Speech by Mr SHUN Chi-ming, Director of the Hong Kong Observatory

23 March 2017

Welcome all of you to join the Observatory's annual press briefing today. Before reporting on the latest developments in the Hong Kong Observatory, let me first introduce my Assistant Directors. They are:

1. Miss LAU Sum-yee, responsible for aviation weather services,
2. Mr LAI Sau-tak, responsible for climate and geophysical services,
3. Mr TSUI Kit-chi, responsible for radiation monitoring and instruments, and
4. Mr LEE Lap-shun, Acting Assistant Director responsible for public weather services,

You may notice that our conference hall has been decorated for the upcoming Open Day event this weekend (24 and 25 March). Adopting this year's World Meteorological Day theme - "Weather Ready, Climate Smart", the new exhibits will show how the Observatory applies the latest technology to provide various services including the microclimate station which can be installed on smart lamp post and drone, the "MyFlightWx" mobile application which can be used in the cockpit, and the MyObservatory app which supports all Windows 10 devices. These new hardware and software demonstrate the key elements of "Weather Ready, Climate Smart", including new innovative technologies such as Internet of Things (IOT), mobile internet, and cloud computing for further enhancing weather services. The Observatory will continue to develop "Weather Ready, Climate Smart", Big Data and artificial intelligence technologies to provide better services and to enhance public safety.

To promote the theme of this year's World Meteorological Day (WMD)- "Weather ready, climate smart", I announce the official launch of the in-house developed microclimate station at the Observatory Headquarters, which is a demonstration how to apply light-weight and power-saving instruments which can be easily integrated into the environment to collect weather data within a small area for analysis of urban microclimate and weather changes. It will also support big data analytics and smart city planning.

As this year marks the 135th anniversary of the Observatory, the exhibitions will also introduce the history of the Observatory. The opportunity is also taken to review and learn from historical weather events. In particular, many people may still remember Super Typhoon Hato which brought damages to the Pearl River Delta Region due to storm surges. Should Hato come closer by 20 or 30 km, the situation would be a recurrence of Wanda in 1962.

Another feature of this year's Open Day is that the Observatory collaborates with the School of Design of the Hong Kong Polytechnic University for the first time to engage their students in designing the exhibition and souvenirs. Members of public are welcome to view the exhibits at the Observatory over the weekend to appreciate the excellent work of youngsters.

Apart from "smart weather" and "microclimate", let me also talk about the global climate. The World Meteorological Organization ranked 2017 as one of the three warmest years on record. The annual average Antarctic and Arctic sea ice extents in 2017 were respectively the lowest and the second lowest since satellite record began. The average temperature of the Arctic region this February has probably broken the highest record for the month. The most extreme was that Arctic temperatures once rose to 20 ^{o}C above the long-term average. Arctic warming will lead to wavier

westerly flow aloft and easier southward incursion of cold Arctic air, and hence the development of "warm Arctic, cold continents" phenomenon. This situation is worrying – on the one hand, extreme weather will become more frequent, and at the same time, weather forecasting will become more challenging.

Locally, the weather in Hong Kong was warmer than usual in 2017 with an annual mean temperature of 23.9 degrees, which is on par with 2002 as the third warmest year since records began in 1884. The daily maximum temperature of 36.6 degrees recorded on August 22 at the Observatory was an all-time high. A record-breaking temperature of 39.0 degrees was even recorded in the New Territories. There were 41 Hot Nights and 29 Very Hot Days in Hong Kong in 2017, ranking the highest and the sixth highest on record respectively. I would like to emphasize that the trend of climate change is so prominent that it should be a concern for everyone. In this regard, we also cooperate with the CUHK Jockey Club Museum of Climate Change for the first time to present interesting exhibits lent by the Museum for our Open Day this year.

Regarding the annual weather outlook of Hong Kong for 2018, after considering a number of factors including the status of La Niña, climate model predictions and other objective guidance, it is expected that five to eight tropical cyclones will come within 500 kilometres of Hong Kong, which is normal to above normal. The tropical cyclone season will probably start in or before June. Under the effect of global warming, the annual mean temperature in 2018 is expected to be above normal, with a medium chance of reaching the warmest top 10 on record. The annual rainfall is expected to be normal to below normal, but Hong Kong would still be affected by heavy rain. Members of the public are reminded to be prepared for the coming rain and typhoon seasons. The Observatory will continue to monitor sea surface temperatures of the central and eastern equatorial Pacific for the assessment of La Niña. According to the latest information, even if a La Niña event is established this spring, it is expected to be weak and short-lived.

After talking about climate and annual outlook, let's talk about our upcoming new services and products.

As the rainy season is approaching, the Observatory's website and "MyObservatory" app will be enhanced to provide the public with more regional information on heavy rain and thunderstorm. A new webpage will be added on the website, with a map indicating the affected regions mentioned in the Announcement on Localised Heavy Rain, Special Announcement on Flooding in the northern New Territories, and Thunderstorm Warning, as well as lightning locations. The recorded regional rainfall will also be displayed. The "MyObservatory" app will be enhanced with personalised notification service to enable users to get hold of the latest rainfall situation of the district where they are located, especially the information on localised heavy rain. We also plan to enhance public's understanding on the rainstorm warnings and local heavy rain information through various channels including the HKO blog and Cool Met Stuff videos.

Furthermore, the Observatory plans to launch or enhance the following weather services this year, including: launch of enhanced "Met on Map" web portal with additional weather observations from over 1,500 airports around the world, and adding 24-hour regional temperature change in "Hong Kong Regional Weather" webpage today; installation of new lightning sensors in Hong Kong and the Pearl River Delta during the first half of the year to enhance lightning location detection capability; launch of a new enhanced version of the Ultra-Violet (UV) information webpage around mid-year to facilitate public access of UV information. Plan is also in hand to launch new lightning location information over China and northern part of South China Sea and high resolution satellite cloud imageries for western Asia based on China's new Feng Yun 4A satellite in the second half of 2018. The Observatory is also developing automatic weather forecasts for cities and airports

around the world to facilitate the public and tourists in planning their overseas trips. The Observatory plans to jointly promote this new service with the tourism sector and relevant stakeholders in the coming year.

On regional collaboration, the Observatory will collaborate with the Guangdong Meteorological Bureau and the Macao Meteorological and Geophysical Bureau to enhance the existing Greater Pearl River Delta Weather website, which is developed and operated by the Observatory, with more comprehensive and detailed weather information for the Guangdong-Hong Kong-Macao Bay Area.

On public engagement, the "Cloud-sourcing: In Touch with Weather from Land, Sea and Air" photo and video collection campaign jointly organised by the Observatory and the marine and aviation sectors received over 2,000 photos and more than 100 videos. Selected entries will be displayed at the Passenger Terminal Building of the Hong Kong International Airport in the second half of the year.

In view of the rapid development of social media platforms, the Observatory keeps up with time and launches its official Facebook page (fb.me/hk.observatory) and Instagram platform (hk.observatory) today. Through text, photos, video, computer graphics animation, the HKO Facebook page serves to enhance public awareness and understanding on weather and climate topics in a lively format. Warm reminders will also be included especially during high impact or extreme weather (i.e. when red / black rainstorm signals or tropical cyclone signals are in force) to remind the public to pay attention to safety. However, the public and media should note that the Observatory will not issue post on Facebook and Instagram every time when a weather warning is issued. Members of the public should continue to refer to the Observatory's webpage and MyObservatory app for real-time weather information.

The Observatory's Instagram platform, on the other hand, will focus on sharing of photos and videos with a view to introducing to the public, especially young people, on interesting or special weather and optical phenomena, facilities and staff stories of the Observatory. We also plan to use the Instagram platform to enhance collection of weather photos and videos from the public.

There will also be updates to the Observatory's website and MyObservatory app to include the Facebook content and link. The MyObservatory app will also be updated to include functions to facilitate sharing of weather graphic. We will also develop new weather graphic and animation to share information on significant weather events in Hong Kong and around the world. Moreover, with the launch of the social media platforms, we will make use of the Instagram platform to organize a weather timelapse competition, with details to be announced later.

The Observatory launches its official Facebook page and Instagram platform to enhance public communication and develop popular science education. I would like to encourage the public to "like" and "follow" the Observatory's Facebook page and Instagram platform, and to "share" the relevant information. As I mentioned earlier, members of the public may have a chance to obtain the new souvenirs designed by students of the School of Design of the Hong Kong Polytechnic University, including the DIY typhoon signal model and the mini "Cloud Collector", by participating in games to be announced on the Facebook page.

I now ask our MC Ms Sandy Song to take us through the Facebook and Instagram launch ceremony.

香港天文台
HONG KONG OBSERVATORY

World Meteorological Day
23 March, 2018

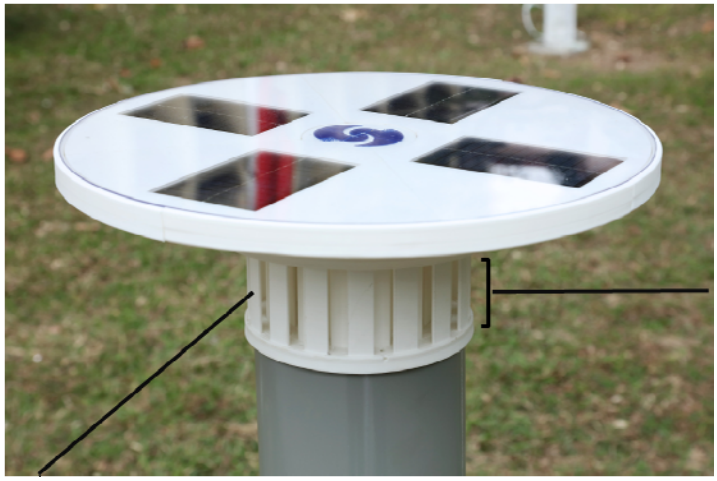
WEATHER READY
智慧氣象
CLIMATE SMART

Figure 1

微氣候監測站
Microclimate Station

短柱型
Bollard-type

太陽能板
Solar panels on its top



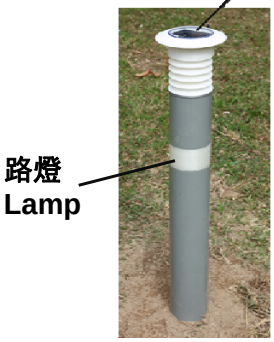
利用3D打印設計的溫度罩
Temperature shield fabricated by 3D printing

量度氣溫、濕度、氣壓的儀器
Sensors to measure temperature, humidity and pressure

Figure 2

微氣候監測站
Microclimate Station

短柱型
Bollard-type



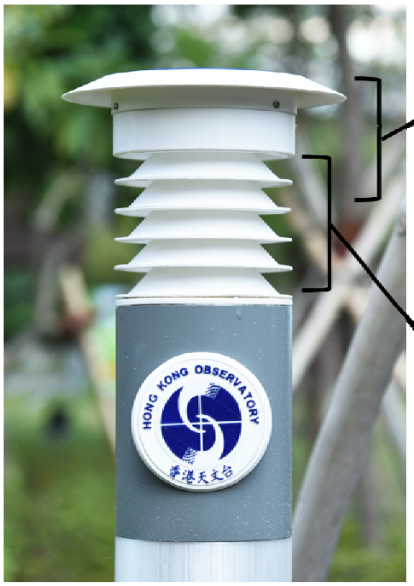


Figure 3

微氣候監測站
Microclimate Station

高柱型
Lamppost-type

Figure 4

微氣候監測站
Microclimate Station

無人機
Drone

安裝在無人機上的微氣候監測儀器
Microclimate sensors installed on a drone

Figure 5

天文台自行研發的電子飛行包氣象程式
Electronic flight bag weather app developed by HKO

Figure 6

「我的天文台」支援 Windows 10 裝置
“MyObservatory”supports Windows 10 devices

Figure 7

天文台微氣候監測站
HKO’s Microclimate Station

Figure 8

天文台135周年
135th Anniversary of the Observatory

Figure 9

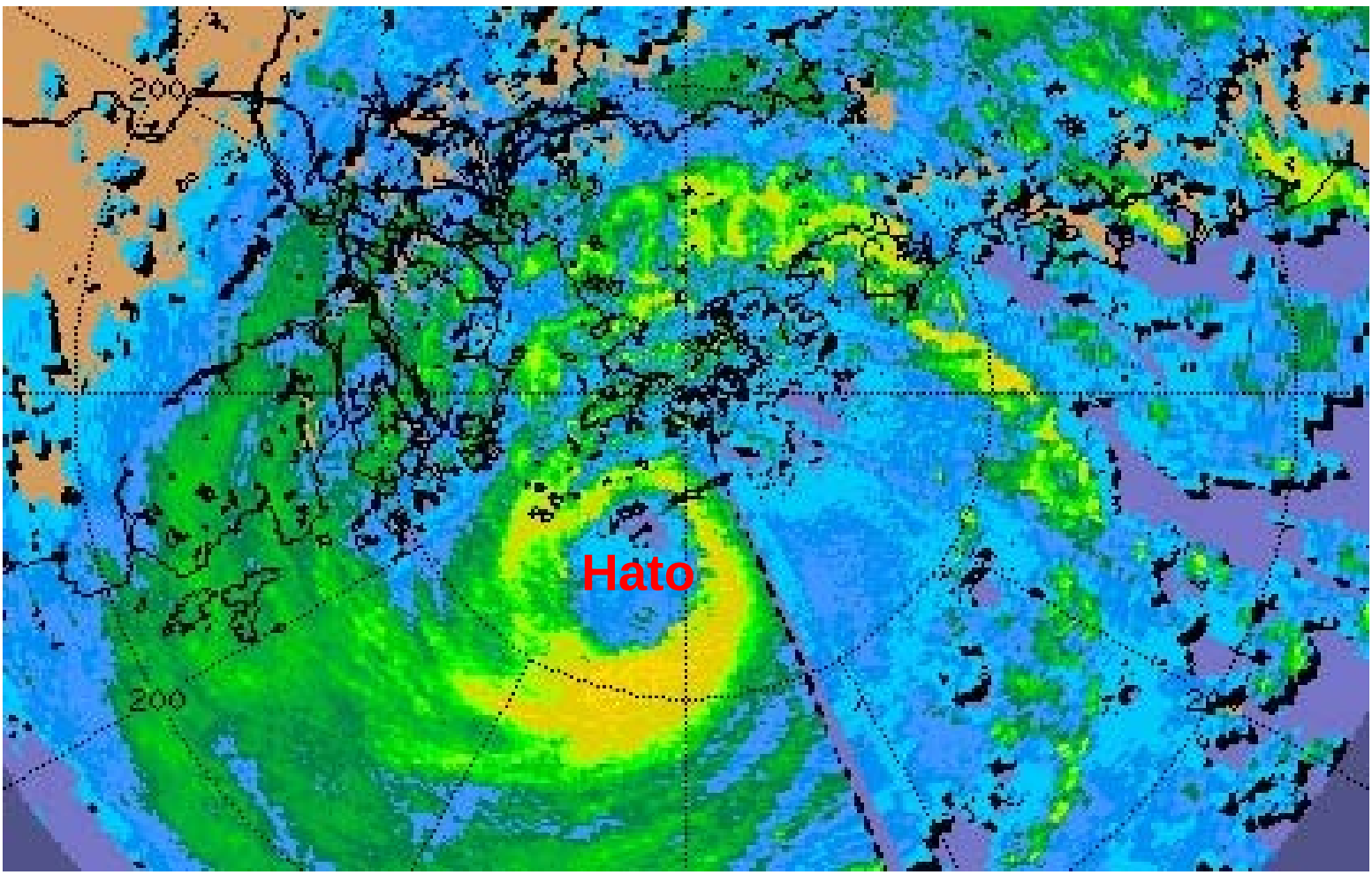


Figure 10

與香港理工大學設計學院合作
Collaborated with the Hong Kong Polytechnic University

Figure 11

全球迄今為止的溫度
Year-to-Date Global Temperature

for 2018 and the other nine warmset years on record

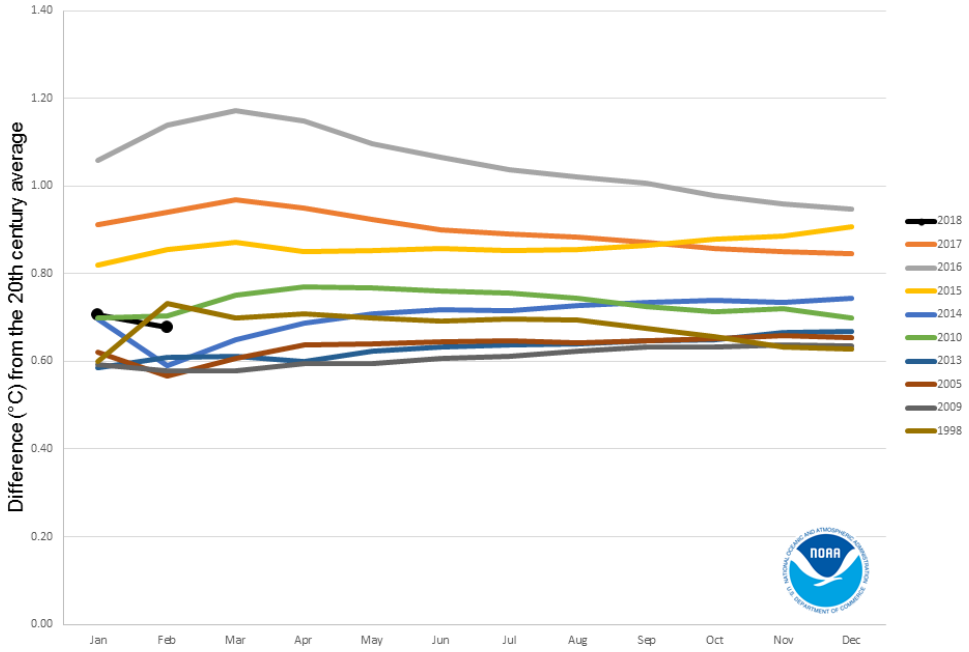
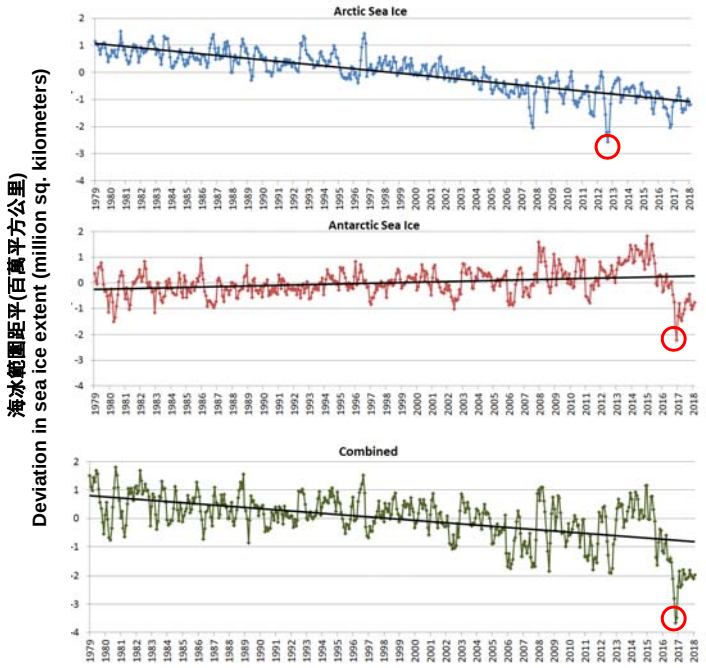


Figure 12

兩極海冰不斷融化
Polar sea ice melting



北極
Arctic

南極
Antarctic

北極 + 南極
Arctic +
Antarctic

Figure 13

北極氣溫曾較長期平均高約20度
Arctic temperature was once about 20 degrees higher than its long-term average

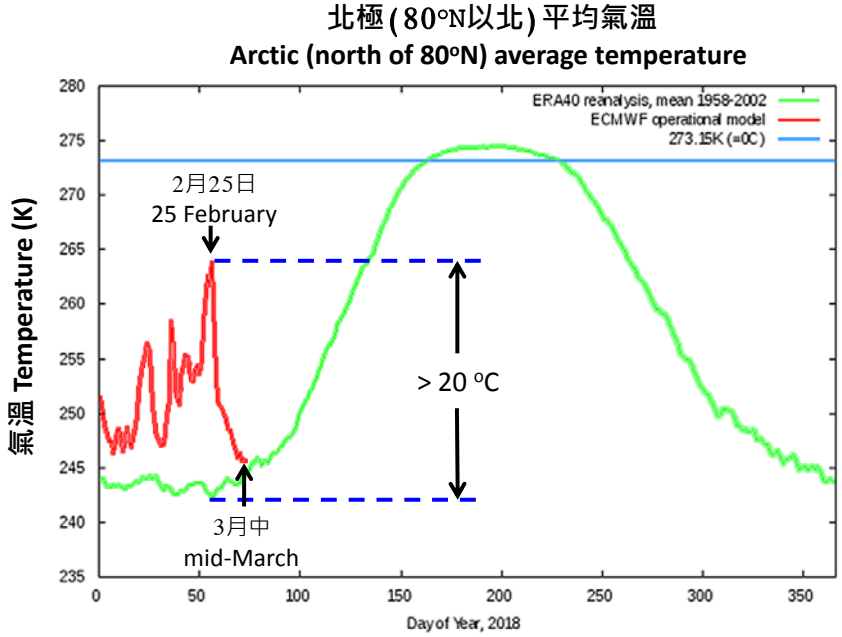


Figure 14

溫暖的北極 寒冷的大陸
Warm Arctic Cold Continents

2018年2月表面溫度距平
Surface temperature anomaly in Feb 2018

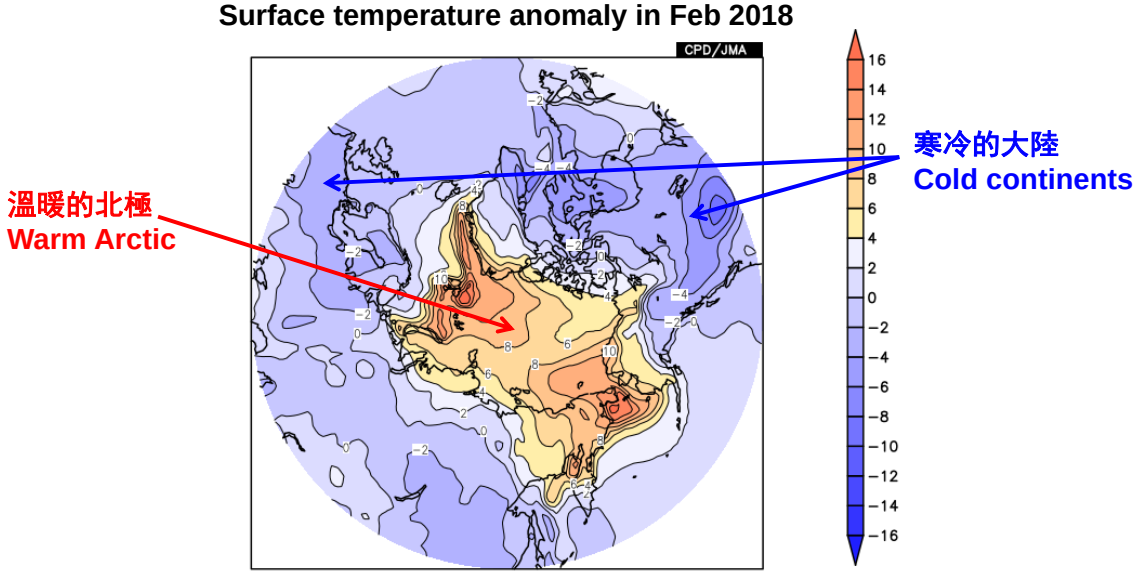


Figure 15

香港天文台全年平均氣溫頭10位
10 highest annual mean temp at HKO
(1885-2017)

排位 Ranking	年份 Year	平均氣溫（℃） Mean Temperature（℃）
1	2015	24.2
2	1998	24.0
3	2017	23.9
3	2002	23.9
5	1999	23.8
5	1966	23.8
7	2007	23.7
8	2016	23.6
8	2003	23.6
8	2001	23.6
8	1994	23.6

Figure 16

香港天文台錄得的全年平均氣溫
Annual mean temperatures recorded at HKO
(1885-2017)

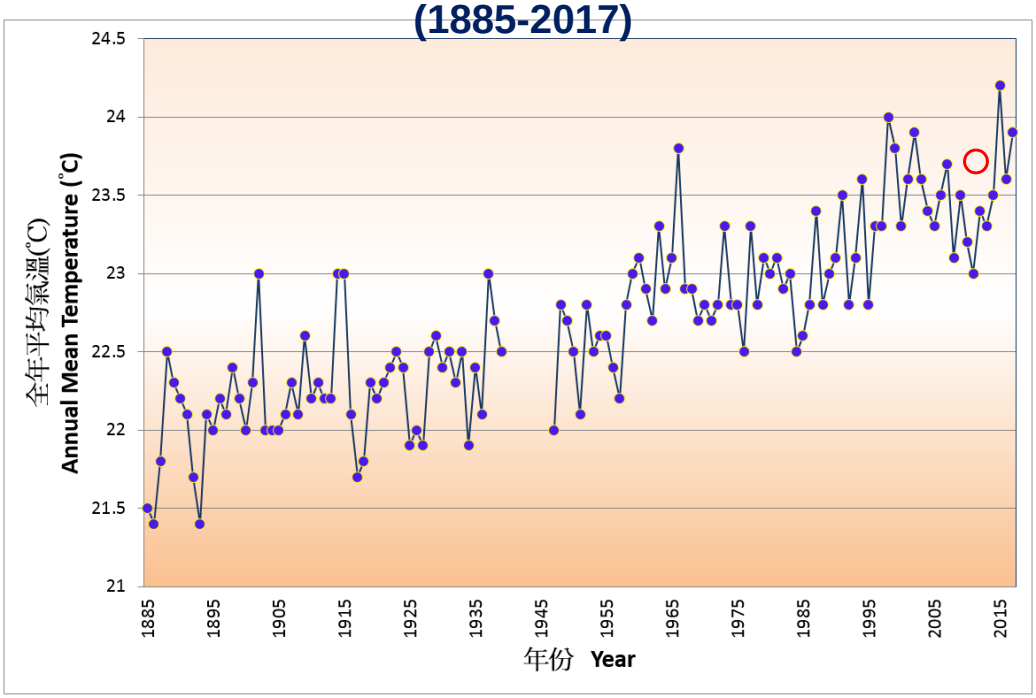


Figure 17

香港天文台日最高氣溫頭10位
10 highest daily max temp at HKO
(1884-2017)

排位 Ranking	日期 Date	最高氣溫（℃） Maximum Temperature（℃）
1	2017年8月22日	36.6
2	2015年8月8日	36.3
3	1900年8月19日	36.1
3	1900年8月18日	36.1
5	1968年7月25日	35.7
6	2016年7月9日	35.6
6	1963年6月1日	35.6
8	2016年6月25日	35.5
8	1963年5月31日	35.5
8	1962年8月31日	35.5

Figure 18

香港天文台熱夜數目
Number of hot nights in Hong Kong
(1884-2017)

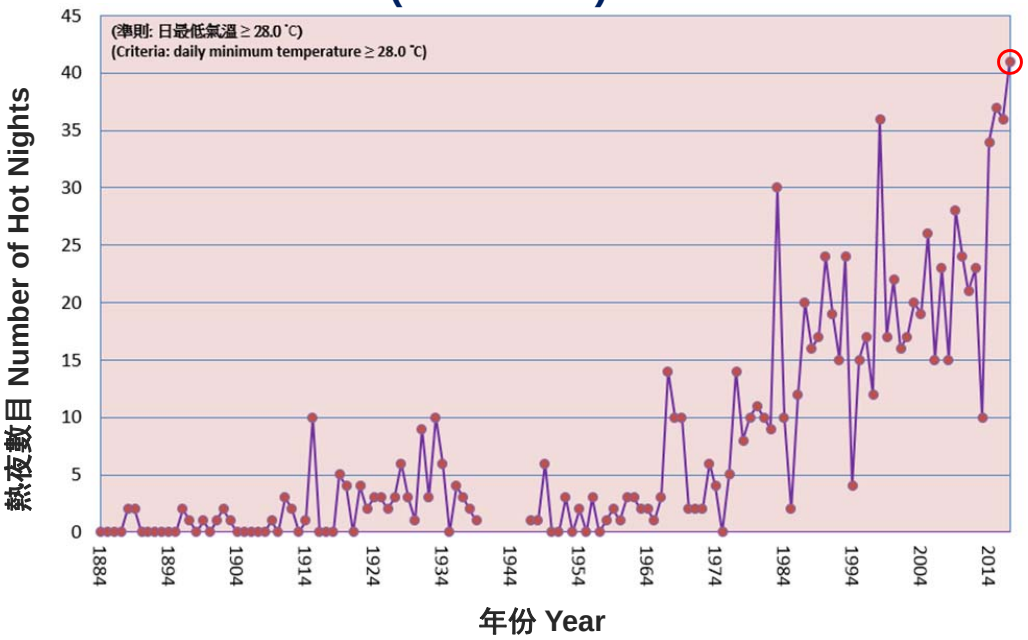


Figure 19

氣候變化博物館展品
Exhibits of Museum of Climate Change

Figure 20

2018年全年展望
Annual outlook for 2018

進入香港500公里範圍內的熱帶氣旋數目 Number of tropical cyclones entering 500 km of Hong Kong	正常至偏多 （5 至 8 個） Normal to above normal (5 to 8)
風季開始 Onset of tropical cyclone season	6月或之前 June or before

Figure 21

2018年全年展望
Annual outlook for 2018

全年總雨量 Annual rainfall	正常至偏少 （介乎 1900 至 2500 毫米） Normal to below normal (between 1900 and 2500 mm)
全年平均溫度 Annual mean temperature	偏高 進入頭十名的機會為中等 Above normal Medium chance of reaching top 10

Figure 22

大雨及雷暴區域資訊網頁
Regional heavy rain and thunderstorm information webpage

新界北部水浸特別報告範圍
Coverage of Special Announcement on Flooding in the northern New Territories

局部地區大雨報告
Announcement on Localised Heavy Rain

Figure 23

大雨及雷暴區域資訊網頁
Regional information on heavy rain and thunderstorm webpage

「雷暴警告」影響範圍
Affected regions in Thunderstorm Warning

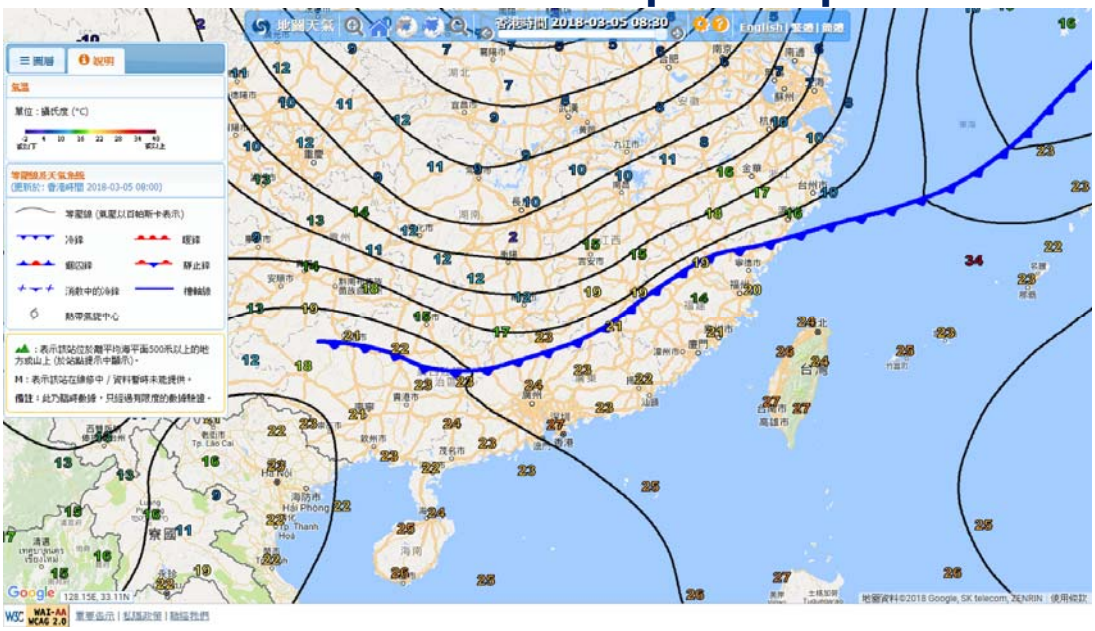
閃電位置
Lightning location

Figure 24

定點大雨資訊
Location-specific Heavy Rain Alert

Figure 25

加強「地圖天氣」服務
Enhanced "Met on Map" web portal



新增全球各地**超過1,500個**機場觀測資訊
New weather observations from **over 1,500** airports around the globe

Figure 26

分區天氣網頁提供過去二十四小時氣溫差別
24-hour temperature difference in Regional Weather webpage

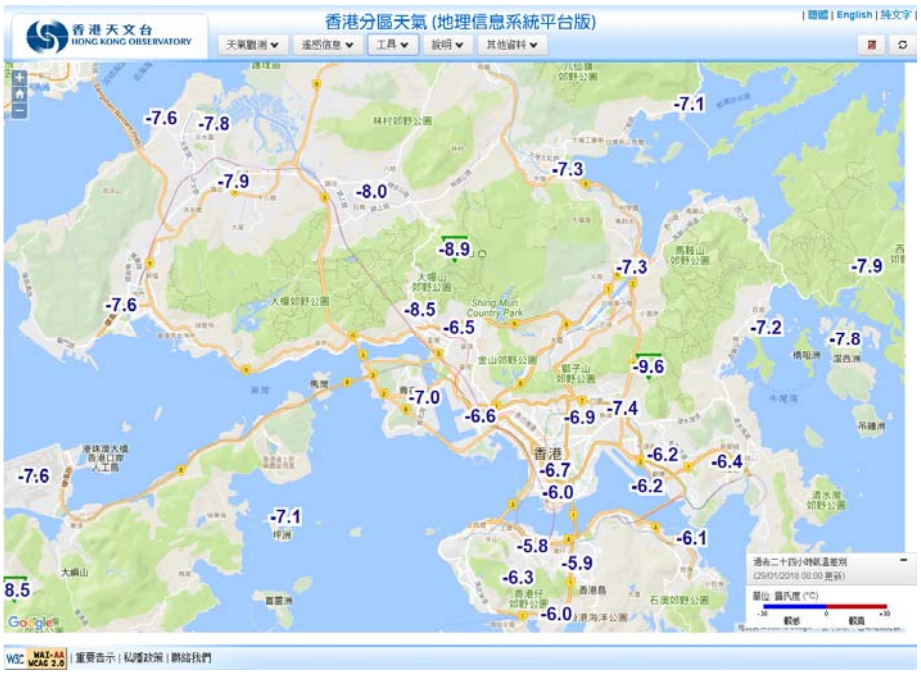
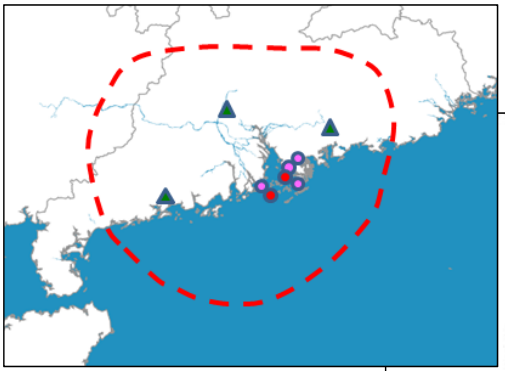


Figure 27

新建閃電探測站
New lightning sensor stations



Coverage of Cloud-to-Ground Lightning Detection

（Red dot: New sensor station.
Pink dot: Station with sensor replaced.）

	Cloud-to-Ground Lightning	Cloud-to-Cloud Lightning
New System	Location accuracy about 2 times higher （～500 m ➔ ～200 m)	Detection efficiency about 2 times higher

Figure 28

改良版「紫外線資訊」網頁
Enhanced version of the UV information webpage

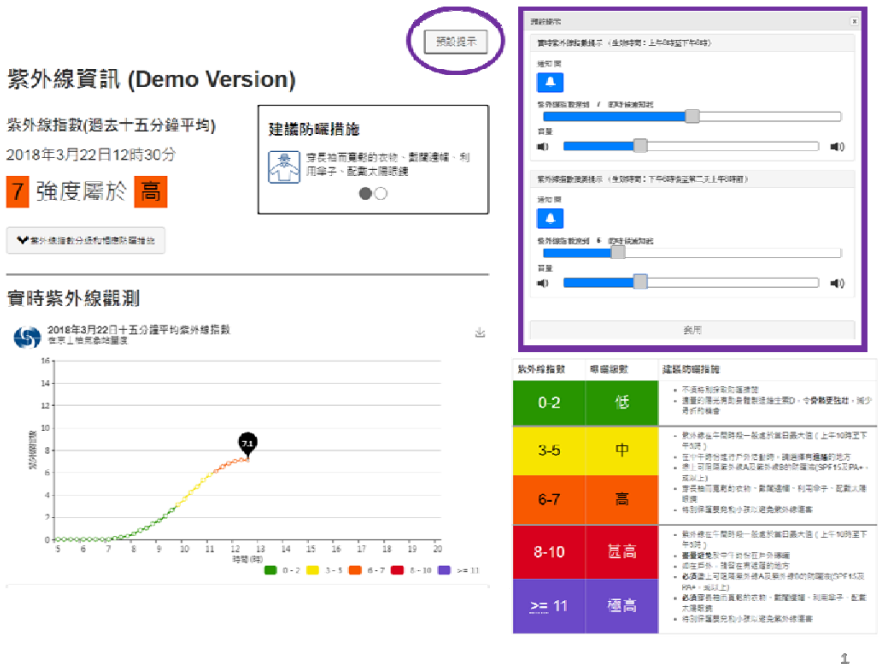
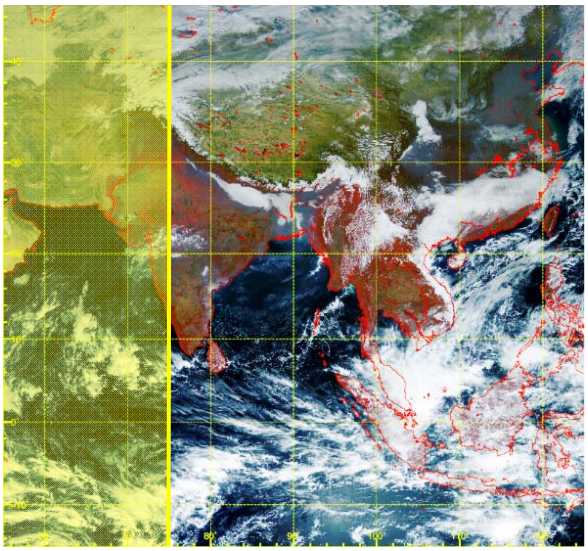


Figure 29

新增個人化自訂提醒功能
New personalised reminder

Figure 30

高解像風雲4A衛星圖像
High-resolution FY4A satellite image



（風雲4A衛星於2018年1月14日香港時間下午2時所拍攝到的真彩圖像）
(The true colour image captured by FY4A satellite at 2:00 p.m.(Hong Kong Time) on 14 January 2018)

Figure 31

風雲4A衛星閃電圖像
FY4A satellite lightning image

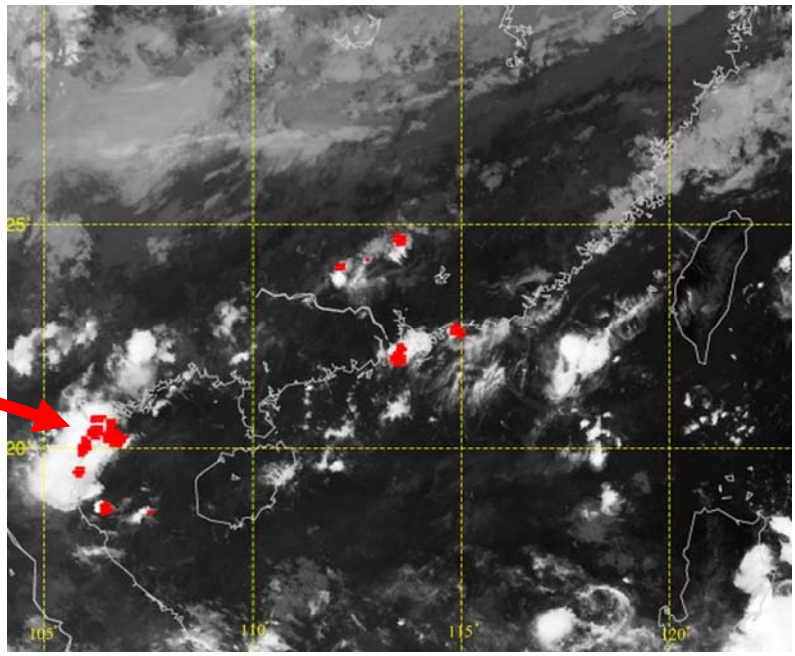


Figure 32

世界各大城市及機場自動天氣預測
Automatic weather forecasts for cities and airports around the world

Figure 33

粵港澳大灣區天氣資訊
Weather information for the Bay Area

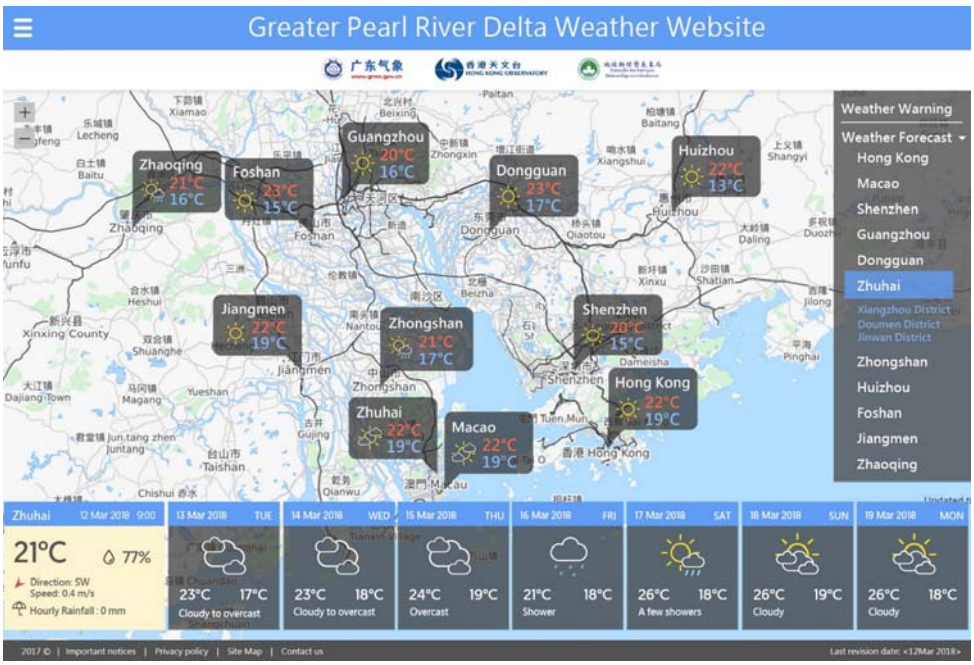


Figure 34

Figure 35

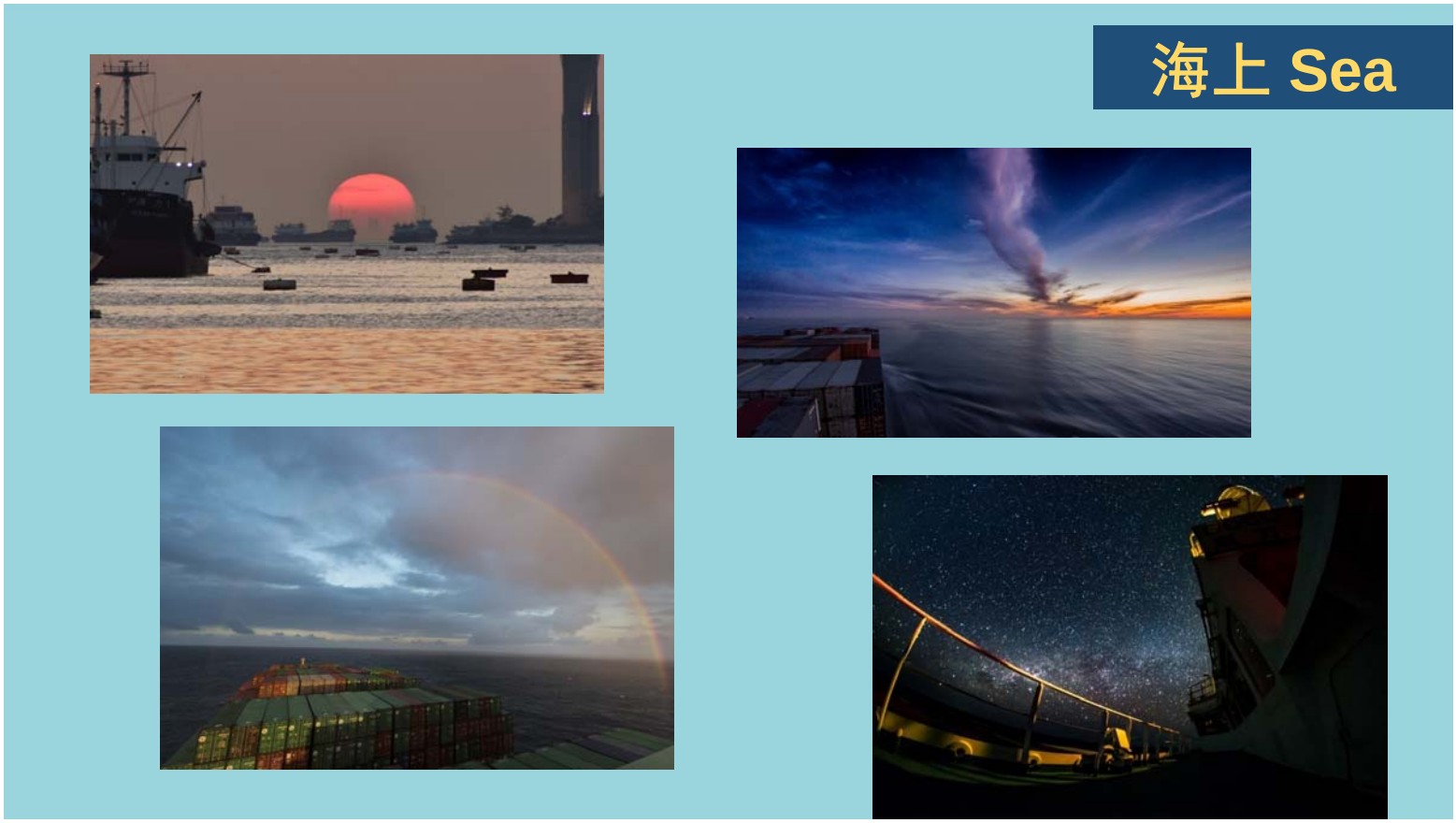


Figure 36

Figure 37

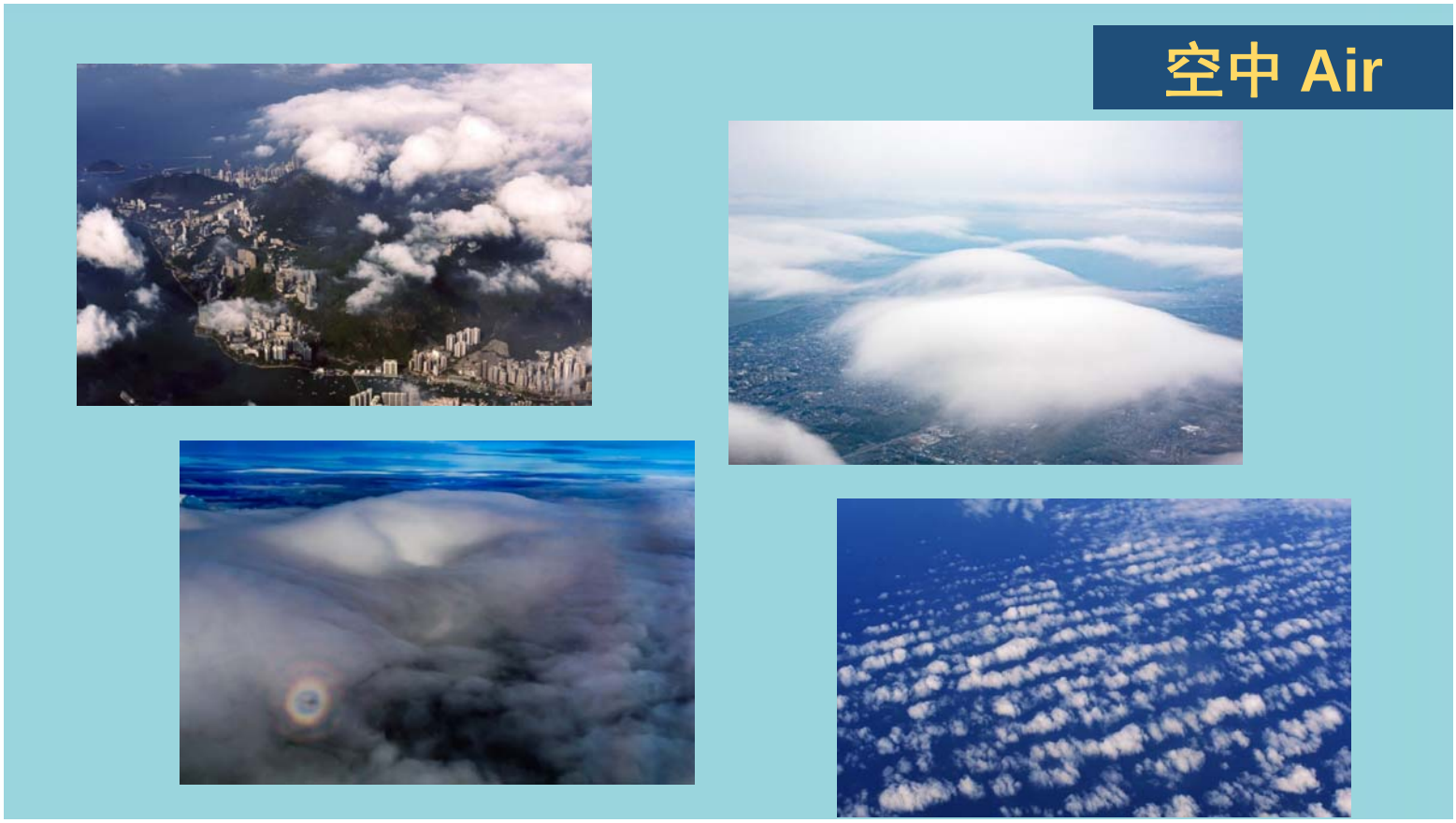


Figure 38

推出社交媒體平台 Facebook及Instagram專頁
Launch social media platforms on Facebook and Instagram

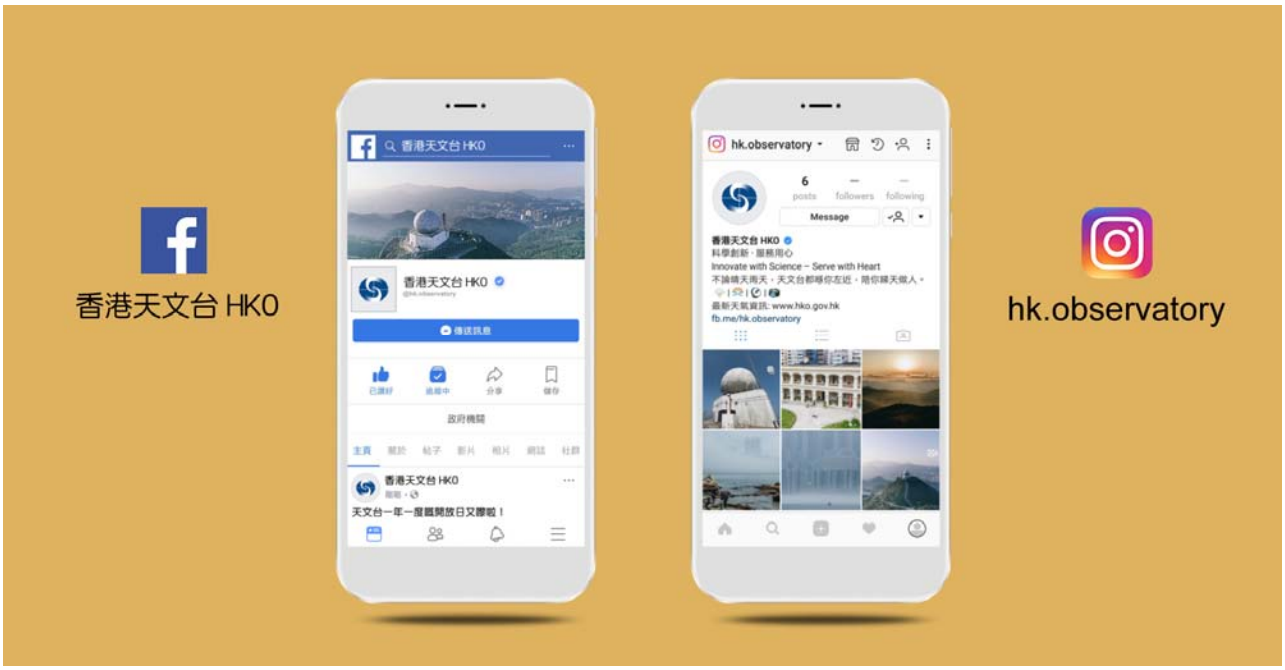
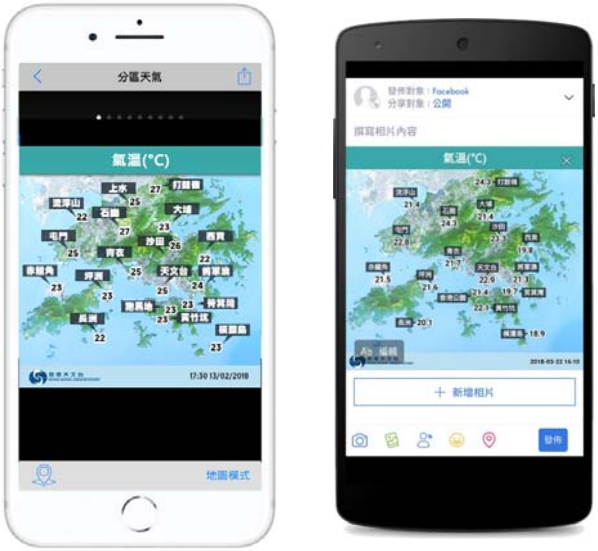


Figure 39

天文台網站及「我的天文台」支援 Facebook專頁
HKO website and “MyObservatory” support Facebook page

Figure 40

「我的天文台」分享天氣圖像
“MyObservatory”sharing weather graphics



分享分區氣溫圖

分享熱帶氣旋路徑圖

Figure 41

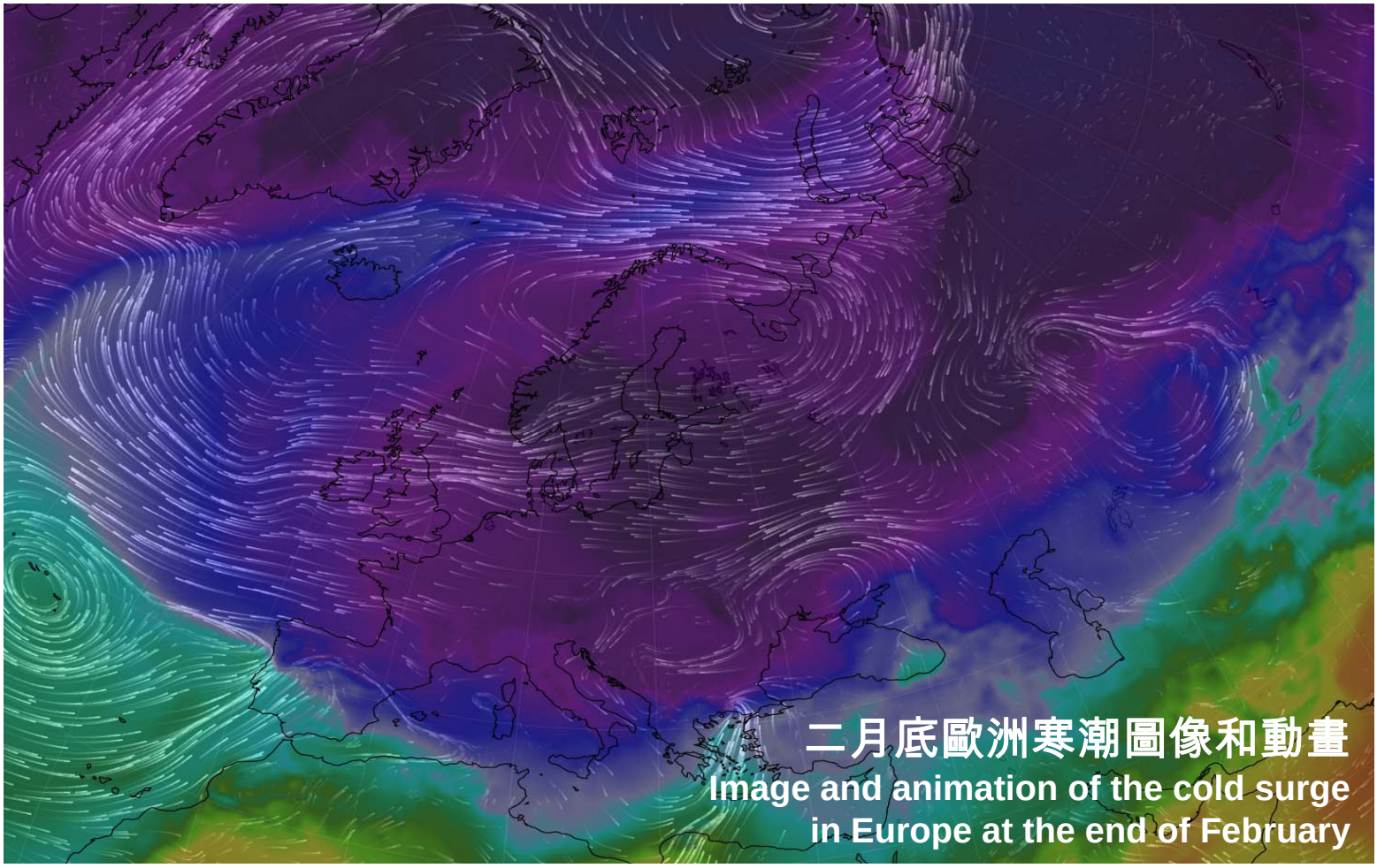


Figure 42

留意天文台Facebook專頁問答遊戲
Stay tuned for Facebook page quiz game

Figure 43