



Dial-a-Weather: 1878 200 Home page : http://www.hko.gov.hk, http://www.weather.gov.hk

### The Observatory Supporting Headline the Shanghai World EXPO

#### YEUNG Hon-yin

Subsequent to the 2008 Beijing Olympic Games, the Hong Kong Observatory was again invited by the World Meteorological Organization (WMO) to participate in another forecast demonstration project in support of important international events — the "Shanghai World EXPO Nowcasting Service Demonstration Project" (WENS). To this end, the Observatory's nowcasting system "SWIRLS" was deployed to Shanghai and put into full operation since the latter part of April. Going hand-inhand with 6 other automatic forecast systems from the Mainland and abroad, "SWIRLS" provides forecast services on severe weather, including rainstorm, hail, lightning and squalls, in support of the World EXPO 2010 Shanghai. During the two weeks around the launch of the EXPO, the Observatory was also invited to visit the Shanghai Meteorological Bureau (SMB) and participate in a series of WENS activities, including forecaster training, system fine tuning, product optimization, as well as weather conference. "The forecast products provided by the Observatory are rich in scope and suit the needs of short-range forecasters. The Oriental Pearl TV Tower caught fire after a thunderstorm strike on 13 April and SWIRLS was able to predict that threat and issue a timely lightning alert", according to Mr DAI Jian-hua, the Chief Forecaster of SMB and subject officer of the WENS project. WMO has attached much importance to this project. Ms Haleh Kootval, Chief of the Public Weather Services Division of WMO, visited Shanghai to see for herself the demonstration project in action.



forecast products provided by the Observatory for the World EXPO 2010 Shanghai to Ms Haleh Kootval, Chief of the Public Weather Services Division of



mark the actual locations of the detected cloud-to-cloud and cloud-to-ground lightning strikes respectively. The gray and blue ellipses represent respectively the predicted threat areas susceptible to lightning and heavy rain 30 minutes later. Near the middle of the map is a small rectangle in red depicting the EXPC

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Editorial Board : Edwin GINN David HUI Ken WONG MA Lap-yin CHU Suet-ying

SEPTEMBER 2010



### International Recognition

**Editorial Board** 



From left: Dr CHENG Cho-ming, Mr SHUN Chi-ming, Mr Keith Mackersy and Mr Chris Keohan, ICAO Regional Officer (MET)

Dr CHENG Cho-ming, Senior Scientific Officer, was elected the vice-chairman of the Communications/Navigation/Surveillance and Meteorology Sub-Group of the Asia/Pacific Air Navigation Planning and Implementation Regional Group at its 14th meeting held in Jakarta in July. This position was previously held by Mr SHUN Chi-ming, Assistant Director, since 2003. It is the first time that two officers of the Obeservatory take up the vice-chairmanship of an international meeting in a row, reflecting the recognition of the contribution of Hong Kong in the development of aviation weather services in the world.

Dr CHENG, together with the other vice-chairman, Mr Keith Mackersy of New Zealand, chaired a meteorological working group meeting of the sub-group. Attended by 102 representatives from 24 countries and 2 international organizations, the sub-group discussed the planning and implementation of communications, navigation, surveillance and meteorology for aviation in the Asia Pacific region.

"I am very honoured to be elected vice-chairman of the sub-group", said Dr CHENG. "I am much grateful for the support rendered by many countries in the Asia Pacific region. Based on

the solid ground work laid by my predecessor, I will endeavor to furthering the development of aviation weather services in the region". Apart from the sub-group, Dr CHENG also joins the work of an international study group of the International Civil Aviation Organization (ICAO) on aviation meteorological observation and forecasting.

Commencing work in aviation meteorology at the Observatory in 1996, Dr CHENG has been responsible for the installation of aerodrome meteorological observing systems and the world-first operational Light Detection and Ranging (LIDAR) as well as the operation of the Terminal Doppler Weather Radar. He has also been involved in the development of the Aircraft Meteorological DAta Relay (AMDAR) programme in Hong Kong.

#### Director Lecturing at Shanghai and Nanjing for the World Meteorological Organization (WMO) Editorial Board

Dr LEE Boon-ying, Director of the Observatory, was invited to give a lecture on the use of technology in service delivery and disaster risk reduction during the WMO "Symposium on Meteorological Service Delivery & Disaster Risk Reduction" at Shanghai on 10 May.

Upon invitation, Dr LEE also delivered another lecture on early warning system at the Multihazard Early Warning Training Course held at the Nanjing University of Information Science & Technology on 12 May. The occasion marked the 50th anniversary of the institution as well as the 20th anniversary of the establishment of the WMO/Regional Training Centre at Nanjing.



WEATHER ON WINGS SEPTEMBER 2010

#### Future Version of "World Weather Information Service" Website LEUNG Yin-kong, John

The Observatory launched the future version of "World Weather Information Service (WWIS)" website (http://worldweather.wmo.int/ globe/), providing latest official weather forecast for more than 1300 cities around the world.

This brand-new version of WWIS website was developed by the Observatory on behalf of the World Meteorological Organization (WMO). It is Google Earth enabled and allows users to freely move around a virtual globe by changing the viewing angle and position. It features a versatile "fly-over" function to any part of the world with a quick search function. The Secretary-General of WMO, Mr Michel Jarraud, said, "The new version of WWIS has strengthened our capability to serve the users even better through a modernized website that is attractive". This website is now showcased in the MeteoWorld Pavilion at the World EXPO 2010 Shanghai that runs from May to October.

As international travel becomes more frequent these days, people will find it very easy via this website to access latest weather information of the cities they plan to visit.



showcased in World EXPO 2010 Shanghai



Direct and Diffuse Solar Radiation Information on Observatory's Regional Weather Webpage

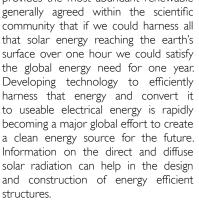
#### NewProducts & NewServices

LEE Shuk-ming

The Observatory measures direct and diffuse solar radiation at King's Park meteorological station and Kau Sai Chau solar station in Sai Kung. Real-time measurements of direct and diffuse solar radiation from these stations can now be accessed from the Observatory's regional weather webpage at www. weather.gov.hk/wxinfo/ts/display\_element\_solar\_e.htm.

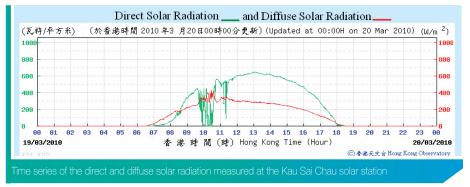
Measurements of diffuse solar radiation is made by an instrument (a pyranometer) that is shaded from the sun, while direct solar radiation is measured by another instrument (a pyrheliometer) mounted on a sun tracker which ensures that the pyrheliometer points directly at the sun all the time.

Knowing the amount of solar radiation is very important as the sun provides the most abundant renewable energy source available to us. It is





Picture shows the direct and diffuse solar radiation instruments (left in Kau Sai Chau solar station mounted on a sun tracker and the global solar radiation sensor (right).



WEATHER

**ON WINGS** 

### Launch of New Version of "MyObservatory" for iPhone

#### CHENG Yuen-chung



To provide more weather information for people on the move, the Hong Kong Observatory (HKO) launched a new version (2.0) of "MyObservatory" for iPhone on 16 July.

Apart from providing a location-based weather service in Hong Kong by displaying real-time weather information near the user's location, the new version of "MyObservatory" features a series of new functions allowing the user to readily obtain the following weather information:

- 7-day weather forecast;
- weather warnings;
- UV index report and forecast;
- satellite and radar images;
- forecast of major world cities;
- astronomical and tide information;
- weather for South China coastal waters;
- HKO storm track of tropical cyclones on Google map;
- lightning locations on Google map; and
- HKO Youtube video.

The new version is available at http://itunes.apple.com/hk/app/ myobservatory/id361319719?mt=8

### SWIC Launched New SWIdget Service

#### LEUNG Yin-kong, John

SWIdget is a software tool developed by the Observatory on behalf of the World Meteorological Organization. Through SWIdget, users can use their personal computers to access via the "Severe Weather Information Centre (SWIC)" platform near real-time severe weather warnings issued by official weather services. At present, warnings of the three participating weather services, namely, Hong Kong, Macao, and Guam, the USA, are available in this beta version of SWIdget. Plans are in hand to invite more official weather services to participate in this new service.



Dialogue boxes showing latest status of selected local warnings in different regions

SWIdget can be downloaded from the SWIC website at http://severe.worldweather.org/swidget/swidget.html. After installing SWIdget, users can select the region/city/warning according to their preference. A dialogue box will pop up with an audio alarm on the user's personal computer when there is a change of warning status issued by the selected official weather services.

### The Observatory Launched New Satellite and Radar Webpages

#### SO Chi-kuen

The Observatory commenced the display of latest Japan Meteorological Agency's MTSAT-2 satellite imagery on its satellite website (http://www.hko.gov.hk/wxinfo/intersat/mtsat/satpic\_s.shtml) since I July. The Observatory has also further enhanced the content of PDA webpage on 2 July, new satellite images from the Chinese Fengyun-2D satellite (http://pda.weather.gov.hk/fy2d/fy2de.htm, right figure) and the Japanese MTSAT-2 satellite (http://pda.weather.gov.hk/mtsate/mtsate.htm) were included. The PDA webpages on animation of satellite and radar imagery have also been updated to facilitate browsing on different PDA or mobile phones. This enables members of the public to gain access to the latest weather information via their mobile devices anywhere and anytime. This also facilitates people engaging in outdoor work or activities to make suitable arrangements under different weather situations.



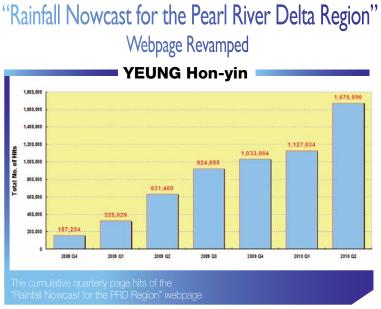
香港天文台



\* Anyone wishing to further disseminate these satellite images should seek permission from CMA (Address: China Meteorological Administration, No. 46, Zhongguancun Nandajie, Beijing, China).

ON WINGS SEPTEMBER 2010

WEATHER

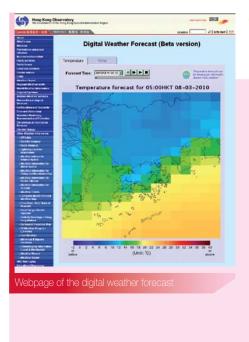


The Observatory launched a new version of the "Rainfall Nowcast for the Pearl River Delta Region" webpage in June. The new webpage features a four-dimensional (4D) space-time map of the globe with user-selectable geographical information content. With this design, members of the public can watch directly using an ordinary web browser the evolution within the next two hours of the forecast rainfall distribution over the Pearl River Delta (PRD) region. This would allow people travelling to and from Hong Kong, Macau and Guangdong to grasp the changing rain conditions more quickly and easily. Through the graphical interface of the 4D map, users can zoomin, zoom-out, configure a panoramic view and animate the forecast maps of



rainfall distribution. This enables the users to appreciate the spatial coverage and the movement trends of rain areas, as well as the expected rainfall amount. Since its first launch in October 2008, the rainfall nowcast product has been well received by the public. As of June 2010, the number of page hits accumulated to over 1.6 million.

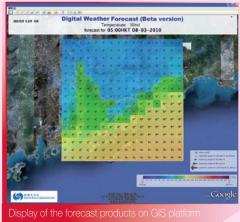
The new webpage is available at http://www.weather. gov.hk/nowcast/prd/api/index\_e.htm



### **Digital Weather Forecast**

#### LI Yuet-sim

Hong Kong has a total area of only about one thousand square kilometers, but is characterized by a long coastline and hilly terrain. Weather may vary over different parts of the territory. For better appreciation of the weather conditions in different regions, the Observatory launched a new 'Digital Weather Forecast' webpage in the first quarter this year, providing weather forecasts in fine spatial and temporal details to the public. The webpage is http://www.hko.gov.hk/dfs/main/dfs\_tt\_e.html.



The new forecast products, at a resolution of 10 kilometres, show hourly changes in temperature, wind direction and speed in the next day over Hong Kong and the neighbouring Pearl River Estuary region. Another set of forecast maps is also available for display on a Geographic Information System (GIS) platform. Users can zoom in, zoom out, animate and overlay other geographic information on the forecast maps.

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### Enhanced Tropical Cyclone Track Webpage

#### LI Yuet-sim

Whenever there is a tropical cyclone approaching Hong Kong, the public is very interested in the movement of the tropical cyclone and the areas that may be affected by the tropical cyclone. The Observatory recently launched a new tropical cyclone track information webpage based on a geographic information platform, for the display of tropical cyclone positions and tracks over a detailed map. Users can also zoom in or out the map and pan to their area of interest. In addition, detailed information of the tropical cyclone can be displayed simply by placing the mouse cursor over its analysed or forecast positions. Multiple tropical cyclones can also be displayed on the same map.

The new webpage is available at <a href="http://www.hko.gov.hk/wxinfo/currwx/tc\_gis\_e.htm">http://www.hko.gov.hk/wxinfo/currwx/tc\_gis\_e.htm</a>.



### You Tube New Videos - Warnings Series

#### NG Chun-yuen

Hong Kong Observatory produces and uploads short videos about weather to the YouTube website every week. Besides a weekly weather review, each video clip also covers a specific topic on weather. From May to July, there was a 9-episode series introducing the severe weather warning systems in Hong Kong.

The Observatory has all along promoted the severe weather warning systems through various channels including pamphlets and webpages. In order to provide the public with an easier way to get to know and understand our warning systems, a new video series was launched on YouTube.

Apart from providing the definitions and factors affecting the issuance of such warnings, the series also demonstrate the possible disasters brought by severe weather. The public are reminded on the suitable precautions to take to minimize damage when severe weather warnings are in force.

Please visit http://www.youtube.com/user/hkweather to watch this video series.

### Observatory Launches Star Ferry Wind Information Service

#### CHOW Siu-wing

The Observatory continues to enhance its regional weather information service. Starting from 12 May, real-time wind information from the Star Ferry wind station is available to the public through the Observatory's "Regional Weather" webpage (www. hko.gov.hk/wxinfo/ts/windbarb.htm?sf&menu=otherwxi&rwx&addbar) or PDA webpage (pda.hko.gov.hk/regione\_sf.htm). The public can also call the Observatory's Dial-a-Weather hotline at 187 8200.

The Star Ferry wind station is located at the southern tip of the Kowloon peninsula, overlooking Victoria Harbour. In the vicinity of the station, there are multi-functional facilities including large shopping malls, leisure and cultural centres as well as places for outdoor activities, making it a tourist and leisure hot spot. In addition, the wind station is situated at the vital marine traffic hub where cross harbour ferries, vessels travelling between Mainland China and Hong Kong and ocean-liners are moored. The Observatory is providing wind information at the Star Ferry Pier to keep the public and tourists informed of the latest weather conditions there. Information on the exposure of the wind station is also posted on the web to help the public learn more about the



geographical characteristics of the station, so that they can make sensible interpretations of the wind information at the site.

### User Guide on "Lightning Alert Service" for Managers of Outdoor Activity Venues

#### YEUNG Ho-kee

As outdoor activities can easily be affected by lightning, the Observatory has prepared a user guide on the "Location-specific Lightning Alert Service" for managers of outdoor facilities. The guide illustrates with diagrams on how to use the lightning alert service through the Observatory's website and provides some advice to mangers of outdoor activity venues on the use of the service. Interested readers can download the guide from http://www.hko.gov.hk/wxinfo/llis/lightning\_alert\_service\_eng.pdf



### Putonghua Weather Programme Launched

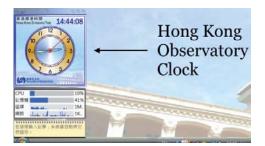
HUI Tai-wai 🖛

Under the joint effort of the Observatory and Radio Television Hong Kong (RTHK), Putonghua weather briefings by the Observatory's Scientific Officers have been made available to the public since 9 July. Broadcasting every Friday evening at 9:40pm on the Putonghua Channel, the programme covers the weather situations of Hong Kong as well as Mainland China. Online broadcast and progarmme archives are also available at http://putonghua.rthk. org.hk/.

### Hong Kong Observatory Clock (Google gadget)

#### LAU Dick-shum

The Web Clock Service that the Observatory launched in October 2009 on its website was well received by members of the public. To make time checking even more user-friendly, the Observatory started to provide a Hong Kong Observatory Clock (Google gadget) in April. Once installed, this handy tool will check the Observatory's network time servers on the Internet to obtain the precise time information and display Hong Kong Standard Time in both analog and digital clock forms on the user's computer desktop.



Details of the Hong Kong Observatory Clock (Google gadget) can be found in http://www.hko.gov.hk/gts/time/HKOclock\_e.htm



### The Observatory Rendering Full Support to the **Dragonair Aviation Certificate Programme 2010**"



Mr SHUN Chi-ming, Assistant Director (4th right, 2nd row), Mr Norman LO, Director-General of Civil Aviation (7th from left, 2nd row), Captain Jones WONG, Commanding Officer of the Hong Kong Air Cadet Corps Group (6th left, 2nd row), with cadets and representatives of the supporting organizations at the inaugural ceremony

#### SONG Man-kuen, Sandy

Jointly organized by Dragonair and Hong Kong Air Cadet Corps and supported by the Observatory, Civil Aviation Department, Airport Authority Hong Kong, Aviation Security Company Limited, the Government Flying Service, Hong Kong Aircraft Engineering Company Ltd and the Hong Kong Airport Services Ltd, the "Dragonair Aviation Certificate Programme 2010" was launched in late April. 16 cadets of the Hong Kong Air Cadet Corps joined the eight-month programme this year. The Observatory rendered full support to the programme by providing the cadets, on 8 and 9 June, basic training on aviation weather observation and forecasting and allowing each participant to work at the Airport Meteorological Office. There were intense thunderstorms on the day of training at the Airport Meteorological Office. They were impressed by the importance of services provided by the meteorological office on a stormy day.

### Windshear Briefing for Airlines and Air Traffic Controllers

#### LI Ping-wah

The Observatory conducted two series of windshear briefings for airlines and air traffic controllers this year to introduce the latest developments of the Observatory's windshear and turbulence alerting services. The briefings were well-received and attended by more than 100 representatives from the aviation community. The participants were briefed about the operational performance of the Observatory's worldfirst dual-LIDAR Windshear Alerting System, the collaboration with Government Flying Service on windshear investigation flights, low-level wind study for airport buildings as well as aircraft flight data analysis. The briefings also introduced the new edition of the windshear booklet jointly published by the Observatory, the International Federation of Airline Pilots' Associations (IFALPA) and Guild of Air Pilots and Air Navigators (GAPAN).The softcopy of the booklet may be downloaded from http:// www.hko.gov.hk/aviat/articles/WS-turb-booklet-eng-3rd.pdf.



#### The 33<sup>rd</sup> Meeting of the Liaison Group on Aviation Weather Services



#### SONG Man-kuen, Sandy

The 33rd meeting of the Liaison Group on Aviation Weather Services was held on 31 March at the Hong Kong Observatory Conference Hall. 19 representatives from airlines, pilots' association and ground handling agents of the aviation community participated in the meeting. The last agenda of the meeting was a note of appreciation given by Captain Brian Greeves of the International Federation of Airline Pilots' Association (IFALPA). He expressed his gratitude to Mr SHUN Chi-ming, Assistant Director; on his internationally recognized contribution in aeronautical meteorology, and wished him well in his subsequent posting.

### Briefing Service on Significant Convective Weather

#### CHEUNG Ping

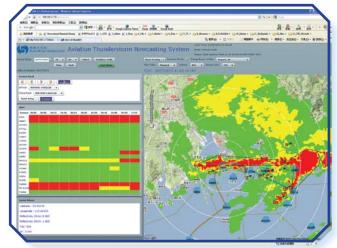
Commencing June, the Observatory's Aviation Forecaster provides trial daily weather briefings to AirTraffic Control Watch Manager of the Civil Aviation Department (CAD) on significant convection forecast in support of their planning of air traffic flow management. To prepare for the new briefing service, outreach visits to the CAD's AirTraffic Control Centre (ATCC) were made to collect user comments. In addition, two joint workshops with CAD were organized to bring frontline staff of both sides together for introduction of the briefing service and exchanges on the impact of weather on air traffic. In line with this new service, a tailor-made experimental product for "Significant Convection Monitoring and Forecast" was developed. It is made available on an integrated webpage for providing significant convective weather observations and forecasts up to 12 hours ahead.



### Real-time Operation of Airport Thunderstorm Nowcasting Products in Support of Air Traffic Control

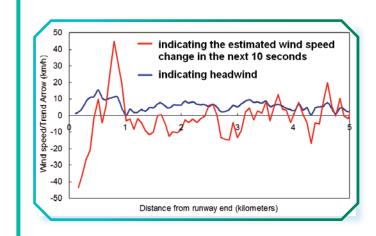
#### LI Ping-wah

With the continual growth of air traffic in Asia Pacific, the impact of thunderstorms developing over the Pearl River Delta region on the local air traffic is becoming more significant. To better support air traffic control in Hong Kong the Observatory has developed an Airport Thunderstorm Nowcasting System (ATNS) to forecast the movement of thunderstorms within the Hong Kong Flight Information Region (FIR) in order to let air traffic controllers better appreciate the latest weather conditions. ATNS utilizes Doppler weather radar data as well as artificial intelligence technology to monitor and forecast the movement of thunderstorms and to estimate their impact on air traffic along the flight routes and the way-points. The System has been put into real-time operation since May. It is updated every 6 minutes to provide thunderstorm forecast in the next hour for air traffic controllers.



In the afternoon on 28 July 2010, ATNS forecast that there would be severe thunderstorms affecting Hong Kong International Airport and its nearby way-points in the next hour

### Some Observations of the **Windshear Reports** at the Airport this Summer



#### LI Ping-wah

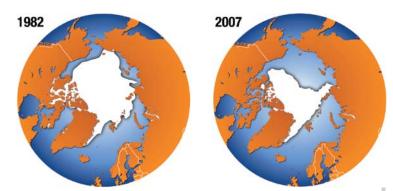
Southwesterly winds prevail over Hong Kong in the summer: When blowing across mountains or buildings, the southwesterly winds could be disturbed and might bring about windshear to the aircraft. The intensities of these windshear events sometimes are not apparent. The figure on the left shows the situation of an aircraft landing in June based on flight data. Possibly influenced by the trend arrow (red curve), the pilot reported significant windshear. However, the magnitude of the headwind change in this case was only 17 km/hr (blue curve), thus not meeting the criterion of significant windshear (headwind change of 28km/hr or more). The Observatory is collecting more aircraft flight data and testing new measuring instruments with a view to better understand the conditions of wind disturbances over the Airport.



### Web Page on Geomagnetism

#### WOO Wang-chun

Geomagnetism is very important to activities like marine and air navigation, hiking and stargazing. Geomagnetic measurement was also one of the three main tasks of the Observatory at the time of its establishment in 1883. To further the understanding of members of the public on geomagnetism, the Observatory recently resumed geomagnetic measurements and set up a webpage to introduce the subject in the form of questions and answers with monthly updates. The webpage is http://www.hko.gov.hk/gts/equake/qe\_geomagnetism\_e.htm



The decrease of Arctic sea ice, minimum extent in 1982 and 2007 (Sources: Hugo Ahlenius, UNEP/GRID-Arendal (http://maps.grida.no/go/ graphic/the-decrease-of-arctic-sea-ice-minimum-extent-in-1982-and-2007and-dimate-projections) and National Snow and Ice Data Center)

### Climate Change FAQ

#### KOK Mang-hin

#### Q: What changes in precipitation can we expect?

A: Precipitation is the general term for rainfall, snowfall and other forms of frozen or liquid water falling from clouds. Global warming will lead to increases in the moisture-holding capacity of the atmosphere and enhance the hydrological cycle, altering the characteristics of precipitation, including the amount, frequency, intensity, duration, type, etc. Analysis of long-term data shows that, unlike the global temperature rise, the regional variation in precipitation trends is large, with a rising trend in some regions but a downward trend in others.

Q: Is the amount of snow and ice on the Earth decreasing?

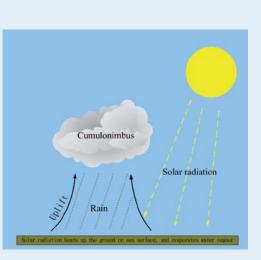
A: Yes. According to 4th Assessment Report of Intergovernmental Panel on Climate Change, the observed decreases in snow and ice extent are consistent with global warming. Mountain glaciers and snow cover on average have declined in both hemispheres. Since 1900, the extent of seasonal frozen ground in the Northern Hemisphere has decreased by about 7%, with a decrease in spring of up to 15%. Satellite data since 1978 show that sea ice in the Arctic has shrunk in all seasons, especially in summer with a decreasing rate reaching 7.4% per decade.

### The Looks of Water in Four Seasons — Summer

PAN Chi-kin

Heavy rain occurs most often during the summer months in Hong Kong and brings about flooding and landslips, causing inconvenience to people. Why do we have more rainstorms in the summer? The main physical conditions for heavy rain events are adequate supply of water vapour, strong uplift motion of surrounding air and an unstable atmosphere. These will be discussed one by one below.

In general, moist air reaching Hong Kong could come from the south, originating from the South China Sea and even as far away as the Bay of Bengal. It could also be come from the east, originating from Western Pacific. In summer, solar heating heats up the continental landmass over mainland China faster than the seas. The differential warming leads to the summer monsoon and creates a steady wind blowing from the sea toward the land, bringing an abundant supply of moist air.



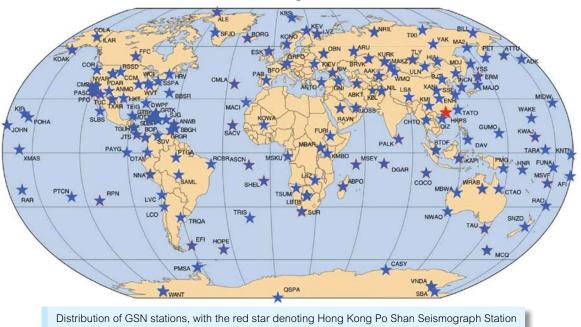
Strong convective activity generally occurs in the summer: When solar radiation heats up the humid air near the earth surface, an abundance of water evaporates into vapour and rises. As water vapour rises through the atmosphere, it cools to the point where it condenses to form water droplets. A huge collection of these tiny suspended droplets forms clouds and becomes visible as cumulus or even cumulonimbus (see the figure). As the air continues to rise and cool, droplets within the clouds will continue to grow by coalescence. When the droplets grow too large and become too heavy to be supported by the surrounding updrafts, they will fall out of the cloud as rain. When the updraft is so strong that the cloud grows significantly allowing large raindrops to form, rainstorm is formed.

The stability of the atmosphere depends on its humidity and temperature. A cold and dry atmosphere is generally more stable and inhibits uplift. On the contrary, moist and warm air is more unstable. In general, the lower levels of the atmosphere will be warmer and more humid, while the upper ones are cooler and drier during summer days. When moist and warm air parcel rises and condenses, significant amount of latent heat will be released to the surrounding air which in turn makes it less dense, facilitating uplift of the air. If curnulus clouds form and converge together, latent heat will gather and strengthen the cloud's updrafts. Further vacuuming up of humid air will promote a full development of currulonimbus and also torrential rain. Besides, air flows like a fluid and often produces disturbance or vortex which enhances the uplifting of air and hence the development of heavy rain.

Although heavy rain may cause inconvenience, it is beneficial to human beings in relieving droughts, for example. It could also help cool us during the hot summer: Meanwhile, in the threat of a global water shortage, collecting rain water is a smart and useful way to conserve this valuable resource.

### Hong Kong Po Shan Seismograph Station Joins GSN

WOO Wang-chun



Rapid and accurate earthquake analysis requires real-time seismic wave-data recorded by seismograph stations around the world. The Global Seismographic Network (GSN) is a global network of broadband seismograph stations equipped with high quality seismic sensors. It is the primary network for detecting global earthquakes by various earthquake monitoring centres.

With the support of the Civil Engineering and Development Department, the Observatory commissioned the Hong Kong Po Shan Seismograph Station in early 2010. This station became the 154th member of GSN in May. With its strategic location at the northern coast of the South China Sea, the seismograph can detect earthquakes in the South China Sea early contributing to an enhancement in earthquake monitoring capability for this region.

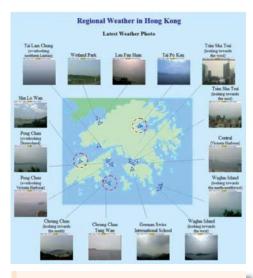
### The Observatory's Webpage - More Real-time Weather Photos TSE Wai-ming

The Observatory is enhancing the content of regional weather information. From 9 June, realtime weather photos at Sha Lo Wan, Tolo Harbour and the eastern waters of Cheung Chau have been added to the Observatory's "Regional Weather" webpage. Together with these three sites, the number of locations where real-time weather photos are available on the webpage has increased to 15.



With the approach of Tropical Storm Soudelor, the weather deteriorated rapidly. It became overcast with rain and the seas were rough over the eastern waters of Cheung Chau at 2pm on 11 July 2009.

Members of the public and tourists can check the weather condition at the Hong Kong International Airport from the photos captured by the weather camera at Sha Lo Wan. Weather photos at Tolo Harbour show the weather conditions at the nearby tourist spots, and help people to better plan their travels. The weather photos from the camera at Cheung Chau Tung Wan provide real-time information on weather conditions



The Observatory's "Regional Weather" webpage showing weather photos of 15 different places. Locations of the cameras at Sha Lo Wan, Tai Po Kau and Cheung Chau Tung Wan are marked by red circles.

for people engaging in water activities in that area. They are also useful for monitoring the sea conditions there, particularly when there is a strong monsoon or tropical cyclone affecting Hong Kong.

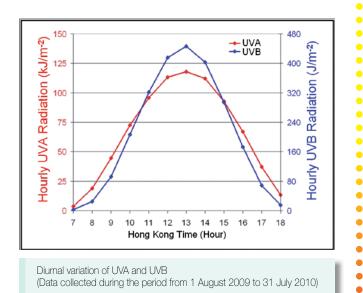
These photos are available from 6am to 9pm everyday and are updated every 15 minutes on the Regional Weather webpage of the Hong Kong Observatory (http://www.hko.gov.hk/wxinfo/ts/index\_e\_ webcam.htm) or PDA webpage (http://pda.weathergov.hk/wxphotoe.htm).

### What You Need to Know about Ultraviolet (UV) Radiation (4): What is UVA?

UV radiation can be further classified as UVA, UVB and UVC respectively, corresponding to their different wavelengths. UV radiation reaching the earth's surface consists of UVA and UVB only, as all UVC is absorbed by the atmosphere. Excessive exposure to UVB may lead to sunburn and is one of the major causes of skin cancer: Although the immediate harmful effect of UVA to the skin is less than that of UVB, over-exposure to UVA may lead to darkening, ageing and wrinkling of the skin, as well as potential development of skin cancer: Therefore, people should take protective measures against both UVA and UVB when engaging in outdoor activities. When choosing sunscreen lotions, we should select the ones that can effectively block both UVA and UVB.

The Observatory has started measuring UVA at the King's Park. Meteorological Station on an experimental basis since August 2009. Preliminary analysis showed that during the day, the change in intensity of UVA was less than that of UVB (see figure). This is because UVA has a longer wavelength and therefore not scattered as much by air molecules as UVB. This phenomenon is more pronounced in the morning and as dusk when the sun's elevation angle is small.

LEUNG Wai-hung



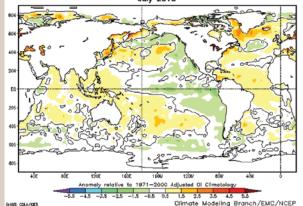
### Latest Information on El Niño and La Niña

The El Niño which started in June last year ended in May this year. Sea surface temperatures of the central and eastern equatorial Pacific returned to normal in May but the cooling trend continued and the sea surface temperatures of July became below normal. The latest forecasts by a number of climate models around the world indicate that the sea surface temperatures would continue to decrease with a La Niña event developing in the next few months.

La Niña refers to the cooling of surface waters over the central and eastern equatorial Pacific Ocean which affects the atmospheric circulation worldwide and regional climate in many parts of the world.

Statistically, when compared to normal condition, La Niña tends to be associated with cooler autumn (Sep to Nov) and winter (Dec to Feb) in Hong Kong, and more tropical cyclones affecting the territory during August to October: Despite the possibility of a La Niña event developing, the Observatory still expects the number of tropical cyclones affecting Hong Kong this year to be 6 or less. The number of tropical cyclones affecting Hong Kong in an average year is 6.4.

Olv2 Sea Surface Temperature Anomaly (\*C) July 2010



Sea surface temperature anomalies of July 2010 in degree Celsius. (Source: National Oceanic and Atmospheric Administration, USA)

### "Clouds in Hong Kong" Series - Stratocumulus Cloud in Summertime

#### HUI Tai-wai

While stratocumulus cloud is quite common in Hong Kong during the cool season, it can also be observed in summertime, particularly when there is a low level temperature inversion associated with the sub-tropical high or a distant tropical cyclone.

There are several variants of stratocumulus but they all share the same characteristic. Firstly, they exist in the lower atmosphere of 2000 metres or below. Secondly, the depth of stratocumulus is quite limited as compared to its horizontal dimensions. Stratocumulus, being composed of water droplets, can be grayish or whitish and is quite often in the form of regularly arranged rolls or patches, with blue skies in between (Figure 1).

On some occasions, stratocumulus may appear as elongated-shape clouds as shown in Figure 2 which was taken at dawn on 20 August 2008. Under the influence of the sub-tropical high, the weather was fine that morning and the atmosphere fairly stable. At the time the photograph was taken, the prevailing southerly winds were forced by a mountain range to rise above the lifting condensation level (LCL) and clouds formed. The clouds were no longer able to develop further upward when they encountered the temperature inversion at 450 metres (Figure 3), and therefore spread out horizontally to form elongated clouds.



Figure 2: Stratocumulus clouds observed to the east of Tung Chung, Lantau Island on the early morning of 20 August 2008 (Courtesy of Mr HUI Tai-wai).



Figure 1: Stratocumulus clouds observed in Tsuen Wan around noon of 9 November 2008 (Courtesy of Mr HUI Tai-wai).

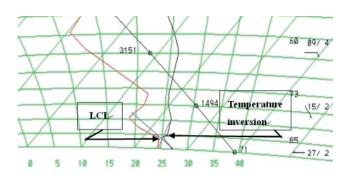


Figure 3: Tephigram of 00UTC, 20 August 2008. The lifting condensation level (LCL), corresponding to the height at which moisture of an air parcel will condense when being forced to move upward, was determined to be 320 metres.

### Real-time Tidal Information for Tai Miu Wan

Tin Hau, the Goddess of the Sea, is known as the saviour at seas in legends among fishermen and seamen in coastal provinces of southern China for centuries. Tai Miu Wan (meaning Big Temple Bay) is known for the Tin Hau Temple there which, constructed in 1266, is the earliest Tin Hau Temple in Hong Kong. Through the years, the Tin Hau Temple has been one of the most popular places of worship for fishermen. With improvement of the communication network near Tai Miu Wan, the Observatory now provides real-time tidal information from the Tai Miu Wan tide gauge station on the Observatory's website (http://www.hko.gov.hk/tide/marine/hko\_tmw.htm). The new service was launched on the birthday of Tin Hau (23rd day of the third lunar month) in 2010.

#### WU Chung-wai



Tai Miu Wan tide gauge station

### Astronomical Photo Album

WONG Wai-kwong

Looking up at night, the stars are twinkling in the sky caused by scattering due to temperature variation in the atmosphere. They seem to be covered by a thin mysterious veil. In April 2010, the Observatory and the Hong Kong Space Museum started to compile an astronomical photo album on the web. Various kinds of astronomical photos with different themes together with short descriptions would be publicized monthly. Members of the public not only can enjoy viewing various kind of stars, but also can gain knowledge in astronomy. Details of the "Astronomical Photo Album" are available at http://www.hko.gov.hk/gts/event/ event-astro-album\_e.htm.



The Dumbbell Nebula, also known as M27, got its name from its resomblance to a dumbbell, and is about 1200 light years away from the Earth.



Because of the Earth's rotation, if you expose your camera to the night sky for a long time, a beautiful photograph of star trails can be produced.

(Courtesy of Hong Kong Space Museum)



### "Science in the Public Service" Student Project Competition a success

#### LAM Hok-yin, David

The award presentation ceremony for the student project competition "How Do Applications of Science and Technology Enhance Quality of Life?" of the 'Science in the Public Service' campaign was held on 3 July at the Hong Kong Science Museum. The ex-Director of the Observatory and one of the founders of the Science in the Public Service campaign, Mr LAM Chiu-ying was the guest of honour: He presented awards to the winning teams in the primary and secondary school categories. About 50 teams from primary and secondary schools participated in the competition to probe into this issue. During the ceremony, one of the judges, Mr HOWingip of the Housing Department, commented on the students' work. This was followed by winners of the primary and secondary school categories sharing their experience with the audience. The champion of the Primary School Category was interviewed in a TV children programme by their favourite hosts.

'Science in the Public Service' is a campaign organized by over 40 government departments and collaborating partners. For details of the 'Science in the Public Service' activities, please visit http://www.science.gov.hk.





## **Job Shadow Day**

#### LAM Hok-yin, David

The Observatory held a "Job Shadow Day" on 7 May with 12 participating students from Shun Lee Catholic Secondary School. Apart from visiting various divisions of the Observatory, students were arranged to job-shadow with 6 colleague mentors for a whole day. A round-up discussion was held to conclude what they had seen and learned. Mentors also

shared with the students their experience of working in society and hoped they could benefit from it.

"Job Shadow Day" is organized by Junior Achievement Hong Kong (JAHK). The Observatory has been participating in this meaningful activity for four consecutive years.



Dr LEE Boon-yin, the Director (left), explained the difficulties in weather forecasting



Sharing amongst students and mentors

### **Assistant Director Attended** WMO Executive Council Meeting **Editorial Board**

Mr SHUN Chi-ming Assistant Director, attended the 62nd Session of the Executive Council of the World Meteorological Organization (WMO) held in Geneva, Switzerland, during 8 to 15 June. This was the first time for Mr SHUN to attend this meeting in the capacity of President of the WMO Commission for Aeronautical Meteorology (CAeM) after his election in February. The Executive Council is the executive body of WMO, comprising permanent representatives from 37 WMO members. Its meetings are held once every year.

At the meeting, Mr SHUN reported the top priorities of CAeM in the next four years and made recommendations on the subjects of the terms of reference of CAeM, aeronautical meteorological personnel competency standards, and provision of significant weather warning to aircraft. After reviewing Mr SHUN's report,



Mr SHUN Chi-ming (3rd right, front row) photographed with Mr Michel Jarraud, Secretary-General of WMO (5th left, front row) and other participants attending the WMO Executive Council meeting at the WMO Headquarters

the Council adopted the recommendations.

Apart from considering the reports submitted by the WMO President, Secretary-General and the relevant WMO bodies, the Council also discussed in depth the Icelandic volcanic eruption which seriously affected global air transport. In particular, the Council adopted the establishment of a Volcanic Ash Scientific Advisory Committee to improve the international volcanic ash warning system in cooperation with the International Civil Aviation Organization and the International Union of Geodesy and Geophysics. The Council also reviewed the WMO Strategic Plan 2012-2015, which included Aviation Meteorological Services as one of the five priority areas for WMO.

### The No-barrier Service Awards

#### Editorial Board



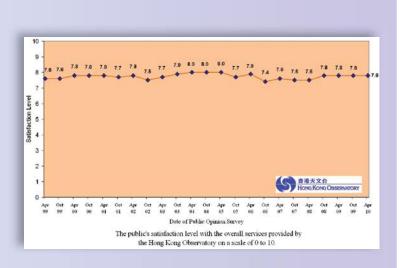
Dr LEE Boon-ying, the Director, received a plaque on 5 June as a recognition of the Observatory's contribution to its no-barrier service, which won the Best Public Service Application (Small Scale Project) Silver Award in the Hong Kong ICT Award 2009. The award-winning "3G Barrier-free Weather Hotline", jointly launched by the Observatory and Hong Kong Lutheran Social Service, provides a brand-new service to enable the hearing-impaired to have a video feed of updated weather information for display on their mobile phones. For more information on the barrier-free hotline, please visit http://www.hko.gov.hk/whatsnew/f2/tel\_hotline\_ hearing\_impaired\_e.htm.

Dr LEE Boon-ying received a plaque in the award presentation ceremony held on 5 June

### Public Opinion Survey in April 2010

Editorial Board

The Observatory commissions an independent consultant to conduct two public opinion surveys every year to gauage the public perception of the accuracy of its weather forecasts, and the level of public satisfaction with the overall service provided by the Observatory. The results of the survey conducted in April 2010 indicated that on the average, the public considered 78.2% of the weather forecasts issued by the Observatory were accurate, and gave a score of 7.8 (out of 10) to its overall service, comparable to that in the last survey carried out in October 2009. A question about the accuracy of the Observatory's tropical cyclone warning services was added in the latest survey. About 60% of the respondents expressed that the recent tropical cyclone warning services were more accurate than that of three to four years ago.



### The Second Scout Met Day

#### TAM Kwong-hung

On 10 July, the Scout Association of Hong Kong organized "The Second Scout Met Day" in the Tsim Sha Tsui District Kai Fong Welfare Centre, and invited Mr LAI Sau-tak, Edwin, Acting Assistant Director; to inaugurate the ceremony.

Over 800 scouts participated in the activity. Apart from game booths and exhibits on special topics in meteorology, there were also model-making activities and design competitions for game booths and meteorological instruments. To arouse participant's interest in meteorology, scouts were also given hands-on experience in the use of portable meteorological instruments to take measurements and invited on guided tours to the Observatory Headquarters.



Scout leader introducing the meteorological instruments at the Observatory Headquarters



Mr LAI Sau-tak, Edwin, Acting Assistant Director (3rd left, 3rd row), taking photo with other guests of honour and scout winners



#### **CHAN Wing-shan**

The Observatory received a Silver Award in the Public Sector of the 2009 HKAEE Sectoral Awards in the award presentation ceremony held on 12 May. The HKAEE is recognized as one of the most prestigious and reputable award schemes in environmental protection in Hong Kong. It aims to encourage organizations to adopt green management and present them with a unique opportunity to benchmark their commitment towards environmental protection. The Observatory will continue to play an active part in environmental protection with its scientific knowledge and expertise.



### Visits • Courses • Talks • Meeting



**December 2009** At the invitation of the ESCAP/ World Meteorological Organization (WMO) Typhoon Committee, Dr LEE Tsz-cheung(1st left), Senior Scientific Officer, joined the Committees expert team on the assessment of the impacts of climate change on the tropical cyclone frequency and intensity in 2009.





8 to 11 March 2010 Mr SHAM Fu-cheung (2nd left), Senior Experimental Officer; led a delegation of three and visited the Hunan Meteorological Centre, Provincial Climate Centre, Provincial Meteorological Equipment Centre, Institute of Meteorological Science and Mapoling National Meteorological Observing Station. They shared experience with frontline meteorological staff on weather operations and services as well as staffing arrangement and the latest development on weather observation and forecast.



**30 March 2010** Mr CHAI Sung-veng John, JP. Director of Civil Engineering and Development (2nd right) led a delegation to visit the Observatory, the Director (left) briefed the guests on the work of the Observatory and accompanied them to visit the Forecasting Office, the TV studio, the Earthquakes and Time Services Division and the History Room.



**30 March to 1 April 2010** Five delegates from the Beijing Meteorological Bureau (BMB) and the Institute of Urban Meteorology visited the Observatory. The Director (1st left), introducing local forecast operations to MsWANG Jian-jie (middle), Deputy Director of BMB, and Mr GUO Hu (2nd left), Director of the Beijing Meteorological Centre, in the Forecasting Office of the Observatory



**1 April 2010** Miss HO Wing-kwan Kimmey, the Assistant Secretary for Commerce and Economic Development (Commerce and Industry), visited the Observatory to learn more about the history of the Observatory and the work of the Forecasting Office. Miss HO also demonstrated her talent as a TV weather presenter.



**15 April 2010** A delegation of the Hong Kong Institution of Engineers (Information Technology Division) visited the Observatory.



**20 April 2010** Mr LEUNG Lap-fun, Government Security Officer, (3rd right) visited the Observatory.



**24 April 2010** A public talk on 'Weather at a glance' was given by Mr TAM Kwong-hung, Scientific Officer (standing). He explained how to access real-time weather photos, radar images and lightning information through computers or mobile phones.



**7 May 2010** A celebration party was held to thank the volunteers of the Friends of the Observatory for their help on the Open Day 2010. Awards of Outstanding Volunteer and Docents were presented. More than 40 volunteers joined the party with happy memories.





**27 May 2010** FONG Soi-kun (right), Director of the Macao Meteorological and Geophysical Bureau led a delegation to visit the Observatory.



**28 May 2010** A group of Fishery community visited the Observatory and learned about weather forecasting operations,





**Late May 2010** At the invitation of the World Meteorological Organization, Mr LEE Lap-shun (2nd right, front row), Senior Scientific Officer; gave a lecture on methods of tropical cyclone forecasting for a training workshop in Shanghai.



**1 June 2010** Photograph of delegation of Green Power with the Director(4th left, front row).

WEATHER





**1 June 2010** A group of 20 from the Civil Engineering and Development Department visited the Observatory. They were briefed on weather forecasting and the effects of climate change.



**4 June 2010** The Observatory organized a seminar on lightning alert service. Nearly 70 participants from property management companies as well as operators of swimming pools and outdoor facilities under the Leisure and Cultural Services Department attended the seminar.



**5 June 2010** A public talk on "Volcanic eruptions and climate change" was given by Mr Ewind GINN, Senior Scientific Officer (standing), explaining the impact of volcanic eruptions on climate, and how scientists use the eruption information to improve long-term climate estimates. More than 80 people attended.



**10 June 2010**The teachers of Geography group in the Curriculum Development Institute of Education Bureau visited the Airport Meteorological Office.



**29 June 2010** Mr HUI Tai-wai (standing), Scientific Officer, delivered a talk on Hong Kong Climate for the Hong Kong Award of Young People. He introduced the hiking tutors the causes of climate change, the impacts on nature and the importance of mitigating global warming.





**15 June 2010** Mr FUNG Kin-kee, JP (2nd right, front row), Legislative Council Member; led a delegation to visit the Observatory. The Director (middle, front row) accompanied them to visit the Forecasting Office, Radiation Monitoring and Assessment Centre, and briefed them on the developments in forecasting and climate projections for the 21st century in Hong Kong.



**30 June 2010** Mr ZHANG You-min, Deputy Director of the China Earthquake Administration, led a delegation, including Director of the Earthquake Administration of Beijing Municipality, Director of the Earthquake Administration of Yunnan Province, and Director of the Earthquake Administration of Guangdong Province, to visit the Observatory.



**22 June 2010** Mr Timo Rajakangas (2nd left), Consul-General, Consulate General of Finland, led a delegation to visit the Observatory. The Director (1st left) briefed them on the Observatory's work.



**27 July 2010** Delegates of the 2010 International Air Cadet Exchange Programme, members of the Hong Kong Air Cadet Corps and the Observatory staff photographed at the Observatory with happy memories.



**4 August 2010** Mr SO Kam-leung, Gregory, JP (middle), Under Secretary for Commerce and Economic Development, visited the Observatory. The Director (left) briefed him on the Observatory's work at the Forecasting Office.



# **Ex-Director Mr Lam Chiu-ying Elected an** Honorary Member of the Royal Meteorological Society of the United Kingdom



#### **Editorial Board**

MrLAM Chiu-ying, ex-Director of the Observatory was recently elected an Honorary Member of the Royal Meteorological Society of the United Kingdom, Mr LAM was commended for his distinguished contributions as a forecaster and a researcher. He is respected the world over for his outstanding leadership of the Observatory and the contributions that the Observatory has made to meteorology internationally under his term of office.

#### Dr LEE Tsz-cheung promoted to Senior Scientific Officer **1** 8 Editorial Board

Dr LEE Tsz-cheung was promoted to Senior Scientific Officer on 13 April, He oversees the Climate Change and Climate Forecasting of Development, Research and Administration Branch, responsible for climate change research, climate forecasting service and impact of development projects on climate in Hong Kong.



Dr LEE Tsz-cheung (right) receiving the promotion letter from the Director

### Retirements

Editorial Board

Mr WAI Hon-gor, Assistant Director, Dr YEUNG King-kay, Senior Scientific Officer; MrWONG Yang-tze, Senior Radar Specialist Mechanic, and Mr LEE Wai-lun, Clerical Officer, started their pre-retirement leave in April and May. The Director together with other senior staff bade them farewell and presented them with souvenirs, commending them for their contributions to the Observatory.







#### Editorial Board

Staff of the Observatory who received words of thanks and commendation from the public or organizations during May to August 2010:

#### Dr LEE Boon-ying (Director)

Ms SONG Man-kuen, Sandy (Senior Scientific Officer) Mr HUI Tai-wai, David (Scientific Officer) Mr LEE Kwok-lun (Scientific Officer) Mr TAM Kwong-hung (Scientific Officer)

### Best TV Weather Programme Presenters 2nd Quarter, 2010



#### **Mr WOO Wang-chun**

### The Observatory Winning Community Chest Award Again

#### CHAN Wing-Shan

The Observatory has won the CARE Scheme Civil Service Category Highest Per Capita Contribution Award under the Community Chest Corporate and Employee Contribution Programme for the 8th consecutive year: It fully demonstrates the commitment of the Observatory's staff in caring for the community.



### Visit to Lai King Correctional Institution



The Observatory staff photographed at Lai King Correctional Institution

#### WONG Man-ting

On 9 April, 16 colleagues and 1 visited the Lai King Correctional Institution (LKCI) which we normally would have little chance to visit.

The group photo was taken outside the institution since photo-taking was strictly prohibited in LKCI. After entering LKCI, our host staff welcomed us and explained to us some restrictions during the visit. For example, bags and mobile phones shoud be kept at the reception area and no talking with inmutes was allowed.

We visited the cell, working place, medical room, kitchen and some other facilities in the LKCI. The tour was truely eye-opening.

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### Visit to Civil Engineering and Development Department

#### LEE Kwong-chueng, Francis

A sunny afternoon in May, 11 colleagues and 1 visited the Headquarters of Civil Engineering and Development Department (CEDD) at Ho Man Tin. We learned that some of their operations were related to the Observatory. For instance, they study the cause of landslide and sand loss at beaches, which can be triggered by certain weather conditions including wind direction, tide and rainfall intensity. During severe weather situation, their Emergency Control Centre keeps close contact with the Observatory, in order to mitigate damage from natural disasters.



A group photo of the staff of the Observatory and Civil Engineering and Development Department

### Tsim Sha Tsui Signature Tour

#### Chan Siu-wai

Rooted deeply in Tsim Sha Tsui, the Observatory has been providing the public with meteorological services for more than 150 years. To explore more about the history of this district, the Staff Association invited Mr CHENG Hon-keung, an experienced culture and history museum docent, to talk about how Tsim Sha Tsui developed from a small fishing village into one of the busiest commercial centers over the past centuries.

Mr CHENG showed us a number of precious old photos of Tsim Sha Tsui, explaining the origin of the names of different place and telling stories of the evolution of Tsim Sha Tsui from a restricted military base a hundred years ago to a vibrant commercial and tourism district nowadays. The narrated stories and legends gave us a better understanding of the history of this area.

### **Colleagues Showing** Artistic Talents

#### WONG Kwun-wa

The Staff Association organized an interest class on 'Do-it-yourself Japanese purse' on 29 May. Starting from materials like pieces of colorful cloth, embroidery, small metallic clip and button, colleagues created different kinds of attractive Japanese purses. Colleagues exchanged their skills of cutting and sewing, and had fun in the class.







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### **Mailing Address**

### Learning from the Game

LAU Chi-ho



Playing game is a fun way to learn. The Staff Association organized a Noah's Ark Family Trip in this summer: Colleagues with their family members visited many scenic spots at Noah's Ark including 'Treasure House', which offered a wide range of interactive activities to foster active learning, and build up the participants' life-long learning attitudes and skills. All of us learned how to reduce carbon emissions in our daily life, and the impact of our lifestyle on the environment. Kids were excited in doing Hydrocar energy experiment (hydrogen fuel cell electric vehicles) to make an environmental by friendly vehicle by themselves. To protect the environment, It is important to start from kids.

