Speech by Mr SHUN Chi-ming, Director of the Hong Kong Observatory
23 March 2017

It is a pleasure to meet all of you again in the 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. Dr CHENG Cho-ming, responsible for public weather services,
2. Miss LAU Sum-yee, responsible for aviation weather services,
3. Mr LAI Sau-tak, responsible for climate and geophysical services, and
4. Mr TSUI Kit-chi, responsible for radiation monitoring and instruments.

You may notice that our conference hall has been decorated for the upcoming Open Day event this weekend (25 and 26 March) under the theme of the World Meteorological Day, i.e. "Understanding Clouds", which aims to encourage the general public to appreciate and understand the fascinating and ever-changing clouds. The Observatory has been operating the "Community Weather Observing Scheme" since 2011 to encourage the public to take and share first-hand weather observations and photos to promote knowledge on weather and climate.

In view of the Observatory's vast experience in engaging the community to contribute weather observations and photos, the World Meteorological Organization (WMO) entrusted the Observatory in 2014 to develop a web-based version of the "International Cloud Atlas" (ICA). From past records, the ICA, which serves as the authoritative standard reference for the meteorological community around the world, was first published by the WMO in 1896 with only 28 pictures. The printed version was last updated in 1987. Over the years, with the advance in information technology, the classification of new cloud types, as well as the popularity of weather photography, WMO decides to revamp the ICA and engage the Observatory to set up a web-based platform to collect photos of clouds and atmospheric phenomena from all over the world for access by the public and meteorological community. Apart from including a number of new cloud types, the new ICA is much enriched in contents, adding over 600 attractive photos and time-lapse videos. The Observatory has also contributed photos taken by people in Hong Kong collected via social media, as well as photos taken by the Observatory's staff. Nearly 60 photos are included in the new ICA. I would also like to highlight that among these new ICA photos, 4 of them pertain to new cloud types. This is indeed exceptional and demonstrates that Hong Kong plays an important role in the international arena again. Let's hear what the Secretary-General of the WMO, Professor Petteri Taalas has to say about the new ICA.

The new ICA will be officially launched later today by WMO at their press conference in Geneva,

Switzerland. You are welcome to visit the website and promulgate its use. (https://www.wmocloudatlas.org)

At the same time, to promote knowledge on cloud observation to kids and students, the Observatory will launch an electronic version of cloud book named "Cloud Appreciation by Dr Tin (HKO's mascot)" in the second quarter this year. Apart from introducing various cloud types, the book also contains interesting interactive games.

From "Understanding Clouds", we also get to know more about the weather. The past winter of 2016/17 was one of the warmest since record began in 1884 with the mean temperature from December 2016 to February 2017 reaching 18.4 degrees, on par with the winter in 1998/99. Looking back in 2016, Hong Kong was warmer with more rain than usual. While Hong Kong was colder than normal in early 2016, June-August was the 3rd hottest summer since records began in 1884. The annual mean temperature of 23.6 degrees was 0.3 degree higher than normal, the seventh warmest on record. With a record-breaking autumn rainfall of 1078.8 millimetres, the annual total rainfall was 3026.8 millimetres, about 26 per cent above normal and the ninth highest on record. Tropical cyclone warning signals were issued nine times in 2016, including the No. 8 Gale or Storm Signals during the passage of Typhoon Nida in August and Super Typhoon Haima in October.

As for the annual outlook for 2017, we notice that in the past couple of months, the sea surface temperature over the equatorial eastern and central Pacific Ocean has continued to increase. A number of climate models around the world are predicting this temperature rise will continue in this spring and summer, and thus the chance of El Nino developing is increasing. Under this trend and considering several other objective factors, we expect in this year normal to below-normal rainfall, and four to seven tropical cyclones coming within 500 km of Hong Kong which is near normal. The chance for the annual mean temperature of Hong Kong in 2017 to reach the warmest top ten records is about 70%. Although the annual rainfall could be normal to below-normal, there is still chance of heavy rain. I would like to remind members of the public and the communities to prepare for the coming rain and typhoon seasons as early as possible.

Now I will introduce the new services and products to be launched in this year.

Many people have experienced the highly changeable weather in recent years. The trend of more extreme weather due to climate change is obvious. In view of the public interest and the increasing online speculation of weather forecast more than one week in advance, the Observatory plans to launch in the next

couple of months a trial version of "Extended outlook", which provides probability forecast of daily minimum temperature for the next two weeks. Similar probability forecast of daily maximum temperature, wind speed and pressure will be launched by phases in the future. We also plan to launch a trial probability forecast of tropical cyclone track during this typhoon season.

In the rainy season approaching, the Observatory will launch a new "Location specific lightning nowcast" on a trial basis tomorrow (24 March) to facilitate monitoring of thunderstorm threat and planning of outdoor activities. This service will first be made available on the HKO website, and will be incorporated into the MyObservatory mobile app later this year. In addition, the computer hardware and software supporting the lightning location information system have been upgraded and are being optimized. After completing optimization in the next few months, the capability of the new system in lightning detection will be further enhanced.

For weather monitoring, the Observatory has enhanced its Internet satellite imagery services on 21 March 2017 with the additional high resolution satellite imageries covering the coast of Guangdong. The new imageries enable viewers to have a better appreciation of the weather conditions over Hong Kong and its vicinity. The Satellite Imagery of Interest webpage is also revamped and enhanced with animation feature, which would improve the display of interesting weather phenomena on the imageries. In addition, the Observatory will launch real-time weather photos taken at the Clear Water Bay around mid-year this year to facilitate the monitoring of weather (e.g. rain and sea fog) over the coastal waters in the southeastern part of Hong Kong.

To strengthen the monitoring and warning of tropical cyclones, the Observatory in collaboration with Government Flying Service has introduced a new meteorological dropsonde system to collect 3-dimensional meteorological data over the South China Sea when conditions allowed.

With the popularity of social media and its increasing importance in public communications, the Observatory plans to officially launch a Facebook page by early 2018 to enhance weather services and public communication. In addition, the World Weather Information Service website operated by the Observatory on behalf of the WMO will be enhanced around mid-year this year to include current weather of world cities and revamped with adaptive webpage design for better display on mobile devices. The associated "MyWorldWeather" mobile app will be updated as well. In addition to current weather, new interface will improve the user experience in the search and use of global city forecast.

To further improve the online service, the Observatory will make a number of enhancements to the mobile website including enriched satellite images, incorporate “Post of the Day” and enhance accessibility for the elderly later this year.

The year, 2017, marks the 100th anniversary of the introduction of numbered typhoon signals in Hong Kong. The Observatory will organise a series of publicity events to promote public understanding of typhoon-related hazards and awareness of disaster prevention, including:

a) support Hongkong Post in the launch of a set of special stamps and first day covers entitled “100 years of numbered typhoon signal” on 13 June;
b) partner with the Radio Television Hong Kong (RTHK) to jointly launch a collection campaign on historical typhoon information (including photos, videos, audio recordings, articles, etc.)
c) production of a special series on typhoon for the “Cool Met Stuff” public education videos; and
d) arrange guided tour to Cheung Chau meteorological station, the last signal station for hoisting typhoon signals.

Back to climate change issues, WMO ranked 2016 as the hottest year globally on record, about 1.1 degrees above pre-industrial levels. The annual temperature record has now been broken for three consecutive years. Average global sea surface temperature in 2016 was also record high. The average sea ice extents in the Arctic and the Antarctic were the lowest on satellite record in January and February 2017.

It is clear for all to see that climate change is already happening. Scientists also forecast that the chance of extreme weather events, including stronger typhoons, more intense rainstorms, heat waves, etc., will likely increase due to global warming. To promote public understanding on climate change and its impact, and enhance preparedness to combat challenges of future weather and climate, the Observatory is collaborating with RTHK to produce a radio programme on climate change under the theme of “Climate Watcher”. For the details, I’ll ask our MC Ms Sandy Song to take us through the following presentation.

Figure 1

Figure 2

Figure 3

Figure 4

《國際雲圖》：新雲種

Figure 5

《國際雲圖》：新附加特徵

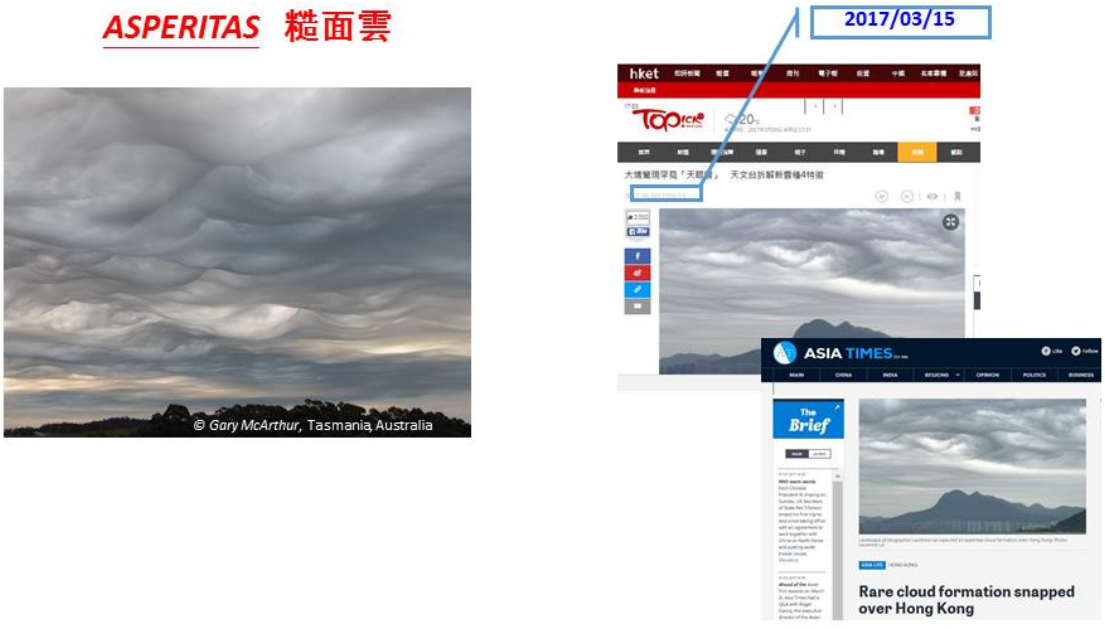


Figure 6

《國際雲圖》：新附加特徵

CAVUM 雲洞

雨幡洞

Figure 7

《國際雲圖》：新附加特徵

FLUCTUS 浪形雲

波浪雲

Figure 8

Figure 9

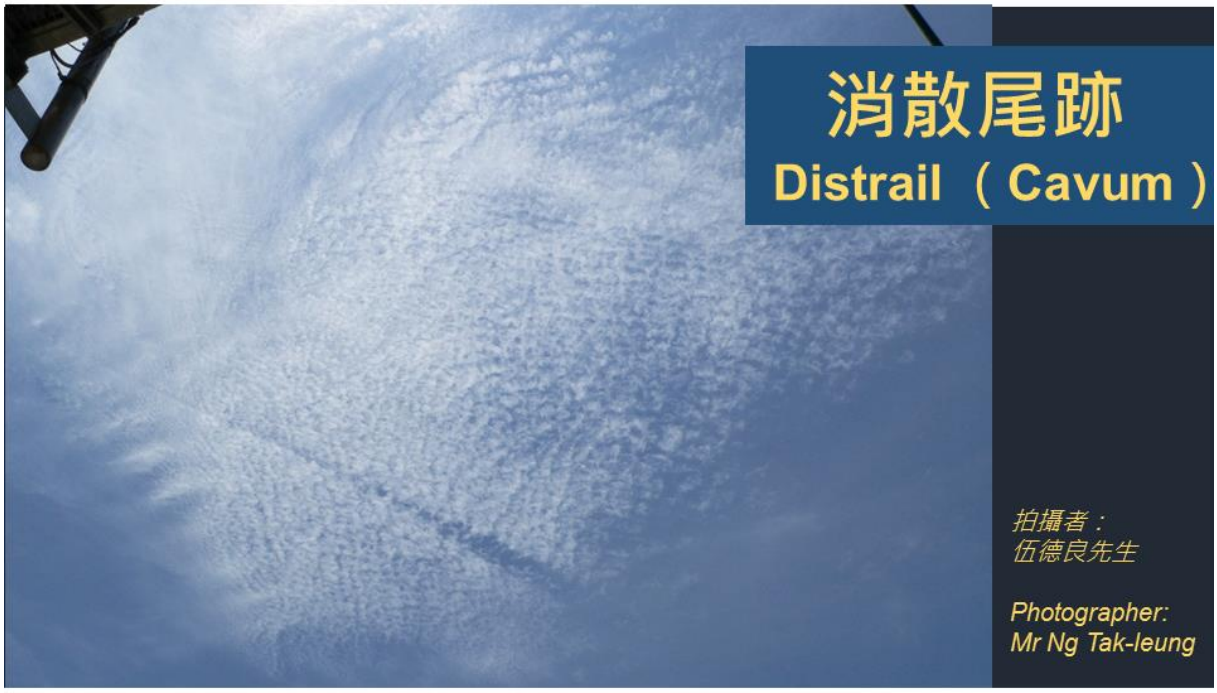


Figure 10

Figure 11

特殊雲種

Figure 12

電子書 – 「度天」賞雲

Figure 13

2016/17年冬季氣候統計

	統計	距平 (1981–2010)	排名
平均氣溫 (12月至2月)	18.4 ° C	+1.4 ° C	最暖第1名

Figure 14

冬季平均氣溫頭10位紀錄

排位	年份	平均氣溫（℃）
1	2016/17	18.4
1	1998/99	18.4
3	1978/79	18.3
4	2008/09	18.1
5	2006/07	18.0
6	2012/13	17.9
6	2001/02	17.9
6	2000/01	17.9
6	1965/66	17.9
10	1986/87	17.8

Figure 15

冬季平均氣溫長期趨勢

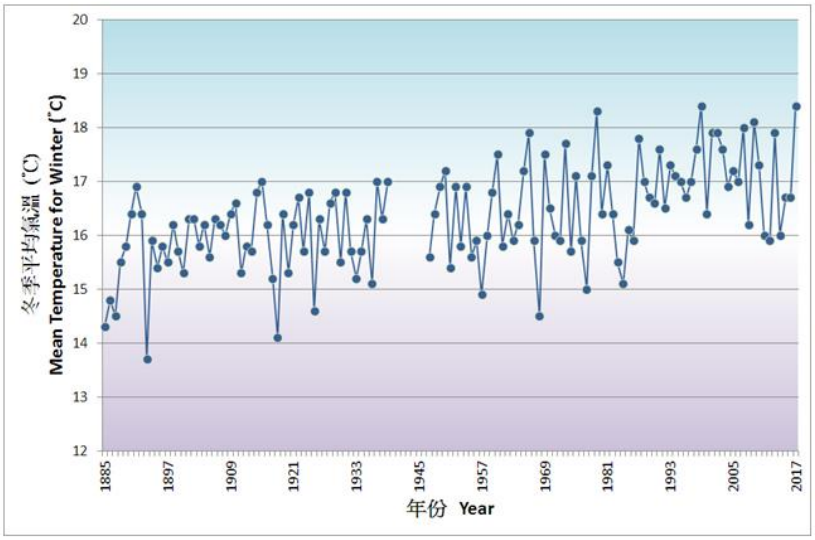


Figure 16

2016年各月平均氣溫距平

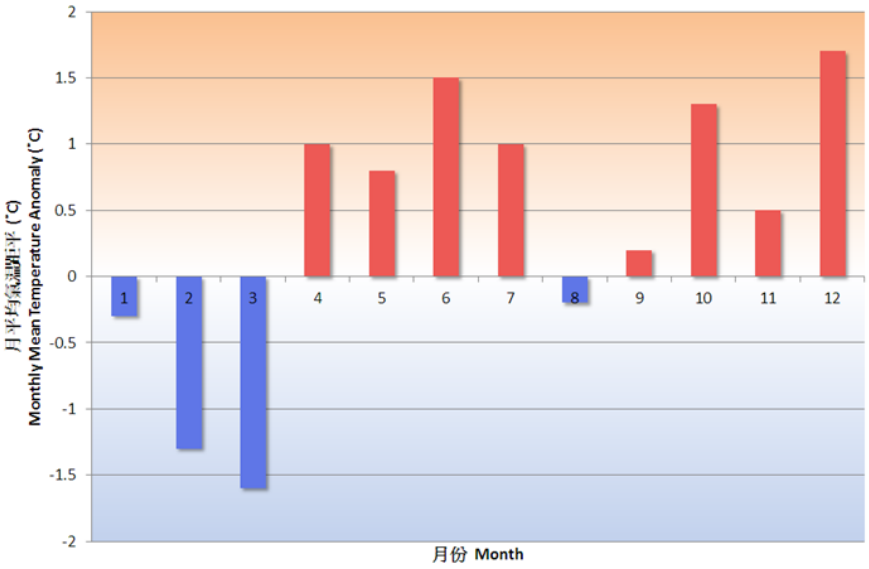


Figure 17

全年平均氣溫頭10位紀錄

排位	年份	平均氣溫（℃）
1	2015	24.2
2	1998	24.0
3	2002	23.9
4	1999	23.8
4	1966	23.8
6	2007	23.7
7	2016	23.6
7	2003	23.6
7	2001	23.6
7	1994	23.6

Figure 18

2016年各月雨量距平

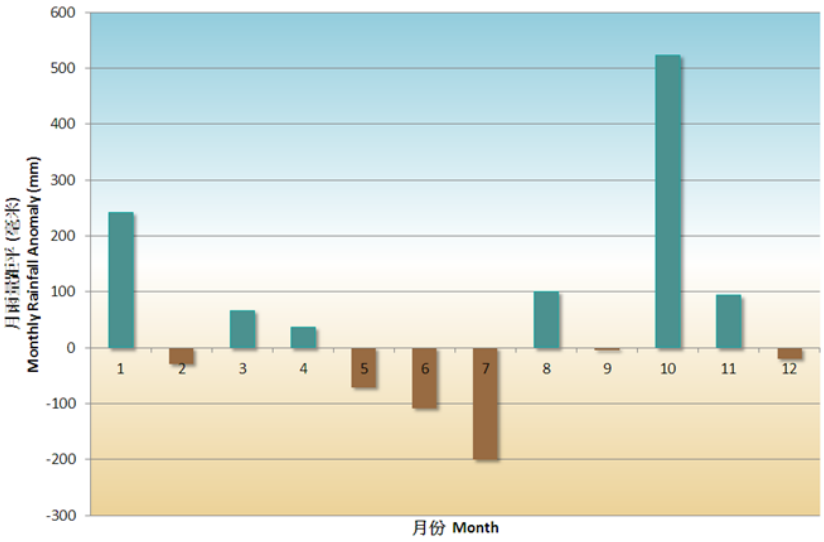


Figure 19

2016年氣候統計

	2016 全年統計	距平 (1981-2010)	排名
平均最高氣溫	26.1 ° C	+0.5 ° C	最暖第10名
平均氣溫	23.6 ° C	+0.3 ° C	最暖第7名
平均最低氣溫	21.7 ° C	+0.3 ° C	最暖第7名
總雨量	3026.8毫米	+628.3毫米	最高第9名

	平均氣溫	距平 (1981-2010)	排名
2016年夏季 2016年6月至8月	29.2 ° C	+0.8 ° C	最熱第3名
2016年秋季 2016年9月至11月	25.7 ° C	+0.7 ° C	最暖第5名

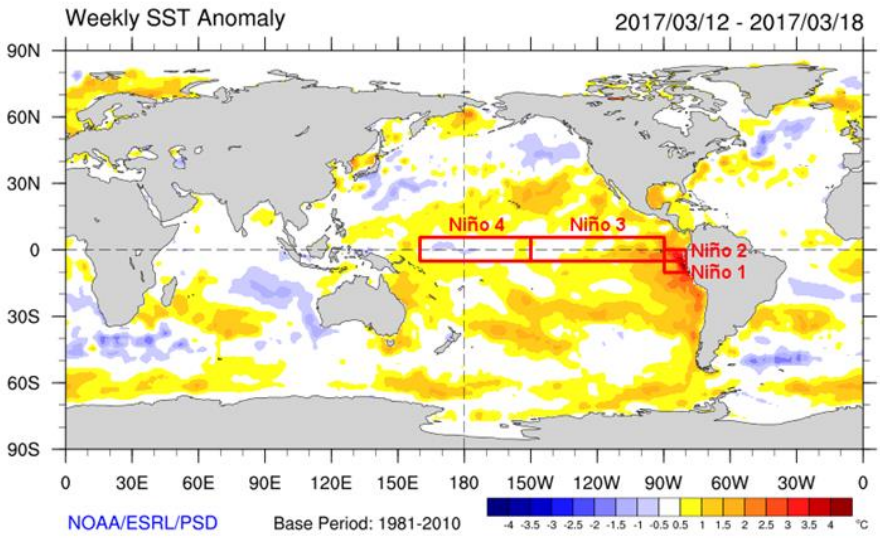
Figure 20

2017年全年展望
Annual Outlook for 2017

香港全年總雨量 Annual rainfall in Hong Kong	正常至偏少 Normal to below normal （2000 - 2600 mm）
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	接近正常 Near normal （4 - 7）

Figure 21

ENSO最新情況



週平均海水表面溫度距平

22

Figure 22

ENSO最新預報

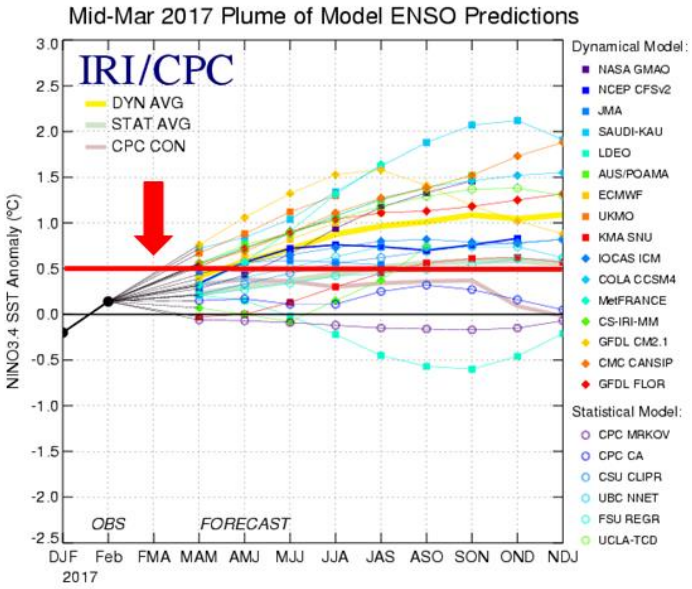


Figure 23

2017年2月14日未來十四日天文台最低氣溫的機會分佈

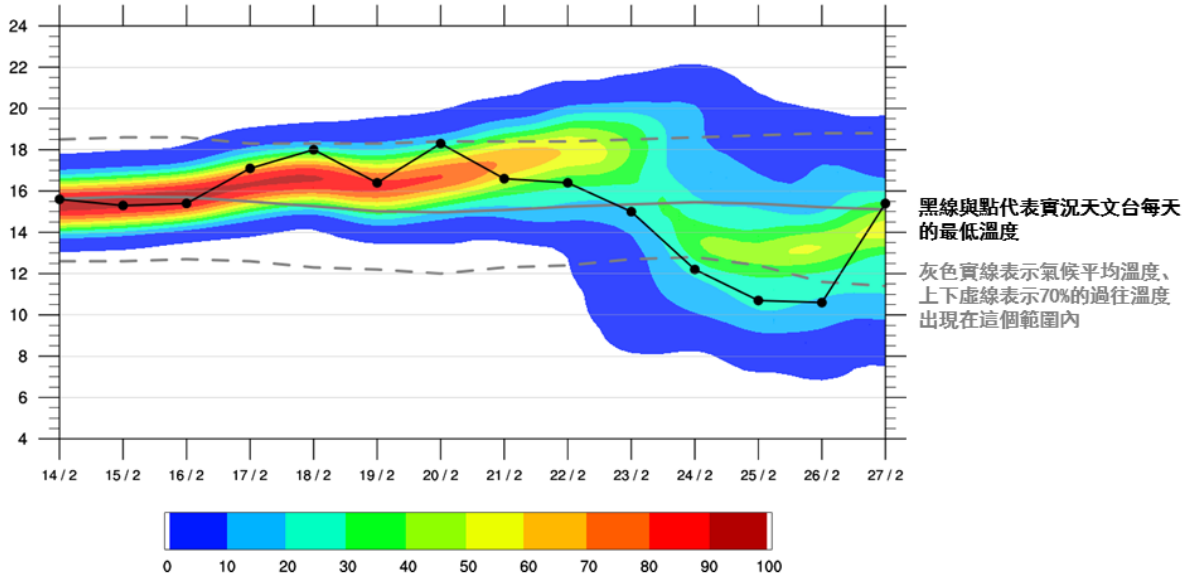


Figure 24

2016年12月19日未來十四日天文台最低氣溫的機會分佈

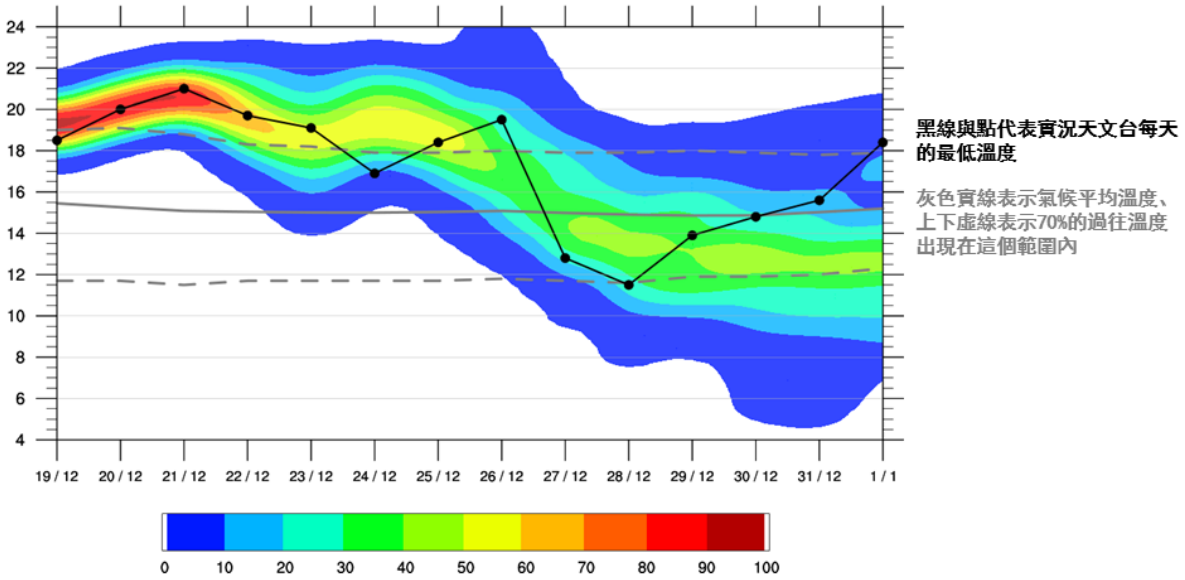


Figure 25

2016年10月16日熱帶氣旋海馬九天路徑概率預報

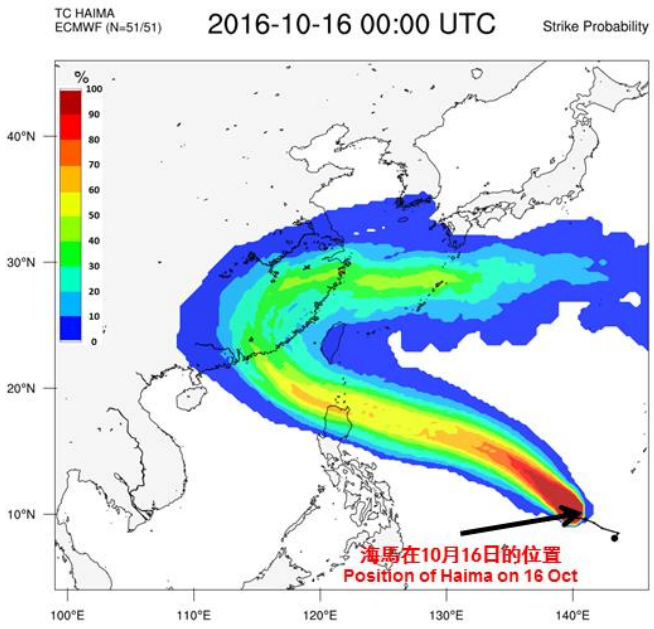


Figure 26

定點閃電臨近預報服務

Figure 27

新增高清衛星圖像

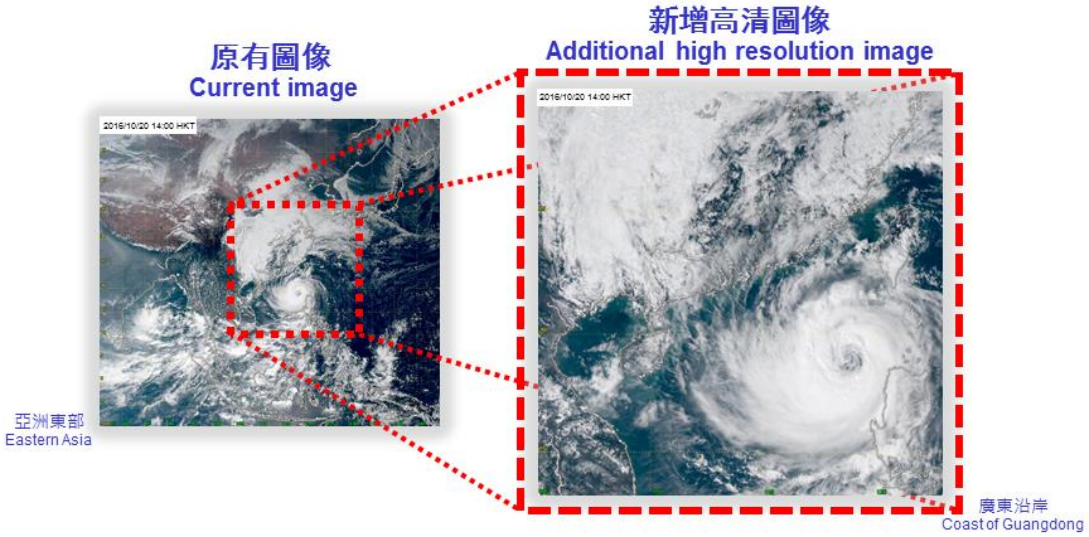


Figure 28

清水灣實時天氣照片

攝影機位置

望向西南面的薄霧

望向東面的薄霧

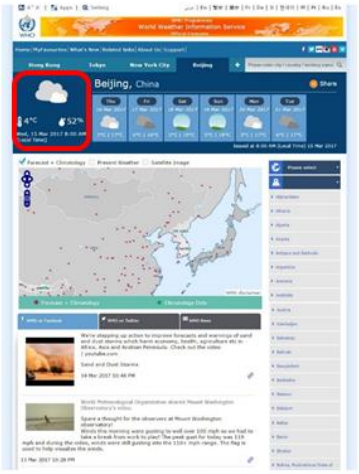
Figure 29

天文台和政府飛行服務隊合作

「下投探空系統」收集南海熱帶氣旋的三維氣象數據

Figure 30

新版「世界天氣信息服務」網站



加入各大城市實況天氣

新設計同時方便桌面及流動裝置用戶

Figure 31

新版本流動應用程式「我的世界天氣」
MyWorldWeather

全新設計

加入各大城市實況天氣

Figure 32

加強流動版網站的衛星圖像服務　　流動版網站加入“今日提提你”

Figure 33

http://www.hko.gov.hk/100YearsTCSignals/stamp.htm

Figure 34

http://www.hko.gov.hk/100YearsTCSignals/collection.htm

Figure 35

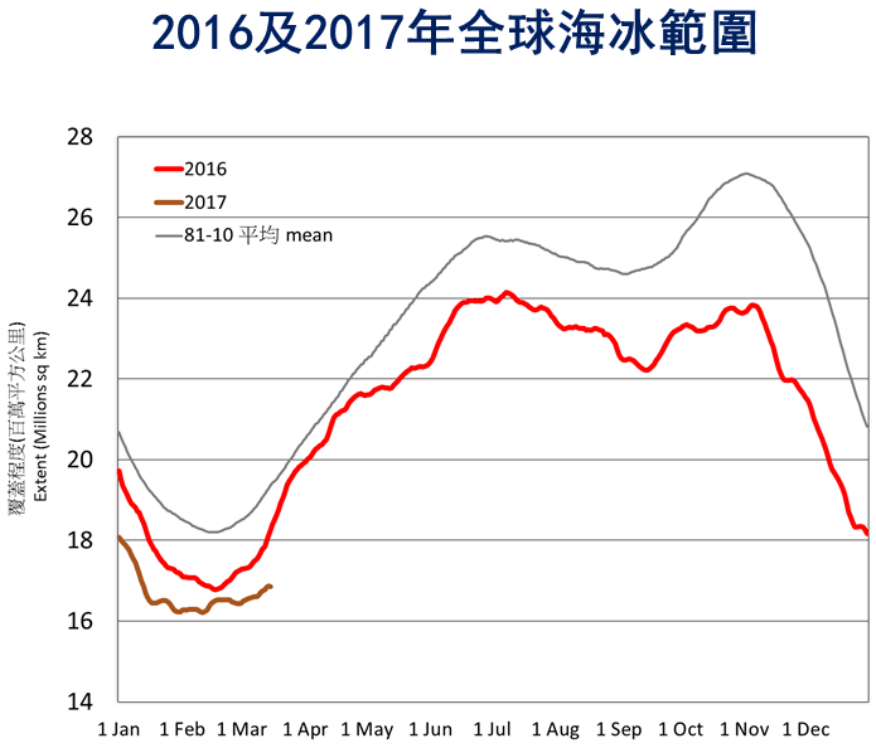


Figure 36

2017年2月北極表面温度異常

“+” ： 北極

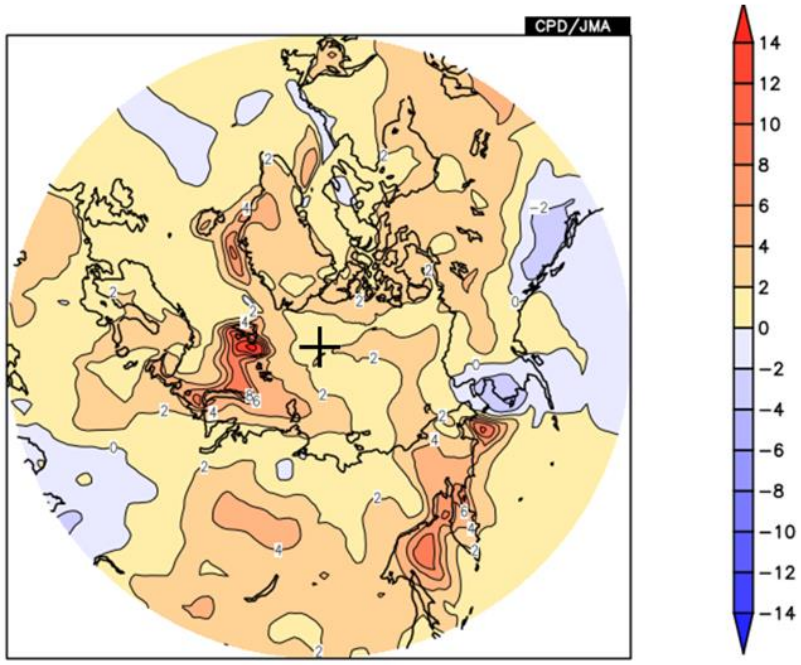


Figure 37