

Speech by Dr CHENG Cho-ming, Director of the Hong Kong Observatory

23 March 2021

Very happy to meet all of you again at this annual press briefing. Before reporting on the latest developments in the Hong Kong Observatory, let me first introduce my fellow Assistant Directors. They are:

1. Miss LAU Sum-yee, responsible for aviation weather services,
2. Mr CHAN Pak-wai, responsible for public weather services,
3. Mr LEE Lap-shun, responsible for radiation monitoring and instruments, and
4. Ms SONG Man-kuen, Acting Assistant Director responsible for climate and geophysical services.

Today, 23 March, is not only the day of the Observatory's annual press briefing, but also the World Meteorological Day, with the theme "The Ocean, our climate and weather". It aims to remind us that climate and weather are closely related to the ocean apart from the atmosphere.

Talking about the ocean, one may think of the La Nina phenomenon. With the development of La Niña in the latter part of 2020, intense cold surges advanced southwards in late 2020, bringing cold weather to southern China. However, the World Meteorological Organization's preliminary assessment indicated that year 2020 was still one of the three warmest years on record globally. The decade 2011-2020 was also the warmest on record. In 2020, various extreme weather events continued to affect different parts of the world, including the record high temperature of 38°C in the Arctic Siberian town of Verkhoyansk; severe flooding triggered by extreme rainfall in South Asia, China, Korean Peninsula, Viet Nam and parts of western Japan; and destructive wildfires exacerbated by high temperatures in California and Colorado of the United States, northern Siberia, eastern Australia, and western Brazil. Owing to the COVID-19 epidemic, there had been transient reduction in greenhouse gas emissions in 2020. However, global carbon dioxide concentration continued to rise and reached record high again. Present-day carbon dioxide concentration has already exceeded the pre-industrial level by almost 50%, while global mean temperature is about 1.2°C above pre-industrial level. To alleviate these situations, we must make every effort to combat climate change proactively so as to slow down the global warming trend.

In Hong Kong, eleven out of the twelve months in 2020 were warmer than usual. The annual mean temperature was 24.4 degrees, being the second warmest on record in Hong Kong since 1884. Hong Kong also saw the hottest summer on record from June to August, with the corresponding mean temperature, the mean maximum temperature and the mean

minimum temperature reaching 29.6 degrees, 32.6 degrees and 27.7 degrees, all the highest on record. There were 50 Hot Nights (with a daily minimum temperature equal to or higher than 28.0 degrees) and 47 Very Hot Days (with a daily maximum temperature equal to or higher than 33.0 degrees) in 2020, both hitting record highs. It was relatively cold in January this year under the influence of cold surges but was much warmer and sunnier than usual in February due to generally weaker northeast monsoon over southern China most of the time.

In February this year, the Observatory collated meteorological data collected at the Hong Kong Observatory Headquarters and other key meteorological stations, and updated the 30-year climatological normals for Hong Kong from 1981-2010 to 1991-2020, in accordance with relevant guidelines of the World Meteorological Organization. The comparison between the two sets of climatological normals reveals that there are statistically significant increases in the annual mean, mean maximum, and mean minimum temperatures in Hong Kong, suggesting that Hong Kong was getting warmer due to global warming and local urbanisation. The climate change trends warrant the public's continuous attention.

As announced in the 2020 Policy Address, the HKO will, starting from the second quarter of 2021, provide basic weather information on its website in eight ethnic minority languages. A new "Personalised Website" will be launched to provide weather information in eight ethnic minority languages including Hindi, Bahasa Indonesia, Nepali, Urdu, Tagalog, Thai, Punjabi and Vietnamese, and users may customise their display languages.

With the rain season approaching, the Observatory plans to launch the "Localised Heavy Rain Advisory" service in the second quarter of this year to replace the existing "Announcement on Localised Heavy Rain" service which provides actual rainfall recorded in different locations. Under the new service, the HKO will issue advisories with reference to recorded rainfall and rainfall forecast from its nowcasting system to advise members of the public of localised heavy rain as early as possible and facilitate their early preparation.

The HKO will also incorporate "Probability of Significant Rain" forecast into its 9-day weather forecast beginning from this afternoon to provide the predicted probability of cumulative rainfall reaching 10 millimetres or above generally over Hong Kong. The public may plan their activities ahead with reference to the forecast and make better preparations.

In addition, the HKO will roll out a trial feature "My Weather Observation" on the mobile application "MyObservatory" to enable the public to report special weather phenomena such as rainbow and hail. Users may also join the Community Weather Observing Scheme (CWOS) through "MyObservatory". CWOS members can upload weather photos or video clips onto the CWOS Facebook public group using the "My Weather Observation"

feature. The Scheme aims to use such crowdsourced meteorological information to enhance the public's awareness and knowledge of different weather conditions.

On public education, the Observatory will launch an interactive e-book titled "A Tour of Tropical Cyclones" for children to enhance their understanding of tropical cyclones and awareness of disaster prevention. The e-book will cover topics such as classification and naming of tropical cyclones, storm structure and track, their impacts on Hong Kong as well as the related precautionary measures, etc.

In respect of upper-air meteorological measurements, the HKO has been using weather balloons to measure wind direction, wind speed, air temperature, humidity and air pressure in the upper atmosphere on a daily basis, and began to measure water vapour content every month since late last year. 2021 also marks the 100th anniversary of upper-air meteorological measurements by the HKO. The HKO will set up a thematic webpage to introduce the related history.

Regarding the weather outlook in 2021, after considering a number of factors including the latest 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 may start in June or earlier in Hong Kong. The annual mean temperature in 2021 is expected to be above normal, with a high chance of reaching the warmest top 10 on record. The annual rainfall is expected to be normal to below normal, ranging between 2000 and 2600 millimetres, but Hong Kong may still be affected by heavy rain. Members of the public should make proper preparation for the rain and typhoon seasons.

Last but not least, I would like to announce that the HKO Open Day held annually in March will be held online this year in view of the latest development of the COVID-19 epidemic. Although in-person visit to the HKO Headquarters is not possible, the public may visit various parts of the HKO Headquarters through virtual tours and videos on the new "Hong Kong Observatory Open Day 2021" webpage to be launched on March 26. The HKO will also host a live-streaming event at the webpage and its Facebook page on March 27 afternoon, which will feature a sand-painting performance to bring out messages on climate change and extreme weather. Results of the online polling campaign "2016-2020 Top 10 Mind-boggling Weather and Climate Events Selection" which attracted over 5 000 voters will also be announced.

Let me pause here. If you have questions, my Assistant Directors and I will try our best to answer.

Thank you!

海洋、我們的氣候和天氣

The Ocean, Our Climate and Weather

世界氣象日
World Meteorological Day
2021 • 3 • 23



2020年是全球有記錄以來最暖三年之

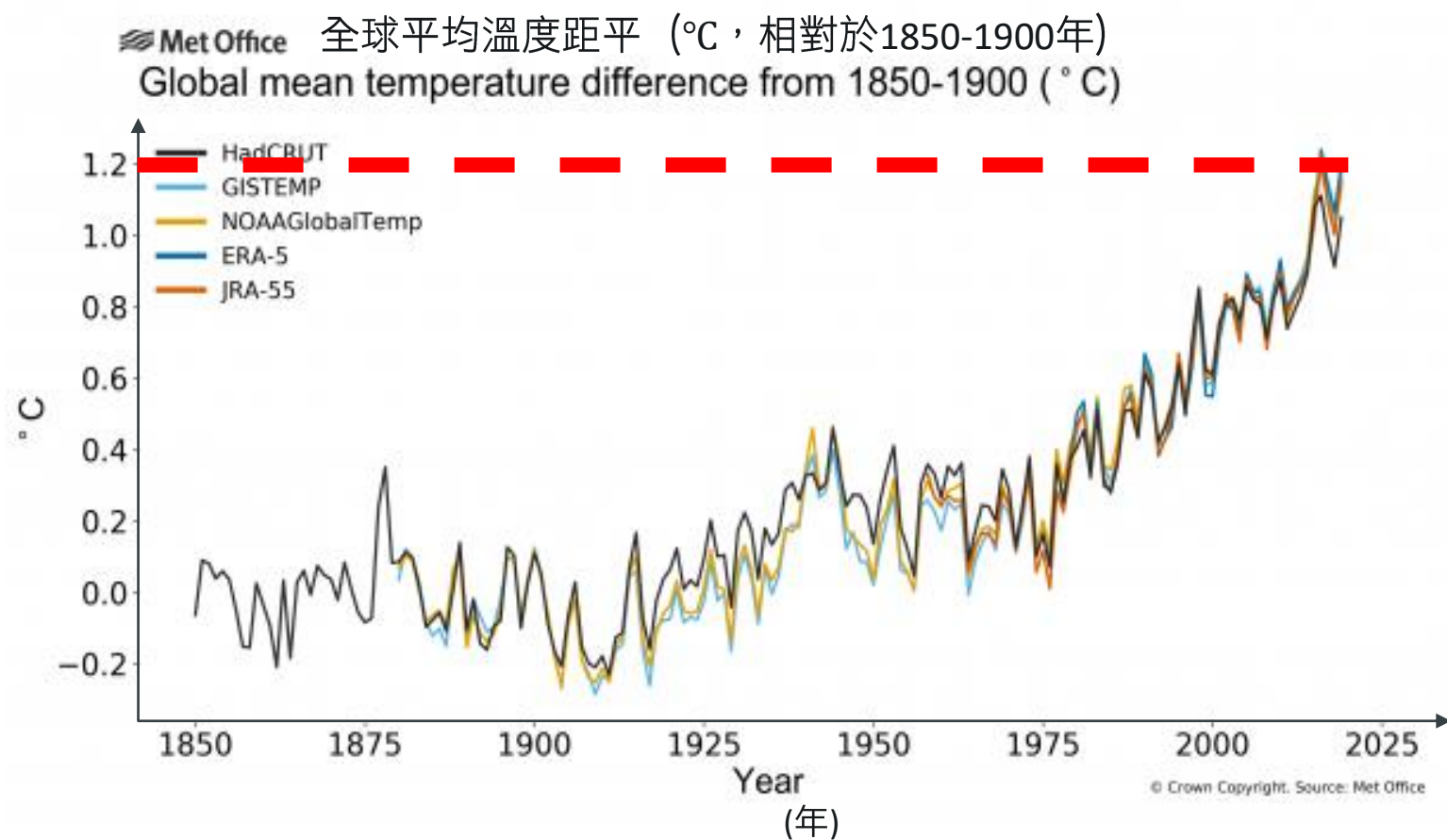
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2020 was one of three warmest years on record for the globe

2011-2020年是記錄上最熱的十年期

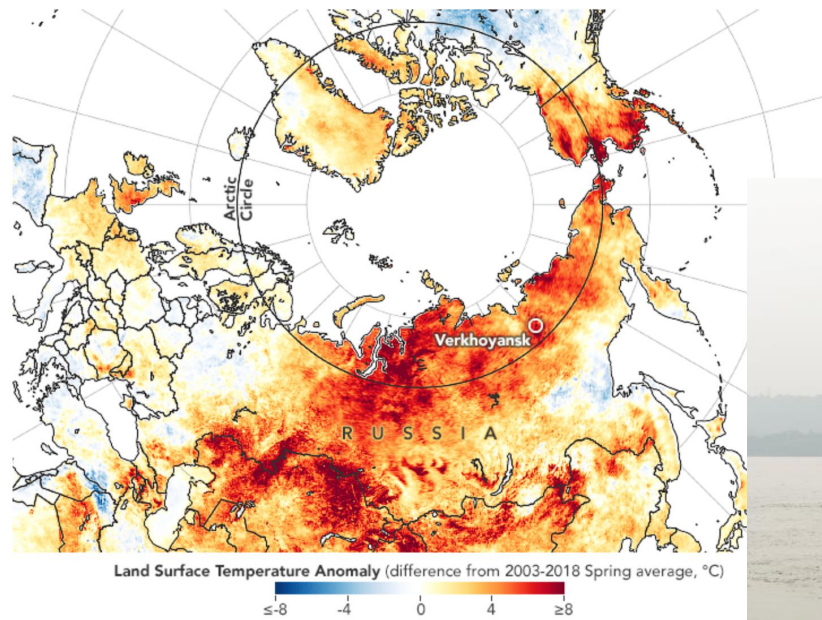
2011-2020 was the warmest decade on record

現今全球平均溫度較工業化前水平高約**1.2°C**

Present-day global mean temperature is about **1.2°C** above pre-industrial levels



2020 極端天氣 EXTREME WEATHER IN 2020



西伯利亞熱浪
Siberia Heat Wave



中國梅雨成災
Heavy monsoonal rain flooded China

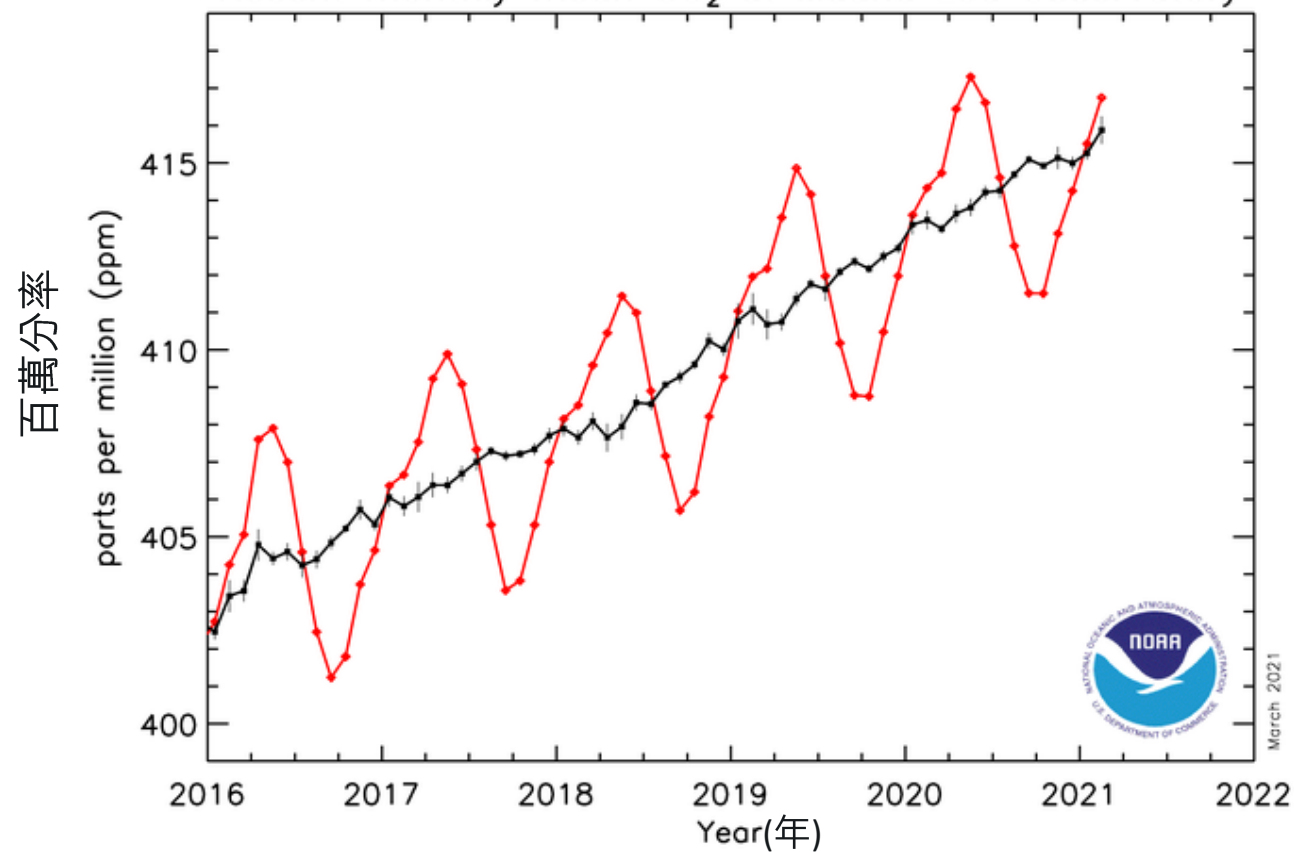


加州山火
California Wildfire

近年CO₂濃度創新高 CO₂ CONCENTRATION RECORD HIGH

近年夏威夷冒納羅亞CO₂月平均濃度

Recent monthly mean CO₂ at Mauna Loa Observatory



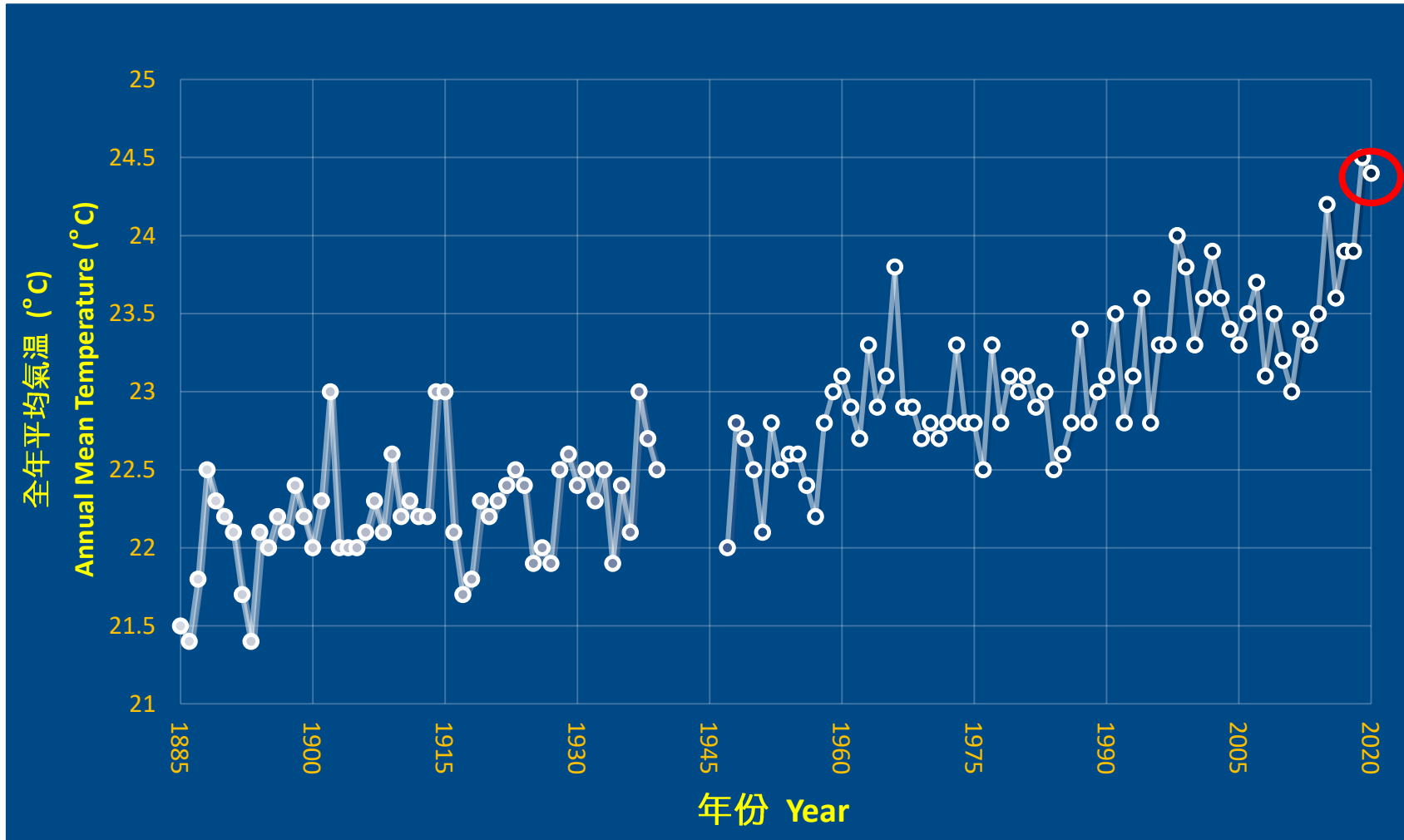
香港全年平均氣溫最高前10名紀錄

TOP 10 RANKINGS OF THE HIGHEST HK ANNUAL MEAN TEMPERATURE

排名 Ranking	年份 Year	全年平均氣溫 (°C) * Annual Mean Temperature (°C)
1	2019	24.5
2	2020	24.4
3	2015	24.2
4	1998	24.0
5	2002	23.9
5	2017	23.9
5	2018	23.9
8	1966	23.8
8	1999	23.8
10	2007	23.7

*自1884年有記錄以來香港天文台總部紀錄 * Recorded at HKO Headquarters since records began in 1884

香港全年平均氣溫的長期時間序列 LONG-TERM TIME SERIES OF ANNUAL MEAN TEMPERATURE IN HONG KONG



2020年:24.4°C
24.4°C in 2020

2020年其他破紀錄高溫天氣事件摘要

SUMMARY OF OTHER RECORD-BREAKING HIGH TEMPERATURE EVENTS IN 2020

夏季：6/2020 – 8/2020

	破紀錄事件 Record-breaking Events	新紀錄* New Record
1	最高夏季平均氣溫 Highest Mean Temperature for Summer	29.6 °C
2	最高夏季平均最高氣溫 Highest Mean Maximum Temperature for Summer	32.6 °C
3	最高夏季平均最低氣溫 Highest Mean Minimum Temperature for Summer	27.7 °C

新紀錄
New Record

自1884年有記錄以來香港天文台總部紀錄 Recorded at HKO Headquarters since records began in 1884

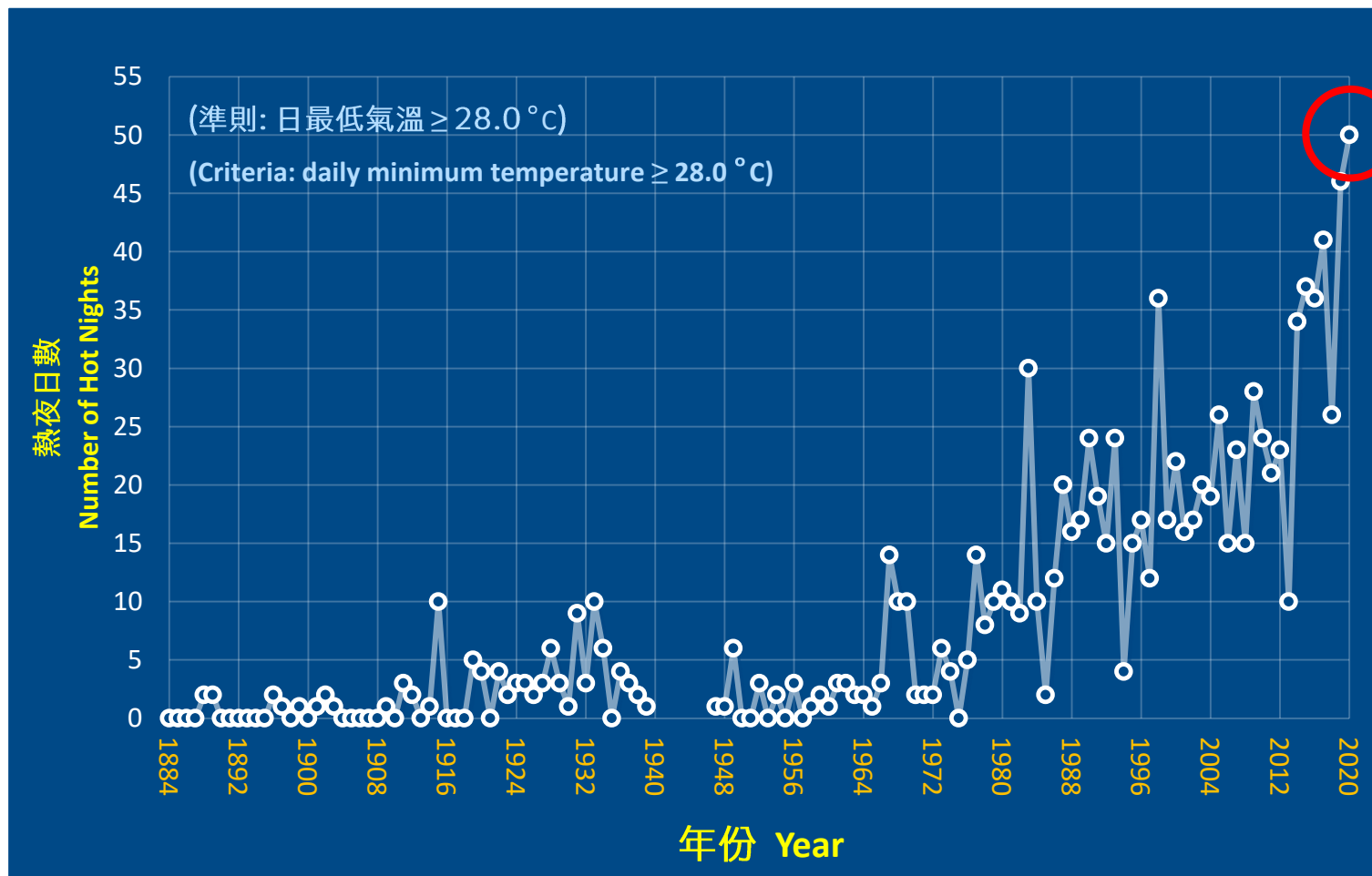
香港全年熱夜數目最多前10紀錄

TOP 10 RANKINGS OF THE HIGHEST ANNUAL NUMBER OF HOT NIGHTS IN HK

排名 Ranking	年份 Year	全年熱夜數目 (天) * Annual Number of Hot Nights (Day)
1	2020	50
2	2019	46
3	2017	41
4	2015	37
5	1998	36
5	2016	36
7	2014	34
8	1983	30
9	2009	28
10	2005	26
10	2018	26

自1884年有記錄以來香港天文台總部紀錄 Recorded at HKO Headquarters since records began in 1884

香港全年熱夜數目的長期時間序列 LONG-TERM TIME SERIES OF NUMBER OF HOT NIGHTS IN HONG KONG



2020年:50天
50 days in 2020

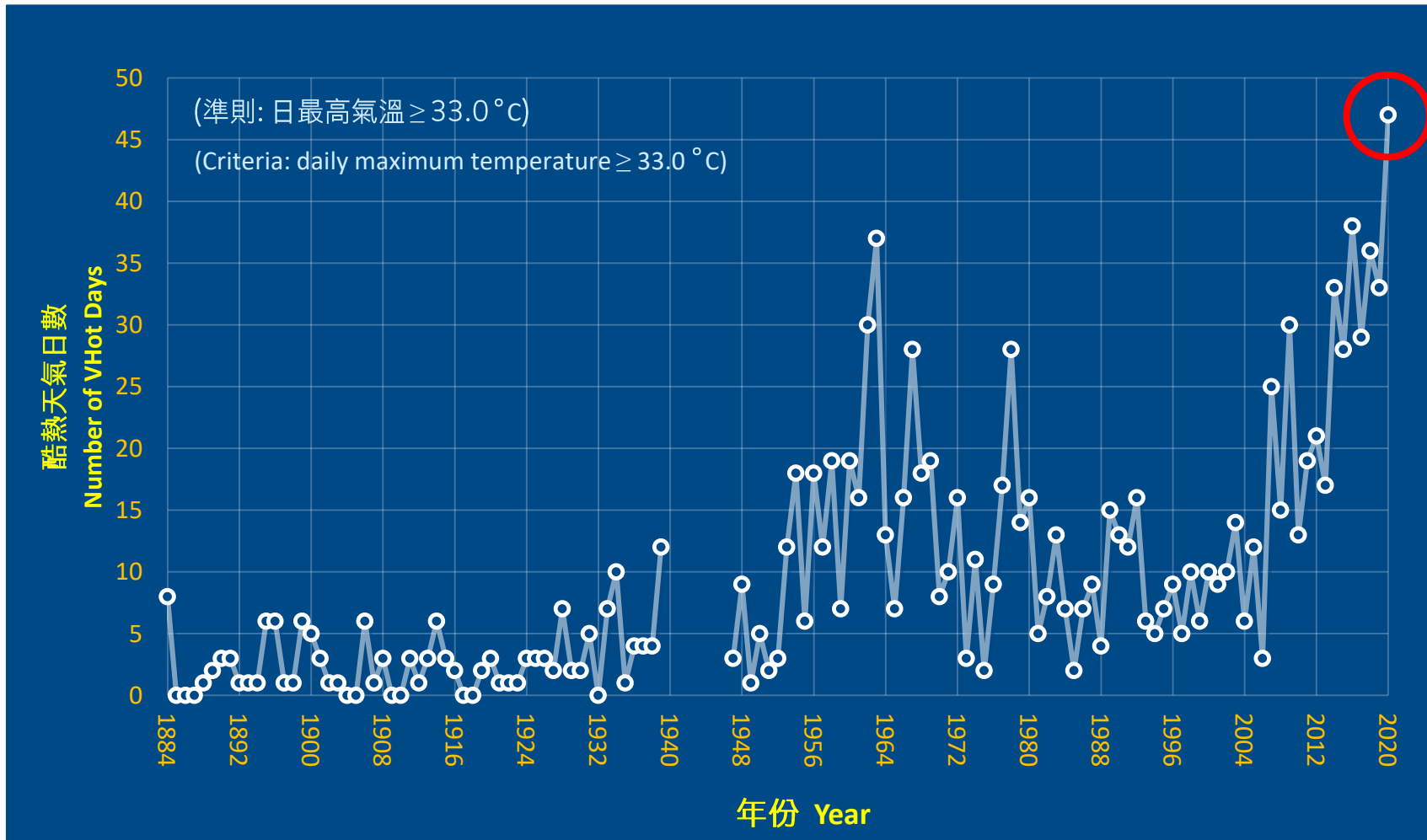
香港全年酷熱天氣日數最多前10名紀錄

TOP 10 RANKINGS OF THE HIGHEST ANNUAL NUMBER OF VERY HOT DAYS IN HK

排名 Ranking	年份 Year	全年酷熱天氣日 (天) * Annual Number of Very Hot Days (Day)
1	2020	47
2	2016	38
3	1963	37
4	2018	36
5	2019	33
5	2014	33
7	2009	30
7	1962	30
9	2017	29
10	2015	28
10	1978	28
10	1967	28

自1884年有記錄以來香港天文台總部紀錄 Recorded at HKO Headquarters since records began in 1884

香港全年酷熱天氣日數的長期時間序列 LONG-TERM TIME SERIES OF NUMBER OF VERY HOT DAYS IN HONG KONG



2020年:47天
47 days in 2020

1991-2020年和1981-2010年 兩套氣候平均值的比較

COMPARISON OF THE 1991-2020 AND 1981-2010 NORMALS

氣象要素 Meteorological element	1991-2020 氣候平均值 1991-2020 normal	1981-2010 氣候平均值 1981-2010 normal	相差 Difference
年平均氣溫(°C) Annual Mean Temperature (°C)	23.5	23.3	↑ 0.2*
年平均最高氣溫(°C) Annual Mean Maximum Temperature (°C)	26.0	25.6	↑ 0.4*
年平均最低氣溫(°C) Annual Mean Minimum Temperature (°C)	21.6	21.4	↑ 0.2*
年降雨量(毫米) Annual Rainfall (mm)	2,431.2	2,398.5	32.7
年平均相對濕度(%) Annual Mean Relative Humidity (%)	78	78	0

*在統計上有顯著變化 *Changes are statistically significant

個人版網站 PERSONAL WEBSITE



Personalized Website

繁體中文
简体中文
English

(Selected Information Only)

Bahasa Indonesia
Hindi - हिन्दी
Nepali - नेपाली
Punjabi - ਪੰਜਾਬੀ
Tagalog
Thai - ภาษาไทย
Urdu - اُردو
Vietnamese - Tiếng Việt

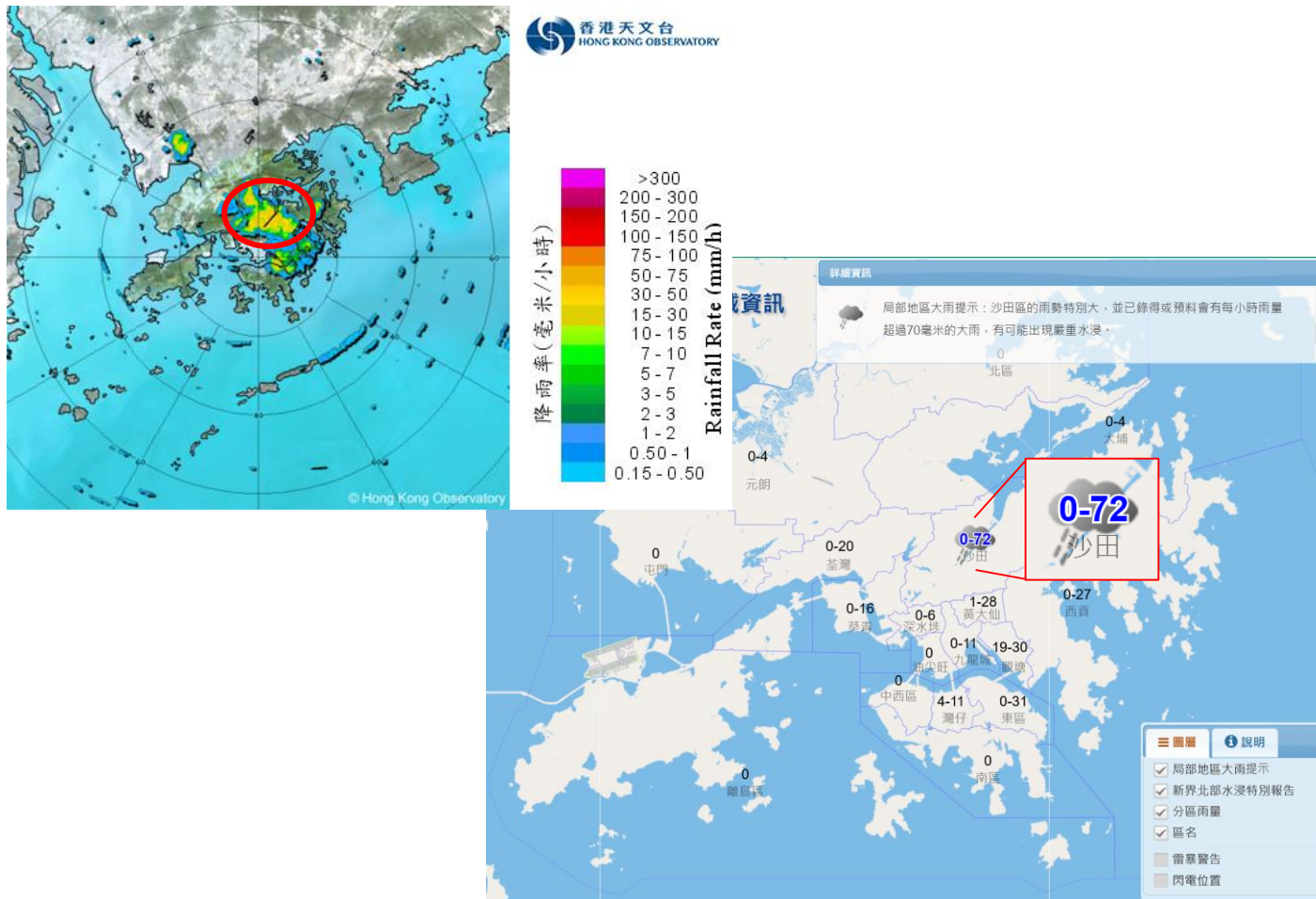
Cancel

即將推出
To be
launched
soon

支援八種少數族裔語言：
Supports **eight** ethnic minority languages:

- 印度語 Hindi
- 印尼語 Bahasa Indonesia
- 尼泊爾語 Nepali
- 烏爾都語 Urdu
- 他加祿語 Tagalog
- 泰語 Thai
- 旁遮普語 Punjabi
- 越南語 Vietnamese

局部地區大雨提示 LOCALISED HEAVY RAIN ADVISORY



即將推出
To be
launched
soon

例子：
沙田區的雨勢特別大，並已錄得或預料會有每小時雨量超過70毫米的大雨，有可能出現嚴重水浸，市民要加倍小心。

Example:
Rain is particularly heavy in Sha Tin District, with more than 70 millimetres of hourly rainfall **fallen or expected to fall** and may cause serious flooding. People in that area should be on the alert.

九天「顯著降雨概率」預報

9-DAY "PROBABILITY OF SIGNIFICANT RAIN" FORECAST

3月1日 (星期一)	3月2日 (星期二)	3月3日 (星期三)	3月4日 (星期四)	3月5日 (星期五)	3月6日 (星期六)	3月7日 (星期日)	3月8日 (星期一)	3月9日 (星期二)
18 22°C 70-90%	19 23°C 75-95%	20 24°C 75-95%	21 26°C 70-95%	19 23°C 65-95%	18 22°C 70-90%	18 22°C 65-85%	18 22°C 65-85%	18 23°C 60-85%
J ₁₀ 低	J ₁₀ 中低	J ₁₀ 中	J ₁₀ 中高	J ₁₀ 高	J ₁₀ 低	J ₁₀ 低	J ₁₀ 低	J ₁₀ 低

1 Mar (MON)	2 Mar (TUE)	3 Mar (WED)	4 Mar (THU)	5 Mar (FRI)	6 Mar (SAT)	7 Mar (SUN)	8 Mar (MON)	9 Mar (TUE)
18 22°C 70-90%	19 23°C 75-95%	20 24°C 75-95%	21 26°C 70-95%	19 23°C 65-95%	18 22°C 70-90%	18 22°C 65-85%	18 22°C 65-85%	18 23°C 60-85%
J ₁₀ Low	J ₁₀ Medium Low	J ₁₀ Medium	J ₁₀ Medium High	J ₁₀ High	J ₁₀ Low	J ₁₀ Low	J ₁₀ Low	J ₁₀ Low

J ₁₀ 高	J ₁₀ HIGH
J ₁₀ 中高	J ₁₀ MEDIUM HIGH
J ₁₀ 中	J ₁₀ MEDIUM
J ₁₀ 中低	J ₁₀ MEDIUM LOW
J ₁₀ 低	J ₁₀ LOW

我的天氣觀察 MY WEATHER OBSERVATION



「我的天氣觀察」新功能
“My Weather Observation”
new feature

即將推出
To be
launched
soon

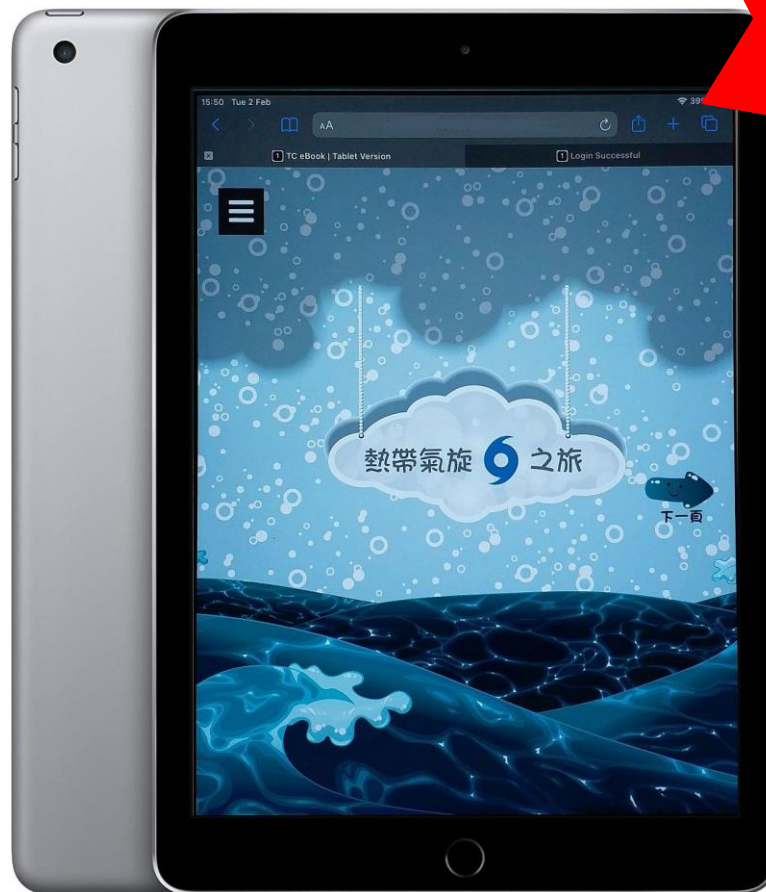


用戶可分享觀察到的
特定天氣現象
Users can share observed
specified weather phenomena



社區天氣觀測計劃用戶可登入Facebook發
佈天氣照片或影片到Facebook 群組
CWOS users can login to post weather
photo/video to the Facebook group

「熱帶氣旋之旅」兒童電子書
KID E-BOOK ON "A TOUR OF TROPICAL
CYCLONES"



即將推出
To be
launched
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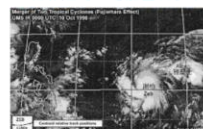
以信息圖及互動設計 · 增強熱帶氣旋知識和防災意識

Enhance knowledge in tropical cyclones and awareness of disaster prevention with the use of infographic and interactive design

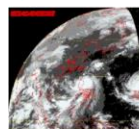


都會談戀愛? 「相互作用」

互相靠近時, 可能出現以下兩種相互作用: (按圖看動畫)



強大一方會吞併較弱一方



跟著穩定軌跡旋轉後, 就釋放及逃離

高空氣象探測一百周年

100TH ANNIVERSARY OF THE OBSERVATORY'S UPPER-AIR WEATHER MEASUREMENTS



香港天文台總部早期高空氣象探測
Upper-air weather measurements in early days
at the Hong Kong Observatory Headquarters



京士柏氣象站自動高空探測系統
Automatic Upper-air Sounding System at
King's Park Meteorological Station

2021年全年展望
ANNUAL OUTLOOK FOR 2020

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

2021年全年展望
ANNUAL OUTLOOK FOR 2021

全年平均溫度
Annual mean temperature

偏高
進入頭十名的機會為高
Above normal
High chance of reaching top 10

香港全年總雨量
Annual rainfall in Hong Kong

正常至偏少
(介乎 2000 至 2600 毫米)
Normal to below normal
(between 2000 and 2600 mm)

天文台開放日2021
HKO OPEN DAY 2021

「香港天文台開放日2021」網頁
“Hong Kong Observatory Open Day 2021” Webpage

3月26日推出
To be
launched on
26 March



「海洋、我們的氣候和天氣」網上直播節目
“THE OCEAN, OUR CLIMATE AND WEATHER”
ONLINE LIVE-STREAMING EVENT



3月27日
下午3時
3 pm on
27 March

海洋、我們的氣候和天氣
The Ocean, Our Climate and Weather

