecasts as well as the impact of various observations on the models' performance. The co-operation aims at advancing the technical development and operational applications of NWP of the two parties.

Staff Stories

Not One Less!

LEE Shuk-ming, Olivia

"Sending up balloons" at King's Park in those days

Sending up a balloon for upper-air sounding was undertaken at the Observatory since 1921. It used to be done manually. But with the introduction of the Automatic Upper-air Sounding System (AUSS) in 2004, balloon ascent had since entered into the era of hands-free release.

The AUSS at King's Park Meteorological Station will inflate and release the balloon at 8 a.m. and 8 p.m. daily. Suspended beneath the balloon are sensors that can measure pressure, temperature and humidity, with GPS tracking the position of the balloon as it rises through the atmosphere to gather upper-air information. Duty staff on the ground will receive and process the data using computers, and such information will be relayed to meteorological centres around the world after quality-checking.

The frequency of upper-air sounding will be increased starting with the Strong Wind Signal No. 3 with additional ascent at 2 p.m. At the same time there will be a Senior Scientific Assistant or Scientific Assistant on duty at King's Park. We call this attending "Typhoon Duty". When tropical cyclone Signal No.8 or higher is in force, upper-air sounding will be further enhanced with additional ascent at 2 a.m. as well. There will also be a Radar Specialist Mechanic on "Typhoon Duty" at King's Park.

Sending up a balloon during the No.10 signal is in need!

The Observatory issued the Hurricane Signal No.10 in the early hours of 24 July 2012 for Severe Typhoon Vicente, the first Signal No.10 for 13 years since Typhoon York in September 1999.

The following was the hair-raising situation for the ascent at the time of the Signal No.10 during the passage of Vicente, as recalled by Mr YEUNG Yu-shin, Radar Specialist Mechanic and Mr YIP Choi-hung, Scientific Assistant, who were on "Typhoon Duty" at King's Park.

YEUNG: As Vicente approached on 23 July, I already felt something was not quite right with the AUSS during the 8 p.m. ascent. I was telling Yip even then that we might have to be prepared for manual release.

YIP: Throughout the night I communicated closely with Mr Wat (Mr WAT Kam-sing, Chief Supervisor), who was on "Typhoon Duty" in the Forecasting Office at the Observatory Headquarters. Mr Wat repeatedly told me to pay attention to personal safety and should only attempt manual release when circumstances allowed. After midnight, the Signal No.10 was in force. When the time came for the 2 a.m. ascent, winds were howling outside. The AUSS failed to function properly, and the cover of its balloon launcher just could not be opened!

YEUNG: Yes, it was raining and quite windy then. I ran outside to check things out, and found the mechanical problem could not be fixed within a short time. Well, a typhoon eye passing Hong Kong nearby is not something that happens everyday. As a professional, it would be a major regret if we could not get the upper-air information for this occasion. So we decided to switch to manual release right away. I monitored the reception of data on the computer. Mr Yip worked on the balloon.

YIP: I reported to Mr Wat that we decided to go for manual release. Mr Wat again asked me to make sure that it was safe before attempting the manual release. I considered the situation, though windy, would allow a manual release. So I was all dressed up for the stormy conditions, in full gear of raincoats, hoods, and wellies. I really struggled to hold on to the inflated balloon. To stay on my feet was itself quite a challenge as the winds and the balloon tried their best to drag me down. On the first attempt, the balloon simply refused to go up under the buffeting winds. On the second attempt, Mr Yeung signaled that no data were received on the computer. On the third attempt, something was wrong in the data reception. It was not until the fourth attempt when the winds slightly subsided that the balloon was able to make the ascent and send back the observations successfully. Mr Yeung confirmed that the information received on the computer was fine.

YEUNG: We finally breathed a sigh of relief. By that time, it was nearly 3 a.m., about an hour behind schedule. But at least, we managed to gather some valuable upper-air meteorological data. I trust the data will be very useful in the research of typhoons.

YIP: Right, seeing those data, it was like finding treasures!

Say "thank you" to the frontline staff!

After listening to our colleagues describing their work when the Signal No.10 was in force during the passage of Vicente, their fondly re-told stories reminded me of the name of a movie - "Not One Less". Yes, we always would like to dig out the last piece of observation information available. To achieve that, the operational staff working tirelessly behind the scene were certainly all indispensable!

I was much impressed by their unwavering belief in the need to maintain normal weather observation routines and their dedicated efforts despite the stormy weather conditions. Indeed I have to say "thank you" to those working scrupulously on the frontline!

A Visit to Ex-Director Mr John Peacock

SHUN Chi-ming

▲ *Mr John Peacock, ex-Director and I photographed together in front of his house in Bath, England.*

Mr John Peacock was the last director coming from England. He joined the Observatory in 1950, succeeded Mr Gordon Bell as director in 1981, and retired in 1984. After attending the World Meteorological Congress in Geneva in late-October 2012, I took the opportunity to take a two-day leave to visit him in Bath, England. At an age of 85, he was still very healthy and even drove together with his wife Diane to pick me up at the railway station. I was really touched. It was also a treat for me as I went through his photograph collections and heard him telling the stories behind these valuable pictures! Even though it was a short stay at his home, I tried my best to gather some interesting bits and pieces of the past for sharing with everybody.

First of all, I found that Mr Peacock might be the director from the recent generations who hoisted the largest number of the Hurricane Signal No. 10! The No. 10 of Shirley in 1968, Rose in 1971, Hope in 1979 and Ellen in 1983 were all handled by him either as director or as acting director.

▲ *Mr Peacock (left) handling Typhoon Ellen at the Central Forecasting Office in 1983, also shown in the photographs include Mrs Elaine Koo (left) and Mr Robert Lau (right - in the middle) who had both retired.*

According to Mr Peacock, Mr Gordon Bell (ex-director from 1965 to 1981) flew into the centre of Tropical Storm Dot on an Islander, a twin-engine aircraft operated by the Royal Hong Kong Auxiliary Air Force (now the Government Flying Service), in 1973. The Islander made observations concurrently with an Hercules transport aircraft of the US Air Force. This was the first time that aircraft and flight crew from Hong Kong entered a tropical cyclone to collect meteorological data. Even though no photos were taken at this occasion, I still felt very excited when Mr Peacock showed me the pictures taken by an Hercules probing into the eye of Typhoon Sarah over the South China Sea in 1979. Looking back, our collaboration today with the Government Flying Service to fly into typhoons over the South China Sea to collect meteorological data is indeed a succession of the pioneering work of Mr. Gordon Bell three decades ago.

▲ *The magnificent view of the eye wall (left) of Typhoon Sarah photographed from a Hercules transport aircraft of the US Air Force (right).*

Mr Peacock also shared with me anecdotes of our ex-directors and photographs of the Observatory in the old days. Please stay tuned as more stories and pictures will be forthcoming in the new book and blogs commemorating the 130th anniversary of the Observatory.

New Products & New Services

TONG Yu-fai

Weather Information for Senior Citizens

To better meet the needs and interests of the elderly for weather information, a new web page "Weather Information for Senior Citizens" was launched.

The new web page is designed to enable easy use and navigation by the elderly. It features large font size and is equipped with a magnifier to enlarge the content of the web page. The web page also provides location-based weather information, the latest weather forecasts and weather video clips. Weather tips for taking appropriate precautionary measures will show up in the web page when weather warnings are in force.

Members of the public are welcome to visit the new "Weather Information for Senior Citizens" web page at elderly.weather.gov.hk.

▲ *The new "Weather Information for Senior Citizens" web page is equipped with magnifier feature to enlarge the content of the web page, to enable easy use and navigation by the elderly.*

Launch of Online Reporting of Felt Earth Tremor

LEUNG Yin-kong

▲ *Online platform for reporting felt earth tremor.*

To facilitate the public in reporting felt earth tremors to the Observatory in a faster and more convenient way, the Observatory launched in its website on 15 October 2012 an online tool for reporting felt earth tremor.

When a felt earth tremor occurs, apart from telephone or email, the public can now make use of the online platform in the Observatory's website (http://www.weather.gov.hk/gts/s/q_e.htm) to report to the Observatory information such as their physical locations, felt experiences and phenomena observed. The information collected is most useful in earthquake analysis, especially in determining the earthquake intensity.

A Facelift of the Regional Weather Charts on the Homepage

CHENG Yuen-chung

▲ *Sample screen of homepage of HKO website - Regional weather chart enhanced with base map containing terrain information.*

To enable better understanding about influence of terrain on weather by the general public, the regional weather chart on the homepage of HKO website (www.weather.gov.hk/contente.htm) has been enhanced with base map containing terrain information. For instance, the diagram below shows that there was a temperature difference of more than 5°C between the Ngong Ping weather station* (location circled in red) and the Chek Lap Kok weather station* (location circled in green) at its north. This is a good example to illustrate that temperature generally falls with height.

* Elevation of Ngong Ping weather station is 593m above mean sea level while elevation of Chek Lap Kok weather station is 6m above mean sea level.

New Hotspot Added to "Wind Forecast for Water Sport Activities"

CHAN Sai-tick

To enhance the weather service for the water sport enthusiasts, weather forecasts for Tap Mun were introduced on the Observatory's web page "Wind Forecast for Water Sport Activities" at the end of September 2012, making the number of water sport hotspots covered by the service eleven.

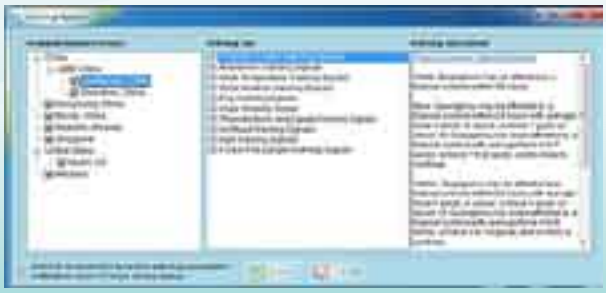
Members of the public are welcome to visit http://www.hko.gov.hk/sports/wind.htm for the detailed weather forecasts of Tap Mun as well as other water sport hotspots.

Launch of an Optimized Version of the SWIdget Service for the Severe Weather Information Centre

CHENG Yuen-chung

A new version 2.1 of the SWIdget service of the Severe Weather Information Centre (SWIC) of the World Meteorological Organization (WMO) has been launched. The SWIdget is a software tool developed by the Observatory on behalf of the WMO to display weather warnings of contributing members automatically on personal computers. The new version improves program stability and optimizes the user interface for selecting official weather warnings of user's choice (Figure 1). Dialogue box (Figure 2) will pop up with an audio alarm on the user's personal computer upon change in warning status.

For users who have installed version 2.0, the program will automatically prompt for an update when it restarts. For new users or users who are using the old version 1.0, they may download the latest version of SWIdget from the SWIC website at http://severe.worldweather.wmo.int/swidget/swidget.html.



▲ *Figure 1: Optimized user interface for selection of official weather warnings.*

▲ *Figure 2: Sample dialogue boxes displaying the issuance (left) and the cancellation (right) of weather warning.*

"MyObservatory" Enhanced with Trial Version of "Location-based Rain Forecast"

CHENG Yuen-chung

To further enhance personalized weather services, the Observatory has launched on a trial basis the "Location-based Rain Forecast" on the mobile app "MyObservatory". Users can now easily get hold of the rainfall forecast in the coming two hours specific to their actual or selected location. The trial "Location-based Rain Forecast" is presented in text, weather icon sequence (Figure 1) and animated rainfall forecast maps (Figure 2). Once activated, a notification message will also be automatically sent to users (Figure 3) whenever rain is forecast at their actual or selected location in the next two hours.

The service is made available on the "MyObservatory" on both the iPhone/iPad platform (version 4.0) and the Android platform (version 3.0). For details please refer to http://www.hko.gov.hk/myobservatory_e.htm.

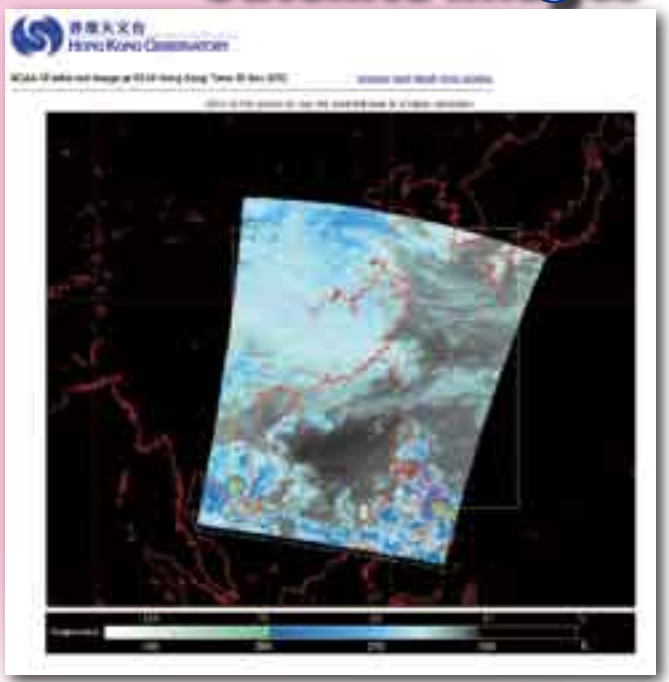
▲ *Figure 1 : Sample screen of "Location-based Rain Forecast" presented in text and weather icon sequence.*

▲ *Figure 2 : Sample screen of "Location-based Rain Forecast" presented in animated rainfall forecast maps.*

▲ *Figure 3 : Sample screen of notification message from the app.*

SO Chi-kuen

Observatory Launches More Polar Orbiting Satellite Images



On 20 November 2012, the Observatory released more images received from polar orbiting satellites at http://www.hko.gov.hk/wxinfo/intersat/polar/sat.htm.

The new additions are infra-red cloud images captured by NOAA-18 and NOAA-19 satellites operated by the U.S. Oceanic and Atmospheric Administration, and Metop-A satellite operated by European EUMETSAT. These high resolution images can be utilized to monitor the weather as well as the global climate.

Aviation Meteorology

Training for "Dragonair Aviation Certificate Programme" Participants

LI Luen-on

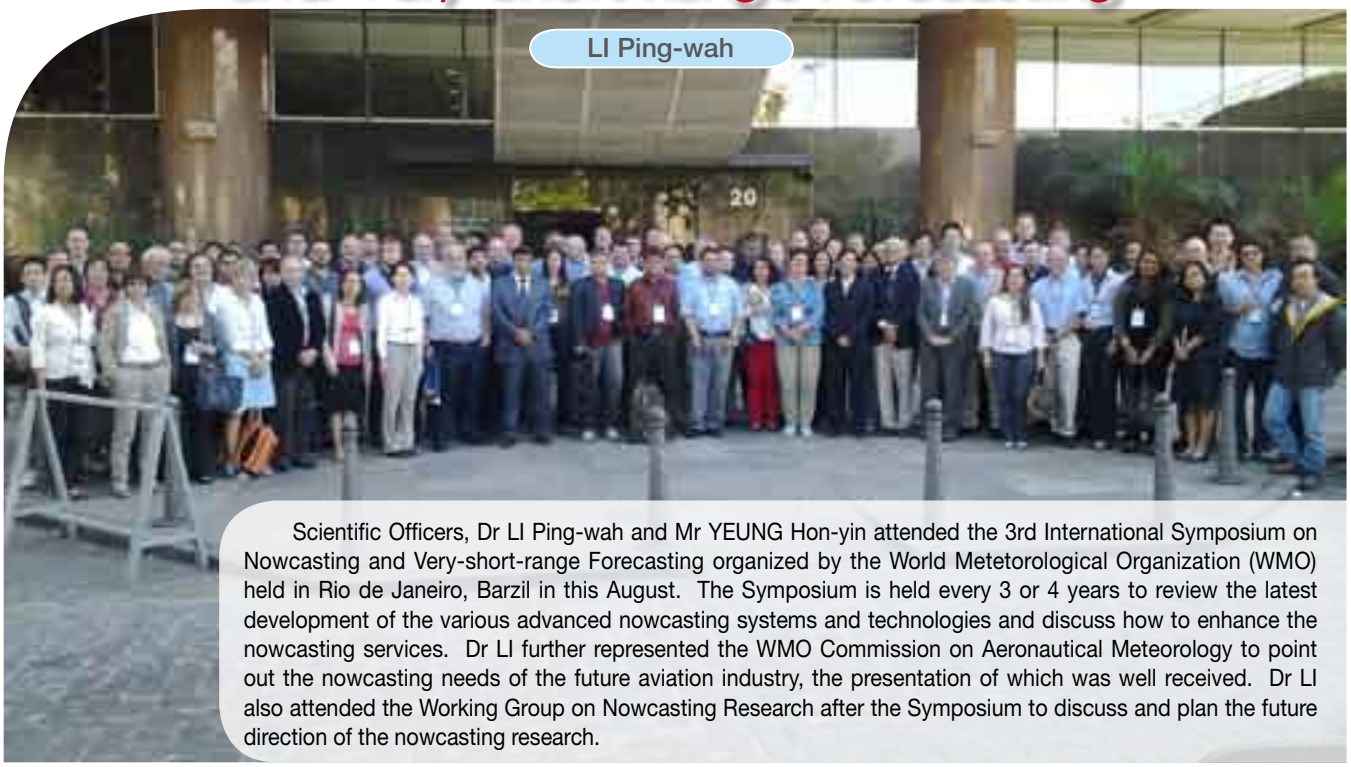
▲ *Participants and lecturers of the training course photographed with Captain Marcus De Santis (7th left), Chief Pilot of Dragonair.*

To help groom the youngsters to join the aviation industry, the Observatory provided a basic training course in aviation meteorology for 23 local youngsters of the "Dragonair Aviation Certificate Programme" during 22 to 24 October 2012. This programme was jointly organized by Dragonair and the Hong Kong Air Cadet Corps, in association with the Observatory and other aviation organizations. Participants of the program could develop a deeper understanding of the various aspects in aviation.

During the training sessions offered by the Observatory, participants were given an understanding of the impact of weather on aviation safety and efficiency. They were impressed by the aviation weather services provided by the Observatory. “The Observatory had developed the world's first LIDAR Windshear Alerting System to ensure the plane’s safety for every take off and landing! It makes me feel proud”, said one participant.

Contribution to Global Advances in Nowcasting and Very-short Range Forecasting

LI Ping-wah



Scientific Officers, Dr LI Ping-wah and Mr YEUNG Hon-yin attended the 3rd International Symposium on Nowcasting and Very-short-range Forecasting organized by the World Metetorological Organization (WMO) held in Rio de Janeiro, Barzil in this August. The Symposium is held every 3 or 4 years to review the latest development of the various advanced nowcasting systems and technologies and discuss how to enhance the nowcasting services. Dr LI further represented the WMO Commission on Aeronautical Meteorology to point out the nowcasting needs of the future aviation industry, the presentation of which was well received. Dr LI also attended the Working Group on Nowcasting Research after the Symposium to discuss and plan the future direction of the nowcasting research.

▲ *Group photo of the 3rd WMO International Symposium on Nowcasting and Very-short-range Forecasting.*

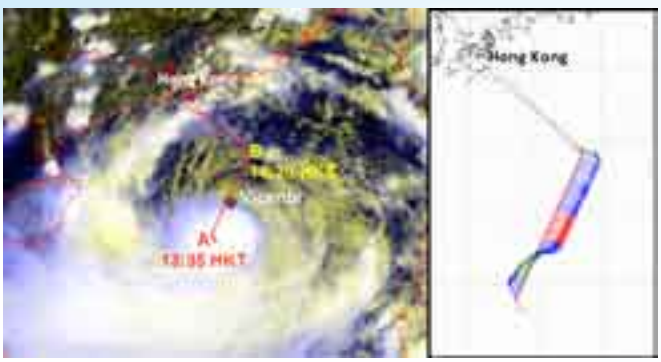
Aircraft Meteorological Observation for Tropical Cyclones - Current and Future

CHAN Pak-wai

The Observatory has been in close collaboration with the aviation community to collect meteorological observations for enhancing our weather services, for instance the investigation flights were conducted to study the low-level windshear and turbulence effects around the Airport (http://www.hko.gov.hk/blog/en/archives/00000124.htm). In 2009, the Observatory commenced the regular flight data collection with the Government Flying Service (GFS). A fixed-wing aircraft Jetstream-41 of GFS was equipped with a dedicated meteorological measuring system to provide horizontal and vertical winds, temperature, pressure and humidity at a high frequency of 20 times per second. These high quality data are used to verify the windshear and turbulence alerts provided by the ground-based meteorological systems and to enhance the turbulence alerting algorithms of the Windshear and Turbulence Warning System (WTWS).

In 2011, our cooperation with GFS extended to reconnaissance flights to capture weather data for tropical cyclones (TCs) over the South China Sea (Right Figure). This greatly enhances our capacity in monitoring the location and intensity of TC that have been based on limited observations or satellite pictures.

To further enhance meteorological data collection in TC situation, HKO and GFS have planned to implement a launcher on the replacement GFS aircraft to release a measuring instrument called dropsonde. Similar dropsonde measurement missions have been in real-time experimental running (http://www.eol.ucar.edu/isf/facilities/dropsonde/gpsDropsonde.html). A dropsonde consists of a set of weather sensors hanged under a mini-parachute. As the dropsonde descends, it measures weather data for transmission to the Observatory via the aircraft. This would provide the vertical meteorological profile of TCs, and more importantly the near sea-surface wind information for better determination of the storm intensity. It would be safer to do the measurements as the aircraft can release the dropsondes on a higher altitudes and leave immediately without confronting the severe convection associated with the tropical cyclones.

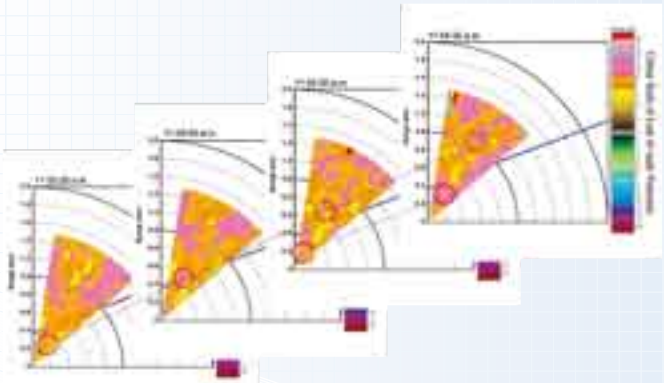


▲ *The flight path of the fixed-wing aircraft on 22 July 2012 (red lines on left panel), overlaid on the visible satellite imagery at 2 p.m. on that day. It could be seen that the aircraft had once flown very close to the centre of the tropical cyclone Vicente. The winds near sea surface estimated from the flight data from point A to point B are shown on the right panel.*

Advantages of Short Range LIDAR in Windshear Alerting

CHAN Pak-wai

The Observatory currently uses a suite of meteorological instruments, including the long-range Light Detection And Ranging (LIDAR) systems, for windshear alerting at the Hong Kong International Airport (HKIA). The instruments are useful in detecting windshear associated with terrain and thunderstorms. However, for windshear/turbulence which have even smaller spatial scales, such as those associated with buildings/man-made structures, it would be beneficial to employ meteorological instruments with even higher resolutions. For this purpose, in the last few summers, the Observatory has arranged the field study of a short-range LIDAR (SRL) on the rooftop of AsiaWorld-Expo to test the possibility of enhancing windshear alerting over the eastern arrival runway corridor of the north runway (i.e. 25RA runway corridor). Compared to the existing long-range LIDARs, SRL has a spatial resolution improved by about 29% (105 m of long-range LIDAR vs. 75 m of SRL) and temporal resolution improved by 83% (120 seconds of long-range LIDAR vs. 20 seconds of SRL).



▲ *Windshear features (encircled) as captured by SRL on 22 June 2012. The flight path is indicated by a blue line on each figure. The coloured pixels refer to line-of-sight velocities measured by SRL, with the legend shown on the right hand side of the last figure of the series. There was a windshear report at 11:54 a.m. on that day over 25RA, indicating headwind gain of 15 knots at a height of 150 m. The event was missed by WTWS.*

During the field study, the Observatory had tried different algorithms to alert windshear using the SRL. Based on the study results of the past 4 summers, the use of SRL could improve the hit of windshear by about 11% based on pilot reports (hitting 214 reports out of a total of 240 reports with the use of SRL, compared to the hitting of 193 reports by the Observatory's Windshear and Turbulence Warning System (WTWS) alone). At the same time, the total alert duration is increased only by a comparable amount of 13%. Moreover, SRL has demonstrated the capability of capturing some windshear features that could not be seen by the existing instruments of WTWS. An example of windshear event captured by SRL but missed by WTWS is shown in the figure. The Observatory is considering the cost-benefit of permanent deployment of a SRL at HKIA.

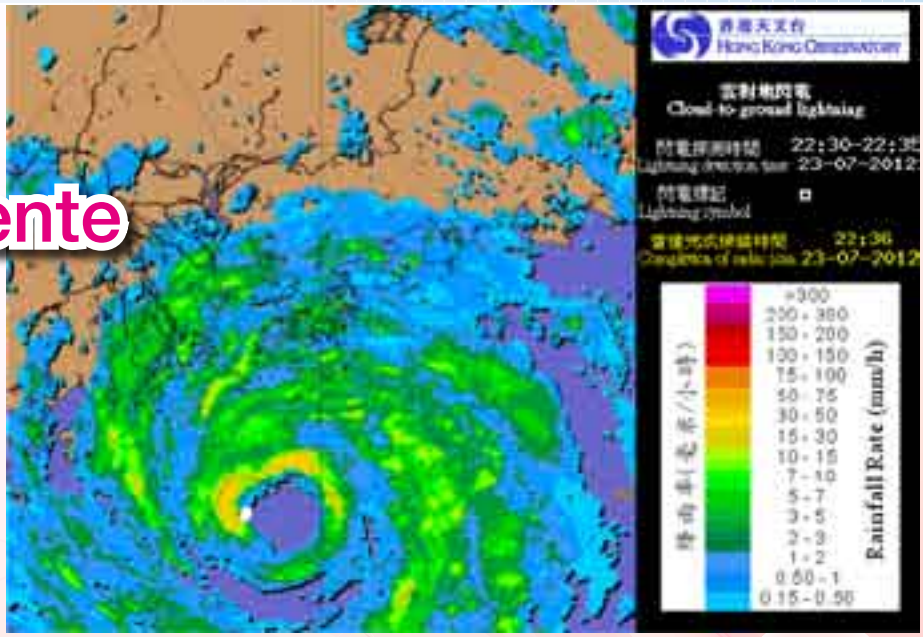
Atmosphere & Environment

Besides Vicente

Editorial Board

The Observatory issued the Hurricane Signal No. 10 in the small hours on 24 July 2012 during the passage of Severe Typhoon Vicente. Vicente skirted about 100 kilometres from the southwest of Hong Kong, and reached its peak intensity with an estimated maximum sustained wind of 155 km/h near its centre.

There are three characteristics of Vicente: (1) It was the farthest tropical cyclone that had necessitated the issuance of the Signal No. 10 since 1946; (2) Vicente underwent rapid intensification within 30 hours prior to its closest approach to Hong Kong, strengthening by three categories from a tropical storm to a severe typhoon. Such rapid intensification near the territory was rather rare among the tropical cyclones that had necessitated the issuance of the Signal No. 10 since 1946; (3) After dusk of 23 July, very intense convection was observed on the eyewall of Vicente and was captured on both radar imagery and lightning location map. The corresponding cloud top overshot 15 km up to the top of the troposphere accompanied by cloud-to-ground lightning. Such observations signified that the associated updraft turned violent. The eyewall accompanied by lightning is also a rare phenomenon.



▲ *The lightning located at the left of eyewall (white dot) was shown in the radar imagery around 10:30 p.m. on 23 July 2012.*

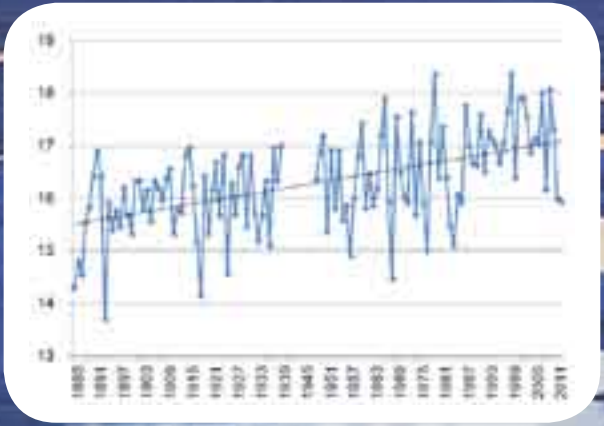
The Paradox of Global Warming and Cold Winters

LEE Sai-ming, TONG Hang-wai

Recent cold winters in parts of the warming world might have puzzled some people and encouraged climate skeptics to deny the fact of global warming. For example, the cold winter 2009/10 in Eurasia and North America, and the European cold spell in late winter 2011/12 causing more than 600 deaths.

The World Meteorological Organization in its annual statement on the status of the global climate released in March 2012 confirmed that 2011 is the 11th warmest year on record dating back to 1880. It is also the warmest year on record with a La Niña which has a short-term cooling effect. How about the situation in 2012? According to the analysis of the US National Climate Data Center, the global average land and ocean surface temperature for January-September 2012 was the 8th warmest on record. The year 2012 could surpass 2011 to become the warmest year with a La Niña if the trend continues. How could regional cold winters, especially in the Northern Hemisphere, be understood in the midst of a warming world?

First of all, we have to distinguish between short-term variation and long-term trend of the climate. Let's take Hong Kong as an example. If we step back and take a look at the winter temperature of Hong Kong in the last 120 years or so (Figure 1), the temperature has been on a rising trend amidst year-to-year variations. As part of the natural fluctuation, cold winters can still occur against a warming background. Actually, the cold spell in Europe in 2011/12 was a serious event, but there were far more severe cold spells in terms of intensity and duration in the past.



▲ *Figure 1 : Winter temperature of Hong Kong (°C), 1885-2012.*

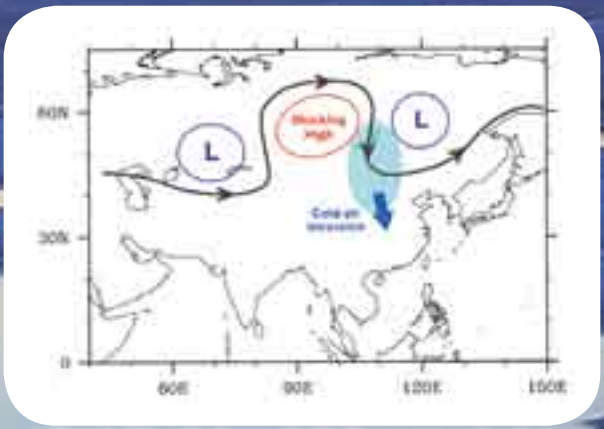
▲ *Figure 2 : Perennial Arctic sea ice in 1980 (source: NASA).*

▲ *Figure 3 : Arctic sea ice in 2012 (source: NASA).*

Secondly, the changes taking place in the Arctic can also lead to cold winters in parts of the Northern Hemisphere. One manifestation of global warming is the diminishing Arctic sea ice. Satellite data from US NASA show that the Arctic perennial ice (ice that has survived at least one summer) has decreased significantly in the last 30 years or so (Figure 2 and 3). In October 2012, the US National Snow and Ice Data Center announced that the daily Arctic sea ice extent fell to 3.41 million square kilometres on 16 September 2012, the minimum in 2012 as well as the lowest since 1979 when satellite observation began. Declining Arctic sea ice will expose more sea surface of the ocean in summer. Since water is less reflective than ice, the ocean will absorb more solar energy, warming up sea water and in turn promoting further reduction of sea ice, forming a vicious cycle. The extra heat will retard the freeze-up of the Arctic, which commences in autumn, and will also be released to the atmosphere, causing higher temperature in autumn and winter. In fact, temperature rise in autumn and winter has been higher in the Arctic than anywhere else in the Northern Hemisphere, causing a decrease in the temperature difference between the Arctic and the tropics and consequently a weakened upper-level westerly flow over the Northern Hemisphere.

What is the importance of this weakened upper-level westerly flow? The direct impact is for more episodes of atmospheric blocking to occur. Blocking patterns in winter favour incursions of cold air from higher latitudes to lower latitudes (Figure 4). As the associated weather systems are usually slow moving, cold weather may persist over the affected region for days or weeks. One example in recent years is the cold spell experienced by most of China in early 2008 during which cold air from Siberia incessantly spread south. Have we had more blocking events in recent years then? The Global Climate Change Group of University of Missouri-Columbia, US maintains an archive of blocking events occurred in the Northern and Southern Hemisphere. A plot of the annual number of blocking events in the Northern Hemisphere shows a significant increase in the past decade or so compared to years before (Figure 5). The increasing trend in blocking event is observed in all four seasons.

Now we understand that global warming and cold northern winters can co-exist. What is most interesting is that part of the reason for the cold winters is exactly global warming! The situation of cold northern winters against the backdrop of global warming may last some time in the near future. We should make it clear that climate skeptics' argument of regional cold winters refuting the existence of global warming is groundless.



▲ *Figure 4 : Schematic diagram of a blocking event: meander of upper-level airstream (black line and arrows) and a blocking high. The northerlies associated with the eastern flank of the blocking high favour cold air incursion to lower latitudes.*

▲ *Figure 5 : Number of blocking events over the Northern Hemisphere during 1969-2011 (data source: The Global Climate Change Group of University of Missouri-Columbia, US).*

Our Partners

Lightning Detector Design Competition

TAM Kwong-hung

The Observatory, the Faculty of Engineering of the University of Hong Kong (HKU) and the Hong Kong Meteorological Society have jointly organized a competition on lightning detector design. A series of talks, workshops and visits will be run to enhance the participants' understanding of the subject.

A talk on "Lightning and its detection" and visit to the Observatory Headquarters were held on 10 November 2012 as the first activity of the competition. Over 200 teachers and students from various Primary and Secondary schools took part in the event that day. The talk has increased the teachers' and students' knowledge of lightning and its detection as well as the lightning location information service provided by the Observatory.

◄ *Mr LAU Dick-shum, Experimental Officer, lectured on the formation and detection of lightning.*

Yangjiang Lightning Sensor Station Set Up by Guangdong, Hong Kong and Macao

MA Wai-man

In cooperation with Guangdong Meteorological Bureau and Macao Meteorological and Geophysical Bureau, the Observatory has established a Lightning Location Network over the Pearl River Estuary region since 2005. An additional lightning sensor station was recently set up at Yangjiang, Guangdong and formally launched in September 2012.

With the Yangjiang lightning sensor station comes into operation, the network now comprises seven stations, spatial coverage has more than doubled. This helps to enhance the effective range and reliability of lightning detection. The Yangjiang station is located over the coastal areas of western Guangdong, about 230 kilometres away from Hong Kong. It can provide more lightning information further to the west of Hong Kong, which is useful for monitoring thunderstorms moving from west to east towards the Pearl River Estuary.

▲ *Significant increase in spatial coverage of the Lightning Location Network.*

▲ *Dr CHENG Cho-ming (3rd right), Assistant Director of the Observatory, photographed with Observatory staff and "Friends of Observatory" volunteers in front of the Observatory's booth. 1st right is retired Observatory Staff, Dr TAM Cheuk-ming.*

2012 Mountaineering Safety Promotion Day

LI Yuet-sim

The Observatory as before rendered full support to the "Mountaineering Safety Promotion Day" on 23 September 2012 organized by the Civil Aid Service and other 17 government departments and non-government organizations. The activity aims to enhance public awareness of mountaineering safety. A booth was set up to introduce weather phenomena that would affect mountaineering and hiking, as well as highlight the precautions under various severe weather conditions. The Observatory also took this opportunity to promote the "Thematic Webpages for Outdoor Activities".

Enhancing Cooperation on Climate Services among Guangdong, Hong Kong and Macao

LEE Tsz-cheung

About 20 experts from the meteorological services in Guangdong, Macao, Hong Kong, Shenzhen and Zhuhai attended the Guangdong-Hong Kong-Macao Seminar on Climate Services held in Zhuhai on 4 September 2012. During the seminar, Senior Scientific Officers of the Observatory, Dr LEE Tsz-cheung and Mr LEE Sai-ming discussed and exchanged views with participants on climate services and climate prediction techniques, the layout of the Guangdong-Hong Kong-Macao climate change impact assessment report and the arrangements of the exchange of information on extreme climate events. This workshop provided an excellent platform for further strengthening collaboration in climate services and climate research in the Pearl River Delta Region.

The Observatory Nurtures Young Mathematicians with Local and Overseas Tertiary Institutes

LAM Ching-chi

▲ *Mr YEUNG Hon-yin, Scientific Officer, in technical discussion with the student researchers in the RIPS laboratory at HKUST.*

The Observatory was invited to participate in the "Research in Industrial Projects for Students (RIPS)" programme organized by the University of California, Los Angeles, in partnership with the Hong Kong University of Science and Technology (HKUST). Four mathematics students from University of Washington (USA), Brown University (USA) and HKUST, within a short span of two months over the summer, took up the challenge to develop schemes and tools for the automatic optimization of an operational nowcasting system used at the Observatory. Under the mentorship and full support rendered by the Forecast Development Division of the Observatory, the students successfully applied their textbook knowledge in mathematics and computer science to resolve real-life issues in the industry and develop an automatic parameter tuning tool.

"InnoCarnival 2012"

KUNG Wing-hang, Terence

▲ *Dr LAM Hok-yin (middle), Scientific Officer, introduced the exhibits to the visitors.*

The Observatory, together with four partner government departments of the "Science in the Public Service", including Architectural Services Department, Civil Engineering and Development Department, Drainage Services Department and Electrical and Mechanical Services Department, joined the "InnoCarnival 2012" organized by the Innovation Technology Commission at the Hong Kong Science Park on 3-11 November 2012. Scientific and technological works associated with these government departments were showcased at the exhibition. The theme of the Observatory's booth was "Weather Observations Aloft and On the Ground". It highlighted the Community Weather Information Network, Community Weather Observing Scheme, as well as upper-air weather measurement in Hong Kong. It was estimated that more than 200,000 people attended the event.

The Observatory Organized Weather Observation Course for Public

LEUNG Kwan-kit

The Observatory conducted a public course on "Weather Observations" at its Headquarters in Tsimshatsui in October 2012. It was the 6th time such courses were organized since they began in 2004. There were 70 participants. The course contents were practical and useful, covering topics that included visual methods for determining cloud types, visibility and the state of weather. The Observatory's technical staff also introduced the basics of meteorological instruments, use of real-time data available on the Observatory's website, coding of weather observations as well as interpretation of weather proverbs. To apply their knowledge and skills learnt through the course, the participants eagerly took part in a practical session to make real-time weather observations.

▲ *Group photo of the participants of the Weather Observation Course in 2012.*

Visits • Courses • Talks • Meeting

2 July 2012

The Director (5th left, front row) and Friends of the Observatory committee members paid a visit to the Macao Meteorological and Geophysical Bureau and photographed in front of the Macao Meteorological Station.

24 August 2012

Professor P. Kevin MacKeown (left) of the University of Hong Kong visited the Observatory, and shared his experience in research relating to the early history of the Observatory.

22 September 2012

9 members of "Weather Underground of Hong Kong" visited the Observatory.

24 and 25 September 2012

Dr Neil Gordon (3rd left), Scientific Advisor of the Observatory, visited the Observatory. He also delivered talks on the "Future of Weather Services" and "Polar Prediction Project".

26 September 2012

A delegation of five members from Administration of Ocean and Fisheries of Guangdong Province, accompanied by Professor Pan Jiayi of the Institute of Space and Earth Information Science of the Chinese University of Hong Kong, visited the Observatory, to understand the Observatory's marine weather observations.

19 October 2012

The Observatory is collaborating with the Agriculture, Fisheries and Conservation Department to provide local flower farmers with special climate services on an experimental basis. A briefing was held to introduce Observatory's climatological information service and climate prediction service were to the representatives of flower farmers.

People

Best TV Weather Programme Presenters

3rd Quarter, 2012

Miss LEE Shuk-ming, Olivia

4th Quarter, 2012

Ms SONG Man-kuen, Sandy

Staff Promotion:

Mr TAM Kwong-hung and Mr CHENG Yuen-chung, Armstrong

▲ *Mr TAM Kwong-hung (left) was promoted to Senior Scientific Officer on 21 May.*

▲ *Mr CHENG Yuen-chung, Armstrong (left) was promoted to Senior Scientific Officer on 21 May.*

Award Presentation Ceremony of Chief Executive's Commendation for Government/ Public Service

Mr LAU Sze-hin

Two Observatory colleagues, Mr MA Wai-man and Miss LEE Shuk-ming, and retired Assistant Director, Mr LEUNG Wing-mo, were awarded the Chief Executive's Commendation for Government/Public Service in 2012. They were commended for their outstanding performance in handling the work related to the Fukushima Nuclear Accident in 2011. The award presentation ceremony was held on 8 December 2012 at Government House.

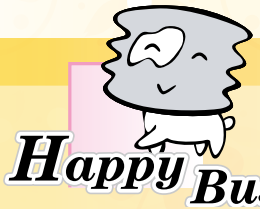
Mr MA Wai-man (2nd right), Miss LEE Shuk-ming (1st right) and Mr LEUNG Wing-mo (1st left) with Mr LEUNG Chun-ying, the Chief Executive, Mrs LEUNG and Mr SHUN Chi-ming (2nd left), the Director, at Government House after the award presentation ceremony. ►

Observatory Staff Receiving Praise

Editorial Board

Staff of the Observatory who received words of thanks and commendation from the public or organizations during September to December 2012:

Dr CHENG Cho-ming (Assistant Director)
Ms LAM Ching-chi (Senior Scientific Officer)
Mr HUI Tai-wai, David (Scientific Officer)
Mr WONG Tak-kan (Experimental Officer)
Mr YEUNG Ho-kee (Experimental Officer)
Mr. LAU Ying-hong (Scientific Assistant)



Award-winning Weather Services on Smartphone

CHENG Yuen-chung

The July issue of Civil Service Newsletter features an article on the Hong Kong Observatory (HKO) winning the Gold Prize of the Departmental Service Enhancement Award (Small Department Category) under the Civil Service Outstanding Service Award Scheme 2011. The article also introduced HKO's mobile app "MyObservatory", and described weather information delivered by the HKO through the social networking platforms.

In view of the popularity of smartphone, the HKO launched the personalized weather service "MyObservatory" in early 2010 to provide location-specific, real-time weather information for people on the move. The "MyObservatory" has been well-received and more than 2.8 million copies of the app have been downloaded.

Social networking websites have become increasingly popular in recent years. In view of this, the HKO produces and uploads video clips produced in-house every week to the YouTube and Tudou websites, aiming to provide the public with knowledge in weather and disaster preparedness. In addition to weekly weather review and weather outlook for the coming weekend, the video clips feature knowledge in meteorology, earthquake and radiation. The video clips also introduce weather warnings and HKO's new services. The total number of video views reached 3.3 million since the launch of the service.

▲ *The mobile application "MyObservatory".*

▲ *HKO@YouTube (Cantonese version only).*

Management Forum – "Managing Communication in Today's Socio-political Environment"

LAM Ching-chi

Ms Stephanie LI, Chief Communication Officer of Airport Authority Hong Kong, shared her valuable and unforgettable experience in strategizing, planning and implementing communication and engagement programmes at the Observatory's management forum on 27 September 2012. She cited the launch of "Hong Kong International Airport Master Plan 2030" as an example, highlighting challenges and opportunities facing the further expansion of the airport to meet future aviation demand. The talk provides much food for thought to colleagues on how to engage stakeholders effectively in the course of service development.

◄ *The Director (right), presenting a souvenir to Ms Stephanie LI.*

CBS Award from WMO

LEE Lap-shun

The Observatory always spares no efforts in participating and promoting international meteorological affairs. Recently, the Commission for Basic Systems (CBS) of the World Meteorological Organization (WMO) presented certificates to the Observatory staff, in appreciation of their effort in contributing to the commission in the past years.

◀ *The Director and colleagues who were awarded the certificates, Mr CHOY Boon-leung (1st left), Mr LEE Lap-shun (2nd left) and Dr PAN Chi-kin (1st right).*

Lifeline Express Charity Walk 2012

LEE Lap-chi, Alfred

With the generous support from the colleagues of HKO, 16 of us from different sections participated in the "Lifeline Express Charity Walk 2012" on 24 November 2012 under the name of "HKO Team". This event aimed at raising funds for the "Lifeline Express" Hospital Eye-train which provides free surgical operations to cataract patients who live in the remote areas of mainland China. In addition to enjoying the splendid view along the path, all of us also had a wonderful time taking part in the carnival held at the terminal point. This charity walk has not just enhanced HKO's caring culture, but also provided us with an opportunity to exercise ourselves in a joyful and meaningful morning.

◀ *Group photo of HKO Team at the starting point.*

Director's Table Tennis Cup 2012

YEUNG Ho-kee

The Hong Kong Observatory Staff Association (HKOSA) held the Director's Cup table tennis tournament in October 2012. After two days of fierce and exciting competition, the Radiation Monitoring and Assessment Branch won the champion with slightly better performance than the others. To add more fun to the tournament, HKOSA introduced a new award for the most actively participating branch, and it was finally won by the colleagues of the Aviation Weather Services Branch.

The champion, players of the Radiation Monitoring and Assessment Branch, and the Director. ▶

HKOSA Seasonal Photo Contest "Four Seasons"

KONG Wai

▲ *Winning work of the champion, Mr LEE Tsz-cheung.*

The seasonal photo contest with the theme "Four Seasons" hosted by HKOSA came to the end last summer after its successful completions in four consecutive seasons. As in the past three seasons, HKOSA was very pleased to invite Mr SHUN Chi-ming, the Director, Mr CHAN Ping-chung, Salon Chairman of the Photographic Society of Hong Kong, and Mr CHAN Siu-tung, Competition Chairman of the Photographic Society of Hong Kong as the judges of the summer photo contest. The judges unanimously voted Mr Lee Tsz-cheung as the winner because of the rich colour and unique cirrus clouds in his masterpiece. The judges also praised that the photography skills of the contestants have been significantly improved after four seasons of competition. HKOSA will continue to organize different kinds of photography events and competitions in the future for our colleagues to share the joy of photography.

Half-day Tour to Six Villages in the Sha Tau Kok Ex-closed Area

CHENG Sheung-tak

◀ *Group photo at the frontier closed area (Second right of the front row is Mr CHOW Kwok-keung, Chairman of Hong Kong Hiking Association, China).*

HKOSA organized a half-day autumn tour to six villages in the Sha Tau Kok ex-closed area in early November 2012. The activity attracted the participation of Observatory staff, their families and friends, at a total of about 40 people. Mr CHOW Kwok-keung, Chairman of Hong Kong Hiking Association, China, fully supported the activity and led the participants to visit the six villages of Sha Tau Kok, which was just opened up in end 2011.

Being the indigenous resident of Sha Tau Kok, Mr CHOW knows very well the history and stories of the region. Throughout the journey, he shared with us the memories of good old days when he lived in the village. Our colleagues also had the opportunity to walk up a hill and explore some ditches and forts remained after the World War II.

The tour not only enriched our knowledge about the past of the closed areas of Sha Tau Kok, but also took us away from the hustle and bustle of the city to enjoy the silence of nature.

Mailing Address

Wine Bottle Painting Class

HKOSA

Art painting in wine cellar has recently become a trendy leisure activity. HKOSA caught up to this trend and organized a wine bottle painting class in May 2012. It gave colleagues, their families and friends an opportunity to escape from the busy daily life to experience the pleasure of 3-dimensional painting. On that day, participants showed off their talents by decorating creatively their own wine bottles. They learned to taste the essence of wine-tasting and the essential knowledge of wine purchase. It was such an agreeable and stylish afternoon!

▲ *Everyone was very satisfied with their own painting.*