

# WEATHER ON WINGS



Dial-a-Weather : 187 8200

Home page : <http://www.hko.gov.hk>, <http://www.weather.gov.hk>



## Reaching New Heights - Observatory Wins Outstanding Service Awards

Editorial Broad



The Hong Kong Observatory won eight awards in the 2009 Civil Service Outstanding Service Award Scheme, including the overall Service Enhancement Award in the "Small Department" category.

The Award Scheme aims to promote a people-based service culture and to recognise the efforts of winning departments in providing excellent service. Adjudicators in the first stage are practitioners and experts from the private and public sectors. The final adjudication panels consist of Legislative and District Councillors, representatives from professional bodies, staff side councils and senior directorates of the Civil Service Bureau.

The adjudicators commented that "The Hong Kong Observatory has served the public with punctual, timely, and good-quality weather information, in the hope of minimising the inconvenience and the economic losses that bad weather brings to the public. In formulating its service strategy and objectives, it has made use of various channels to collect opinions of the public, such as the "Friends of the Observatory", various public talks and its Open Day, so as to establish face-to-face dialogue with the public. The various innovative and cost-effective services launched, without involving extra resources, have been widely used and appreciated by the public."

The Director was very delighted to receive the awards. "We will continue to serve the public with creative thinking and science," he said.



### Awards won by the Observatory :

Award Category	Award	Awarded Project
Service Enhancement Award (Small Department)	Champion	—
Partnership Award	Merit	Science in the Public Service (HKO is the coordinating department)
Specialised Service	1 <sup>st</sup> Runner-up	Airport Thunderstorm and Lightning Alerting System Development
Specialised Service	2 <sup>nd</sup> Runner-up	Equestrian Weather Service Team
Specialised Service	Special Citation (Innovation)	Airport Thunderstorm and Lightning Alerting System Development
Internal Service	Merit	Weather Buoy Deployment Team
General Public Service	Merit	Lightning Information Service Team
General Public Service	Special Citation (Innovation)	Lightning Information Service Team

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# Director attends ..... international climate change conference

The 2nd International Conference on Climate Change (ICCC) was held in Hong Kong in October 2009. Professionals, business and political leaders in Hong Kong and around the world were invited to share their views and knowledge on climate change.

The Director of the Observatory, Dr Lee Boon-ying (middle), was one of the keynote speakers. He gave a talk on "Data monitoring and evidence of climate change in Hong Kong".

Dr Lee pointed out that the temperature rise in Hong Kong in the past was mainly due to global warming and urbanisation. As population growth is expected to slow down in the future, the effect of urbanisation will also diminish and future temperature rise will be dominated by global warming. According to the Observatory's projection, the annual mean temperature in Hong Kong will increase 2 to 3 degrees by 2050.

Regarding rainfall, he pointed out that the average annual rainfall in Hong Kong was projected to increase by about 10 percent towards the end of this century. The rainfall in Hong Kong would also become more



Some scientists even predicted a rise of 0.8 to 2 metres. "Hong Kong will be affected by more severe flooding and a higher storm surge," he said.

Lastly, he called upon all sectors to take immediate actions against climate change. "Nothing short of concerted efforts by everybody, lifestyle changes, enhanced energy efficiency, use of renewable and alternative energies, and adoption of green technology and mitigation measures, would accomplish the feat."

## Editorial Board

variable with more extremely wet and extremely dry years. However, the projection also showed a possible decrease of up to 5 percent over the next few decades, till the 2040s. The situation over southern China (including Guangdong) would be similar. "This is of immediate concern, as it is set against projected increases in water consumption both in Hong Kong and Guangdong," he said.

He also mentioned that, according to recent studies, the global sea level would rise by 0.4 to 0.8 metres by the end of this century.

# Sha Tin District Council visited the Observatory

## Editorial Board

Around 20 members of the Sha Tin District Council and District Office, headed by the Chairman Mr WAI Kwok-hung, SBS, JP, visited the Observatory on 4 November 2009. The Director briefed the guests on the work of the Observatory. This was followed by a guided tour of the Forecasting Office, the Radiation Monitoring and Assessment Centre, the TV studio, the Earthquake and Time Services Division and the History Room. The councilors were much impressed by the Observatory's skillful application of science and technology in serving the public.

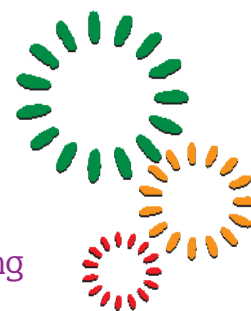


Councilors show great interest in the work of a TV weather presenter.



Senior Scientific Officer Edwin Lai (2<sup>nd</sup> left) introducing the work of the Forecasting Office to the councilors.

# The Observatory in Full Support of the East Asian Games



Following the successful provision of weather services for the 2008 Olympic and Paralympic Equestrian Events, the Observatory redoubled its efforts and offered full support to the East Asian Games held in Hong Kong in December 2009.

**YEUNG Kwok-chung**

## Getting prepared in advance

Among the 22 events of the East Asian Games, the nine outdoor events were the main focus of the Observatory's support. Based on experiences from the Olympic Equestrian Event, the Observatory made use of its dense network of automatic weather stations to closely monitor the weather around the various outdoor venues, providing real-time weather information to the East Asian Games organizers and relevant government departments. A dedicated website (Figure 1) was launched to display weather information and forecasts to the organizers, athletes and general public.

Among the outdoor events, windsurfing was the most weather-sensitive one, during preparations as well as the races. As such, a weather buoy was set up and deployed by the Observatory at Tai Tam Bay (Figure 2). Apart from the usual weather information, sea surface temperature and current over the region were also monitored. During the race period, changes in winds and temperature over the race area were simulated by a computer model operated by the Observatory (Figure 3). Weather briefings for the organizers and athletes were conducted every morning through video conferencing (Figure 4).

A week before the official opening of the Games, the forecaster already kept in close contact with organizers and relevant government departments via a telephone hotline, helping them to set up arrangements for the competition events and venues.



Figure 1. Weather website for the 2009 East Asian Games.



Figure 2. Observatory staff testing the weather buoy at the windsurfing venue in Tai Tam Bay.

## Blessed with kind weather

The weather was generally fine and stable throughout the Games with comfortable temperatures, generally following the predicted trends. Although some tennis matches was delayed by rain initially, fine weather returned towards the latter part of the event and all the matches were completed without a hitch. The northeast monsoon prevailing over the south China coastal areas brought east to northeasterly winds of 10 to 20 knots to Tai Tam Bay, well suited to the windsurfing races.

The Windsurfing Association of Hong Kong showered praises for the excellent weather information and forecasts provided. While Hong Kong athletes had a good harvest of the medals, the Observatory's service also left a good impression on guests and participants from East Asia and contributed positively to the success of this prestigious event.

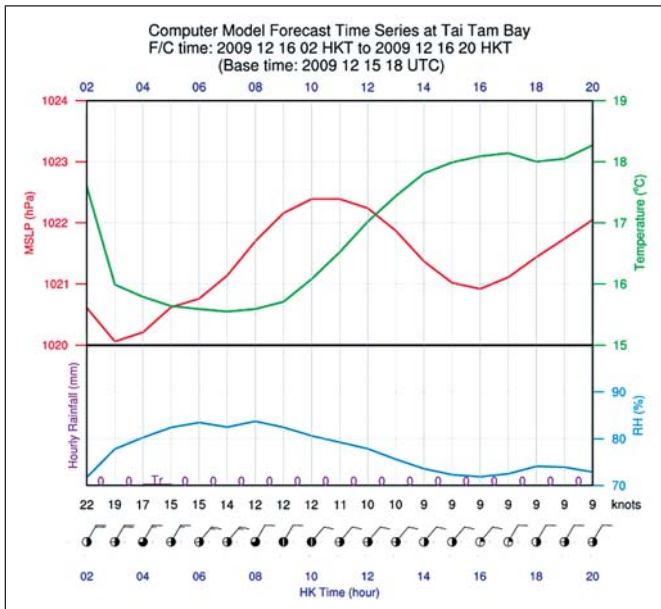


Figure 3. Forecasts generated by the computer model for the windsurfing venue in Tai Tam Bay.



Figure 4. Forecaster (inset) conducting weather briefing through video conferencing with the organizers and athletes.

## New temperature station for Kwun Tong District

CHOW Siu-wing

The automatic weather station for Kwun Tong District started operation on 21 October, providing temperature readings round-the-clock for the district. The new station is located inside the Radio Monitoring Unit of the Office of the Telecommunications Authority (OFTA) at the Ngau Tau Kok Service Reservoir.

The population in Kwun Tong is over 580,000. In addition to housing estates, there are major exhibition and shopping centres as well as tourist spots such as Lei Yue Mun and Cha Kwo Ling. The new station's data keeps residents and visitors informed of the latest weather conditions in the district.

The temperature readings can be accessed from the Observatory's "Regional Weather" webpage at

[http://www.weather.gov.hk/wxinfo/ts/display\\_graph\\_e.htm?ktg&menu=otherwx&rxw&addbar](http://www.weather.gov.hk/wxinfo/ts/display_graph_e.htm?ktg&menu=otherwx&rxw&addbar) or PDA webpage at [http://pda.hko.gov.hk/regione\\_ktg.htm](http://pda.hko.gov.hk/regione_ktg.htm), or the "Dial-a-Weather" hotline at 187 8200.



(From left) Assistant Director of OFTA, Mr So Tat-foon; Director of the Observatory, Dr Lee Boon-ying; Chairman of the Kwun Tong District Council, Mr Chan Chung-bun; and District Officer of Kwun Tong District, Ms Wong Po-lin officiating at the opening of the new station.

# Weather photos of Hong Kong South

TAM Kwong-hung

The Observatory recently added on its website weather photos of Hong Kong South. The southern side of Hong Kong Island offers spectacular scenery and a host of tourist spots such as the Ocean Park and Aberdeen. Real-time weather photos help attract more tourists to Hong Kong and facilitate their travel planning. They also facilitate people in observing the real-time weather conditions such as cloud amounts, cloud height and visibility, and arouse their interests in exploring weather phenomena.

The camera is installed inside the German Swiss International School (GSIS), a Community Weather Information Network member at the Peak. The Observatory provided technical support while the school took up the installation and routine maintenance of the camera. This new mode of co-operation not only provides a more cost-effective way of delivering public weather service, but also nurtures a sense of satisfaction on the part of the students through participating in the provision of weather service to the public. It encourages them to be actively involved in maintaining and operating the instruments, data transmission and studying weather phenomena, leading to a win-win situation for all partners.

Real-time weather photos of 12 different places in Hong Kong are now available on the "Regional Weather" webpage ([http://www.weather.gov.hk/wxinfo/ts/webcam/GSI\\_e\\_realttime.htm](http://www.weather.gov.hk/wxinfo/ts/webcam/GSI_e_realttime.htm)) or PDA webpage ([http://pda.hko.gov.hk/wxphotoe\\_gsi.htm](http://pda.hko.gov.hk/wxphotoe_gsi.htm)). Photos taken between 7am and 7pm are updated every 15 minutes. The Observatory will continue to enhance its public weather service through providing more weather photos and information of other places.



Weather conditions of Hong Kong South as seen from German Swiss International School



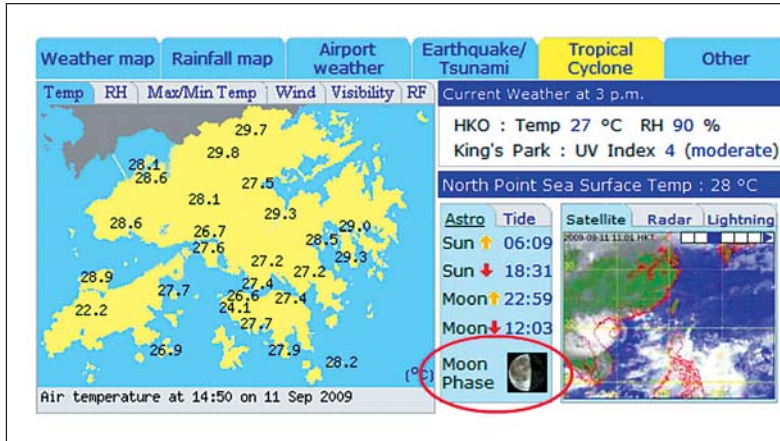
## Web Clock

WOO Wang-chun

Want to check the correct time on your desktop PC without installing additional software? Why don't you try our new web clock (<http://www.hko.gov.hk/gts/time/HKSTime.htm>)? It regularly synchronizes with the Observatory's time server over the Internet and displays the Hong Kong Standard Time in both analogue (with clock hands) and digital format. No matter what kind of computing device you use - desktop, notebook, netbook or smartphones - so long as it is connected to the Internet you can access the web clock.

# Moon phase icon on HKO front page

WOO Wang-chun



The moon phase is related to activities like moon watching, stargazing as well as determination of tide, traditional Chinese calendar and Islamic calendar. This useful information is now available on the front page of the HKO website through a moon phase icon. The time elapsed since the last new moon (moon age) is shown graphically on mouse-over.

# New YouTube videos

Editorial Board



More videos are now on the Observatory's YouTube site :

**Radar and satellite imageries of Typhoon Koppu** - the typhoon skirted around 150 km south of Hong Kong in September 2009. Its eye and spiral rain bands are vividly revealed on the radar and satellite pictures.

**Cartoon "Scorched Earth"** - Santa Claus in an undervest? Find out why from this cartoon!

**Weekly weather reports** - Don't miss the short video on the weather in the past week and outlook for the coming weekend, available every Friday evening.

# Weather hotline for the hearing-impaired

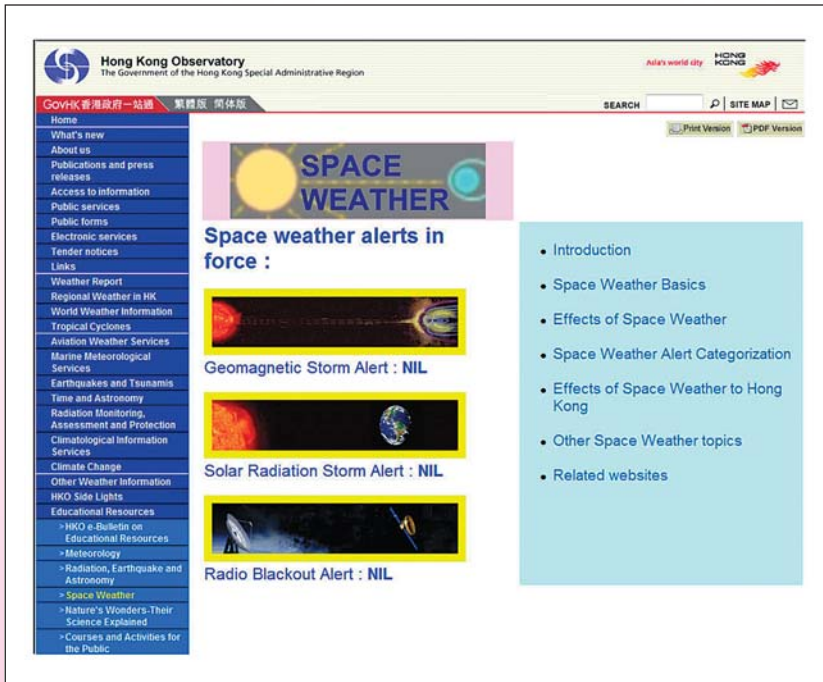
SUK Ka-fai

The Observatory and the Hong Kong Lutheran Social Service jointly launched Hong Kong's first barrier-free weather telephone hotline (Chinese only) for the hearing-impaired through 3G mobile video services. People can now try out the new service by making a video call to 6777 5100.

The hotline delivers the latest weather information. Weather warnings in force are displayed with scrolling captions.

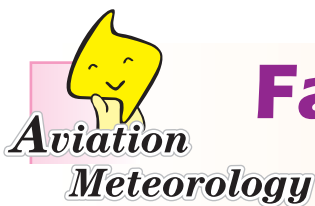


## webpage enhanced



Solar activity has a cycle of about 11 years. To prepare for the coming active period around 2012 to 2013, the Observatory enhanced the content of its "Space Weather" webpage in the 4th quarter of 2009. ([http://www.weather.gov.hk/education/edu05spacewx/ele\\_spwx\\_curwarn\\_e.htm](http://www.weather.gov.hk/education/edu05spacewx/ele_spwx_curwarn_e.htm))

This is an enhancement to the one launched in 2004 to inform readers how space weather can affect our daily life. It also relays the latest space weather warnings of the United States' NOAA Space Weather Prediction Center, so that relevant organizations can take appropriate and timely precautions if necessary.



## Familiarization Flights with Dragonair

HO Ka-leung, Paul

Four aviation forecasters of the Observatory joined in familiarization flights in June 2009 arranged by Dragonair of Hong Kong. It was the second round of familiarization flights for Observatory's staff since 2005.

Through the flights, the forecasters had the opportunity to witness in the cockpit how pilots utilized aviation weather information provided by the Observatory. They also gained a better insight of how pilots acquire the latest weather information, under what weather conditions they communicate with air traffic controllers, and actions that they would take to respond to weather affecting their flights. The pilots also expressed their needs and expectations for flight-route specific weather information. The forecasters learned that future dissemination of weather information would be through uplinking graphical products of significant weather directly to the cockpit.

The flights also enhanced the forecasters' understanding of the pilots' perception of the weather services, providing opportunity for service enhancement.



A huge, brilliant white thundery cloud outside the cockpit. The anvil at the cloud top was clearly seen.

# Mainland weather forecaster at Hong Kong Observatory

LAM Ching-chi

A weather forecaster of the China Meteorological Administration (CMA), Ms Zhao Surong, was attached to the Observatory's Airport Meteorological Office for a month in late May 2009 for technical exchanges on aviation weather services. In return, she shared with us CMA's experience in establishing the new Severe Weather Prediction Centre under their National Meteorological Centre. Ms Zhao was impressed by the Observatory's development of nowcasting techniques, automation of weather forecast guidance and management of the forecaster team.

Ms Zhao Surong (middle, first row) with Observatory colleagues



## Exchanges with

CHEUNG Ping

## International Air Cadets

In late July 2009, more than 30 delegates of the "2009 International Air Cadet Exchange (IACE) Programme" and 20 local members of the Hong Kong Air Cadet Corps visited the Observatory to learn more about aviation weather services provided by the Observatory and how weather observations and forecasts were made. It was the first time that the IACE Programme arranged a visit to the Observatory. The delegates came from ten countries including Australia, Canada, China, France, Ghana, Israel, Netherlands, Turkey, United Kingdom and United States.

We were very glad to have the opportunity to exchange with these young and passionate delegates from different cultures.



Director (right) exchanged souvenirs with the officer-in-charge of the Programme, Mr Peter K.W. Ng.



# 30th Anniversary of Windshear Alerting Service

CHAN Pak-wai

A press event was held on 10 December 2009 to commemorate the 30th anniversary of windshear alerting service. In 1979, the first-generation windshear detection system was commissioned at Kai Tak. Over the past 30 years, the Observatory has enhanced the service for the Hong Kong International Airport (HKIA) by applying the latest technologies, innovations and science. The most notable achievement was the in-house development of the Light Detection And Ranging (LIDAR) Windshear Alerting System, which is now generally recognised as a world-leading airport windshear system.

The windshear alerting service at HKIA is among the pioneers in the world. It is described as one of the world models in an International Civil Aviation Organisation (ICAO) manual. Aviation authorities in the US and Japan have made reference to the Hong Kong experience in their deployment of LIDARs for windshear detection. Meteorological services around the world, such as Mainland China, the Russian Federation, India, the Republic of Korea and Thailand, have visited the Observatory to appreciate the windshear alerting work in Hong Kong.

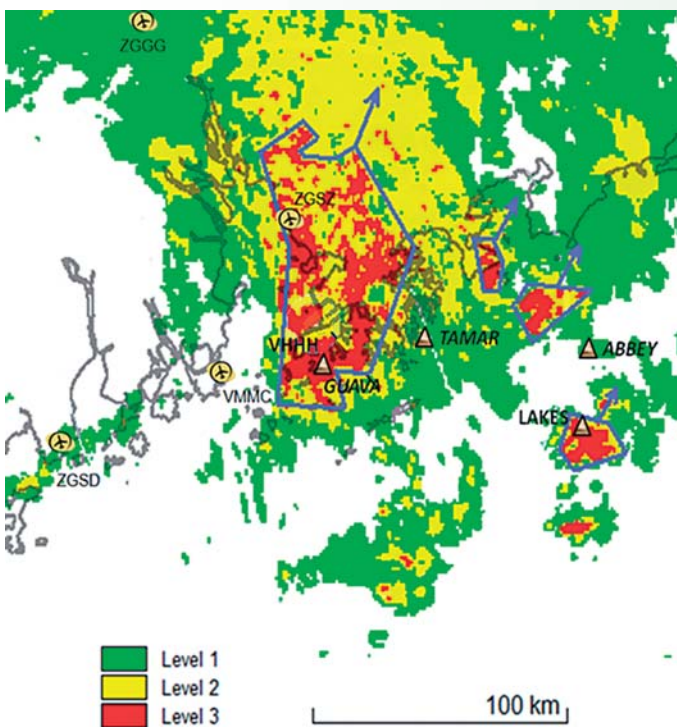
In the development of the windshear alerting service, active contributions by the pilots played a crucial role. Captain Brian Greeves of International Federation of Airline Pilots' Associations (IFALPA) indicated that the present Windshear and Turbulence Warning System at HKIA, was among the most sophisticated systems in the world.



Director of the Observatory (3rd left) and representatives of Civil Aviation Department, Government Flying Service, International Air Transport Association, International Federation of Airline Pilots' Associations and the Guild of Air Pilots and Air Navigators declaring operation of the LIDAR for all runway corridors at the airport.

## New meteorological services for air traffic management

SONG Man-kuen, Sandy



A prototype short-term forecast of convection for air traffic management

I attended the first meeting of the Meteorology/Air Traffic Management (MET/ATM) Task Force organized by the International Civil Aviation Organization (ICAO) for the Asia/Pacific Region in December 2009. The seminar aimed to develop new requirements for meteorological services to enhance the support to air traffic management.

Currently, ATM personnel receive weather information mainly through highly-condensed text messages using special codes like the Terminal Aerodrome Forecast (TAF). Such weather codes were developed back in the mid-20th century due to the then limitations in international data transmission. In recent years, it is recognized that these legacy weather codes limit the development of new weather products, such as the forecast movement of thunderstorms in the terminal area, to meet the increasing demands of aviation users including ATM. In Hong Kong, the Observatory is collaborating with the Civil Aviation Department to develop similar products to enhance our aviation weather services. Internationally, the Observatory also works in an Expert Team of the World Meteorological Organization (WMO) to enhance the provision of weather information for terminal areas with busy air traffic.

In this meeting, I felt privileged to present a number of proposals of the new terminal forecast being developed by WMO (Figure). I also sent out a questionnaire at the meeting to collect user feedback for the new terminal forecast prototype and received positive feedback.

# Delegation of CAAC

SONG Man-kuen, Sandy

## visited the Observatory

Director of the Observatory (right) presented a souvenir to Mr Chen Bao.



Mr Chen Bao, Director of Meteorological Division of Air Traffic Management Bureau, Civil Aviation Administration of China (CAAC), led 5 meteorologists from different regions in the Mainland visited the Observatory on 17-20 November 2009. The delegation visited the Central Forecasting Office, the Airport Meteorological Office, the Light Detection and Ranging System (LIDAR) and the Terminal Doppler Weather Radar (TDWR) station. They found the visit very fruitful and were particularly impressed by the Windshear and Turbulence Warning System.



CAAC delegates and Observatory colleagues.

# 50 years of weather radar observations

LEE Shuk-ming



Mr Shun Chi-ming, Assistant Director (middle) celebrating with serving and retired staff who worked for the maintenance and operation of the radars.

New weather radar product making use of geographical information system to enable interactive viewing of radar images.



In 1959, the Observatory installed its first weather radar at Tate's Cairn. For the first time, weather forecasters were able to observe in real time where in Hong Kong and neighbouring areas was raining. This formed the basis for monitoring of severe weather like thunderstorms, heavy rain and tropical cyclones. The Observatory celebrated on 15 December 2009 the 50th anniversary of weather radar observation in Hong Kong. Several retired staff who worked for the implementation and maintenance of weather radars were invited to commemorate and share their reminiscence of the past.

During the celebration, Assistant Director Mr Shun Chi-ming reviewed the history of weather radar observations in Hong Kong. "In the past half-century, the Observatory has advanced through several generations of weather radars, making use of the latest technologies to protect lives and property from natural hazards such as typhoons and rainstorms. This would not have been possible without the efforts of many colleagues who have worked diligently over the years to maintain the weather radars, especially during inclement weather. We salute our colleagues in their commitment to work under such difficult conditions," Mr Shun said.

The Observatory also prepared a booklet on "50 Years of Weather Radar Observations in Hong Kong" in which Observatory staff shared their feelings in working with weather radars. The booklet is available on the Observatory's website:

[http://www.hko.gov.hk/wxinfo/radars/radar\\_gallery/Radar-50years.pdf](http://www.hko.gov.hk/wxinfo/radars/radar_gallery/Radar-50years.pdf)

To make the weather radar images more user-friendly for use by public, the Observatory also launched a new radar product on its website based on a geographical information platform. People can interactively zoom in and out of the radar images, and make reference to a host of geographical information, to enable them to know more precisely the locations affected by rain. The new radar products are accessible from:

[http://www.weather.gov.hk/wxinfo/radars/radar\\_256\\_kml/Radar\\_256.kml](http://www.weather.gov.hk/wxinfo/radars/radar_256_kml/Radar_256.kml) (256 km range)

[http://www.weather.gov.hk/wxinfo/radars/radar\\_064\\_kml/Radar\\_064.kml](http://www.weather.gov.hk/wxinfo/radars/radar_064_kml/Radar_064.kml) (64 km range)

# Waterspout Spotted

WU Man-chi

The Observatory received reports from the public on 19 August of a waterspout occurring near Po Toi Island around 8am for a few minutes (Figure 1). Locally, it was mainly fine apart from localized strong convection that led to the formation of showers and the waterspout.

A waterspout occurs over water, and a tornado is its equivalent over land. It usually involves a fast rotating column of air extending from the base of a convective cloud to the water surface. A rotating column of air that does not touch the water surface is called a funnel cloud (Figure 2), which is made visible by cloud droplets.

Waterspouts are most commonly seen in June and July. In Hong Kong, a waterspout was last spotted on August 13, 2005. Since 1959, there have been 38 cases of waterspouts and 17 cases of funnel clouds sighted within 460 kilometres of Hong Kong.



Figure 2. A funnel cloud observed to the southwest of Chek Lap Kok (taken at 10:29 am, 9 July 2003).



Figure 1. Waterspout near Po Toi Island (picture courtesy of Mr Lawrence Leong)

## What you need to know about Ultraviolet radiation (2) :

LEUNG Wai-hung

# Myths about protection against sunburn

Human exposure to ultraviolet (UV) radiation from the sun may cause acute and chronic effects on the skin, eye and immune system. Although most people are aware of the need to take protective actions, there are still some common misconceptions about sunburn.

Many people have a mistaken belief that darker sunglasses offer more protection against UV radiation. In fact, there is no direct relationship between the colour of sunglasses and their UV filtering capability. The most important thing to look for is how much UV radiation can be filtered out by their lens. While wearing the sunglasses, our pupil will widen as there is less light reaching the eyes. If the sunglasses have poor UV filtering capability, the amount of UV radiation getting into the eyes may even be greater than not wearing sunglasses at all.

Another common misconception is that you will not get sunburn on a cloudy day. In fact, up to 80% of solar UV radiation can penetrate through thin cloud layers. There are also occasions where UV radiation reaching the ground is enhanced by reflection from the boundaries of the clouds. Therefore, when going outdoors, it is advisable to check the latest

UV index and forecast through radio, television, the Observatory's website or Dial-a-Weather system (1878200).

The belief that one cannot get sunburn under the water is also incorrect. Water can only partially block UV radiation. At half a metre under water, the UV radiation level can still be 40% as that at the surface. Besides, any part of the body above the water will also be exposed to UV rays reflected from the water surface.

Sunscreen lotion provides protection against unavoidable sun exposure. It is not designed for prolonging sun exposure. Therefore, it is incorrect to think that one can have sunbathing for prolonged periods of time after applying sunscreen lotion.

It is not true that if you take sunbathing intermittently, you will not get sunburn. The effect of UV radiation to our body is cumulative. The damage one can get will be from the accumulated sum of the individual exposures. Therefore, overexposure to UV radiation should be reduced as far as practicable. This could decrease the chance of skin cancer. In particular, children should be adequately protected from the sun.

Even if you do not feel hot under the sun, it does not mean that you will not get sunburn. Sunburn is caused by UV radiation which does not make you feel hot. The feeling of heat is caused by the sun's infrared radiation and not by UV radiation.

On 23 February 2009, the sky was covered by low level broken clouds, but the UV index reached a maximum of 10 at around 1 pm.

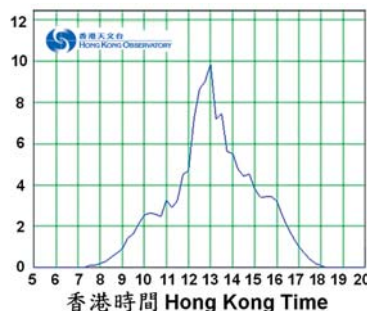




Figure 1. Stratocumulus undulatus to the east of the Hong Kong International Airport on 24 November 2003.

## Stratocumulus Undulatus

Following the seasonal march, the northeast monsoon becomes the predominant weather system in Hong Kong during autumn and winter. Temperatures near the surface drop; moisture contents decrease; and the weather becomes relatively stable with temperature inversion frequently observed in the lower or middle atmosphere. The most observable change is the quite limited cloud development along the vertical direction. Cumulus clouds prevailing in the lower atmosphere during summertime would be replaced with stratocumulus in autumn and winter.

Stratocumulus, being composed of tiny water droplets, can be grayish or whitish. It belongs to the low cloud group with cloud base height of 2000 meters or below. It is usually thin with a depth of a few hundred meters and the horizontal coverage often exceeds several kilometers. Among the varieties of stratocumulus, Stratocumulus Undulatus is most frequently observed and noticeable during autumn and winter. Quite often, it exhibits itself in the form of regularly arranged rolls or patches, with blue sky in between (figure 1). This distinctive pattern reflects that the formation of stratocumulus undulatus is closely related to the wavy motion in the air.

In fact, the atmosphere is full of waves with different origins. Some are generated from the boundary between two air layers with different densities and velocities; some are triggered by the upward movement of air forced by mountain ranges. These waves induce up and down motion. When sufficient moisture is present, cloud will form where the wave rises above the condensation level and dissipate where it falls below that level (figure 2). Eventually cloud strips and gaps are arranged in an alternating pattern. Stratocumulus undulatus carries limited moisture content and is usually not rain-bearing. On some occasions, particularly when cloud strips merge together and develop further, it may indicate that rainy weather is on the way.

In the middle atmosphere of about 3000 to 4500 meters, there exists another cloud type, altocumulus; that resembles stratocumulus undulatus in the lower atmosphere. They are similar in terms of pattern and formation mechanism. To casually distinguish a stratocumulus undulatus from an altocumulus undulatus, stretch you arm and point your hand towards the cloud strips that are well above the horizon. If the strip exceeds the width of the middle three fingers, then it is most likely the former.

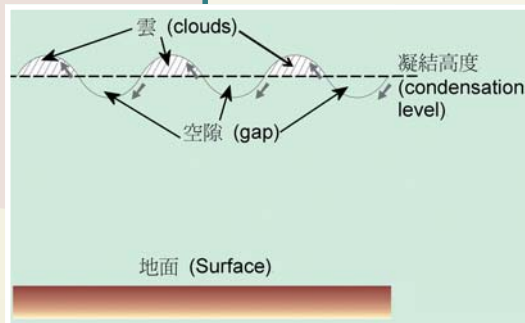


Figure 2. Schematic diagram showing the formation mechanism of stratocumulus undulatus

## Climate Change FAQs

CHAN Ho-sun

Through Qs and As, this new section explains the basic facts of climate change in layman terms, including its causes, impacts and what we can do to mitigate its effects.

**Q: What is IPCC?**

**A:** The Intergovernmental Panel on Climate Change (IPCC) was established in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP). It is an intergovernmental scientific body tasked to evaluate the risk of climate change caused by anthropogenic (man-made) activity. IPCC is the authority on climate change. The main activity of IPCC is to provide authoritative assessment reports at regular intervals. The Fourth Assessment Report of 2007 confirms that most of the observed increase in globally averaged temperatures since the mid-20th century is very likely due to the increase in anthropogenic greenhouse gas concentration.

**Q: What is Greenhouse Effect?**

**A:** The Earth surface is heated up by solar radiation and radiates infra-red radiation back to space. Greenhouse gases in the atmosphere, such as carbon dioxide and methane absorb part of the infra-red radiation emitted from the Earth and then return part of radiation to the Earth. This is the so-called greenhouse effect. If greenhouse gases were not present in the atmosphere, the average Earth surface temperature would be as low as -18 °C to -19 °C rather than the about 14.5 °C today. As such, greenhouse gases act like a blanket and prevent the Earth from losing excessive heat. Therefore, increase in the concentration of greenhouse gases in the atmosphere causes a rise in Earth temperature.

# El Niño's impact on Hong Kong

LEE Sai-ming

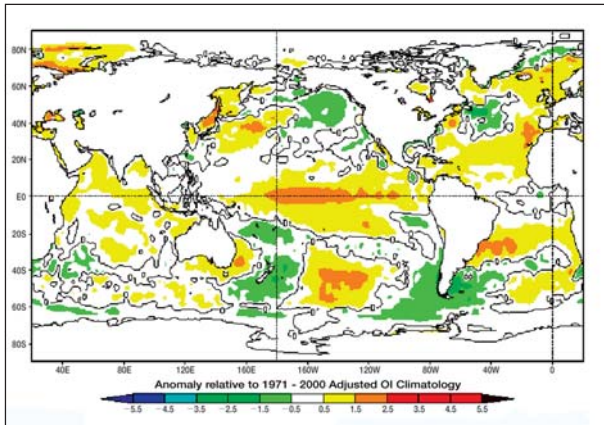


Fig. 1 Sea surface temperature anomalies of November 2009. Deep yellow regions represent anomalies of around 2 °C. (Source: National Oceanic and Atmospheric Administration, US)

Sea surface waters of the central to eastern equatorial Pacific Ocean started to exhibit warmer-than-normal conditions since the beginning of summer 2009. The warmer-than-normal conditions persisted and finally developed into an El Niño event in early November. The sea surface temperature anomalies of November 2009 are shown in Fig. 1. This El Niño is expected to last into the spring of 2010 but on a weakening trend.

El Niño is characterized by above-normal sea surface temperatures over the central to eastern equatorial Pacific Ocean. It usually peaks around Christmas, hence the name of the phenomenon (Spanish for "the Christ Child"). El Niño recurs every few years. The previous El Niño took place between August 2006 and January 2007. The atmospheric circulation worldwide will be affected whenever an El Niño appears.

Statistically, under the influence of El Niño, Hong Kong is likely to experience wetter springs (March-May). As shown in Fig. 2, the average spring rainfall of Hong Kong with an El Niño in place could be 300 mm more than that under normal condition during 1950-2008. Another impact of El Niño is on tropical cyclone activity. Data of 1961-2008 revealed that against the background of El Niño the "typhoon" season of Hong Kong did not start until June. However, under other conditions, tropical cyclones could come within 500 km of Hong Kong as early as April, posing a threat to the territory.

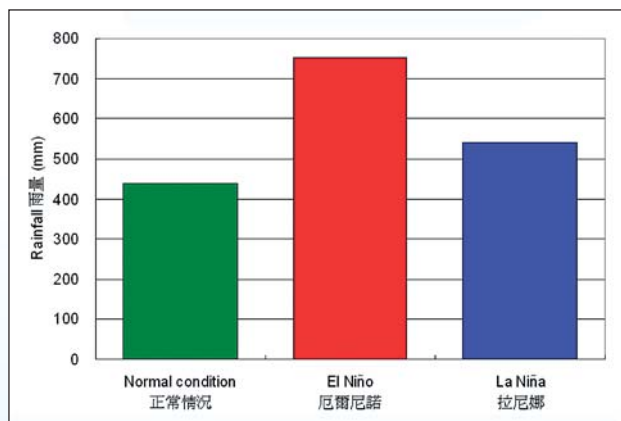


Fig. 2 Spring (March-May) rainfall of Hong Kong under El Niño, La Niña and normal conditions during 1950-2008. Normal condition refers to the situation with neither El Niño nor La Niña in place.

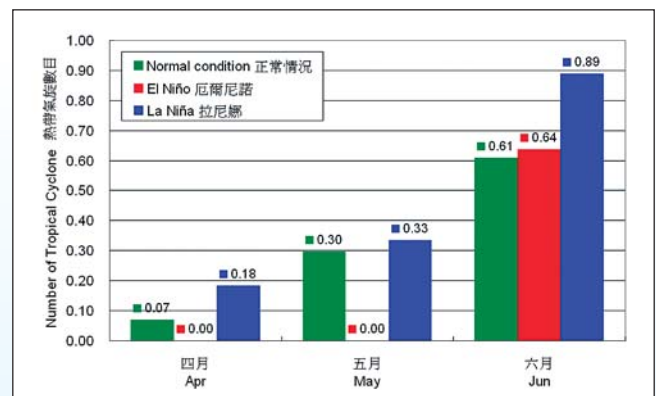
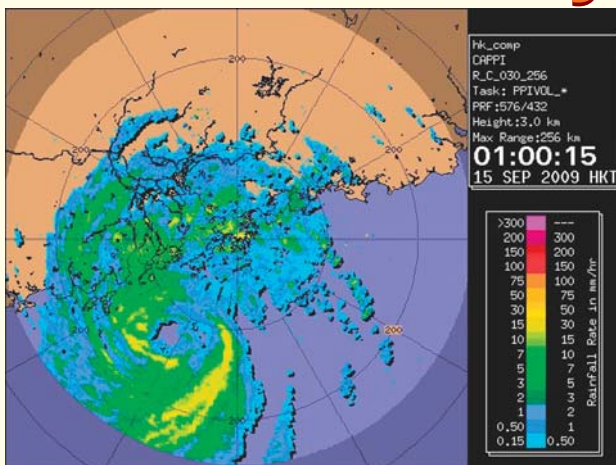


Fig. 3 Number of tropical cyclones coming within 500 km of Hong Kong under El Niño, La Niña and normal conditions during 1961-2008.

## The eye of Typhoon Koppu

LUI Wing-hong



Koppu formed over the western North Pacific on 12 September 2009. It entered the northern part of the South China Sea on the following day and continued to intensify, became a typhoon on the afternoon of 14 September with estimated maximum sustained wind speed reaching 140 kilometres per hour near its centre. Koppu passed about 130 km to the south-southwest of Hong Kong in the small hours of 15 September and its eye could be clearly seen on the radar.

Please visit the Observatory's YouTube webpage to review the radar animation sequence of Koppu. (<http://www.youtube.com/hkweather#p/c/E3C91C001D5D77E4/6/2JcASbrmtJo>)

# A very long and hot summer

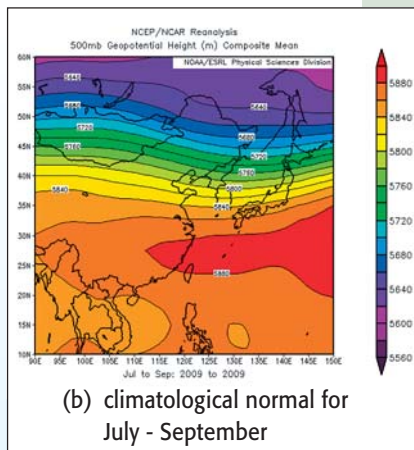
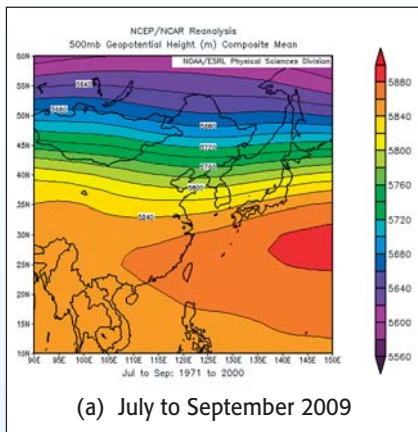


Figure 1: Schematic of the subtropical Pacific ridge (by NCEP re-analysis data, USA). The strong area of the ridge is shaded in red. Figure (a) shows the significantly stronger-than-normal and westward extension of the ridge in July-September 2009.

Hong Kong experienced a prolonged summer in 2009 with hot weather extending into late September. There were 30 Very Hot Days with daily maximum temperatures of 33 degrees or above, the highest number since 1963. The hot spell of 17 consecutive Very Hot Days (23 August - 8 September 2009) was only 2 days less than that in July 1978.

Apart from stronger-than-normal subtropical Pacific ridge which suppressed the development of deep convection and brought plenty of sunshine, the outer subsidence of a number of tropical cyclones near Taiwan and Luzon during the period was also a major reason for the large number of Very Hot Days. The subsidence associated with tropical cyclones Soudelor, Molave, Goni, Morakot and Ketsana altogether brought six Very Hot Days to Hong Kong.

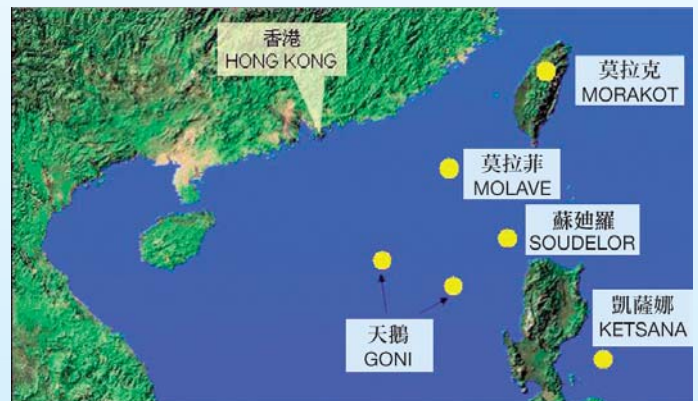
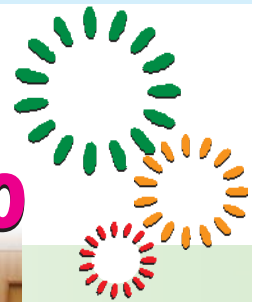


Figure 2: The yellow dots show positions of the five tropical cyclones when their outer subsidence caused very hot weather in Hong Kong. Amongst them, Goni triggered two consecutive Very Hot Days.



TAM Kwong-hung

## Observatory supporting Asian Games 2010



The Observatory's Heat Stress Measurement System at Guangzhou. Mr Tam Kwong-hung, Scientific Officer, was the 3rd from the right.



The Director (2nd left) sharing experience in 2008 Olympic Equestrian Events with GMB colleagues.

The Equestrian Events of the coming Asian Games will be held at Conghua, Guangzhou in November 2010. To ensure the best weather services for the events, the Guangdong Meteorological Bureau (GMB) has formed a task force entitled "Leading Group for Ensuring Weather Services for the Equestrian Events of the Asian Games" and sent a delegation to the Observatory in June 2009 to tap our experience in the Olympic Equestrian Events. With our technical support, GMB successfully installed the Observatory's in-house built "Heat Stress Measurement System" in August 2009. The system is now under test in Guangzhou and will be relocated to the event venue to collect on-site heat stress information.

# Giving Training in Faraway

LEE Kwok-lun

## South Africa



The author and a Mozambique participant demonstrating media interview skills.

Invited by the World Meteorological Organization (WMO), I took a lengthy flight to South Africa in early November 2009 to give lectures and training in a public weather services workshop. The workshop focused on the important role of public weather services in support of disaster prevention and mitigation, especially the communication and coordination between meteorological services and disaster management authorities. Participants included 29 meteorologists and officials of disaster management authorities from 17 countries in the southern part of Africa.

Participants were most interested in the graded warning systems used by the Observatory to trigger disaster management and contingency plans. Apart from precautionary actions associated with the warning signals for alerting the general public, caring reminders reaching out to the people at risk also made an impression on the participants. Participants indicated that skills in communicating with the media presented in the workshop would definitely help to improve public weather services in their countries. The workshop drew enthusiastic responses and facilitated the sharing of experiences between lecturers and participants.

WMO has organized this series of workshops in different parts of the world. Observatory personnel were often invited to lecture and share experience in the workshops, reflecting the international recognition of the Observatory's professional knowledge and skills in public weather services.



The author (front row, 3rd left) with participants of the workshop.

## Sixty Years of Voluntary Weather Observations

The first fleet of Hong Kong voluntary weather observing ships was established in 1949. Weather reports taken by observers on board have contributed to the well-being of the marine community for 60 years. Another group of voluntary observers measured daily rainfall at their premises for many years and provided valuable rainfall information. The Observatory honoured these observers on 26 November 2009 in the celebration of 60 years of voluntary weather observations in Hong Kong.

Weather observations taken on ships are vital to the preparation of marine weather forecasts and warnings, especially for tropical cyclones. These observations provide the ground truth for weather forecasters and are used in numerical weather prediction modelling. They are indispensable in spite of the recent advances in weather satellite and radar technology. The uneven rainfall distribution in Hong Kong was captured through the hard work of voluntary observers and the information was used in various hydrological studies including reservoir and drainage design.

More than 20 voluntary observers and representatives of participating organization attended the celebration. Two of them also shared their unforgettable moments with other guests and the media.



WONG Chi-fai

Captain L. C. Chan sharing his experience as a weather observer aboard voluntary observing ships.



▲ The Director (middle, front row) and guests cutting a birthday cake to celebrate the 60th anniversary of voluntary weather observations.

# Community Weather Information Network celebrates 2nd anniversary

**TSE Wai-ming**

On 21 November 2009, the Observatory, the Department of Applied Physics of the Hong Kong Polytechnic University and the Hong Kong Joint-school Meteorological Association celebrated the second anniversary of the "Community Weather Information Network" (Co-WIN) at the campus of Polytechnic University. It also marked the official launch of the activity "Collaborative Efforts for Better Appreciation of Weather in the Community". The past two years have seen substantial growth in Co-WIN as it begins to take root in the community. The number of members has doubled from 35 when it was first established to 70. Apart from local primary and secondary schools, Co-WIN members now include an elderly centre as well as a school from Macao. As Co-WIN would continue to grow both locally and overseas, the network's former name of "Hong Kong Co-WIN" is replaced by "Co-WIN" to properly reflect its international perspective.

The activity "Collaborative Efforts for Better Appreciation of Weather in the Community" launched by Co-WIN this year aims to encourage members to directly participate in observing and analysing the weather conditions in their communities so that they can appreciate the changes in the climate and their environment.

At the ceremony, teachers and students reported their results on urban heat island studies while some elders also shared their experience in using the network's information.

Please visit the Co-WIN website at (<http://weather.ap.polyu.edu.hk/index.php>) for more.



Elders sharing their experience in studying weather in their community.



Students reporting their results on urban heat island studies.



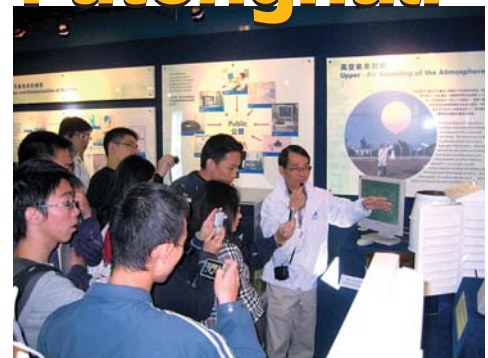
Guests and member representatives celebrating the 2nd anniversary of Co-WIN.

## Friends of Observatory gave tours in Putonghua

**TAI Sai-choi**



Friend of Observatory volunteers and visitors.



A docent, Mr Poon Lai-shun, explaining the operation of an automatic weather station.

Every Saturday, "Friends of Observatory" volunteers give guided tours to the public to introduce the rich history of the Observatory, its advanced instruments, the Forecasting Office and the mini-forest within the Headquarters. Not only are the tours a healthy family activity, they are also good opportunities to promote our weather services and meteorological knowledge to the visitors.

In a gathering in July 2009, some volunteers mentioned that many immigrants, students and visitors from the Mainland might not be able to understand the weather in Hong Kong and the Observatory's services due to language barrier. They therefore suggested organizing tours in Putonghua. The suggestion was immediately supported by others.

After several months' preparation, the first tour in Putonghua was held on 22 November 2009. Around 30 students of the Hong Kong Polytechnic University from mainland China joined the tour. Four carefully selected volunteers conducted the tour in fluent Putonghua. In the survey taken after the tour, most of the visitors felt 'satisfied' or 'very satisfied' with the tour. The University organizer also requested a second tour.

The next Putonghua tour would be held in March 2010 in collaboration with the Hong Kong Tourism Board for around 60 ladies from Guangdong, as one of the activities to commemorate the 100th anniversary of Women's Day. Dear volunteers, time to polish your Putonghua and get ready to serve our fellow compatriots!



# Mountaineering Safety Promotion Day

Editorial Board

To enhance public awareness of mountaineering safety, the Civil Aid Service joined hands with 17 government departments and non-governmental organizations in organizing the "Mountaineering Safety Promotion Day" on 14-15 November 2009. As one of the co-organizers, the Observatory set up a booth to introduce the weather affecting mountaineering and hiking, and gave a talk on Weather and Outdoor Activities. More than ten "Friends of Observatory" volunteers helped man the booth and enjoyed a happy weekend with the visitors.



The Director (5th left) officiating at the opening ceremony of the Mountaineering Safety Promotion Day

A young visitor at the Observatory's booth learning about weather warnings through playing a game

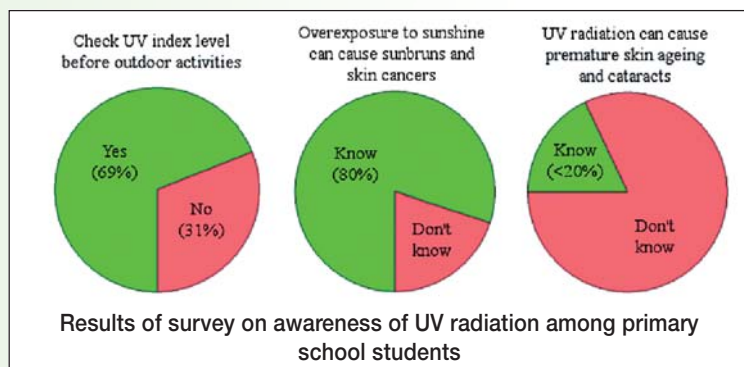


## Primary schoolchildren's awareness of UV radiation

LEUNG Man-ye

The Observatory and the Department of Health jointly conducted a survey, targeted at primary school students, in June 2009 on the awareness of UV radiation and its protective measures. Over 3,000 Primary 5 and 6 students in Hong Kong responded to the questionnaire.

The result indicated that some 70% of the students would check the level of the UV index regularly or before outdoor activities. About 60% of the students would take protective measures like using an



umbrella, wearing a hat or using sunscreen lotions. About 80% of the students knew that overexposure to sunshine might cause painful sunburns and even skin cancers. The survey also revealed that girls' awareness of UV index and protective measures were significantly higher than boys. However, less than 20% of students knew that UV radiation could cause premature ageing of the skin and cataracts. Strengthening health education on these aspects is necessary.

## Renowned Climate Scientist

KOK Mang-hin

### Professor Lau Ngar-cheung visited the Observatory



Assistant Director, Mrs Lam Kwong Si-lin, Hilda (right), presenting a souvenir to Professor Lau.

One of the Observatory's Scientific Advisors, Professor Lau Ngar-cheung, visited the Observatory on 5 January and delivered a lecture on the impacts of El Niño on the Asian monsoon. Colleagues also took the opportunity to discuss with Professor Lau the future development of climate related research. He also gave a public talk "Climate Change in the China Region" at the Hong Kong Science Museum on 9 January 2010.

Professor Lau is a renowned climate scientist. He is the lead scientist of the Climate Diagnostics Project at the Geophysical Fluid Dynamics Laboratory (GFDL) of the U.S. National Oceanic and Atmospheric Administration (NOAA) and a Professor at Princeton University.



Professor Lau delivering his talk to the public in the Hong Kong Science Museum

# VISITS, COURSES, TALKS, SEMINARS

## Editorial Board



**22 August** - More than 50 youngsters from Tuen Mun, led by District Councillors Mr Chan Wang Sang and Ms Lung Shui Hing, visited the Observatory.



**24 and 25 August** - Delegates from Shenzhen Air Traffic Management Station, visited the Light Detection and Ranging (LIDAR) system at the Hong Kong International Airport.



**4 September** - Mr Lau Ka-keung (left), Director of Drainage Services Department led a delegation to the Observatory and visited the Forecasting Office.



**15 September** - Professor Pan Zi-qiang, an international expert on radiation, visited the Observatory and delivered a lecture on China's future development of nuclear energy. Many colleagues from other departments and organizations also attended.



**17 September** - Consuls of the Australian, British, Canadian and U.S. Consulate-General in Hong Kong visited the Observatory.



**27 September** - Mr Sham Fu-cheung (right), an experienced aviation forecaster, received an appreciation certificate from Chief Pilot John Li of the Hong Kong Aviation Club Foundation, after a day of work at the "Flying without Boundary - Aviation Day 2009".



**5 October** - Dr Gavin Schmidt, Climate Scientist of NASA Goddard Institute for Space Studies, visited the Observatory and shared his experience in communicating climate change science to the media and different sectors of the community.



**10 October** - Scientific Officer Dr Lee Tsz-cheung (right) delivered a public lecture "Climate is changing, act now!" at the Hong Kong Wetland Park.





**12 to 16 October** - Ms Lai Un Man and Ms Mak Choi San (2nd and 3rd right) from the Macao Meteorological and Geophysical Bureau attended on-the-job training at the Observatory.



**28 to 30 October** - Seven aviation meteorologists from the Russian Federation visited the Observatory. This is the first time that delegates from the Russian meteorological service visited us. They showed particular interest in the Observatory's windshear alerting service.



**5 November** - The UK Master of The Guild of Air Pilots and Air Navigators (GAPAN), Rear Admiral Colin Cooke-Priest (2nd left) and their members visited the Observatory for the first time. GAPAN has been actively participating in the Observatory's liaison group on aviation weather services.



**8 November** - The Observatory participated in the Government Flying Service (GFS) Open Day. Dr Li Ping-wah (right) received a souvenir from Captain Michael Chan, Controller of GFS.



**5 November** - Students from the Department of Earth Sciences of the Hong Kong University visited the Observatory. The photo was taken in front of the radome of the Observatory's meteorological satellite receiving antenna.



**21 November** - Mr Lee Kin-wai, Chief Experimental Officer, delivered a public lecture on the relationship between hillfire and weather.



**28 November and 12 December** - A course on weather observation was held by the Observatory to meet the demands of local weather enthusiasts. Basic weather observation techniques were covered.

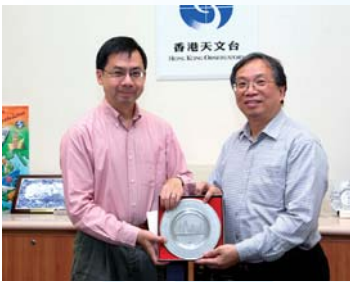


**30 November to 4 December** - The course "Basic Operation of Weather Radar and Use of Radar Products" was held by the Observatory for the World Meteorological Organization Voluntary Cooperation Programme. Ten meteorologists from mainland China, Fiji, Guyana, Honduras, Indonesia, Laos, Macedonia, Maldives, Myanmar and Niger attended.

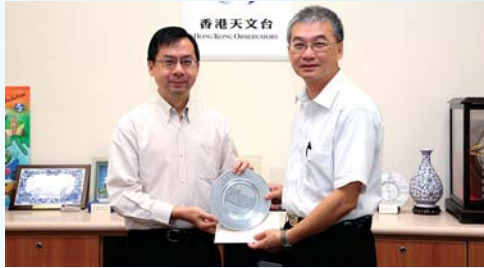


# Retirements

Assistant Director Dr Wong Ming-chung, Senior Scientific Officer Dr Tam Cheuk-ming and Artisan Mr Law Tak-yin started their pre-retirement leave in September and October. The Director bade them farewell and presented them souvenirs to commend their contributions to the Observatory.



Dr Wong Ming-chung



Dr Tam Cheuk-ming



Mr Law Tak-yin

# Staff Promotion

## Editorial Board

Mrs Lam Kwong Si-lin (left) was promoted to Assistant Director on 13 October 2009. Before promotion, Mrs Lam was a Senior Scientific Officer responsible for corporate Communication and tropical cyclone studies. After promotion, Mrs Lam heads the Development, Research and Administrative Branch.



Mr Ng Moon-chiu was promoted to Chief Experimental Officer on 23 October. He continues to work in geophysics, time and port meteorological services.

# Best TV Weather Programme Presenters



**3rd Quarter,  
2009**

*Mr Chan Sai-tick*



**4th Quarter,  
2009**

*Dr Cheng Cho-ming*

## Obituary:

Mr Chan Chee-yuen David, Supplies Assistant

Mr Chan Chee-yuen David, Supplies Assistant, passed away on 23 October 2009 at the age of 53. Mr Chan served in the civil service for 34 years and started his service in the Observatory since 2005. He always worked with enthusiasm and was helpful to colleagues. His image, both as a dedicated officer and a good friend, will always retain in the hearts of colleagues in the Observatory.

David, you will be dearly missed and fondly remembered by all of us!

# Colleagues Receiving Praise



Colleagues who received words of thanks and commendation from the public or organizations during September-December 2009:

Dr LEE boon-ying (Director)

Mr LAU Ying-hong (Scientific Assistant)

Mr LEUNG Wing-mo (Assistant Director)

Mr CHOW Pui-keung (Friends of the Observatory volunteer)

Mr TAI Sai-choi (Scientific Officer)

Mr POON Lai-shun (Friends of the Observatory volunteer)



## Elites shared managerial experience with Observatory staff

CHIU Hung-yu



The Director (right) presenting a souvenir to Dr Chung Wai-hung, Thomas

Their lectures were enlightening and informative, covering key areas in emergency preparedness strategies and crisis management as well as the evolution of managerialism and the problems arising from it. The lectures provided much food for thought on emergency preparedness and management of the Observatory.

In the past few months, two professionals shared their management insights with Observatory staff in the monthly management forum: (1) Dr Chung Wai-hung Thomas, Head of Emergency Response and Information Branch in the Centre for Health Protection (CHP) of the Department of Health, and (2) Dr Lee Wai-choi Eddy, a former colleague of the Observatory, a renowned writer and proponent of popular science.



Dr Lee Wai-choi, Eddy speaking in the Observatory management forum

## Friends and Wine

Hong Kong developed rapidly into an international wine centre in recent years. More and more Hong Kong people liked to enjoy wine. In an autumn evening, colleagues of the Observatory and their family came together at the red wine workshop organized by the Staff Association. They learned about the basics of wine, tasted different kinds of red wine and exchanged opinions. The drinks and chats brought joy to everyone after a day of busy work.

LEE Lap-shun



# Observatory awarded Corporate Social Responsibility Advocate Mark

Editorial Board



The Observatory was awarded a Corporate Social Responsibility (CSR) Advocate Mark on 5 November 2009. The award was presented by the Hong Kong Quality Assurance Agency (HKQAA) to commend the Observatory's maturity in practicing social responsibilities.

Based on the ISO/DIS 26000 Guidance for Social Responsibility, the HKQAA launched the CSR Index last year to provide a quantitative metric to measure an organizations maturity in practicing its social responsibilities on a scale of 1 to 5. In this first year, a total of 25 renowned organizations from the public and private sectors participated in the assessment. The Observatory was given a score of 4.8, against the average score of 4.53.

Observatory representative receiving the CSR Advocate Mark

## Celebration Party

LEI Chi-lap



The Director cutting a roast-pig with colleagues



It's the end of the year, and harvest time again. A party was held on 4 November 2009 to celebrate the Observatory's winning of eight awards in Civil Service Outstanding Service Award Scheme 2009. In the party, the Director commended colleagues for their creativity and endeavour, and invited them to talk about their triumph.



Assistant Director Dr Wong Ming-chung (6th right, 2nd row) and the winners

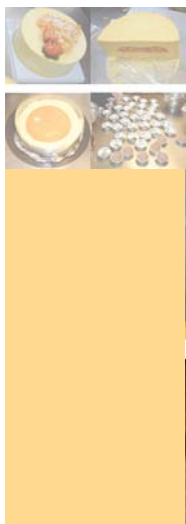
## The Director's Table Tennis Cup

CHAN Man-ye

Table tennis is a popular sport in Hong Kong. It is also one of the favorite games of Observatory's colleagues. "The Director's Table Tennis Cup" organized by the Hong Kong Observatory Staff Association attracts enthusiastic participation every year and this year is no exception. Twenty-four individuals/pairs joined the tournament held on 17-25 September 2009. After five days of fierce competition, Wong Sing Ki and Brenda Tong won the men's and women's singles title. Ling Wing Sum & Ip Chi Wing was the winning team in the men's doubles, while Betty Tsui & Philip Chan triumphed in the mixed doubles. Having four champions in their team, the Development, Research and Administration Branch vanquished last year's Champion, Forecasting and Warning Services Branch, and regained the Champion's Cup this year.

## Cake making course for colleagues

YEUNG Pui-ye



It is a good idea to make and share some cold and tasty food during hot weather. Last summer, the Observatory Staff Association held a cake making course again. Twelve colleagues participated and learned how to make cold mango cheese cakes, hot onion ham crisps and chocolate mousse. After a messy but fruitful lesson, we brought home our successful products and a full tummy. To retain the happy and tasty memories, we also bought home some cooking tools and ingredients for making cakes.

## Mailing Address

# Observatory Hill Race

LI Wai-ching

The "Observatory Hill Race" held on 9 November 2009 had three distinct differences from the last one held in June 2008:

1. The air was much fresher and cooler;
2. It was already sunset when the race started. Lights were switched on, and several camp lamps were lit up in dark corners;
3. Photo-taking in nighttime required a higher degree of expertise and more sophisticated cameras.

Walkathon instead of running race was held for women this year. The races were so competitive that they almost crossed the finish point at the same time.

Thanks to the two volunteer photographers, who vividly captured the strength of the runners, the beautiful night scenes of the Observatory and the joy of all participants.

