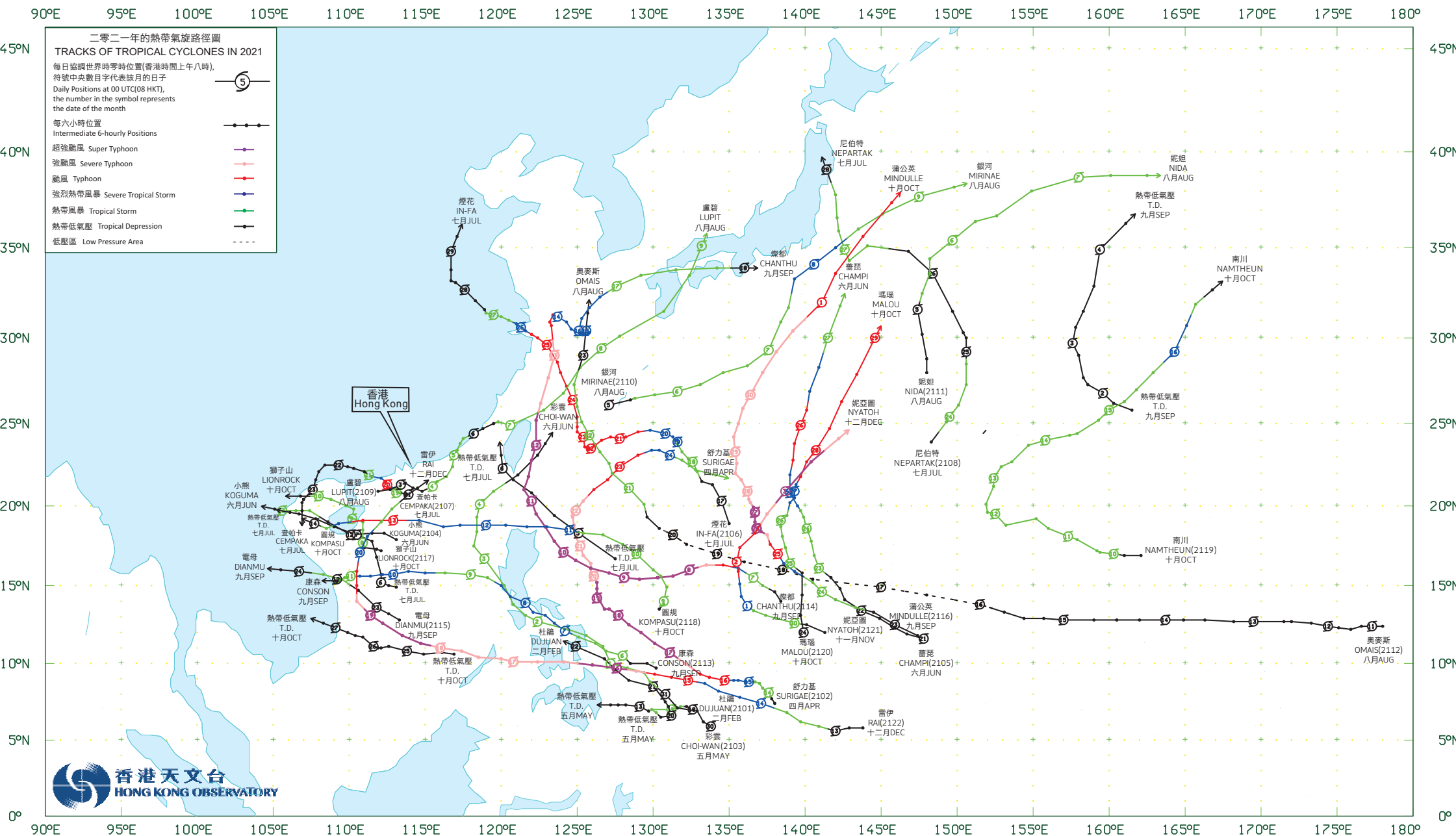




2021年熱帶氣旋概述

27 個

熱帶氣旋

影響北太平洋西部及南海

平均: 29 - 30

10 個

達到颱風或以上強度

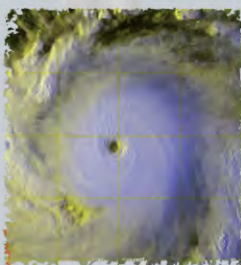
平均: 14 - 15

每小時

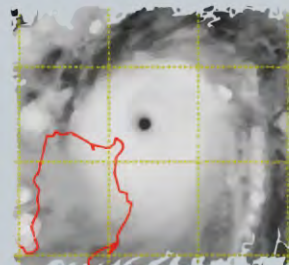
240 公里

910 百帕

2021 年最強熱帶氣旋



舒力基



爛都

8 個

熱帶氣旋影響香港

T1

小熊 (2104),
2 個熱帶低氣壓,
雷伊 (2122)

查帕卡 (2107),
盧碧 (2109)

L3

▼ **8** ▲ **8**
SE 東南 NE 東北

獅子山 (2117),
圓規 (2118)



980.6 毫米

2021 年熱帶氣旋
為香港帶來的雨量

高於平均

39.3 %

平均: 704.2 毫米

Tropical Cyclone Overview for 2021

27



Tropical Cyclones

affected western North Pacific and the South China Sea

Normal: 29- 30

10

Reaching Typhoons or above intensity

Normal: 14- 15



980.6 mm

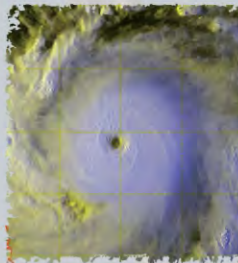
2021 Tropical Cyclone Rainfall brought to HK



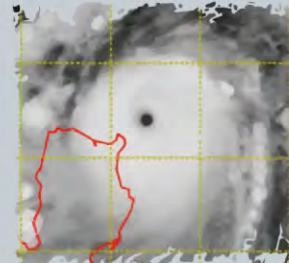
240 km/h

910 hPa

2021 Strongest Tropical Cyclones



Surigae



Chanthu

8

Tropical Cyclones affected Hong Kong

T1

Koguma (2104),
2 Tropical Depressions,
Rai (2122)

Cempaka (2107),
Lupit (2109)

T3

SE 8 NE 8
東南 東北

Lionrock (2117),
Kompasu (2118)

39.3 %

Higher than Normal

Normal: 704.2 mm

2021 年香港 颱風季節焦點



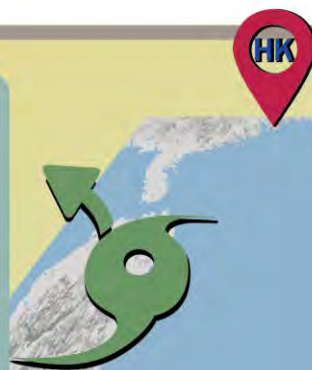
1. 十月獅子山及圓規 相繼襲港

在10月9日至12日短短4日內，香港接連受獅子山及圓規吹襲，天文台均需發出八號烈風或暴風信號。兩個八號信號僅相距60小時40分鐘，是自1946年以來最短的紀錄。

2. 獅子山

— 距離香港最遠而需發出八號信號的熱帶氣旋

獅子山在香港約490公里掠過，成為1961年以來距離香港最遠而需發出八號信號的熱帶氣旋。



3. 雷伊

— 年內最遲影響香港的熱帶氣旋

雷伊在12月20日逐漸靠近廣東沿岸，天文台需要發出一號戒備信號。這是自1946年以來年內最遲發出的熱帶氣旋警告信號。

4. 天文台同時就兩個熱帶氣旋 發出熱帶氣旋警告信號

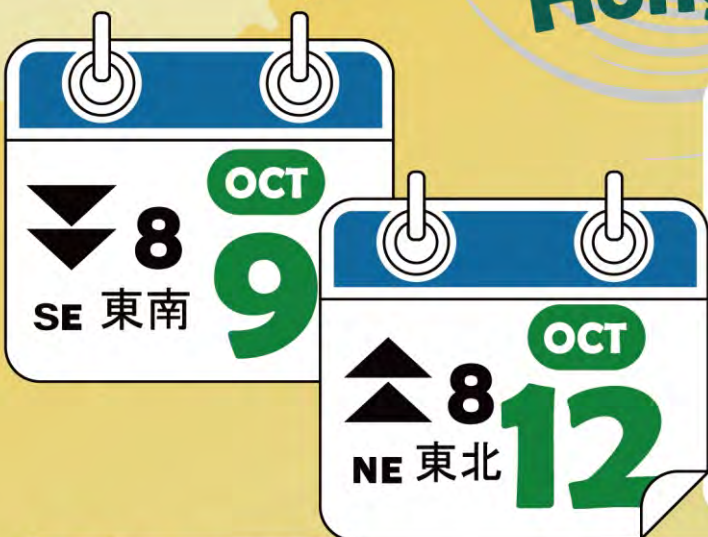
7月6日天文台就分別位於台灣南部附近及南海中部的兩個熱帶低氣壓發出一號戒備信號，對上一次是在1979年發生。





香港天文台
HONG KONG OBSERVATORY

Highlights of 2021 Typhoon Season in Hong Kong



1. Successive Strikes of Lionrock and Kompasu in October

Lionrock and Kompasu successively hit Hong Kong within four days between 9 – 12 October and both necessitated the issuance of No. 8 Gale or Storm Signal. The time separation between the two No. 8 signals was only **60 hours 40 minutes**, the shortest record since 1946.

2. Lionrock

– the farthest Tropical Cyclone Necessitating the Issuance of No. 8 Signal

Skirting past at about **490 km** of Hong Kong, Lionrock became the farthest tropical cyclone necessitating the issuance of No. 8 Signal in Hong Kong since 1961.



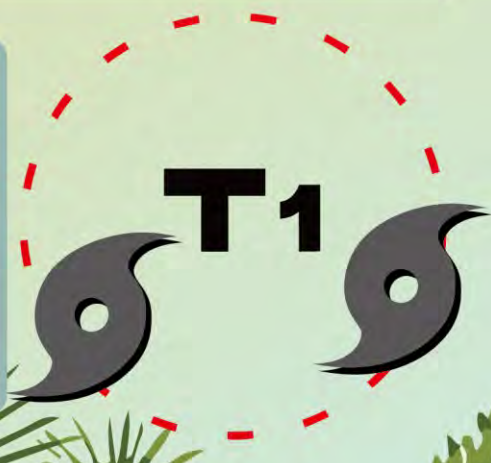
3. Rai

– the Latest Tropical Cyclone affecting Hong Kong

The Standby Signal No. 1 was issued on **20 December** as Rai gradually edged closer to the coast of Guangdong. This is the **latest tropical cyclone warning signal** in a year since 1946.

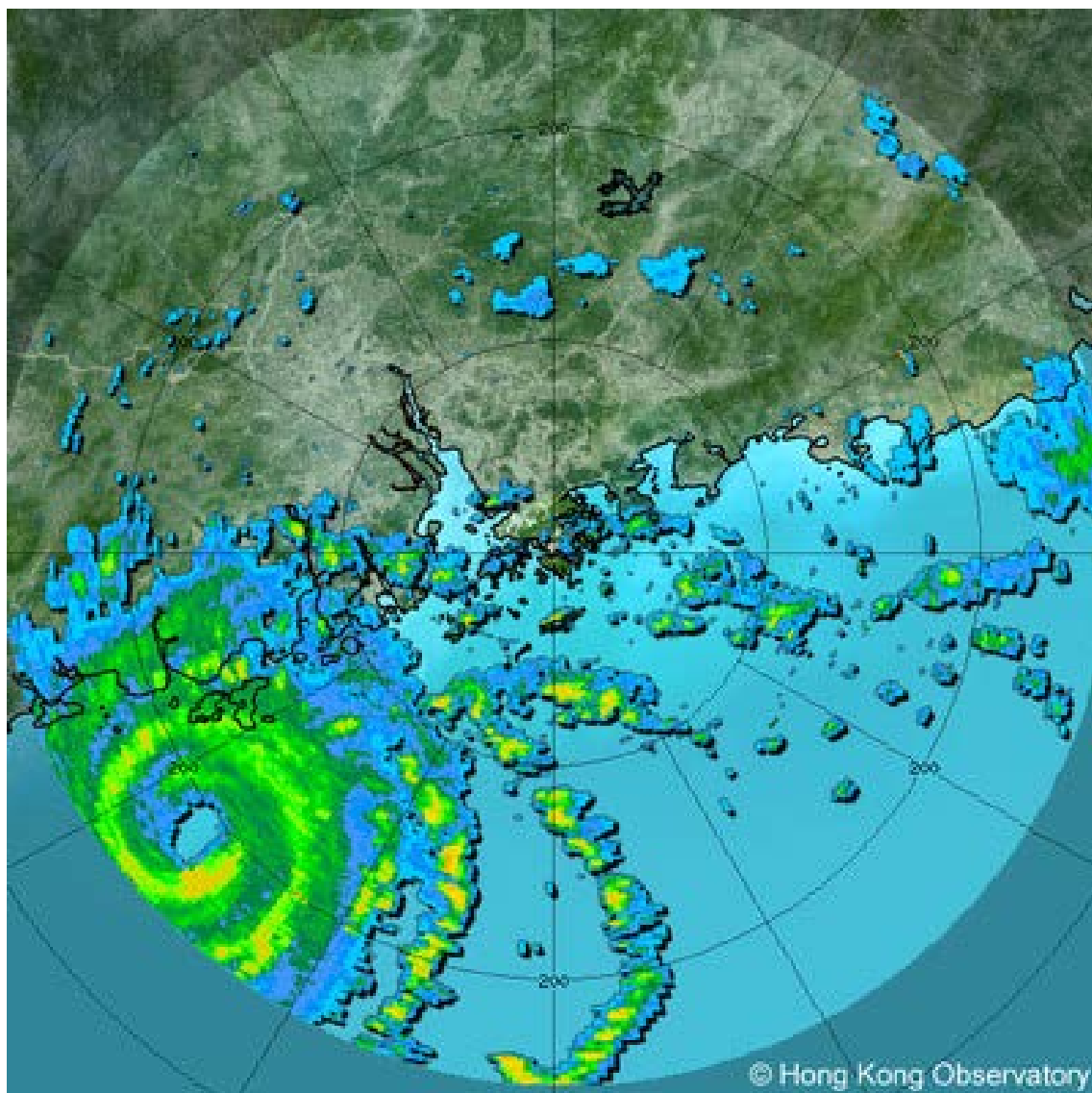
4. Tropical Cyclone Warning Signal Issued for 2 Tropical Cyclones at the Same Time

On 6 July, the **Standby Signal No.1** was issued for **two tropical depressions** which were respectively located near the southern part of Taiwan and over the central part of the South China Sea. The last time happened in 1979.



二零二一年熱帶氣旋

TROPICAL CYCLONES IN 2021



二零二二年七月出版
Published July 2022

香港天文台編製
香港九龍彌敦道134A

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551.515.2:551.506.1(512.317)

封面

二零二一年七月二十日上午2時正的雷達回波圖像，查帕卡直徑約25公里的風眼清晰可見。

Cover

Image of radar echoes at 2:00 a.m. on 20 July 2021 showing clearly the eye of Cempaka with a diameter of about 25 km.

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第一節 引言

1.1 熱帶氣旋刊物的沿革

除了在一九四零至一九四六年因二次大戰而中斷外，天文台自一八八四年以來便一直進行地面氣象觀測，並將整理好的數據攝列於由天文台出版的《氣象資料》年刊內。天文台在一九四七年開始進行高空氣象觀測後，該年刊便分成兩冊：分別是《氣象資料第一冊（地面觀測）》及《氣象資料第二冊（高空觀測）》。一九八一年，年刊第二冊改稱為《無線電探空儀觀測摘要》，而第一冊亦於一九八七年改稱為《香港地面觀測年報》。一九九三年，該兩刊物由一本名為《香港氣象觀測摘要》的新刊物所取代。這份摘要載列了地面及高空的氣象數據。

一八八四至一九三九年期間，部分對香港造成破壞的颱風的報告，曾以附錄形式載於《氣象資料》年刊內。而在一九四七至一九六七年出版的《天文台年報》，更擴充了有關熱帶氣旋的內容，收納所有導致香港吹烈風的熱帶氣旋的報告。其後，年刊系列加推《氣象資料第三冊（熱帶氣旋摘要）》，以記載每年北太平洋西部及南海區域所有熱帶氣旋的資料。此冊第一期在一九七一年出版，內容包括一九六八年赤道至北緯45度、東經100至160度範圍內所有熱帶氣旋的報告。由一九八五年開始，第三冊的覆蓋範圍東面邊界由東經160度伸展至180度。一九八七年，第三冊改稱為《熱帶氣旋年報》，內容大致上維持不變。年報由一九九七年起以中英雙語刊印，一年後加設電腦光碟版，二零零零年以網上版取代印刷版。

在一九三九年及以前，每年北太平洋西部及南海區域的熱帶氣旋的路徑圖都收錄於《氣象資料》年刊內。一九四七至一九六七年的路徑圖則載列於《氣象資料第一冊》內。在早期的刊物內，熱帶氣旋的路徑只顯示每日位置，而每日定位時間在某程度上還未統一。但到了一九四四年以後，則一直維持以每日協調世界時(UTC)零時作定位。此項改變的資料詳載於天文台出版的《技術記錄第十一號第一冊》內。由一九六一年開始，所有熱帶氣旋的路徑圖都顯示每六小時的位置。

為了能回應傳媒、航運界及其他有關人士或團體的需求，天文台自一九六零年開始就影響香港的個別熱帶氣旋編寫臨時報告，盡早為有需要的人士提供資料。初時，天文台只就那些曾導致天文台發出烈風或暴風信號以上的熱帶氣旋編寫臨時報告。自一九六八年起，天文台為所有引致天文台發出熱帶氣旋警告信號的熱帶氣旋編寫臨時報告。

1.2 熱帶氣旋等級

為了讓市民對較強的颱風特別提高警覺，天文台在二零零九年開始將「颱風」分為三級，即「颱風」、「強颱風」和「超強颱風」。根據熱帶氣旋中心附近的最高持續地面風速，熱帶氣旋共分為以下六個級別：

- (i) 熱帶低氣壓 (T.D.) 的最高持續風速為每小時62公里或以下。
- (ii) 熱帶風暴 (T.S.) 的最高持續風速為每小時63至87公里。
- (iii) 強烈熱帶風暴 (S.T.S.) 的最高持續風速為每小時88至117公里。
- (iv) 颱風# (T.) 的最高持續風速為每小時118至149公里。
- (v) 強颱風* (S.T.) 的最高持續風速為每小時150至184公里。
- (vi) 超強颱風* (SuperT.) 的最高持續風速為每小時185公里或以上。

1.3 熱帶氣旋命名

從一九四七年至一九九九年，北太平洋西部及南海區域的熱帶氣旋非正式地採用美國軍方「聯合颱風警報中心」所編訂的名單上的名字。由二零零零年開始，日本氣象廳根據一套新名單為每個達到熱帶風暴強度的熱帶氣旋命名。這套名單（表1.1）經颱風委員會通過，共有140個名字，分別由亞太區內14個國家或地區提供。這些名字除了用於為國際航空及航海界發放的預測和警報外，也是向國際傳媒發放熱帶氣旋消息時採用的規範名稱。而名單會每年檢討和更新，通常導致嚴重傷亡的熱帶氣旋會依照受影響國家或地區的要求而被刪除。提供該名字的國家或地區會建議新名字取代。

另外，日本氣象廳在一九八一年起已獲委託為每個在北太平洋西部及南海區域出現而達到熱帶風暴強度的熱帶氣旋編配一個四位數字編號。例如編號“2101”代表在二零二一年區內第一個被日本氣象廳分類為熱帶風暴或更強的熱帶氣旋。在年報內，此編號會顯示在熱帶氣旋名稱後的括弧內，例如熱帶風暴杜鵑（2101）。

二零零九年以前颱風的最高持續風速為每小時118公里或以上。

* 二零零九年新增等級。

1.4 資料來源

年報內的海平面氣壓及地面風資料，是根據天文台氣象站及測風站網絡所錄得的數據。表1.2及1.3分別是該些網絡內各站的位置及海拔高度。

熱帶氣旋產生的最大風暴潮是由裝置在香港多處的潮汐測量器量度。圖1.1是本年報內提及的各個風速表及潮汐測量站的分佈地點。

年報內的雨量資料來自天文台氣象站和雨量站網絡及土力工程處的雨量站。

除特別列明外，年報內提及的最高持續風速均為10分鐘內風速的平均值；每小時平均風速為該小時前60分鐘內的平均風速；每日雨量為當天香港時間午夜前24小時內的總雨量。

1.5 年報內容

年報第二節是二零二一年所有影響北太平洋西部及南海區域的熱帶氣旋的概述。

年報第三節是二零二一年影響香港的熱帶氣旋的個別詳細報告，內容包括：

- (i) 該熱帶氣旋對香港造成的影響；
- (ii) 發出熱帶氣旋警告信號的過程；
- (iii) 香港各地錄得的最高陣風風速及最高每小時平均風速；
- (iv) 香港天文台錄得的最低平均海平面氣壓；
- (v) 香港天文台及其他地方錄得的每日總雨量；
- (vi) 香港各潮汐測量站錄得的最高潮位及最大風暴潮；及
- (vii) 氣象衛星雲圖及雷達圖像。

有關熱帶氣旋的各種資料及統計表載於年報第四節內。

二零二一年每個熱帶氣旋的每六小時位置，連同當時的最低中心氣壓及最高持續風速，則表列於年報第五節內。

年報依照內文需要採用了不同的時間系統。正式的時間以協調世界時（即UTC）為準。至於在熱帶氣旋的敘述中，用作表示每天各時段的詞彙，例如“上午”、“下午”、“早上”、“黃昏”等則是指香港時間。香港時間為協調世界時加八小時。

1.6 香港的熱帶氣旋警告系統

表1.4是香港熱帶氣旋警告信號的定義。

由二零零七年開始，發出3號和8號信號的參考範圍由維多利亞港擴展至由八個涵蓋全港並接近海平面的參考測風站組成的網絡(圖1.1顯示二零二一年所採用的八個參考測風站)。這些測風站處於較為空曠的位置，地理上的考慮也包括山脈地勢的自然分隔，可概括地反映全港的風勢。

當參考網絡中半數或以上的測風站錄得或預料持續風速達到指標的風速限值，而且風勢可能持續時，天文台會考慮發出3號或8號信號。

Section 1 INTRODUCTION

1.1 Evolution of tropical cyclone publications

Apart from a disruption due to World War II during 1940-1946, surface observations of meteorological elements since 1884 have been summarized and published in the Observatory's annual publication "Meteorological Results". Upper-air observations began in 1947 and from then onwards the annual publication was divided into two parts, namely "Meteorological Results Part I - Surface Observations" and "Meteorological Results Part II - Upper-air Observations". These two publications were re-titled "Surface Observations in Hong Kong" and "Summary of Radiosonde-Radiowind Ascents" in 1987 and 1981 respectively. In 1993, both publications were merged into one revised publication entitled "Summary of Meteorological Observations in Hong Kong", including surface as well as upper-air data.

During the period 1884-1939, reports on some destructive typhoons were printed as Appendices to the "Meteorological Results". This practice was extended and accounts of all tropical cyclones which caused gales in Hong Kong were included in the publication "Director's Annual Departmental Reports" from 1947 to 1967 inclusive. The series "Meteorological Results Part III - Tropical Cyclone Summaries" was subsequently introduced to provide information on tropical cyclones over the western North Pacific and the South China Sea. The first issue, published in 1971, contained reports on tropical cyclones in 1968 within the area bounded by the Equator, 45°N, 100°E and 160°E. The eastern boundary of the area of coverage was extended from 160°E to 180° from 1985 onwards. In 1987, the series was re-titled as "Tropical Cyclones in YYYY" but its contents remained largely the same. Starting from 1997, the series was published in both Chinese and English. The CD-ROM version of the publication first appeared in 1998 and the printed version was replaced by the Internet version in 2000.

Tracks of tropical cyclones in the western North Pacific and the South China Sea were published in "Meteorological Results" up to 1939 and in "Meteorological Results Part I" from 1947 to 1967. In earlier publications, only daily positions were plotted on the tracks and the time of the daily positions varied to some extent, but then remained fixed at 0000 UTC after 1944. Details of the changes are given in the Observatory's publication "Technical Memoir No. 11, Volume 1". From 1961 onwards, six-hourly positions are shown on the tracks of all tropical cyclones.

Provisional reports on individual tropical cyclones affecting Hong Kong were prepared since 1960 to provide early information to meet the needs of the press, shipping companies and others. These reports were printed and supplied on request. Initially, provisional reports were only available for tropical cyclones for which gale or storm signals or above had been issued in Hong Kong. From 1968 onwards, provisional reports were prepared for all tropical cyclones that necessitated the issuance of tropical cyclone warning signals.

1.2 Classification of tropical cyclones

To enhance public awareness of stronger typhoons, the Observatory further categorised 'Typhoon' into 'Typhoon', 'Severe Typhoon' and 'Super Typhoon' starting from the 2009 tropical cyclone season. Tropical cyclones are now classified into the following six categories according to the maximum sustained surface winds near their centres:

- (a) A TROPICAL DEPRESSION (T.D.) has maximum sustained winds of 62 km/h or below.
- (b) A TROPICAL STORM (T.S.) has maximum sustained winds in the range 63-87 km/h.
- (c) A SEVERE TROPICAL STORM (S.T.S.) has maximum sustained winds in the range 88-117 km/h.
- (d) A TYPHOON# (T.) has maximum sustained winds of 118-149 km/h.
- (e) A SEVERE TYPHOON* (S.T.) has maximum sustained winds of 150-184 km/h.
- (f) A SUPER TYPHOON* (SuperT.) has maximum sustained winds of 185 km/h or more.

1.3 Naming of tropical cyclones

Over the western North Pacific and the South China Sea between 1947 and 1999, tropical cyclone names were assigned by the U.S. Armed Forces' Joint Typhoon Warning Center according to a pre-determined but unofficial list. With effect from 2000, the Japan Meteorological Agency has been assigned the responsibility to name tropical cyclones attaining tropical storm intensity according to a new list adopted by the Typhoon Committee. It contains a total of 140 names contributed by 14 countries or territories within the Asia Pacific region (Table 1.1). Apart from being used in forecasts and warnings issued to the international aviation and shipping communities, the names are also used officially in information on tropical cyclones issued to the international press. The list is reviewed every year, and usually names of tropical cyclones that have caused serious damage or casualty will be retired upon the requests of countries or territories affected. Countries or territories providing those names will then propose new names as replacement.

Besides, since 1981, Japan Meteorological Agency has been delegated with the responsibility of assigning to each tropical cyclone in the western North Pacific and the South China Sea attaining tropical storm intensity a numerical code of four digits. For example, the first tropical cyclone of tropical storm intensity or above, as classified by Japan Meteorological Agency, within the region in 2021 was assigned the code "2101". In this report, the associated code immediately follows the name of the tropical cyclone in bracket, e.g. Tropical Storm Dajuan (2101).

Prior to 2009, the maximum sustained winds of typhoon was defined to be 118 km/h or more.

* New categories adopted since 2009.

1.4 Data sources

Mean sea level pressure and surface wind data presented in this report were obtained from a network of meteorological stations and anemometers operated by the Hong Kong Observatory. Details of such stations are listed in Tables 1.2 and 1.3.

Maximum storm surges caused by tropical cyclones were measured by tide gauges installed at several locations around Hong Kong. The locations of anemometers and tide gauges mentioned in this report are shown in Figure 1.1.

Rainfall data presented in this report were obtained from a network of meteorological and rainfall stations operated by the Hong Kong Observatory, as well as raingauges operated by the Geotechnical Engineering Office.

Throughout this report, maximum sustained surface winds when used without qualification refer to wind speeds averaged over a period of 10 minutes. Hourly mean winds are winds averaged over a 60-minute interval ending on the hour. Daily rainfall amounts are computed over a 24-hour period ending at midnight Hong Kong Time.

1.5 Content

In Section 2, an overview of all the tropical cyclones over the western North Pacific and the South China Sea in 2021 is presented.

The reports in Section 3 are individual accounts of the life history of tropical cyclones affecting Hong Kong in 2021. They include the following information:-

- (a) the effects of the tropical cyclone on Hong Kong;
- (b) the sequence of display of tropical cyclone warning signals;
- (c) the maximum gust peak speeds and maximum hourly mean winds recorded in Hong Kong;
- (d) the lowest mean sea level pressure recorded at the Hong Kong Observatory;
- (e) the daily amounts of rainfall recorded at the Hong Kong Observatory and selected locations;
- (f) the times and heights of the maximum sea level and maximum storm surge recorded at various tide stations in Hong Kong;
- (g) satellite and radar imageries.

Statistics and information relating to tropical cyclones are presented in various tables in Section 4.

Six-hourly positions together with the corresponding estimated minimum central pressures and maximum sustained surface winds for individual tropical cyclones in 2021 are tabulated in Section 5.

In this report, different time references are used depending on the contexts. The official reference times are given in Co-ordinated Universal Time and labelled UTC. Times of the day expressed as “a.m.”, “p.m.”, “morning”, “evening” etc. in the tropical cyclone narratives are in Hong Kong Time which is eight hours ahead of UTC.

1.6 Hong Kong's Tropical Cyclone Warning System

Table 1.4 shows the meaning of tropical cyclone warning signals in Hong Kong.

Starting from 2007, the reference for the issuance of No.3 and No.8 signals has been expanded from the Victoria Harbour to a network of eight near-sea level reference anemometers covering the whole of Hong Kong. The eight reference anemometers adopted in 2021 are depicted in Figure 1.1. The reference anemometers have good exposure and geographical distribution, taking into account the physical separation created by Hong Kong's natural terrain. Together, they are used to represent the overall wind condition in Hong Kong.

The Observatory will consider issuing the No. 3 or No. 8 signal, as the case may be, when half or more anemometers in the reference network register or are expected to register sustained strong winds or gale/storm force winds, and that the windy conditions are expected to persist.

表 1.1 二零二一年一月一日起生效的熱帶氣旋名單

TABLE 1.1 Tropical cyclone name list effective from 1 January 2021

來源	Contributed by	I	II	III	IV	V
		名字 Name	名字 Name	名字 Name	名字 Name	名字 Name
柬埔寨	Cambodia	達維 Damrey	康妮 Kong-rey	娜基莉 Nakri	科羅旺 Krovanh	翠絲 Trases
中國	China	海葵 Haikui	銀杏 Yinxing	風神 Fengshen	杜鵑 Dujuan	木蘭 Mulan
朝鮮	DPR Korea	鴻雁 Kirogi	桃芝 Toraji	海鷗 Kalmaegi	舒力基 Surigae	米雷 Meari
中國香港	Hong Kong, China	鴛鴦 Yun-yeung	萬宜 Man-yi	鳳凰 Fung-wong	彩雲 Choi-wan	馬鞍 Ma-on
日本	Japan	小犬 Koinu	天兔 Usagi	天琴 Koto	小熊 Koguma	蝎虎 Tokage
老撾	Lao PDR	布拉萬 Bolaven	帕布 Pabuk	洛鞍 Nokaen	薔琵 Champi	軒嵐諾 Hinnamnor
中國澳門	Macau, China	三巴 Sanba	蝴蝶 Wutip	黃蜂 Vongfong	煙花 In-fa	梅花 Muifa
馬來西亞	Malaysia	杰拉華 Jelawat	聖帕 Sepat	鸚鵡 Nuri	查帕卡 Cempaka	苗柏 Merbok
米克羅尼西亞	Micronesia	艾雲尼 Ewiniar	木恩 Mun	森拉克 Sinlaku	尼伯特 Nepartak	南瑪都 Nanmadol
菲律賓	Philippines	馬力斯 Maliksi	丹娜絲 Danas	黑格比 Hagupit	盧碧 Lupit	塔拉斯 Talas
韓國	RO Korea	格美 Gaemi	百合 Nari	薔薇 Jangmi	銀河 Mirinae	奧鹿 Noru
泰國	Thailand	派比安 Prapiroon	韋帕 Wipha	米克拉 Mekkhala	妮妲 Nida	玫瑰 Kulap
美國	U.S.A.	瑪莉亞 Maria	范斯高 Francisco	海高斯 Higos	奧麥斯 Omais	洛克 Roke
越南	Viet Nam	山神 Son-Tinh	竹節草 Co-May	巴威 Bavi	康森 Conson	桑卡 Sonca
柬埔寨	Cambodia	安比 Ampil	羅莎 Krosa	美莎克 Maysak	燦都 Chanthu	納沙 Nesat
中國	China	悟空 Wukong	白鹿 Bailu	海神 Haishen	電母 Dianmu	海棠 Haitang
朝鮮	DPR Korea	雲雀 Jongdari	楊柳 Podul	紅霞 Noul	蒲公英 Mindulle	尼格 Nalgae
中國香港	Hong Kong, China	珊珊 Shanshan	玲玲 Lingling	白海豚 Dolphin	獅子山 Lionrock	榕樹 Banyan
日本	Japan	摩羯 Yagi	劍魚 Kajiki	鯨魚 Kujira	圓規 Kompasu	山貓 Yamaneko
老撾	Lao PDR	麗琵 Leepi	藍湖 Nongfa	燦鴻 Chan-hom	南川 Namtheun	帕卡 Pakhar

表 1.1 (續)

TABLE 1.1 (cont'd)

來源	Contributed by	I	II	III	IV	V
		名字 Name	名字 Name	名字 Name	名字 Name	名字 Name
中國澳門	Macau, China	貝碧嘉 Bebinca	琵琶 Peipah	蓮花 Linfa	瑪瑙 Malou	珊瑚 Sanvu
馬來西亞	Malaysia	普拉桑 Pulasan	塔巴 Tapah	浪卡 Nangka	妮亞圖 Nyatoh	瑪娃 Mawar
米克羅尼西亞	Micronesia	蘇力 Soulik	米娜 Mitag	沙德爾 Saudel	雷伊 Rai	古超 Guchol
菲律賓	Philippines	西馬侖 Cimaron	樺加沙 Ragasa	莫拉菲 Molave	馬勒卡 Malakas	泰利 Talim
韓國	RO Korea	飛燕 Jebi	浣熊 Neoguri	天鵝 Goni	鮎魚 Megi	杜蘇芮 Doksuri
泰國	Thailand	山陀兒 Krathon	博羅依 Bualoi	艾莎尼 Atsani	暹芭 Chaba	卡努 Khanun
美國	U.S.A.	百里嘉 Barijat	麥德姆 Matmo	艾濤 Etau	艾利 Aere	蘭恩 Lan
越南	Viet Nam	潭美 Trami	夏浪 Halong	環高 Vamco	桑達 Songda	蘇拉 Saola

註： 在二零二一年，西北太平洋和南海的熱帶氣旋名單上新增了六個新名字「銀杏」、「竹節草」、「藍湖」、「樺加沙」、「天琴」及「洛鞍」，分別取代舊有名字「玉兔」、「利奇馬」、「法茜」、「海貝思」、「北冕」及「巴蓬」。

Note: In 2021, six new names “Yinxing”, “Co-May”, “Nongfa”, “Ragasa”, “Koto” and “Nokaen” have been adopted for tropical cyclones in the western North Pacific and the South China Sea, replacing “Yutu”, “Lekima”, “Faxai”, “Hagibis”, “Kammuri” and “Phanfone” respectively.

表 1.2 年報內各氣壓表的海拔高度及所處氣象站的位置

TABLE 1.2 Elevations of various barometers and positions of weather stations mentioned in this annual report

站 Station		位置 Position		氣壓表的海拔高度(米)
		北緯 Latitude N	東經 Longitude E	Elevation of barometer above M.S.L. (m)
香港天文台總部	Hong Kong Observatory Headquarters	22°18'07"	114°10'27"	40
長洲	Cheung Chau	22°12'04"	114°01'36"	79
香港國際機場	Hong Kong International Airport	22°18'34"	113°55'19"	7
京士柏	King's Park	22°18'43"	114°10'22"	66
流浮山	Lau Fau Shan	22°28'08"	113°59'01"	36
橫瀾島	Waglan Island	22°10'56"	114°18'12"	60

表 1.3 年報內各風速表的海拔高度及所處氣象站的位置

TABLE 1.3 Elevations of various anemometers and positions of the weather stations mentioned in this annual report

站 Station		位置 Position		風速表的 海拔高度(米)
		北緯 Latitude N	東經 Longitude E	Elevation of anemometer above M.S.L. (m)
黃麻角(赤柱)	Bluff Head (Stanley)	22°11'51"	114°12'43"	103
中環碼頭	Central Pier	22°17'20"	114°09'21"	30
長洲*	Cheung Chau*	22°12'04"	114°01'36"	99
長洲泳灘	Cheung Chau Beach	22°12'39"	114°01'45"	27
青洲	Green Island	22°17'06"	114°06'46"	107
香港國際機場*	Hong Kong International Airport*	22°18'34"	113°55'19"	14#%
啟德*	Kai Tak*	22°18'35"	114°12'48"	16
京士柏	King's Park	22°18'43"	114°10'22"	90
南丫島	Lamma Island	22°13'34"	114°06'31"	17
流浮山*	Lau Fau Shan*	22°28'08"	113°59'01"	50
昂坪	Ngong Ping	22°15'31"	113°54'46"	607
北角	North Point	22°17'40"	114°11'59"	26
坪洲	Peng Chau	22°17'28"	114°02'36"	47
平洲	Ping Chau	22°32'48"	114°25'42"	39
西貢*	Sai Kung*	22°22'32"	114°16'28"	32
沙洲	Sha Chau	22°20'45"	113°53'28"	31
沙螺灣	Sha Lo Wan	22°17'28"	113°54'25"	71
沙田*	Sha Tin*	22°24'09"	114°12'36"	16
石崗	Shek Kong	22°26'10"	114°05'05"	26
九龍天星碼頭	Star Ferry (Kowloon)	22°17'35"	114°10'07"	18
打鼓嶺*	Ta Kwu Ling*	22°31'43"	114°09'24"	28
大美督	Tai Mei Tuk	22°28'31"	114°14'15"	71
大帽山	Tai Mo Shan	22°24'38"	114°07'28"	966
大埔滢	Tai Po Kau	22°26'33"	114°11'03"	11
塔門東	Tap Mun East	22°28'06"	114°21'47"	48
大老山	Tate's Cairn	22°21'28"	114°13'04"	587
將軍澳	Tseung Kwan O	22°18'57"	114°15'20"	52
青衣島蜆殼油庫*	Tsing Yi Shell Oil Depot*	22°20'48"	114°05'11"	43
屯門政府合署	Tuen Mun Government Offices	22°23'26"	113°58'36"	69
橫瀾島	Waglan Island	22°10'56"	114°18'12"	83
濕地公園	Wetland Park	22°28'00"	114°00'32"	15
黃竹坑	Wong Chuk Hang	22°14'52"	114°10'25"	30

%由二零二一年十二月二日開始，原有的北跑道重新編配為中跑道。

% The existing "North Runway" has been re-designated as the "Centre Runway" since 2 December 2021.

所指風速表在中跑道(原北跑道)近中間位置。

Refer to the wind sensor at the middle of the Centre Runway (the existing North Runway).

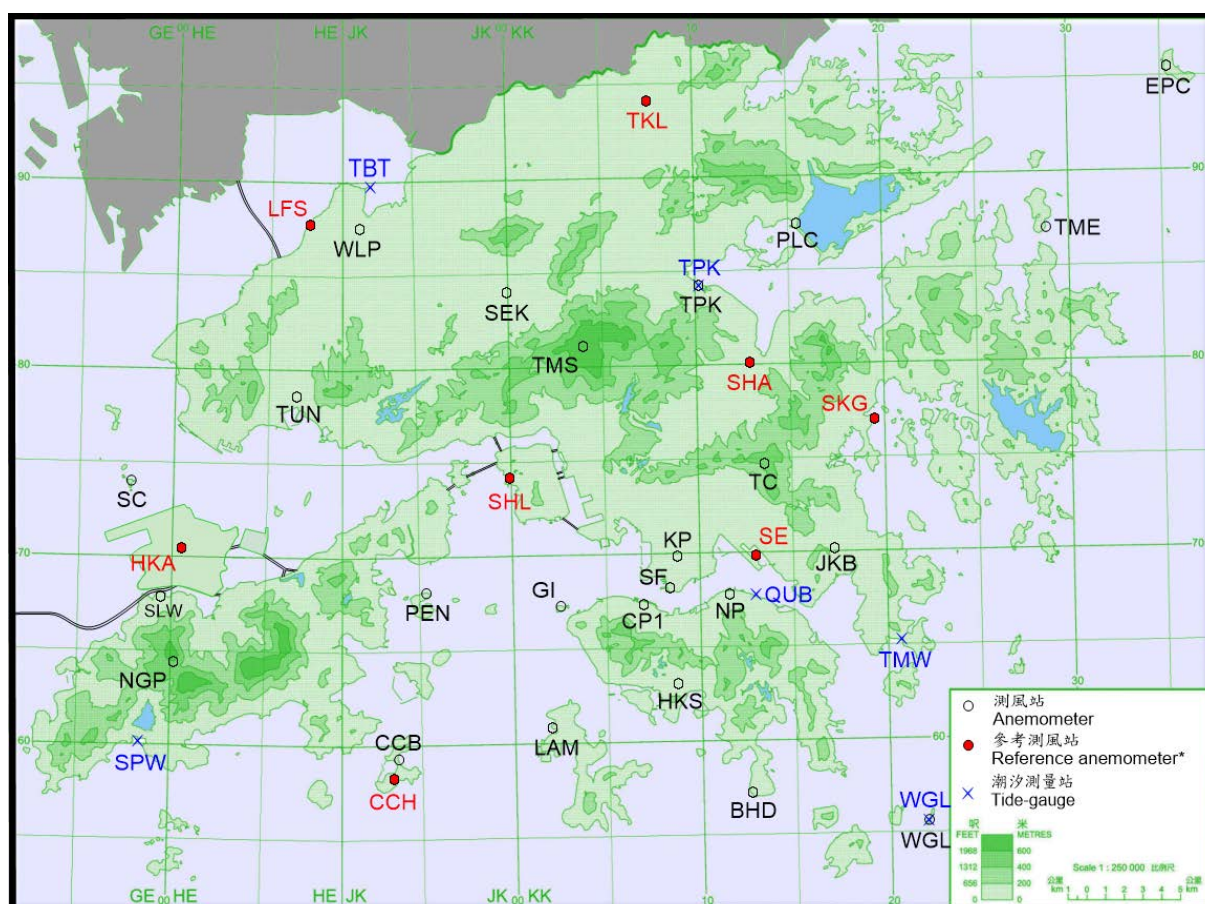
* 參考測風站

* Reference anemometer

表 1.4 二零二一年香港熱帶氣旋警告信號的意義

TABLE 1.4 Meaning of tropical cyclone warning signals in Hong Kong in 2021

信號 Signals		顯示符號 Symbol Display	信號的意義 Meaning of Signals
戒備 Standby	1		有一熱帶氣旋集結於香港約800公里的範圍內，可能影響本港。 A tropical cyclone is centred within about 800 kilometres (km) of Hong Kong and may affect the territory.
強風 Strong Wind	3		香港近海平面處現正或預料會普遍吹強風，持續風力達每小時41至62公里，陣風更可能超過每小時110公里，且風勢可能持續。 Strong wind is blowing or expected to blow generally in Hong Kong near sea level, with a sustained speed of 41-62 kilometres per hour (km/h), and gusts which may exceed 110 km/h, and the wind condition is expected to persist.
西北 烈風或暴風 NW'LY Gale or Storm	8 西北 NW		香港近海平面處現正或預料會普遍受烈風或暴風從信號所示方向吹襲，持續風力達每小時 63 至 117 公里，陣風更可能超過每小時 180 公里，且風勢可能持續。 Gale or storm force wind is blowing or expected to blow generally in Hong Kong near sea level, with a sustained wind speed of 63-117 km/h from the quarter indicated and gusts which may exceed 180 km/h, and the wind condition is expected to persist.
西南 烈風或暴風 SW'LY Gale or Storm	8 西南 SW		
東北 烈風或暴風 NE'LY Gale or Storm	8 東北 NE		
東南 烈風或暴風 SE'LY Gale or Storm	8 東南 SE		
烈風或暴風 風力增強 Increasing Gale or Storm	9		烈風或暴風的風力現正或預料會顯著加強。 Gale or storm force wind is increasing or expected to increase significantly in strength.
颶風 Hurricane	10		風力現正或預料會達到颶風程度，持續風力達每小時118公里或以上，陣風更可能超過每小時220公里。 Hurricane force wind is blowing or expected to blow with sustained speed reaching 118 km/h or above and gusts that may exceed 220 km/h.



* 熱帶氣旋警告系統的參考測風站網絡

*Network of reference anemometers in the tropical cyclone warning system

測風站 Anemometers		測風站 Anemometers	
BHD	黃麻角(赤柱) Bluff Head (Stanley)	TMS	大帽山 Tai Mo Shan
CCB	長洲泳灘 Cheung Chau Beach	TUN	屯門政府合署 Tuen Mun Government Offices
CP1	中環碼頭 Central Pier	WLP	濕地公園 Wetland Park
EPC	平洲 Ping Chau	WGL	橫瀾島 Waglan Island
GI	青洲 Green Island	參考測風站* Reference anemometers*	
HKS	黃竹坑 Wong Chuk Hang	CCH	長洲 Cheung Chau
JKB	將軍澳 Tseung Kwan O	LFS	流浮山 Lau Fau Shan
KP	京士柏 King's Park	HKA	香港國際機場 Hong Kong International Airport
LAM	南丫島 Lamma Island	SE	啟德 Kai Tak
NGP	昂坪 Ngong Ping	SHA	沙田 Sha Tin
NP	北角 North Point	SHL	青衣島蜆殼油庫 Tsing Yi Shell Oil Depot
PEN	坪洲 Peng Chau	SKG	西貢 Sai Kung
PLC	大美督 Tai Mei Tuk	TKL	打鼓嶺 Ta Kwu Ling
SC	沙洲 Sha Chau	潮汐測量站 Tide-gauge	
SEK	石崗 Shek Kong	QUB	鯽魚涌 Quarry Bay
SF	九龍天星碼頭 Star Ferry (Kowloon)	SPW	石壁 Shek Pik
SLW	沙螺灣 Sha Lo Wan	TBT	尖鼻咀 Tsim Bei Tsui
TME	塔門東 Tap Mun East	TMW	大廟灣 Tai Miu Wan
TC	大老山 Tate's Cairn	TPK	大埔滘 Tai Po Kau
TPK	大埔滘 Tai Po Kau	WGL	橫瀾島 Waglan Island

圖1.1 年報內提及的測風站及潮汐測量站之分佈地點

Figure 1.1 Locations of anemometers and tide gauge stations mentioned in this annual report

第二節 二零二一年熱帶氣旋概述

2.1 二零二一年的熱帶氣旋回顧

2.1.1 北太平洋西部(包括南海區域)的熱帶氣旋

二零二一年有27個熱帶氣旋影響北太平洋西部及南海區域（即由赤道至北緯45度、東經100至180度所包括的範圍），少於1961-2020年約30個的長期年平均數目。全年有10個熱帶氣旋達到颱風或以上強度，少於1961-2020年約15個的長期年平均數目，其中有五個熱帶氣旋更達到超強颱風程度(中心附近最高持續風速達到每小時185公里或以上)。

圖2.1是二零二一年在北太平洋西部及南海區域熱帶氣旋數目之逐月分佈。

二零二一年內有七個熱帶氣旋在中國登陸，其中一個在香港300公里內的華南沿岸登陸。四個橫過菲律賓及五個登陸越南。四月的超強颱風舒力基(2102)及九月的超強颱風燦都(2114)（圖2.3）皆是二零二一年北太平洋西部及南海區域最強的熱帶氣旋，其中心附近最高持續風速估計為每小時240公里，而最低海平面氣壓為910百帕斯卡（表4.1）。

2.1.2 香港責任範圍內的熱帶氣旋

在二零二一年的27個熱帶氣旋中，有17個出現在香港責任範圍（即北緯10至30度、東經105至125度），略多於1961-2020年約16個的長期年平均數目（表2.1），當中有七個在香港責任範圍內形成。年內，香港天文台總共發出413個供船舶使用的熱帶氣旋警告(表4.2)。

2.1.3 南海區域內的熱帶氣旋

二零二一年共有11個熱帶氣旋影響南海區域（即北緯10至25度、東經105至120度），略少於1961-2020年約12個的長期年平均數目，當中有七個在南海上形成。

2.1.4 影響香港的熱帶氣旋

二零二一年香港的颱風季節始於六月十一日，當天隨著熱帶低氣壓小熊(2104)在南海北部上形成，天文台發出一號戒備信號。香港入冬後一般甚少受熱帶氣旋直接威脅，然而強烈熱帶風暴雷伊(2122)在十二月下旬逐漸靠近廣東沿岸，天文台需要在十二月二十日發出一號戒備信號。這是自一九四六年以來年內最遲發出的熱帶氣旋警告。翌日雷伊迅速減弱及消散，二零二一年颱風季節隨著天文台當天取消所有熱帶氣旋警告信號而結束。

年內共有八個熱帶氣旋影響香港（圖2.2），較1961-2020年約六個的長期年平均數目偏多(表2.2)。這八個熱帶氣旋分別為六月的熱帶風暴小熊(2104)、七月的兩個熱帶低氣壓及颱風查帕卡(2107)、八月的熱帶風暴盧碧(2109)、十月的熱帶風暴獅子山(2117)及颱風圓規(2118)、十二月的超強颱風雷伊(2122)。天文台在獅子山及圓規影響香港期間，分別在十月九日及十月十二日發出八號烈風或風暴信號，是年內發出的最高熱帶氣旋警告信號。而兩個八號信號僅相距60小時40分鐘，是自一九六一年以來由兩個不同熱帶氣旋所引致的八號信號之時間相距最短的紀錄。查帕卡及盧碧吹襲本港期間天文台曾發出三號強風信號。其餘四個影響香港的熱帶氣旋均引致天文台發出一號戒備信號。

2.1.5 熱帶氣旋的雨量

二零二一年熱帶氣旋為香港帶來的雨量（即由熱帶氣旋出現於香港600公里範圍內至其消散或離開香港600公里範圍之後72小時期間天文台總部錄得的雨量）共為980.6毫米（表4.8.1），約佔年內總雨量2307.1毫米的百分之42.5，較1961-2020年長期年平均值的704.2毫米多約百分之39.3。

根據上述的定義，熱帶風暴獅子山(2117)為香港帶來的雨量為369.0毫米(表4.8.1)，是年內雨量最多的熱帶氣旋。

2.2 每月概述

這一節逐月介紹二零二一年北太平洋西部及南海區域的熱帶氣旋概況。影響香港的各熱帶氣旋及傷亡報告則詳述於第三節。

一月

二零二一年一月並無熱帶氣旋在北太平洋西部及南海區域上形成。

二月

熱帶低氣壓杜鵑(2101)於二月十八日早上在馬尼拉之東南偏東約1 520公里的北太平洋西部上形成，當晚增強為熱帶風暴。翌日早上杜鵑達到其最高強度，中心附近最高持續風速估計為每小時75公里。當晚及二月二十日杜鵑在菲律賓以東海域徘徊並減弱。杜鵑於二月二十一日採取西北路徑移向菲律賓，翌日早上在菲律賓減弱為低壓區。

根據報章報導，杜鵑為菲律賓帶來狂風暴雨，造成53 000人受災，超過180座房屋受損。

三月

二零二一年三月並無熱帶氣旋在北太平洋西部及南海區域上形成。

四月

熱帶低氣壓舒力基(2102)於四月十三日晚上在雅蒲島以南約230公里的北太平洋西部上形成，大致向西北偏西方向移動並逐漸增強。舒力基於四月十六日增強為颱風。在有利的大氣條件下，當晚舒力基開始迅速增強，翌日發展為超強颱風並達到其最高強度，中心附近最高持續風速估計為每小時240公里，成為自一九六一年以來四月份在北太平洋西部出現的最強熱帶氣旋。隨後四天舒力基向西北偏北緩慢移動，橫過菲律賓以東海域。舒力基於四月二十二日轉向東北方向移動，橫過琉球群島以南海域並逐漸減弱。舒力基最後於四月二十五日在日本以南的北太平洋西部演變為一股溫帶氣旋。

根據報章報導，在舒力基的吹襲下，一艘貨輪在菲律賓南部海域擱淺，造成四名船員死亡。

五月至六月

一個熱帶低氣壓於五月十三日凌晨在馬尼拉之東南約1 280公里的北太平洋西部上形成，大致向西移向菲律賓南部。當日早上該熱帶低氣壓達到其最高強度，中心附近最高持續風速估計為每小時55公里。隨後該熱帶低氣壓逐漸減弱，最後於五月十四日凌晨在菲律賓南部消散。

熱帶低氣壓彩雲(2103)於五月三十日早上在馬尼拉之東南偏東約1 700公里的北太平洋西部上形成，向西北偏西移動。彩雲於翌日增強為熱帶風暴，橫過菲律賓以東海域，並於六月一日凌晨達到其最高強度，中心附近最高持續風速估計為每小時75公里。隨後彩雲橫過菲律賓並進入南海。六月三日彩雲轉向北移動，並逐漸減弱。其後彩雲在六月四日再轉向東北移動，最後於六月五日凌晨在琉球群島一帶演變為一股溫帶氣旋。

根據報章報導，彩雲吹襲菲律賓期間，最少造成11人死亡，3人受傷及2人失蹤，約9萬4千人受災。彩雲亦為台灣帶來暴雨及水浸，導致台北約5萬戶停電。

一個季風低壓於六月十一日下午在香港之西南偏南約500公里的南海北部上發展為熱帶低氣壓，大致向西北偏西移向海南島。該熱帶低氣壓於六月十二日早上橫過海南島，下午被命名為小熊(2104)。當日傍晚時分小熊在北部灣增強為熱帶風暴並達到其最高強度，中心附近最高持續風速估計為每小時65公里。小熊於六月十三日早上在越南北部登陸，下午在越南內陸減弱為低壓區。

根據報章報導，小熊吹襲越南期間造成最少1人死亡，2人失蹤，最少130間房屋倒塌。

熱帶低氣壓薔琵(2105)於六月二十一日早上在關島之東南偏東約390公里的北太平洋西部上形成，大致向西北方向移動並逐漸增強。六月二十五日凌晨薔琵增強為強烈熱帶風暴，並轉向北或東北偏北方向移動。晚上薔琵進一步增強為颱風並達到其最高強度，中心附近最高持續風速估計為每小時120公里。隨後薔琵開始減弱，最後在六月二十七日於日本本州以東海域演變為一股溫帶氣旋。

七月

七月五日凌晨，一個低壓區在馬尼拉之東北偏東約740公里的北太平洋西部上發展為熱帶低氣壓，隨後向西北方向移動，橫過呂宋海峽。該熱帶低氣壓在當晚達到其最高強度，中心附近最高持續風速估計為每小時55公里。該熱帶低氣壓在七月六日早上掠過台灣西南沿岸海域並迅速減弱，中午過後在台灣海峽附近消散。

而另一個低壓區則在七月五日晚上於西沙之東南偏南約230公里的南海中部上增強為熱帶低氣壓。該熱帶低氣壓在七月六日大致採取西北至西北偏北路徑移向海南島，當晚達到其最高強度，中心附近最高持續風速估計為每小時55公里。七月七日該熱帶低氣壓橫過海南島西南部後進入北部灣，翌日登陸越南北部並減弱為低壓區。

熱帶低氣壓煙花(2106)於七月十七日凌晨在沖繩島之東南約1 110公里的北太平洋西部上形成，向西北偏北方向移動，並逐漸增強。七月十九日早上煙花增強為強烈熱帶風暴，並採取西至西南偏西路徑掠過琉球群島一帶。七月二十日晚上煙花進一步增強為颱風，翌日早上達到其最高強度，中心附近最高持續風速估計為每小時145公里。七月二十二日煙花移速減慢，隨後三天轉向西北偏北方向移動，橫過東海。煙花於七月二十六日在浙江北部沿岸登陸，並逐漸減弱，最後於七月二十九日在山東減弱為低壓區。

根據報章報導，在煙花的持續影響下，華東一帶有暴雨，多處地區水浸，超過270萬人受災，約1 100間房屋受損。

熱帶低氣壓查帕卡(2107)於七月十八日晚上在香港之西南偏南約180公里的南海北部上形成，大致向西北至西北偏西方向緩慢移動，趨向廣東西部沿岸並迅速增強。七月二十日凌晨查帕卡增強為颱風並達到其最高強度，中心附近最高持續風速估計為每小時120公里，晚上查帕卡開始減弱並在陽江附近登陸。查帕卡於七月二十一日橫過廣東西部及廣西內陸，逐步減弱為熱帶低氣壓。查帕卡翌日轉向西南偏南移動，七月二十三日進入北部灣。最後於七月二十四日在北部灣減弱為一個低壓區。

熱帶低氣壓尼伯特(2108)於七月二十三日晚上於硫磺島以東約710 公里的北太平洋西部上形成，七月二十四日凌晨尼伯特增強為熱帶風暴，隨後兩天大致向東北偏北方向移動及減弱為熱帶低氣壓，尼伯特於七月二十六日逐漸轉向偏西方向移動，橫過日本以東海域，晚上再增強為熱帶風暴。尼伯特於七月二十七日凌晨達到其最高強度，中心附近最高持續風速估計為每小時75公里。隨後尼伯特轉向西北方向移動，最後於七月二十八日在日本本州減弱為一個低壓區。

八月

熱帶低氣壓盧碧(2109)於八月二日晚上在香港之西南約280公里的南海北部上形成，大致向東北偏東方向橫過南海北部並逐漸增強。八月三日早上盧碧移速減慢，下午轉向東南移動。隨後盧碧於八月四日凌晨轉向東北移動，早上增強為熱帶風暴。八月五日凌晨盧碧達到其最高強度，中心附近最高持續風速估計為每小時85公里。當日下午及翌日盧碧掠過福建沿岸地區，並減弱為熱帶低氣壓。八月七日凌晨盧碧在台灣海峽再度增強為熱帶風暴，並採取東北路徑移向日本，最後於八月九日在日本本州以北海域演變為一股溫帶氣旋。

根據報章報導，盧碧為台灣及日本九州帶來暴雨及水浸。

熱帶低氣壓妮妲(2111)於八月四日下午在硫磺島之東北偏東約760 公里的北太平洋西部上形成，向北移動並逐漸增強。妮妲於八月五日增強為熱帶風暴，翌日轉向東至東北方向移動，橫過日本以東的北太平洋西部。妮妲於八月七日凌晨達到其最高強度，中心附近最高持續風速估計為每小時85公里。妮妲於八月八日在日本以東的北太平洋西部演變為一股溫帶氣旋。

熱帶低氣壓銀河(2110)於八月五日早上在沖繩島之西南偏西約60公里的北太平洋西部上形成，大致向東北偏東方向移動並逐漸增強。銀河在八月八日凌晨發展為強烈熱帶風暴並達到其最高強度，中心附近最高持續風速估計為每小時90公里。銀河於八月九日在日本以東海域演變為一股溫帶氣旋。

熱帶低氣壓奧麥斯(2112)於八月十一日在威克島之東南偏東約1 430公里的北太平洋西部上形成，向西移動。奧麥斯於八月十六日在關島以東海域減弱為一個低壓區，其殘餘隨後四日繼續向西北偏西方向移動。與奧麥斯相關的殘餘低壓區於八月二十日下午在沖繩島之東南偏南約890 公里的北太平洋西部上再度增強為熱帶低氣壓，並轉向西北方向移動。奧麥斯於八月二十一日增強為熱帶風暴並達到其最高強度，中心附近最高持續風速估計為每小時85公里。奧麥斯於八月二十二日橫過琉球群島一帶後轉向北移動並逐漸減弱，翌日於濟州島附近海域演變為一股溫帶氣旋。

九月至十月

一個熱帶低氣壓於九月一日晚上在威克島之西北約 900 公里的北太平洋西部上形成，向西北偏西移動。九月二日早上該熱帶低氣壓達到其最高強度，中心附近最高持續風速估計為每小時55公里。隨後兩日該熱帶低氣壓逐漸轉向東北方向移動，最後於九月四日在日本以東的北太平洋西部上演變為一股溫帶氣旋。

熱帶低氣壓康森(2113)於九月五日下午在馬尼拉之東南偏東約1 140公里的北太平洋西部上形成，向西北方向移動並逐漸增強。九月七日上午康森增強為強烈熱帶風暴並達到其最高強度，中心附近最高持續風速估計為每小時90公里。康森在九月八日橫過菲律賓中部後稍為減弱，轉向偏西方向橫過南海中部。康森在九月九日晚上再度增強為強烈熱帶風暴。九月十一日上午康森減弱為熱帶風暴，隨後移動速度減慢並在越南以東的南海中部徘徊，最後康森於九月十二日晚上在越南中部沿岸海域減弱為一個低壓區。

根據報章報導，康森吹襲菲律賓期間，造成20人死亡，24人受傷，至少7人失蹤，此外，康森亦令當地約9 000幢建築物受損。

熱帶低氣壓燦都(2114)於九月六日下午在馬尼拉以東約1 880公里的北太平洋西部上形成，初時向西或西北偏西方向移動並迅速增強。燦都於九月八日早上增強為超強颱風，並於九月十日晚上達到其最高強度，中心附近最高持續風速估計為每小時240公里。隨後燦都逐漸減弱並轉向偏北方向移動，橫過台灣以東海域。九月十四日及十五日燦都移速減慢並在東海徘徊。九月十六日燦都開始加速向東至東北移動，翌日先後橫過日本九州及四國，最後於九月十八日在日本本州以東海域演變為一股溫帶氣旋。

根據報章報導，受燦都影響，台灣有超過80 000戶停電。燦都吹襲日本期間，鐵路及航空服務暫停。

熱帶低氣壓電母(2115)於九月二十二日晚上在西沙之東南偏南約460 公里的南海南部上形成，向西北偏西移動並逐漸增強。九月二十三日晚上電母增強為熱帶風暴並達到其最高強度，中心附近最高持續風速估計為每小時65公里。九月二十四日凌晨電母在越南中部登陸後轉向西移動並減弱，日間在中南半島減弱為一個低壓區。

熱帶低氣壓蒲公英(2116)於九月二十三日凌晨在關島之東南約340公里的北太平洋西部上形成，向西北偏西方向移動並逐漸增強。九月二十四日晚上蒲公英發展為強烈熱帶風暴，轉向西北方向移動並迅速增強。九月二十六日蒲公英進一步發展為超強颱風並達到其最高強度，中心附近最高持續風速估計為每小時220公里。隨後三日蒲公英向偏北方向移動，並在九月三十日轉向東北，移向日本以東海域。最後蒲公英於十月二日在日本以東海域演變為一股溫帶氣旋。

一個季風低壓於十月七日下午在三亞之東南偏東約290公里的南海中部上發展為熱帶低氣壓，大致向西北移向海南島。該熱帶低氣壓在十月八日上午被命名為獅子山(2117)，並增強為熱帶風暴。當日下午獅子山達到其最高強度，中心附近最高持續風速估計為每小時75公里。十月九日獅子山橫過海南島，期間路徑較為飄忽，以逆時針方向轉了一個圈。當日下午獅子山轉向西北偏西方向移動，在晚上進入北部灣。十月十日晚上獅子山在越南北部沿岸減弱為低壓區。

根據報章報導，獅子山在澳門造成六人受傷。此外，獅子山亦為珠海帶來暴雨，多處地區水浸。

圓規(2118)於十月八日晚上在馬尼拉以東約1020公里的北太平洋西部上發展為熱帶低氣壓，初時向偏北方向移動，並逐漸增強。十月十日圓規加速向偏西方向移動，十月十一日發展為強烈熱帶風暴及橫過呂宋海峽。圓規在十月十二日向西橫過南海北部，翌日早上進一步發展為颱風並達到其最高強度，中心附近最高持續風速估計為每小時120公里。十月十三日圓規橫過海南島並迅速減弱，十月十四日在北部灣減弱為低壓區。

根據報章報導，圓規吹襲菲律賓期間，造成40人死亡，5人受傷，17人失蹤，超過五十萬人須要撤離。此外，圓規帶來的暴雨令廣東鹽田港及海南島的三個港口關閉，海上運輸服務暫停。

熱帶低氣壓南川(2119)於十月九日晚上在威克島之西南偏西約550公里的北太平洋西部上形成，向西北偏西方向移動並逐漸增強。南川於十月十二日轉向北移動，翌日再向東北漂移。南川在十月十六日早上增強為強烈熱帶風暴並達到其最高強度，中心附近最高持續風速估計為每小時90公里。南川隨後迅速減弱，最後於十月十七日在威克島以北的北太平洋西部演變為一股溫帶氣旋。

熱帶低氣壓瑪瑙於(2120)十月二十四日早上在雅蒲島之東北約340公里的北太平洋西部上形成，大致向北移動並逐漸增強。瑪瑙於十月二十七日晚上增強為颱風，並轉向東北偏北移動。十月二十八日下午瑪瑙達到其最高強度，中心附近最高持續風速估計為每小時140公里。瑪瑙隨後逐漸減弱，最後於十月二十九日在日本以東海域演變為一股溫帶氣旋。

一個熱帶低氣壓於十月二十四日下午在南沙以東約280公里的南海南部上形成，向西或西北偏西移動。十月二十六日下午該熱帶低氣壓達到其最高強度，中心附近最高持續風速估計為每小時55公里。十月二十七日該熱帶低氣壓在越南南部減弱為一個低壓區。

十一月至十二月

熱帶低氣壓妮亞圖(2121)於十一月二十九日晚上在雅蒲島之東北約450公里的北太平洋西部上形成，向西北偏西方向移動，移向菲律賓以東海域並逐漸增強。妮亞圖於十二月一日早上增強為強烈熱帶風暴，隨後逐漸轉向東北方向移動，移向硫磺島一帶並持續增強。妮亞圖於十二月三日凌晨進一步增強為超強颱風並達到其最高強度，中心附近最高持續風速估計為每小時185公里。當晚妮亞圖減弱為強颱風，最後在硫磺島以東海域演變為一股溫帶氣旋。

熱帶低氣壓雷伊(2122)於十二月十二日晚上在馬尼拉之東南偏東約2 680公里的太平洋西部上形成，向西北偏西方向移動並逐漸增強。雷伊於十二月十五日開始迅速增強，翌日發展為超強颱風。雷伊橫過菲律賓後減弱為強颱風，十二月十七日向西移動，橫過南海南部。雷伊翌日再度增強為超強颱風，成為自一九六一年以來首個在十二月於南海出現的超強颱風。十二月十九日凌晨雷伊達到其最高強度，中心附近最高持續風速估計為每小時205公里。隨後兩日雷伊逐漸轉向東北方向移動，靠近廣東沿岸並迅速減弱，最後於十二月二十一日在香港以南海域減弱為一個低壓區。

根據報章報導，雷伊吹襲菲律賓期間造成最少409人死亡，超過十萬人需要撤離。

備註：人命傷亡及財物損毀數據是根據報章報導輯錄而成。

Section 2 TROPICAL CYCLONE OVERVIEW FOR 2021

2.1 Review of tropical cyclones in 2021

2.1.1 Tropical cyclones over the western North Pacific (including the South China Sea)

In 2021, a total of 27 tropical cyclones occurred over the western North Pacific (WNP) and the South China Sea (SCS) bounded by the Equator, 45°N, 100°E and 180°, less than the long-term (1961 - 2020) average figure of around 30. During the year, 10 of the tropical cyclones attained typhoon intensity or above, less than the long-term average (1961 - 2020) of about 15, with five of them reaching super typhoon intensity (maximum 10-minute wind speed of 185 km/h or above near the centre).

Figure 2.1 shows the monthly frequencies of the occurrence of tropical cyclones in WNP and SCS in 2021.

During the year, seven tropical cyclones made landfall over China, with one of them crossing the south China coast within 300 km of Hong Kong. Four traversed the Philippines and five made landfall over Vietnam. With an estimated maximum sustained wind speed of 240 km/h and a minimum sea-level pressure of 910 hPa near the centre (Table 4.1), Super Typhoon Surigae (2102) and Super Typhoon Chanhu (2114) in September (Figure 2.3) were the most intense tropical cyclones over the WNP and the SCS in 2021.

2.1.2 Tropical cyclones in Hong Kong's area of responsibility

Amongst the 27 tropical cyclones in 2021, 17 of them occurred inside Hong Kong's area of responsibility (i.e. the area bounded by 10°N, 30°N, 105°E and 125°E), slightly more than the long-term annual average (1961-2020) figure of around 16 (Table 2.1). Seven of them developed within Hong Kong's area of responsibility. Altogether, 413 tropical cyclone warnings to ships and vessels were issued by the Hong Kong Observatory this year (Table 4.2).

2.1.3 Tropical cyclones over the South China Sea

11 tropical cyclones affected SCS bounded by 10°N, 25°N, 105°E and 120°E in 2021, slightly less than the long-term annual average (1961-2020) of around 12. Seven of them formed over the SCS.

2.1.4 Tropical cyclones affecting Hong Kong

In 2021, the typhoon season in Hong Kong started on 11 June when Tropical Depression Koguma (2104) formed over the northern part of the SCS, necessitating the issuance of the Standby Signal No. 1. It is rare to have tropical cyclones directly threatening Hong Kong in winter. However, as Severe Tropical Storm Rai (2122) gradually edged closer to the coast of Guangdong in late December, the Observatory issued the Standby Signal No. 1 on 20 December. This is the latest tropical cyclone warning signal in a year since 1946. When Rai weakened rapidly and dissipated the next day, the typhoon season ended with the cancellation of all tropical cyclone warning signals on that day.

Eight tropical cyclones affected Hong Kong during 2021 (Figure 2.2), more than the long-term (1961-2020) average of about six in a year (Table 2.2). They were Tropical Storm Koguma (2104) in June, two Tropical Depressions and Typhoon Cempaka (2107) in July, Tropical Storm Lupit (2109) in August, Tropical Storm Lionrock (2117) and Typhoon Kompasu (2118) in October, Super Typhoon Rai (2122) in December. The No. 8 Gale or Storm Signal was issued during the passage of Lionrock and Kompasu on 9 and 12 October respectively, the highest tropical cyclone warning signal issued in 2021. The time separation between these two No. 8 signals was only 60 hours 40 minutes, the shortest record of break time between two No. 8 signals for two tropical cyclones since 1946. The No. 3 Strong Wind Signal was issued during the passage of Cempaka and Lupit. The rest of the four tropical cyclones all necessitated the issuance of the Standby Signal No. 1 in Hong Kong.

2.1.5 Tropical cyclone rainfall

Tropical cyclone rainfall for Hong Kong (total rainfall recorded at the Hong Kong Observatory Headquarters from the time when a tropical cyclone comes within 600 km of Hong Kong to 72 hours after it has dissipated or moved more than 600 km away from Hong Kong) in 2021 was 980.6 mm (Table 4.8.1). This accounted for approximately 42.5 % of the year's total rainfall of 2307.1 mm and was about 39.3% higher than the 1961-2020 long-term average of 704.2 mm.

According to the above definition, Tropical Storm Lionrock (2117) brought 369.0 mm of rainfall to Hong Kong (Table 4.8.1) and was the wettest tropical cyclone in 2021.

2.2 Monthly overview

A monthly overview of tropical cyclones in 2021 is given in this section. Detailed reports on tropical cyclones affecting Hong Kong, including reports of damage, are presented in Section 3.

JANUARY

No tropical cyclone formed over the western North Pacific and the South China Sea in January 2021.

FEBRUARY

Dujuan (2101) formed as a tropical depression over the western North Pacific about 1 520 km east-southeast of Manila on the morning of 18 February. Dujuan developed into a tropical storm that night, reaching its peak intensity the next morning with an estimated sustained wind of 75 km/h near its centre. Dujuan lingered over the seas east of the Philippines and weakened that night and on 20 February. It tracked northwestward towards the Philippines on 21 February and degenerated into an area of low pressure over the Philippines the next morning.

According to press reports, Dujuan brought squalls and torrential rain to the Philippines. More than 53 000 people were affected and over 180 houses were damaged.

MARCH

No tropical cyclone formed over the western North Pacific and the South China Sea in March 2021.

APRIL

Surigae (2102) formed as a tropical depression over the western North Pacific about 230 km south of Yap on the night of 13 April. Moving generally west-northwestwards, it intensified gradually. Surigae intensified into a typhoon on 16 April. Under favourable atmospheric conditions, Surigae started to intensify rapidly that night. It developed into a super typhoon the next day and reached its peak intensity with an estimated sustained wind of 240 km/h near its centre, making it the most intense tropical cyclone over the western North Pacific in April since 1961. It then moved north-northwestwards slowly across the seas east of the Philippines in the following four days. Surigae turned to move northeastwards across the seas south of Ryukyu Islands on 22 April and weakened gradually. It finally evolved into an extratropical cyclone over the western North Pacific south of Japan on 25 April.

According to press reports, a cargo ship ran aground over the seas of the southern Philippines during the passage of Surigae, killing four crew members on board.

MAY TO JUNE

A tropical depression formed over the western North Pacific about 1 280 km southeast of Manila on the small hours of 13 May and moved generally westwards towards the southern part of the Philippines. The tropical depression reached its peak intensity in the morning with an estimated sustained wind of 55 km/h near its centre. It weakened gradually afterwards and finally dissipated over the southern part of the Philippines in the small hours on 14 May.

Choi-wan (2103) formed as a tropical depression over the western North Pacific about 1 700 km east-southeast of Manila on the morning of 30 May and moved west-northwestwards. It intensified into a tropical storm the next day and moved across the seas east of the Philippines. Choi-wan reached its peak intensity with an estimated maximum sustained wind of 75 km/h near its centre in the small hours on 1 June. It moved across the Philippines afterwards and entered the South China Sea. Choi-wan turned to move northwards on 3 June and weakened gradually. It then moved northeastwards on 4 June and finally evolved into an extratropical cyclone over the vicinity of the Ryukyu Islands in the small hours on 5 June.

According to press reports, Choi-wan left at least 11 deaths, 3 injuries and 2 missing in the Philippines during its passage. Near 94 000 people were affected. Choi-wan also brought torrential rain and flooding to Taiwan. Electricity supply to around 50 000 households was interrupted in Taipei.

A monsoon depression developed into a tropical depression over the northern part of the South China Sea about 500 km south-southwest of Hong Kong on the afternoon of 11 June. It generally tracked west-northwestward towards Hainan Island. The tropical depression moved across Hainan Island on the morning of 12 June and was named Koguma (2104) in the afternoon. Koguma intensified into a tropical storm over Beibu Wan in that evening and reached its peak intensity with an estimated maximum sustained wind of 65 km/h near its centre. It made landfall over the northern part of Vietnam on the morning of 13 June and degenerated into an area of low pressure over inland Vietnam in the afternoon.

According to press reports, Koguma left at least 1 death and 2 missing during its passage to Vietnam. At least 130 houses were collapsed.

Champi (2105) formed as a tropical depression over the western North Pacific about 390 km east-southeast of Guam on the morning of 21 June. It generally moved northwestwards and intensified gradually. Champi intensified into a severe tropical storm in the small hours on 25 June and turned to move north or north-northeastwards. Champi further intensified into a typhoon that night and reached its peak intensity with an estimated maximum sustained wind of 120 km/h near its centre. Champi started to weaken afterwards and finally evolved into an extratropical cyclone over the seas east of Honshu, Japan on 27 June.

JULY

The area of low pressure over the western North Pacific around 740 km east-northeast of Manila developed into a tropical depression in the small hours on 5 July. The tropical depression then moved northwestwards across the Luzon Strait. It reached its peak intensity that night with an estimated sustained wind of 55 km/h near its centre. The tropical depression skirted past the southwestern coastal waters of Taiwan and weakened rapidly on the morning of 6 July. It dissipated near the Taiwan Strait shortly after noon.

Another area of low pressure over the central part of the South China Sea around 230 km south-southeast of Xisha intensified into a tropical depression on the night of 5 July. It tracked generally northwest to north-northwestwards towards Hainan Island on 6 July and reached its peak intensity that night with an estimated sustained wind of 55 km/h near its centre. After moving across the southwestern part of Hainan Island, the tropical depression entered Beibu Wan on 7 July. It made landfall over the northern part of Vietnam the next day and then weakened into an area of low pressure.

In-fa (2106) formed as a tropical depression over the western North Pacific about 1 110 km southeast of Okinawa in the small hours on 17 July. It moved north-northwestwards and intensified gradually. In-fa intensified into a severe tropical storm on the morning of 19 July, and took a west to west-southwesterly track to skirt past the vicinity of Ryukyu Islands. It further intensified into a typhoon on the night of 20 July and reached its peak intensity with an estimated maximum sustained wind of 145 km/h near its centre in the next morning. In-fa slowed down on 22 July and turned to move north-northwestwards across the East China Sea in the following three days. In-fa made landfall over the coast of the northern part of Zhejiang on 26 July and weakened gradually. It finally degenerated into an area of low pressure over Shandong on 29 July.

According to press reports, there were torrential rain and extensive flooding over the vicinity of eastern China under the persistent influence of In-fa. More than 2.7 million people were affected and around 1 100 houses were damaged.

Cempaka (2107) formed as a tropical depression over the northern part of the South China Sea about 180 km south-southwest of Hong Kong on the night of 18 July. It moved generally northwest to west-northwestwards slowly towards the coast of western Guangdong and intensified rapidly. Cempaka intensified into a typhoon in the small hours on 20 July and reached its peak intensity with an estimated maximum sustained wind of 120 km/h near its centre. It started to weaken at night and made landfall near Yangjiang. Cempaka moved across western Guangdong and inland Guangxi, and weakened into a tropical depression progressively on 21 July. It turned to move south-southwestwards the next day and entered Beibu Wan on 23 July. Cempaka finally degenerated into an area of low pressure over Beibu Wan on 24 July.

Nepartak (2108) formed as a tropical depression over the western North Pacific about 710 km east of Iwo Jima on the night of 23 July and intensified into a tropical storm in the small hours on 24 July. It generally moved north-northeastwards in the following two days, and weakened into a tropical depression. Nepartak then gradually turned to move westwards across the seas east of Japan on 26 July and re-intensified into a tropical storm that night. Nepartak reached its peak intensity with an estimated maximum sustained wind of 75 km/h near its centre in the small hours on 27 July. It then turned to move northwestwards and finally weakened into an area of low pressure over Honshu of Japan on 28 July.

AUGUST

Lupit (2109) formed as a tropical depression over the northern part of the South China Sea at about 280 km southwest of Hong Kong on the night of 2 August. It moved generally east-northeastwards across the northern part of the South China Sea and intensified gradually. Lupit slowed down on the morning of 3 August and turned to move southeastwards in the afternoon. It then turned to move northeastwards in the small hours on 4 August and intensified into a tropical storm in the morning. Lupit reached its peak intensity in the small hours on 5 August with an estimated maximum sustained wind of 85 km/h near its centre. It skirted past the coastal areas of Fujian in the afternoon and the next day, and weakened into a tropical depression. Lupit re-intensified into a tropical storm over the Taiwan Strait in the small hours on 7 August and tracked northeastwards towards Japan. It finally evolved into an extratropical cyclone over the seas north of Honshu of Japan on 9 August.

According to press reports, Lupit brought torrential rain and flooding to Kyushu of Japan and Taiwan.

Nida (2111) formed as a tropical depression over the western North Pacific about 760 km east-northeast of Iwo Jima on the afternoon of 4 August. It tracked northwards and intensified gradually. Nida intensified into a tropical storm on 5 August and turned to move east to northeastwards across the western North Pacific east of Japan the next day. Nida reached its peak intensity in the small hours on 7 August with an estimated maximum sustained wind of 85 km/h near its centre. It evolved into an extratropical cyclone over the western North Pacific east to Japan on 8 August.

Mirinae (2110) formed as a tropical depression over the western North Pacific about 60 km west-southwest of Okinawa on the morning of 5 August. It moved generally east-northeastwards and intensified gradually. Mirinae developed into a severe tropical storm in the small hours on 8 August and reached its peak intensity with an estimated maximum sustained wind of 90 km/h near its centre. It evolved into an extratropical cyclone over the seas east of Japan on 9 August.

Omais (2112) formed as a tropical depression over the western North Pacific about 1 430 km east-southeast of Wake Island on 11 August and moved westwards. It weakened into an area of low pressure over the seas east of Guam on 16 August and its remnant continued to track west-northwestwards in the following four days. The low pressure area associated with the remnant of Omais re-intensified into a tropical depression over the western North Pacific about 890 km south-southeast of Okinawa on the afternoon of 20 August. It turned to move northwestwards and intensified into a tropical storm on 21 August, reaching its peak intensity with an estimated maximum sustained wind of 85 km/h near its centre. After moving across the vicinity of Ryukyu Islands on 22 August, Omais turned to move northwards and weakened gradually. It evolved into an extratropical cyclone over the seas near Jeju Island the next day.

SEPTEMBER TO OCTOBER

A tropical depression formed over the western North Pacific about 900 km northwest of Wake Island on the night of 1 September and moved west-northwestwards. The tropical depression reached its peak intensity on the morning of 2 September with an estimated maximum sustained wind of 55 km/h near its centre. It turned to move northeastwards gradually in the following two days. The tropical depression finally evolved into an extratropical cyclone over the western North Pacific to the east of Japan on 4 September.

Conson (2113) formed as a tropical depression over the western North Pacific about 1 140 km east-southeast of Manila on the afternoon of 5 September. It moved northwestwards and intensified gradually. Conson intensified into a severe tropical storm and reached its peak intensity on the morning of 7 September with an estimated maximum sustained wind of 90 km/h near its centre. After sweeping across the central part of the Philippines on 8 September, Conson slightly weakened and turned to move westwards across the central part of the South China Sea. It re-intensified into a severe tropical storm again on the night of 9 September. Conson weakened into a tropical storm on the morning of 11 September. Conson then slowed down and lingered over the central part of the South China Sea to the east of Vietnam. Conson finally degenerated into an area of low pressure over the coastal waters of the central part of Vietnam on the night of 12 September.

According to press reports, Conson left 20 deaths, 24 injuries and at least 7 missing in the Philippines during its passage. Besides, about 9 000 buildings were damaged.

Chanthu (2114) formed as a tropical depression over the western North Pacific about 1 880 km east of Manila on the afternoon of 6 September. It moved west or west-northwestwards at first and intensified rapidly. Chanthu intensified into a super typhoon on the morning of 8 September and reached its peak intensity on the night of 10 September with an estimated maximum sustained wind of 240 km/h near its centre. Chanthu then weakened gradually and turned to move northwards across the seas east of Taiwan. It slowed down and lingered over the East China Sea on 14 and 15 September. Chanthu started to pick up speed and turned to move east to northeastwards on 16 September. It swept across Kyushu and Shikoku of Japan next day and finally evolved into an extratropical cyclone over the seas east of Honshu, Japan on 18 September.

According to press reports, there were more than 80 000 households without electricity supply in Taiwan under the influence of Chanthu. Railways and aviation services in Japan were suspended during the passage of Chanthu.

Dianmu (2115) formed as a tropical depression over the southern part of the South China Sea about 460 km south-southeast of Xisha on the night of 22 September. It moved west-northwestwards and intensified gradually. Dianmu intensified into a tropical storm on the night of 23 September and reached its peak intensity with an estimated maximum sustained wind of 65 km/h near its centre. Dianmu weakened and turned to move westwards after it made landfall over the central part of Vietnam in the small hours on 24 September. It degenerated into an area of low pressure over Indochina Peninsula during the day.

Mindulle (2116) formed as a tropical depression over the western North Pacific about 340 km southeast of Guam in the small hours on 23 September. It moved west-northwestwards and intensified gradually. Mindulle developed into a severe tropical storm on the night of 24 September. It turned to move northwestwards and intensified rapidly. Mindulle further developed into a super typhoon on 26 September and reached its peak intensity with an estimated maximum sustained wind of 220 km/h near its centre. It tracked northwards in the following three days and turned to move northeastwards towards the seas east of Japan on 30 September. Mindulle finally evolved into an extratropical cyclone over the seas east of Japan on 2 October.

A monsoon depression developed into a tropical depression over the central part of the South China Sea about 290 km east-southeast of Sanya on the afternoon of 7 October. It generally tracked northwestwards towards Hainan Island. The tropical depression was named Lionrock (2117) on the morning of 8 October and intensified into a tropical storm. Lionrock reached its peak intensity in the afternoon with an estimated maximum sustained wind of 75 km/h near its centre. When Lionrock moved across Hainan Island on 9 October, it took on an erratic track and made an anti-clockwise loop. Lionrock turned to move west-northwestwards in that afternoon and entered Beibu Wan at night. It degenerated into an area of low pressure over the coast of northern Vietnam on the night of 10 October.

According to press reports, Lionrock left six injuries in Macao. Besides, it also brought torrential rain to Zhuhai and triggered extensive flooding.

Kompasu (2118) developed as a tropical depression over the western North Pacific about 1 020 km east of Manila on the night of 8 October. It moved northwards at first and intensified gradually. Kompasu picked up speed to move westwards on 10 October. It developed into a severe tropical storm and moved across the Luzon Strait on 11 October. Kompasu moved westwards across the northern part of the South China Sea on 12 October. It further developed into a typhoon on the morning of next day, reaching its peak intensity with an estimated sustained wind of 120 km/h near its centre. Kompasu moved across Hainan Island on 13 October and weakened rapidly. It degenerated into an area of low pressure over Beibu Wan on 14 October.

According to press reports, Kompasu left 40 deaths, 5 injuries, 17 missing and over 500 000 people evacuated in the Philippines during its passage. Besides, the Yantian Port in Guangdong and 3 ports in Hainan Island were closed and the marine transportation services were suspended because of the torrential rain brought by Kompasu.

Namtheun (2119) formed as a tropical depression over the western North Pacific about 550 km west-southwest of Wake Island on the night of 9 October. It moved west-northwestwards and intensified gradually. Namtheun turned to move northwards on 12 October and drifted northeastwards the next day. Namtheun intensified into a severe tropical storm and reached its peak intensity on the morning of 16 October with an estimated maximum sustained wind of 90 km/h near its centre. It then weakened rapidly and finally evolved into an extratropical cyclone over the western North Pacific to the north of Wake Island on 17 October.

Malou (2120) formed as a tropical depression over the western North Pacific about 340 km northeast of Yap Island on the morning of 24 October. It generally moved northwards and intensified gradually. Malou intensified into a typhoon on the night of 27 October and turned to move north-northeastwards. It reached its peak intensity on the afternoon of 28 October with an estimated maximum sustained wind of 140 km/h near its centre. Malou then weakened gradually and finally evolved into an extratropical cyclone over the seas east of Japan on 29 October.

A tropical depression formed over the southern part of the South China Sea about 280 km east of Nansha on the afternoon of 24 October. It generally moved westwards or northwestwards. The tropical depression reached its peak intensity on the afternoon of 26 October with an estimated maximum sustained wind of 55 km/h near its centre. It degenerated into an area of low pressure over the southern part of Vietnam on 27 October.

NOVEMBER TO DECEMBER

Nyatoh (2121) formed as a tropical depression over the western North Pacific about 450 km northeast of Yap on the night of 29 November. It moved west-northwestwards towards the seas east of the Philippines and intensified gradually. Nyatoh intensified into a severe tropical storm on the morning of 1 December. It then turned gradually to move northeastwards towards the vicinity of Iwo Jima and continued to intensify. Nyatoh further intensified into a super typhoon in the small hours on 3 December and reached its peak intensity with an estimated maximum sustained wind of 185 km/h near its centre. Nyatoh weakened into a severe typhoon that night and finally evolved into an extratropical cyclone over the seas east of Iwo Jima.

Rai (2122) formed as a tropical depression over the western North Pacific about 2 680 km east-southeast of Manila on the night of 12 December. It moved west-northwestwards and intensified gradually. Rai started to intensify rapidly on 15 December and developed into a super typhoon on the next day. After sweeping across the Philippines, Rai weakened into a severe typhoon and moved westwards across the southern part of the South China Sea on 17 December. Rai re-intensified into a super typhoon the next day and became the first super typhoon over the South China Sea in December since 1961. It reached its peak intensity in the small hours on 19 December with an estimated maximum sustained wind of 205 km/h near its centre. Turning to move northeastwards gradually in the following two days, Rai edged closer to the coast of Guangdong and weakened rapidly. It finally degenerated into an area of low pressure over the seas south of Hong Kong on 21 December.

According to press reports, Rai left at least 409 deaths and over 100 000 people evacuated in the Philippines during its passage.

Note: Casualties and damage figures were compiled from press reports.

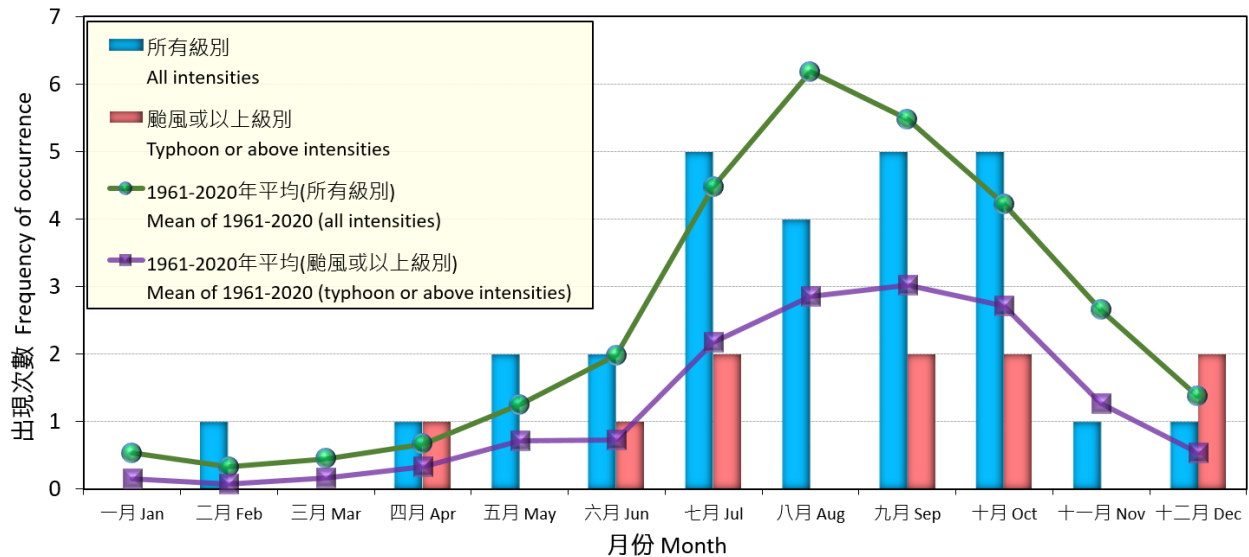


圖 2.1 二零二一年在北太平洋西部及南海區域的熱帶氣旋出現次數之每月分佈 (以熱帶氣旋在該月初次出現為準，假如一熱帶氣旋在九月形成並在十月首次增強為颱風或以上級別，它在「所有級別」及「颱風或以上級別」的統計數字將分別計算在九月及十月份內)。

Figure 2.1 Monthly frequencies of the occurrence of tropical cyclones in the western North Pacific and the South China Sea in 2021 (based on the first occurrence of the tropical cyclone in the month; for example if a tropical cyclone forms in September and first intensifies into typhoon or above intensities in October, its related statistics for “all intensities” and “typhoon or above intensities” will be counted in September and October respectively).

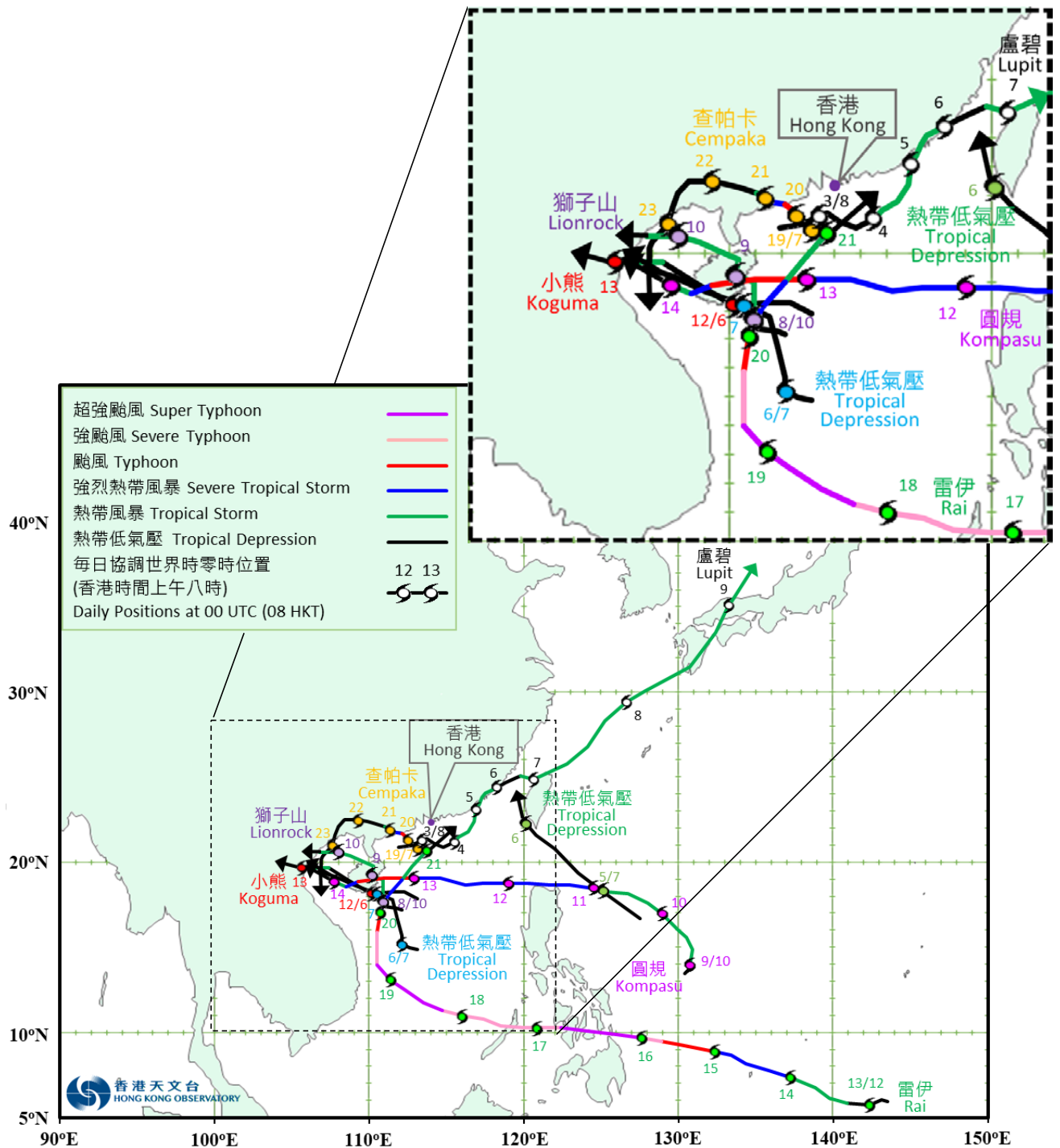


圖 2.2 二零二一年八個影響香港的熱帶氣旋的路徑圖。

Figure 2.2 Tracks of the eight tropical cyclones affecting Hong Kong in 2021.

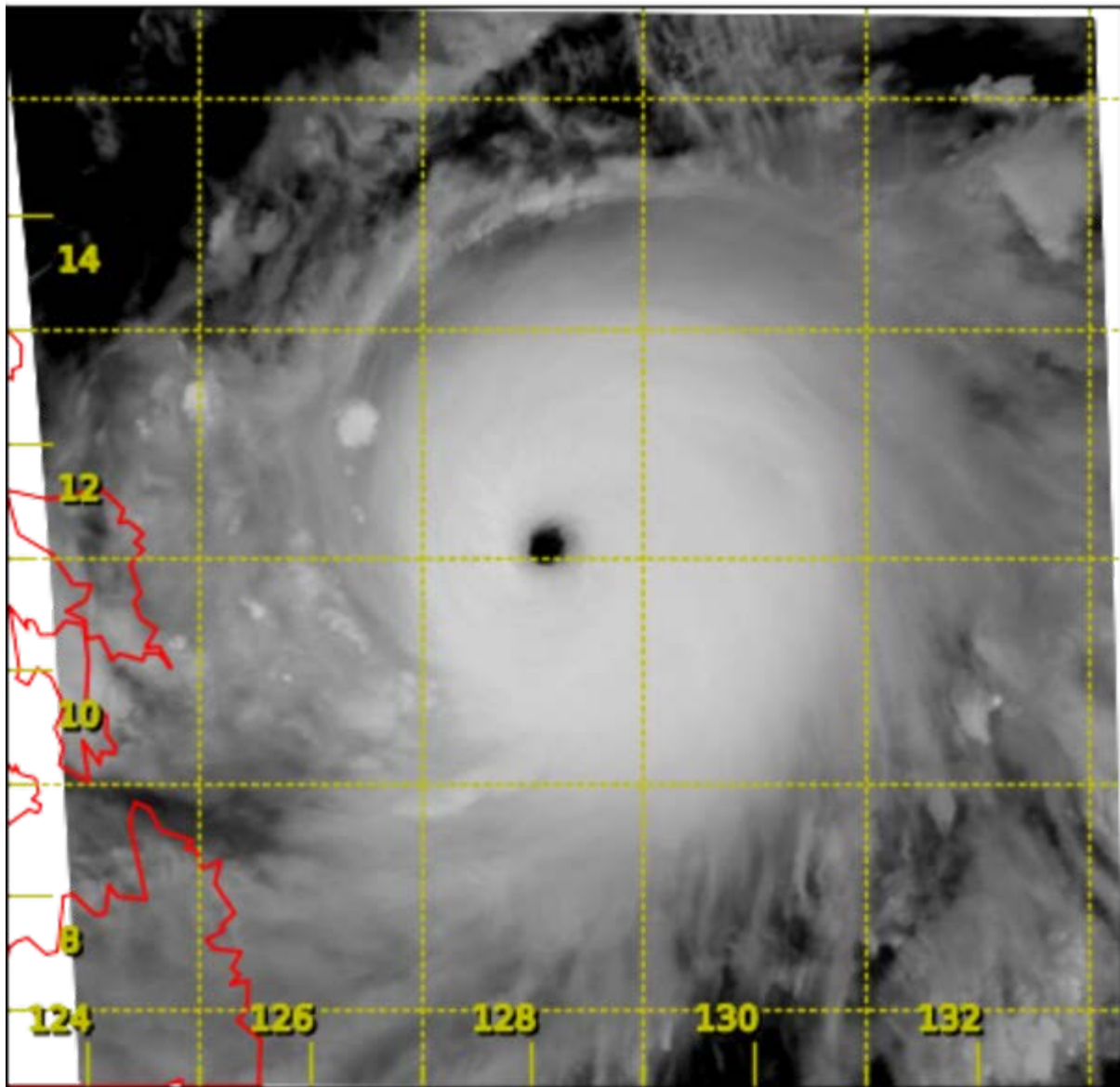


圖2.3a 二零二一年四月十七日下午8時左右超強颱風舒力基(2102)的紅外線衛星圖片，當時舒力基達到其最高強度，中心附近最高持續風速估計為每小時240公里，而最低中心氣壓為910百帕斯卡。

Figure 2.3a Infra-red satellite imagery of Super Typhoon Surigae (2102) around 8 p.m. on 17 April 2021, when Surigae was at its peak intensity with an estimated maximum sustained wind of 240 km/h near its centre and a minimum sea-level pressure of 910 hPa.

[此衛星圖像接收自日本氣象廳的向日葵8號衛星。]

[The satellite imagery was originally captured by Himawari-8 Satellite (H-8) of Japan Meteorological Agency (JMA).]

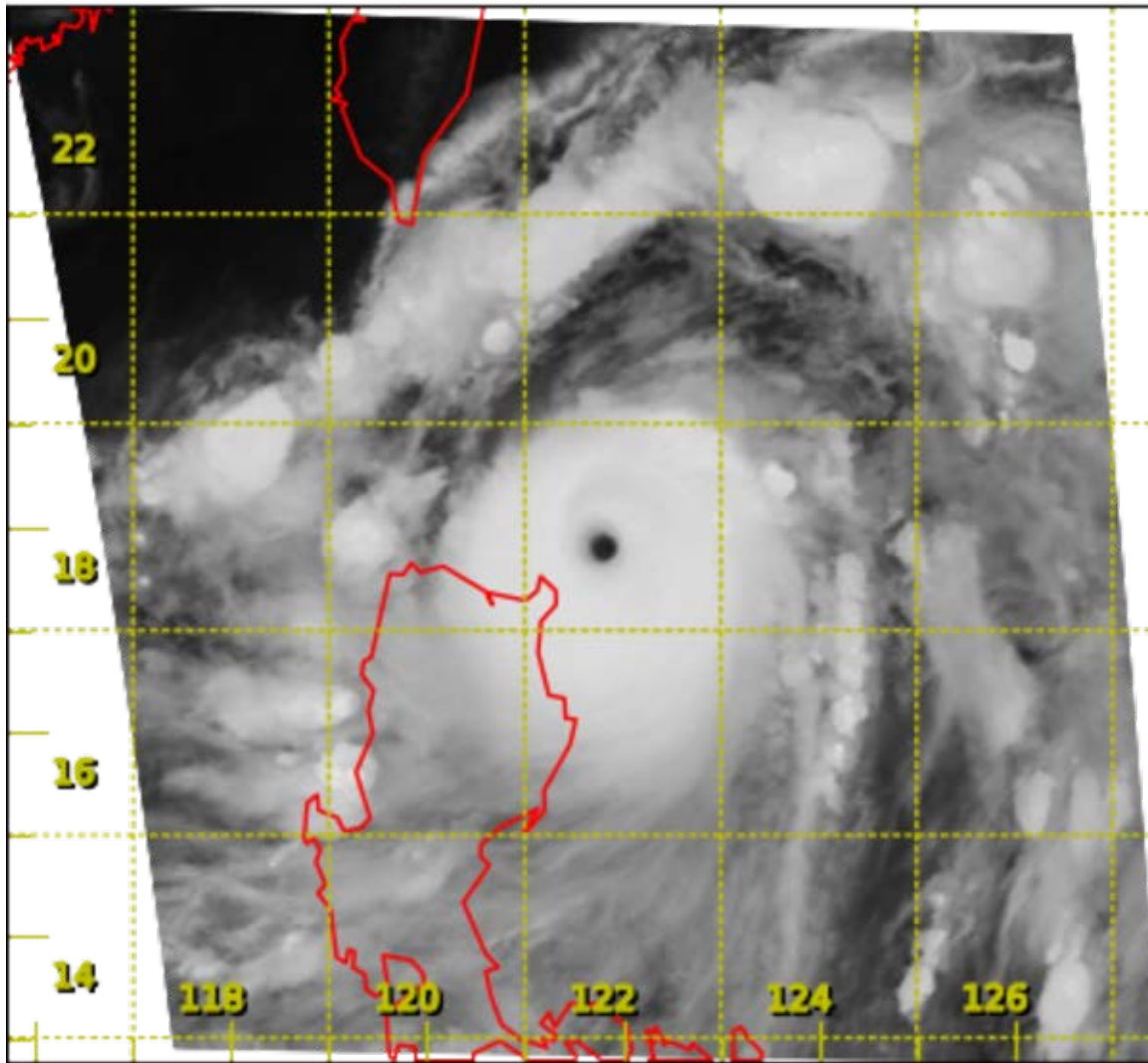


圖2.3b 二零二一年九月十日下午8時左右超強颱風燦都(2114)的紅外線衛星圖片，當時燦都達到其最高強度，中心附近最高持續風速估計為每小時240公里，而最低中心氣壓為910百帕斯卡。

Figure 2.3b Infra-red satellite imagery of Super Typhoon Chanthu (2114) around 8 p.m. on 10 September 2021, when Chanthu was at its peak intensity with an estimated maximum sustained wind of 240 km/h near its centre and a minimum sea-level pressure of 910 hPa.

[此衛星圖像接收自日本氣象廳的向日葵8號衛星。]

[The satellite imagery was originally captured by Himawari-8 Satellite (H-8) of Japan Meteorological Agency (JMA).]

表 2.1 在香港責任範圍內(10°-30°N, 105°-125°E)熱帶氣旋出現之每月分佈(以熱帶氣旋在該月初次出現為準)

Table 2.1 Monthly distribution of the occurrence of tropical cyclones in Hong Kong's area of responsibility (10° - 30°N, 105° - 125°E), based on the first occurrence of the tropical cyclone in the month

月份 Month 年份 Year	一月 Jan	二月 Feb	三月 Mar	四月 Apr	五月 May	六月 Jun	七月 Jul	八月 Aug	九月 Sep	十月 Oct	十一月 Nov	十二月 Dec	共 Total
1961					3	5	2	5	4	3	1	1	24
1962					3		4	5	4	1	3		20
1963						3	3	3	2			2	13
1964					1	1	5	3	6	3	6	1	26
1965	1				2	3	4	3	2		1		16
1966					2		5	2	3	2	2	1	17
1967			1	1		1	2	6	1	2	3		17
1968							2	4	2	1	3		12
1969							3	3	4	1			11
1970		1				2	2	3	4	5	3		20
1971				1	2	2	5	3	3	4			20
1972	1					3	2	4	2	1	1	1	15
1973							4	4	2	4	3		17
1974						3	2	4	2	4	4	2	21
1975	1					1		3	2	3	1	1	12
1976					1	1	1	4	1		1	1	10
1977						1	4	1	3		1		10
1978	1			1		2	2	4	5	4	1		20
1979				1	2	1	3	5	2	2	1	1	18
1980			1		3	1	5	2	3	1	1		17
1981						3	3	3	1	1	3	1	15
1982			2		1	1	3	3	3	1		2	16
1983						1	3	1	3	5	2		15
1984						2	2	4	2	2	2		14
1985						2	2	2	4	4	1		15
1986					1	1	1	4	1	3	3	2	16
1987						1	3	2	1	1	3	1	12
1988	1				1	3	1	1	2	5	2	1	17
1989					2	1	4	2	4	3	1		17
1990					1	4	2	3	3	3	2		18
1991				1	1	1	3	2	2	1	3		14
1992						2	3	2	2	2			11
1993						1	1	2	3	2	2	3	14
1994				1	1	2	6	5	2	2		1	20
1995						1	1	5	5	3	1	1	17
1996		1		1	2		3	3	2	1	2		15
1997					1		1	4	1	2	1		10
1998							1	3	4	3	3	1	15
1999				1		1	1	2	3	2	1	1	12
2000					2	1	3	5	3	3	2	1	20
2001					1	2	4	2	2	1	1	1	14
2002	1					1	3	2	3				10
2003				1	1	2	2	3	1	1	1		12
2004			1		1	3	2	2	2	1	2	1	15
2005			1				2	3	4	3	2		15
2006					1	1	3	3	4	1	2	1	16
2007							1	4	3	1	3		12
2008				1	2	1	2	3	5	1	2		17
2009					2	2	3	2	3	4	1		17
2010							3	4	2	2			11
2011					2	3	1	2	2	2			12
2012				1		3	2	3	1	2		2	14
2013						2	3	4	4	3	3		19
2014	1					1	2		3		1	2	10
2015	1			1	1	1	2	2	2	2		1	13
2016					1		3	1	4	3	1	2	15
2017	1			1		1	6	3	4	2	3	1	22
2018	1					2	4	4	2	1	2	1	17
2019							3	3	3	1	3	2	15
2020					1	1	2	4	1	4	4	1	18
2021		1		1		2	4	2	3	3		1	17
平均 Average (1961-2020)	0.2	0.0	0.1	0.2	0.8	1.4	2.7	3.1	2.7	2.1	1.7	0.7	15.6

表 2.2

影響香港的熱帶氣旋之每月分佈

Table 2.2

Monthly distribution of tropical cyclones affecting Hong Kong

月份 Month # 年份 Year	一月 Jan	二月 Feb	三月 Mar	四月 Apr	五月 May	六月 Jun	七月 Jul	八月 Aug	九月 Sep	十月 Oct	十一月 Nov	十二月 Dec	共 Total
1961					1		3		2				6
1962							2	1		1			4
1963						1	1	1	1				4
1964					1	1		1	4	3			10
1965						1	2		2		1		6
1966					1		3	1	1				6
1967				1		1	1	3		1	1		8
1968							1	3	2				6
1969							1		2	1			4
1970							1	2	1	2			6
1971					1	2	3	1	1	1			9
1972						2	1	1			1		5
1973							2	3	2	2			9
1974						2	1		2	4	1	1	11
1975						1		1	2	3			7
1976						1	1	2	1				5
1977						1	3	1	3				8
1978				1			1	2	2	2			8
1979							2	2	2				6
1980					1	1	4	1	2	1			10
1981						1	2	1	1				5
1982						1	2		1	1			5
1983							3		2	2			7
1984						1	1	2	1				5
1985						1	1		2	1			5
1986							1	2		1			4
1987						1		2	1	1			5
1988					1	1	1		1	2			6
1989					1	1	2		1	2			7
1990					1	2	1	1	1				6
1991							3	1	2				6
1992						1	3	1					5
1993						1	1	2	3	1	1		9
1994						2		1	1				4
1995							1	4	2	1			8
1996							2	2	2	1			7
1997							1	1					2
1998								2	1	2			5
1999				1		1	1	1	3	1			8
2000						1	2	2	1		1		7
2001						2	2	1	1				6
2002								2	1				3
2003							2	1	1				4
2004						1	1	1					3
2005								1	2				3
2006					1	1		3	1	1			7
2007								1	1				2
2008				1		1		2	1	1			6
2009						2	2	1	3				8
2010							2	1	1	1			5
2011						2	1		1	1			5
2012						2	1	2					5
2013						2	1	2	1		1		7
2014						1	1		2				4
2015						1	1			1			3
2016					1		2	1	2	3			9
2017						1	1	2	2	1			7
2018						1	1	1	2	1			6
2019							2	2	1				5
2020						1	1	1		2			5
2021						1	3	1		2		1	8
平均 Average (1961-2020)	0.0	0.0	0.0	0.1	0.2	0.8	1.5	1.4	1.5	0.9	0.2	0.0	6.0

熱帶氣旋警告信號首次發出的月份。#The month that the tropical cyclone warning signal was first issued.

第三節 二零二一年影響香港的熱帶氣旋

3.1 熱帶風暴小熊 (2104)：二零二一年六月十一日至十三日

小熊是二零二一年首個影響香港的熱帶氣旋。

一個季風低壓於六月十一日下午在香港之西南偏南約500公里的南海北部上發展為熱帶低氣壓，大致向西北偏西移向海南島。該熱帶低氣壓於六月十二日早上橫過海南島，下午被命名為小熊。當日傍晚時分小熊在北部灣增強為熱帶風暴並達到其最高強度，中心附近最高持續風速估計為每小時65公里。小熊於六月十三日早上在越南北部登陸，下午在越南內陸減弱為低壓區。

香港天文台於六月十一日下午4時15分發出一號戒備信號，當時小熊集結在香港之西南偏南約500公里。當晚及翌日早上本港普遍吹清勁的東至東南風，離岸及高地間中吹強風。小熊於六月十一日晚上8時左右最接近香港，在本港之西南偏南約480公里附近掠過。隨著小熊於六月十二日早上登陸海南島並遠離本港，本港風力逐漸減弱，天文台在當日下午2時10分取消所有熱帶氣旋警告信號。

在小熊的影響下，石壁錄得最高潮位(海圖基準面以上) 2.63米，而大埔滘則錄得最大風暴潮(天文潮高度以上)0.34米。天文台總部於六月十一日下午5時44分錄得最低瞬時海平面氣壓1004.0百帕斯卡。

受小熊相關的外圍雨帶影響，本港六月十一日及十二日間中有狂風大驟雨及雷暴。天文台曾在六月十一日晚上發出黃色暴雨警告。這兩天本港普遍錄得超過40毫米雨量，九龍東的雨量更超過70毫米。

小熊吹襲香港期間並沒有造成嚴重破壞。根據報章報導，小熊吹襲越南期間造成最少1人死亡，2人失蹤，最少130間房屋倒塌。

Section 3 TROPICAL CYCLONES AFFECTING HONG KONG IN 2021

3.1 Tropical Storm Koguma (2104): 11 to 13 June 2021

Koguma was the first tropical cyclone affecting Hong Kong in 2021.

A monsoon depression developed into a tropical depression over the northern part of the South China Sea about 500 km south-southwest of Hong Kong on the afternoon of 11 June. It generally tracked west-northwestward towards Hainan Island. The tropical depression moved across Hainan Island on the morning of 12 June and was named Koguma in the afternoon. Koguma intensified into a tropical storm over Beibu Wan in that evening and reached its peak intensity with an estimated maximum sustained wind of 65 km/h near its centre. It made landfall over the northern part of Vietnam on the morning of 13 June and degenerated into an area of low pressure over inland Vietnam in the afternoon.

In Hong Kong, the Standby Signal No.1 was issued at 4:15 p.m. on 11 June when Koguma was about 500 km south-southwest of the territory. Local winds were generally fresh east to southeasterlies and occasionally reached strong force offshore and on high ground at night and the next morning. Koguma came closest to the territory at around 8 p.m. on 11 June as it skirted past about 480 km south-southwest of Hong Kong. With Koguma making landfall over Hainan Island on the morning of 12 June and moving away from Hong Kong, local winds subsided gradually and all tropical cyclone warning signals were cancelled at 2:10 p.m. on 12 June.

Under the influence of Koguma, a maximum sea level (above chart datum) of 2.63 m and a maximum storm surge of 0.34 m (above astronomical tide) were recorded at Shek Pik and Tai Po Kau respectively. At the Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 1004.0 hPa was recorded at 5:44 p.m. on 11 June.

Under the influence of the outer rainbands of Koguma, there were occasional heavy squally showers and thunderstorms in Hong Kong on 11 and 12 June. Amber Rainstorm Warning was issued on the night of 11 June. More than 40 millimetres of rainfall were generally recorded in Hong Kong during these two days, with rainfall exceeding 70 millimetres over the eastern part of Kowloon.

Koguma did not cause significant damage in Hong Kong. According to press reports, Koguma left at least 1 death and 2 missing as well as at least 130 houses collapsed during its passage to Vietnam.

表 3.1.1 在小熊影響下，本港各站在熱帶氣旋警告信號生效時所錄得的最高陣風、最高每小時平均風速及風向

Table 3.1.1 Maximum gust peak speeds and maximum hourly mean winds with associated wind directions recorded at various stations when the tropical cyclone warning signals for Koguma were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time	風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time
中環碼頭	Central Pier	東	E	55	11/6	21:04	東	E	33	11/6	18:00
長洲	Cheung Chau	東南	SE	90	12/6	09:28	東南偏東	ESE	46	12/6	07:00
長洲泳灘	Cheung Chau Beach	東	E	94	12/6	09:28	東北偏東	ENE	42	12/6	01:00
青洲	Green Island	東北偏東	ENE	83	11/6	21:00	東北偏東	ENE	41	11/6	17:00
							東北偏東	ENE	41	11/6	18:00
香港國際機場	Hong Kong International Airport	東南偏東	ESE	59	12/6	09:48	東	E	32	11/6	17:00
							東	E	32	11/6	18:00
啟德	Kai Tak	東北偏東	ENE	64	11/6	22:29	東	E	28	12/6	10:00
京士柏	King's Park	東	E	51	11/6	20:55	東	E	21	11/6	17:00
		東南偏東	ESE	51	11/6	20:56	東	E	21	11/6	18:00
							東	E	21	12/6	05:00
南丫島	Lamma Island	東南偏東	ESE	65	12/6	09:29	東南偏東	ESE	26	12/6	10:00
流浮山	Lau Fau Shan	東	E	50	11/6	17:12	東	E	30	11/6	18:00
昂坪	Ngong Ping	東	E	117	12/6	09:40	東	E	68	12/6	02:00
北角	North Point	東	E	56	11/6	20:54	東	E	32	11/6	18:00
坪洲	Peng Chau	東南	SE	59	12/6	09:39	東	E	36	11/6	17:00
							東	E	36	11/6	18:00
平洲	Ping Chau	東南	SE	32	12/6	10:44	東	E	12	11/6	18:00
							東	E	12	12/6	03:00
西貢	Sai Kung	東南偏南	SSE	62	12/6	09:56	東北偏東	ENE	28	11/6	17:00
							東北偏東	ENE	28	12/6	03:00
沙洲	Sha Chau	東南偏南	SSE	65	12/6	09:53	東南	SE	30	12/6	11:00
							東南	SE	30	12/6	14:00
沙螺灣	Sha Lo Wan	東南	SE	58	12/6	10:18	東	E	19	11/6	19:00
							東	E	19	12/6	08:00
沙田	Sha Tin	東南偏南	SSE	43	12/6	09:26	東南偏南	SSE	15	12/6	10:00
							東南偏南	SSE	15	12/6	11:00
九龍天星碼頭	Star Ferry (Kowloon)	東南偏東	ESE	54	11/6	18:27	東	E	27	12/6	02:00
		東南偏東	ESE	54	12/6	07:17					
打鼓嶺	Ta Kwu Ling	東	E	39	12/6	05:09	東南偏東	ESE	15	12/6	09:00
大美督	Tai Mei Tuk	東	E	71	12/6	04:57	東北偏東	ENE	38	12/6	04:00
大帽山	Tai Mo Shan	東南偏東	ESE	98	12/6	05:04	東南偏東	ESE	65	12/6	06:00
大埔滘	Tai Po Kau	東南	SE	62	12/6	10:05	東	E	29	11/6	18:00
塔門東	Tap Mun East	-	-	67	12/6	04:43	-	-	43	12/6	07:00
大老山	Tate's Cairn	東南偏東	ESE	82	12/6	02:46	東南偏東	ESE	49	12/6	01:00
將軍澳	Tseung Kwan O	東南偏東	ESE	43	12/6	09:47	東南偏東	ESE	11	12/6	10:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東南偏東	ESE	54	11/6	16:31	東南偏東	ESE	19	11/6	17:00
屯門政府合署	Tuen Mun Government Offices	東南	SE	53	12/6	09:55	東南	SE	21	12/6	14:00
橫瀾島	Waglan Island	東	E	66	11/6	18:53	東	E	48	12/6	00:00
濕地公園	Wetland Park	東	E	32	11/6	16:26	東	E	14	11/6	17:00
		東北偏東	ENE	32	11/6	17:06					
黃竹坑	Wong Chuk Hang	東北偏東	ENE	63	11/6	19:11	東北偏東	ENE	18	12/6	02:00

黃麻角(赤柱)、石崗 - 沒有資料

Bluff Head (Stanley), Shek Kong - data not available

塔門東 - 沒有風向資料

Tap Mun East - wind direction not available

表 3.1.2 小熊影響香港期間，香港天文台總部及其他各站所錄得的日雨量
Table 3.1.2 Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Koguma

站 (參閱圖 3.1.2) Station (See Fig. 3.1.2)			六月十一日 11 Jun	六月十二日 12 Jun	總雨量(毫米) Total rainfall (mm)
香港天文台 Hong Kong Observatory (HKO)			31.2	30.3	61.5
香港國際機場 Hong Kong International Airport (HKA)			20.0	15.3	35.3
長洲 Cheung Chau (CCH)			3.0	[5.5]	[8.5]
H23	香港仔	Aberdeen	18.0	24.0	42.0
N05	粉嶺	Fanling	9.0	35.5	44.5
N13	糧船灣	High Island	16.0	24.0	40.0
K04	佐敦谷	Jordan Valley	51.5	28.5	80.0
N06	葵涌	Kwai Chung	28.0	30.5	58.5
H12	半山區	Mid Levels	23.0	33.5	56.5
N09	沙田	Sha Tin	19.0	40.0	59.0
H19	筲箕灣	Shau Kei Wan	41.0	20.0	61.0
SEK	石崗	Shek Kong	18.5	[25.0]	[43.5]
K06	蘇屋邨	So Uk Estate	44.0	21.0	65.0
R31	大美督	Tai Mei Tuk	9.0	28.0	37.0
R21	踏石角	Tap Shek Kok	16.5	21.0	37.5
N17	東涌	Tung Chung	23.0	11.0	34.0
TMR	屯門水庫	Tuen Mun Reservoir	13.9	25.5	39.4

註： [] 基於不完整的每小時雨量數據。

Note: [] based on incomplete hourly data.

表 3.1.3 小熊影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮
Table 3.1.3 Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Koguma

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高潮位(海圖基準面以上) Maximum sea level (above chart datum)			最大風暴潮(天文潮高度以上) Maximum storm surge (above astronomical tide)		
		高度(米) Height (m)	日期/月份 Date/Month	時間 Time	高度(米) Height (m)	日期/月份 Date/Month	時間 Time
鰂魚涌	Quarry Bay	2.45	12/6	09:23	0.26	12/6	06:40
石壁	Shek Pik	2.63	12/6	09:40	0.29	12/6	07:18
大廟灣	Tai Miu Wan	2.40	12/6	07:36	0.29	12/6	07:35
大埔滘	Tai Po Kau	2.51	12/6	08:03	0.34	12/6	07:59

尖鼻咀、橫瀾島 - 沒有資料 Tsim Bei Tsui, Waglan Island - data not available

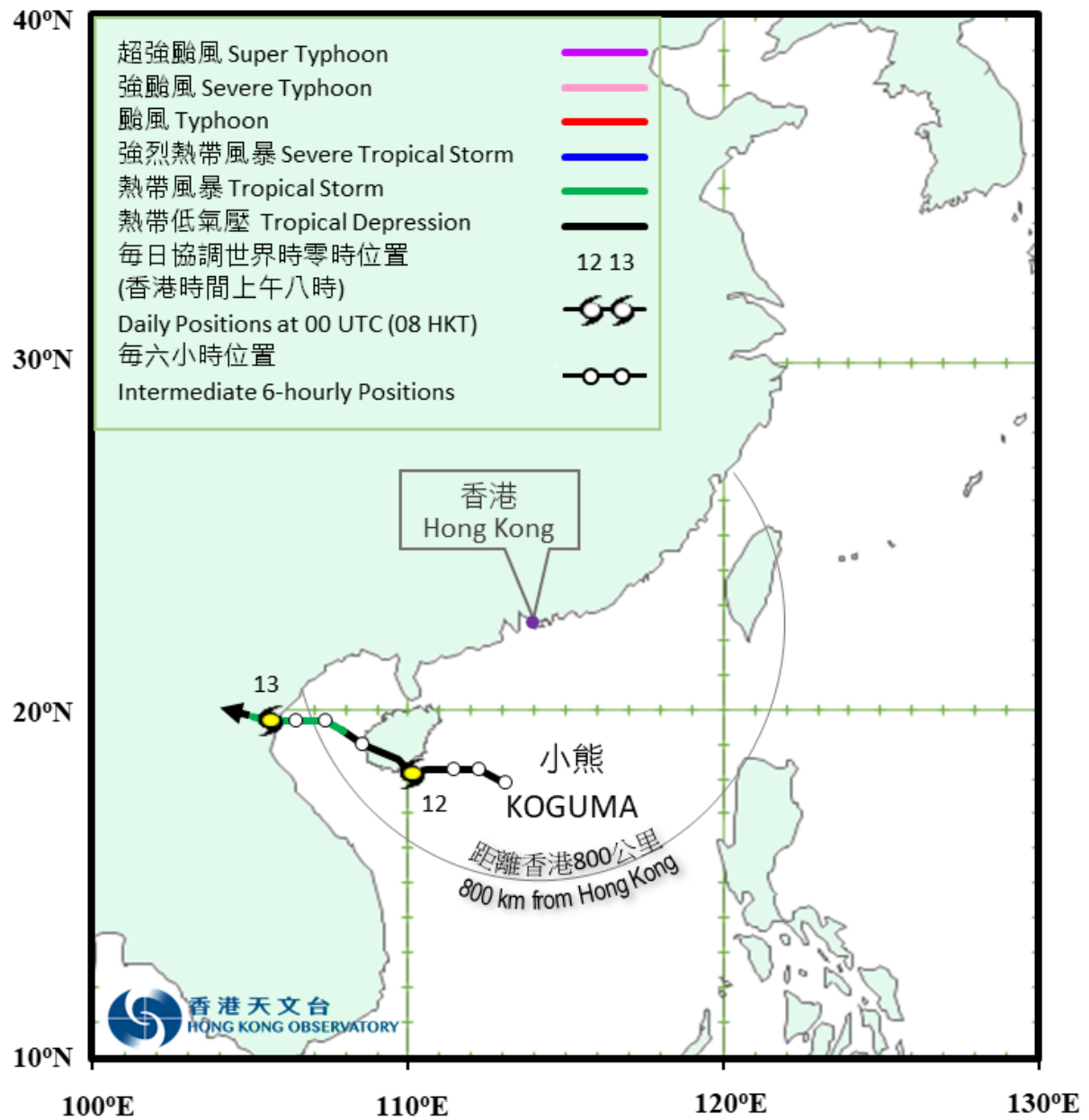


圖 3.1.1 二零二一年六月十一日至十三日小熊的路徑圖。

Figure 3.1.1 Track of Koguma : 11 – 13 June 2021.

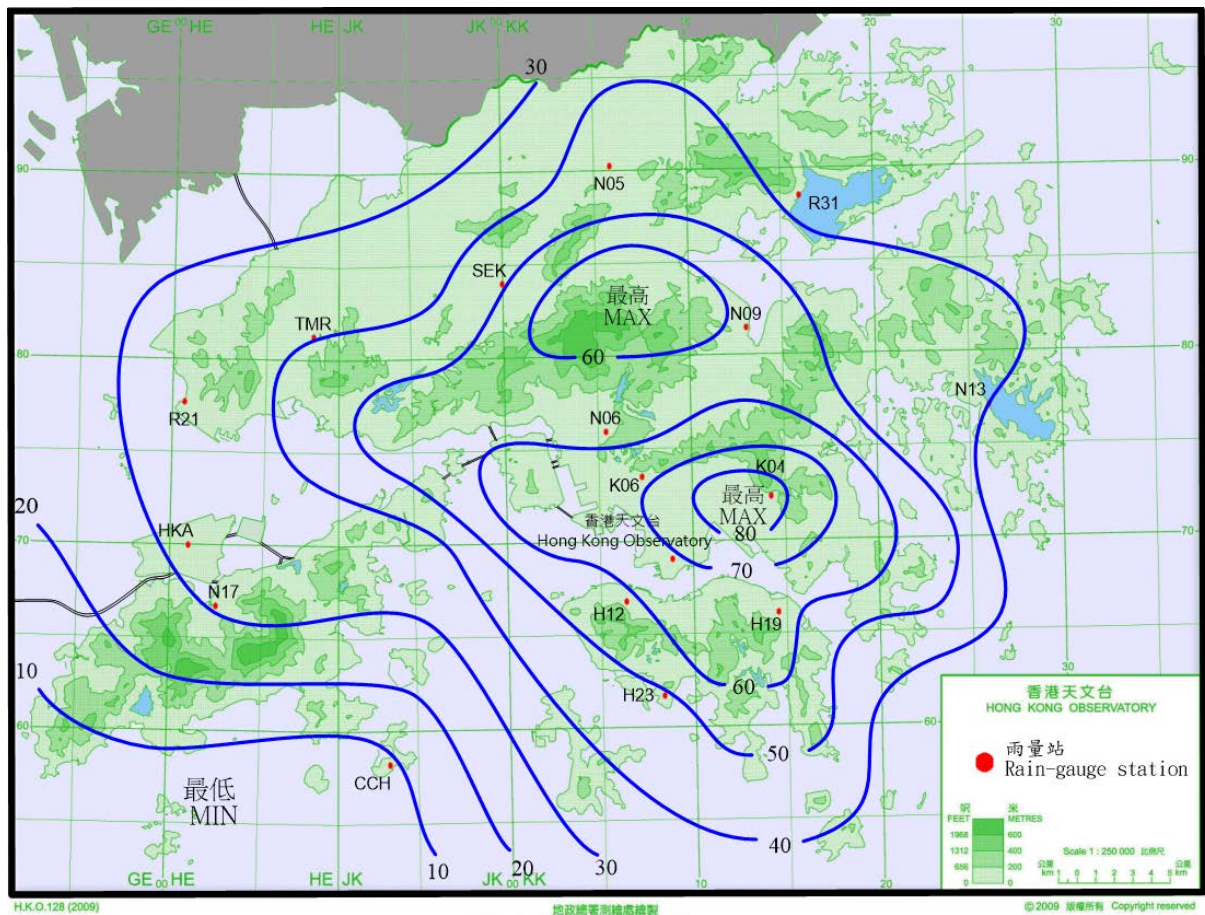


圖 3.1.2 二零二一年六月十一日至十二日的雨量分佈(等雨量線單位為毫米)。

Figure 3.1.2 Rainfall distribution on 11 – 12 June 2021 (isohyets in millimetres).

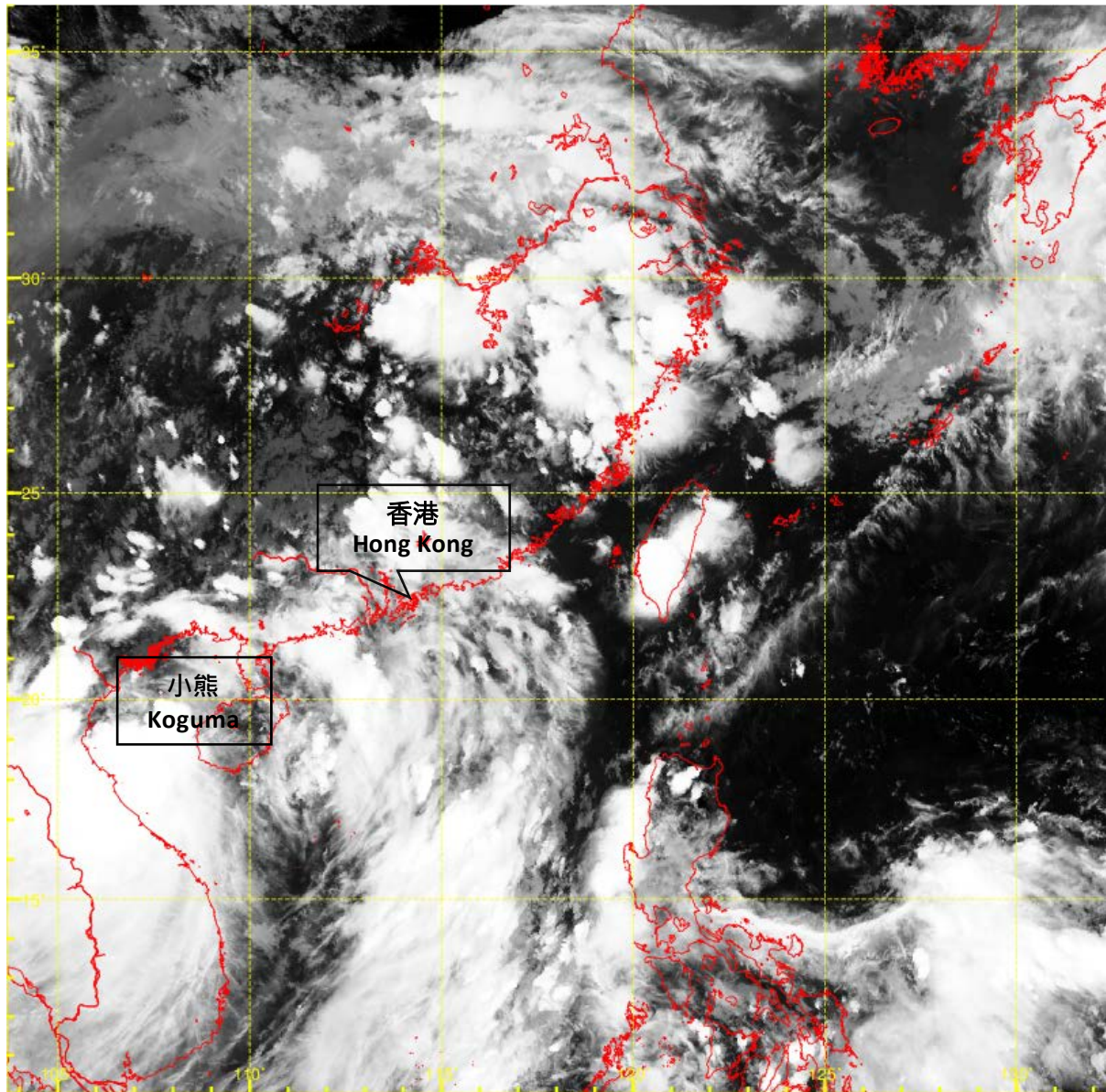


圖 3.1.3 二零二一年六月十二日下午5時左右的紅外線衛星圖片，當時小熊達到其最高強度，中心附近最高持續風速估計為每小時65公里。

Figure 3.1.3 Infra-red satellite imagery around 5 p.m. on 12 June 2021, when Koguma was at its peak intensity with an estimated sustained wind of 65 km/h near its centre.

[此衛星圖像接收自日本氣象廳的向日葵8號衛星。]

[The satellite imagery was originally captured by Himawari-8 Satellite (H-8) of Japan Meteorological Agency (JMA).]

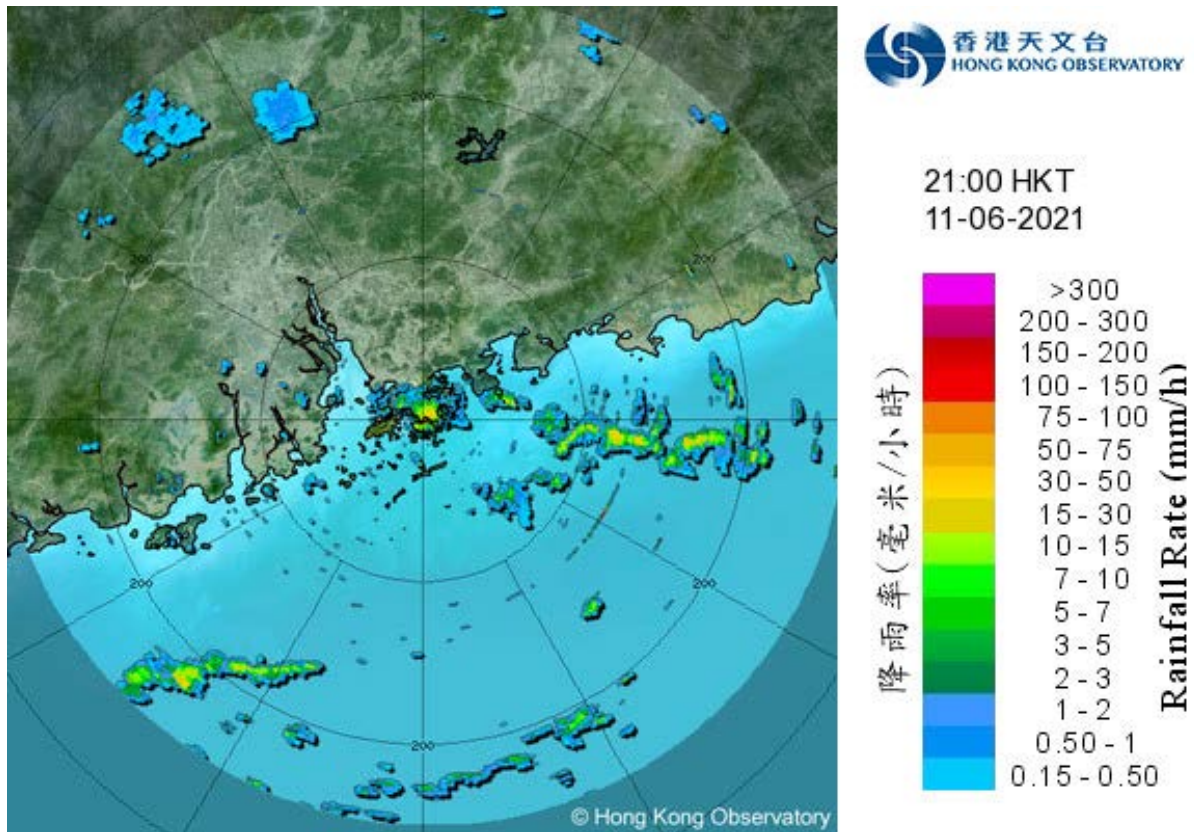


圖 3.1.4 二零二一年六月十一日晚上 9 時正的雷達回波圖像，當時與小熊相關的外圍雨帶正影響香港，黃色暴雨警告正在生效。

Figure 3.1.4 Image of radar echoes at 9:00 p.m. on 11 June 2021. The outer rainbands associated with Koguma were affecting Hong Kong and Amber Rainstorm Warning was in force at that time.

3.2 兩個熱帶低氣壓：二零二一年七月五日至八日

七月六日天文台就分別位於台灣南部附近及南海中部的兩個熱帶低氣壓發出一號戒備信號，這情況較為罕見，對上一次天文台同時就兩個熱帶氣旋發出熱帶氣旋警告信號是一九七九年九月的強烈熱帶風暴麥克及熱帶風暴蘭茜。

七月五日凌晨，一個低壓區在馬尼拉之東北偏東約740公里的西北太平洋上增強為熱帶低氣壓，隨後向西北方向移動，橫過呂宋海峽。該熱帶低氣壓在當晚達到其最高強度，中心附近最高持續風速估計為每小時55公里。該熱帶低氣壓在七月六日早上掠過台灣西南沿岸海域並迅速減弱，中午過後在台灣海峽附近消散。

而另一個低壓區則在七月五日晚上於西沙之東南偏南約230公里的南海中部上增強為熱帶低氣壓。該熱帶低氣壓在七月六日大致採取西北至西北偏北路徑移向海南島，當晚達到其最高強度，中心附近最高持續風速估計為每小時55公里。七月七日該熱帶低氣壓橫過海南島西南部後進入北部灣，翌日登陸越南北部並減弱為低壓區。

香港天文台在七月六日上午4時15分發出一號戒備信號，當時第一個位於台灣南部附近的熱帶低氣壓集結在香港以東約660公里，而第二個位於南海中部的熱帶低氣壓則在香港之西南偏南約820公里。當日早上本港普遍吹和緩偏東風。第一個熱帶低氣壓在中午前最接近本港，其中心位於香港以東約610公里。中午過後該熱帶低氣壓在台灣海峽附近消散。但由於位於南海中部的第二個熱帶低氣壓繼續移近本港，一號戒備信號仍然維持。七月六日下午及翌日本港離岸及高地間中吹強風。第二個熱帶低氣壓在七月七日上午二時左右最接近本港，在香港之西南偏南約570公里掠過。隨著該熱帶低氣壓登陸海南島及遠離香港，對香港的威脅減少，天文台在七月七日下午2時10分取消所有熱帶氣旋警告信號。

在這兩個熱帶低氣壓的影響下，尖鼻咀錄得最高潮位(海圖基準面以上) 2.49米，而大廟灣及大埔滘均錄得最大風暴潮(天文潮高度以上)0.22米。天文台總部於七月六日上午4時15分錄得最低瞬時海平面氣壓1004.7百帕斯卡。

受這兩個熱帶低氣壓相關的外圍雨帶影響，在七月六日及七月七月初時本港間中有狂風驟雨及雷暴，多處地區錄得超過20毫米雨量。隨著覆蓋中國東南部的副熱帶高壓脊向西伸展，七月七日本港日間驟雨減少，天氣轉為酷熱及短暫時間有陽光。

這兩個熱帶低氣壓影響香港期間並沒有造成嚴重破壞。

3.2 Two Tropical Depressions: 5 to 8 July 2021

On 6 July, the Standby Signal No.1 was issued for two tropical depressions which were respectively located near the southern part of Taiwan and over the central part of the South China Sea. This is a relatively rare event and the last time with a tropical cyclone warning signal issued for two tropical cyclones at the same time was due to severe tropical storm Mac and tropical storm Nancy in September 1979.

The area of low pressure over the western North Pacific around 740 km east-northeast of Manila intensified into a tropical depression in the small hours on 5 July. The tropical depression then moved northwestwards across the Luzon Strait. It reached its peak intensity at night with an estimated sustained wind of 55 km/h near its centre. The tropical depression skirted past the southwestern coastal waters of Taiwan and weakened rapidly on the morning of 6 July. It dissipated near the Taiwan Strait shortly after noon.

Another area of low pressure over the central part of the South China Sea around 230 km south-southeast of Xisha intensified into a tropical depression on the night of 5 July. It tracked generally northwest to north-northwestwards towards Hainan Island on 6 July. The tropical depression reached its peak intensity on the night of 6 July with an estimated sustained wind of 55 km/h near its centre. After moving across the southwestern part of Hainan Island, the tropical depression entered Beibu Wan on 7 July. It made landfall over the northern part of Vietnam on 8 July and then degenerated into an area of low pressure.

In Hong Kong, the Standby Signal No.1 was issued at 4:15 a.m. on 6 July when the first tropical depression near the southern part of Taiwan was about 660 km east of Hong Kong and the second tropical depression over the central part of the South China Sea was about 820 km south-southwest of Hong Kong. Local winds were generally moderate easterlies in the morning. The first tropical depression was closest to Hong Kong before noon with its centre about 610 km east of Hong Kong. It dissipated near Taiwan Strait shortly after noon. Meanwhile, as the second tropical depression over the central part of the South China Sea continued to edge closer to Hong Kong, the Standby Signal No.1 remained in force. Locally, there were occasional strong winds offshore and on high ground on the afternoon of 6 July and the next day. The second tropical depression came closest to Hong Kong around 2 a.m. on 7 July as it skirted past about 570 km south-southwest of the territory. With the second tropical depression making landfall over Hainan Island and moving away from Hong Kong, its threat to Hong Kong diminished and all tropical cyclone warning signals were cancelled at 2:10 p.m. on 7 July.

Under the influence of the two tropical depressions, a maximum sea level (above chart datum) of 2.49 m was recorded at Tsim Bei Tsui. A maximum storm surge of 0.22 m (above astronomical tide) was recorded at Tai Miu Wan and Tai Po Kau. At the Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 1004.7 hPa was recorded at 4:15 a.m. on 6 July.

Affected by the outer rainbands of these two tropical depressions, there were occasional squally showers and thunderstorms in Hong Kong on 6 July and the early part of 7 July. More than 20 millimetres of rainfall were recorded in many places of Hong Kong. With the subtropical ridge over southeastern China extending westwards, showers in Hong Kong abated gradually during the day on 7 July and local weather became very hot with sunny intervals.

The two tropical depressions did not cause significant damage in Hong Kong.

表 3.2.1 在兩個熱帶低氣壓影響下，本港各站在熱帶氣旋警告信號生效時所錄得的最高陣風、最高每小時平均風速及風向

Table 3.2.1 Maximum gust peak speeds and maximum hourly mean winds with associated wind directions recorded at various stations when the tropical cyclone warning signals for the two tropical depressions were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time	風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time
中環碼頭	Central Pier	東	E	56	6/7	15:38	東	E	22	6/7	22:00
							東南偏東	ESE	22	7/7	11:00
長洲	Cheung Chau	東南	SE	69	6/7	23:09	東南偏東	ESE	40	7/7	09:00
長洲泳灘	Cheung Chau Beach	東	E	61	6/7	14:24	東	E	36	6/7	15:00
		東南偏東	ESE	61	6/7	23:11					
香港國際機場	Hong Kong International Airport	東南偏東	ESE	54	6/7	23:35	東	E	28	6/7	15:00
啟德	Kai Tak	東南偏東	ESE	54	6/7	15:34	東南偏東	ESE	24	7/7	11:00
京士柏	King's Park	東	E	46	6/7	23:46	東	E	17	7/7	11:00
南丫島	Lamma Island	東南偏東	ESE	50	6/7	14:12	東南偏東	ESE	26	7/7	10:00
流浮山	Lau Fau Shan	東南偏南	SSE	51	6/7	16:24	東南	SE	30	7/7	13:00
昂坪	Ngong Ping	東南偏東	ESE	90	6/7	23:26	東	E	53	7/7	03:00
北角	North Point	東	E	50	6/7	15:33	東	E	22	7/7	03:00
坪洲	Peng Chau	東南	SE	54	6/7	14:25	東	E	30	6/7	22:00
平洲	Ping Chau	東南	SE	27	7/7	14:08	東	E	8	6/7	22:00
西貢	Sai Kung	東南偏南	SSE	50	6/7	15:43	東南偏南	SSE	30	7/7	11:00
沙洲	Sha Chau	東南	SE	52	6/7	14:52	東南	SE	34	7/7	12:00
		東南偏南	SSE	52	6/7	16:29					
沙螺灣	Sha Lo Wan	東南偏東	ESE	54	7/7	08:28	東	E	18	7/7	00:00
沙田	Sha Tin	東南	SE	39	7/7	09:55	東南	SE	15	7/7	11:00
							東南	SE	15	7/7	12:00
九龍天星碼頭	Star Ferry (Kowloon)	東	E	52	6/7	23:45	東南偏東	ESE	27	7/7	11:00
打鼓嶺	Ta Kwu Ling	東	E	43	7/7	03:37	東南偏南	SSE	15	7/7	13:00
大美督	Tai Mei Tuk	東	E	68	7/7	03:20	東	E	30	7/7	02:00
大帽山	Tai Mo Shan	東南偏東	ESE	69	7/7	09:17	東	E	49	6/7	23:00
大埔滘	Tai Po Kau	東南偏南	SSE	50	6/7	15:56	東南偏東	ESE	25	7/7	12:00
塔門東	Tap Mun East	-	-	62	7/7	03:56	-	-	38	7/7	04:00
大老山	Tate's Cairn	東南	SE	65	6/7	15:37	東南偏東	ESE	37	7/7	00:00
將軍澳	Tseung Kwan O	東南偏東	ESE	36	6/7	15:33	東	E	5	7/7	09:00
							東南偏東	ESE	5	7/7	11:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東南	SE	49	6/7	14:40	東南	SE	24	6/7	15:00
屯門政府合署	Tuen Mun Government Offices	東南	SE	48	6/7	14:41	東南偏南	SSE	24	6/7	15:00
橫瀾島	Waglan Island	東南偏東	ESE	59	6/7	23:18	東南偏東	ESE	37	7/7	08:00
							東南偏東	ESE	37	7/7	09:00
濕地公園	Wetland Park	南	S	33	7/7	12:31	東南偏南	SSE	14	7/7	13:00
							南	S	14	7/7	14:00
黃竹坑	Wong Chuk Hang	北	N	49	6/7	14:04	北	N	17	7/7	13:00

黃麻角(赤柱)、青洲、石崗 - 沒有資料

Bluff Head (Stanley), Green Island, Shek Kong - data not available

塔門東 - 沒有風向資料

Tap Mun East - wind direction not available

表 3.2.2 兩個熱帶低氣壓影響香港期間，香港天文台總部及其他各站所錄得的日雨量

Table 3.2.2 Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of the two tropical depressions

站 (參閱圖 3.2.2) Station (See Fig. 3.2.2)			七月六日 6 Jul	七月七日 7 Jul	總雨量(毫米) Total rainfall (mm)
香港天文台 Hong Kong Observatory (HKO)			18.4	11.7	30.1
香港國際機場 Hong Kong International Airport (HKA)			2.8	1.5	4.3
長洲 Cheung Chau (CCH)			10.0	0.0	10.0
H23	香港仔	Aberdeen	17.5	5.0	22.5
N05	粉嶺	Fanling	3.5	20.0	23.5
N13	糧船灣	High Island	7.0	12.5	19.5
K04	佐敦谷	Jordan Valley	7.5	26.0	33.5
N06	葵涌	Kwai Chung	2.0	22.0	24.0
H12	半山區	Mid Levels	13.5	5.0	18.5
N09	沙田	Sha Tin	5.5	10.0	15.5
H19	筲箕灣	Shau Kei Wan	17.0	14.5	31.5
SEK	石崗	Shek Kong	0.5	7.0	7.5
K06	蘇屋邨	So Uk Estate	9.5	20.0	29.5
R31	大美督	Tai Mei Tuk	10.0	15.0	25.0
R21	踏石角	Tap Shek Kok	0.0	3.0	3.0
N17	東涌	Tung Chung	0.0	0.0	0.0
TMR	屯門水庫	Tuen Mun Reservoir	0.3	6.8	7.1

表 3.2.3 兩個熱帶低氣壓影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮

Table 3.2.3 Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of the two tropical depressions

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高潮位(海圖基準面以上) Maximum sea level (above chart datum)			最大風暴潮(天文潮高度以上) Maximum storm surge (above astronomical tide)		
		高度(米) Height (m)	日期/月份 Date/Month	時間 Time	高度(米) Height (m)	日期/月份 Date/Month	時間 Time
鯽魚涌	Quarry Bay	2.11	7/7	07:10	0.15	6/7	23:27
石壁	Shek Pik	2.26	7/7	07:04	0.21	6/7	23:25
大廟灣	Tai Miu Wan	2.12	7/7	07:26	0.22	6/7	22:29
大埔滘	Tai Po Kau	2.09	7/7	08:01	0.22	6/7	22:55
尖鼻咀	Tsim Bei Tsui	2.49	7/7	07:59	0.20	7/7	01:05

橫瀾島 - 沒有資料 Waglan Island - data not available

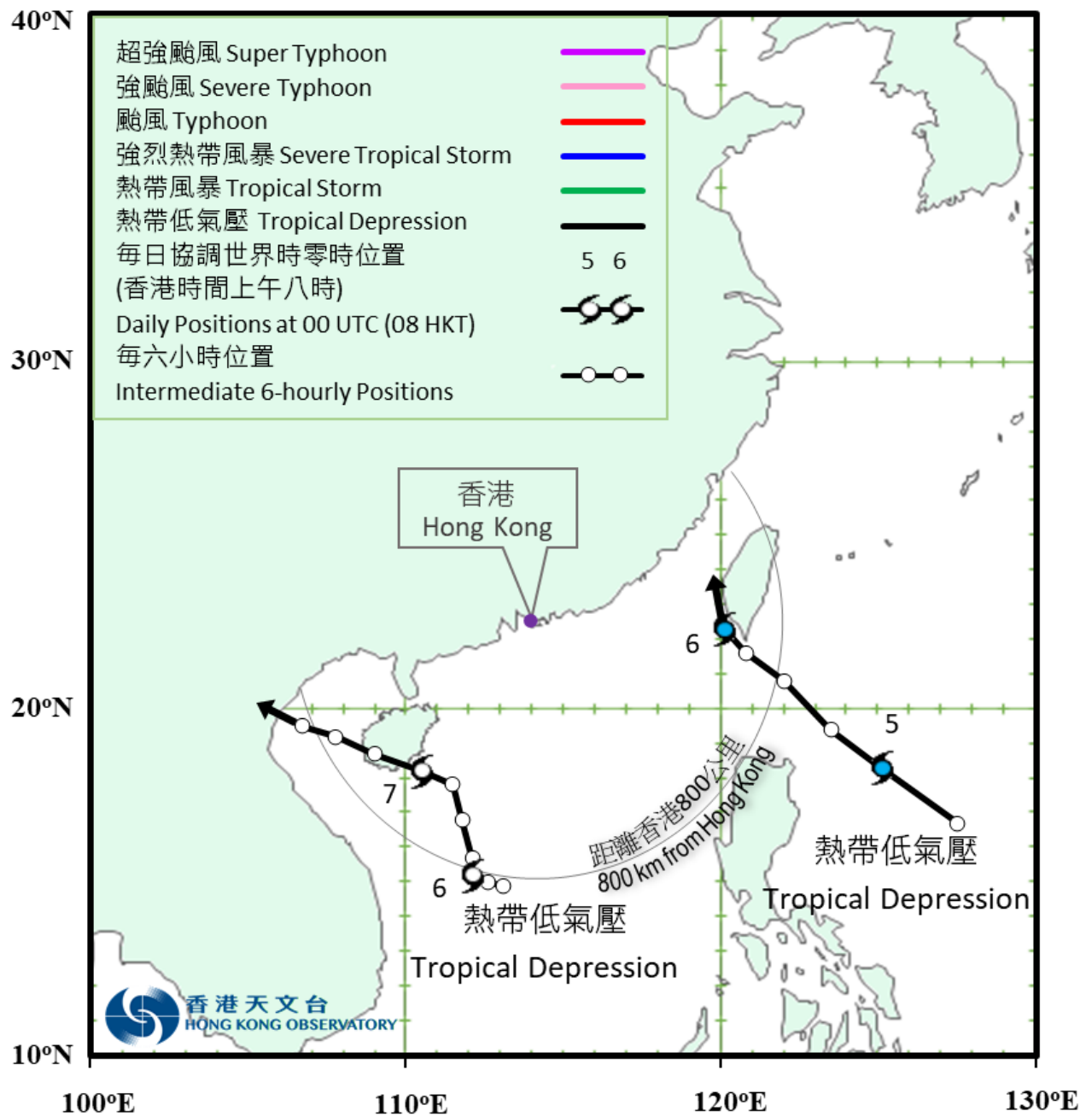


圖 3.2.1 二零二一年七月五日至八日兩個熱帶低氣壓的路徑圖。

Figure 3.2.1 Tracks of the two tropical depressions: 5 – 8 July 2021.

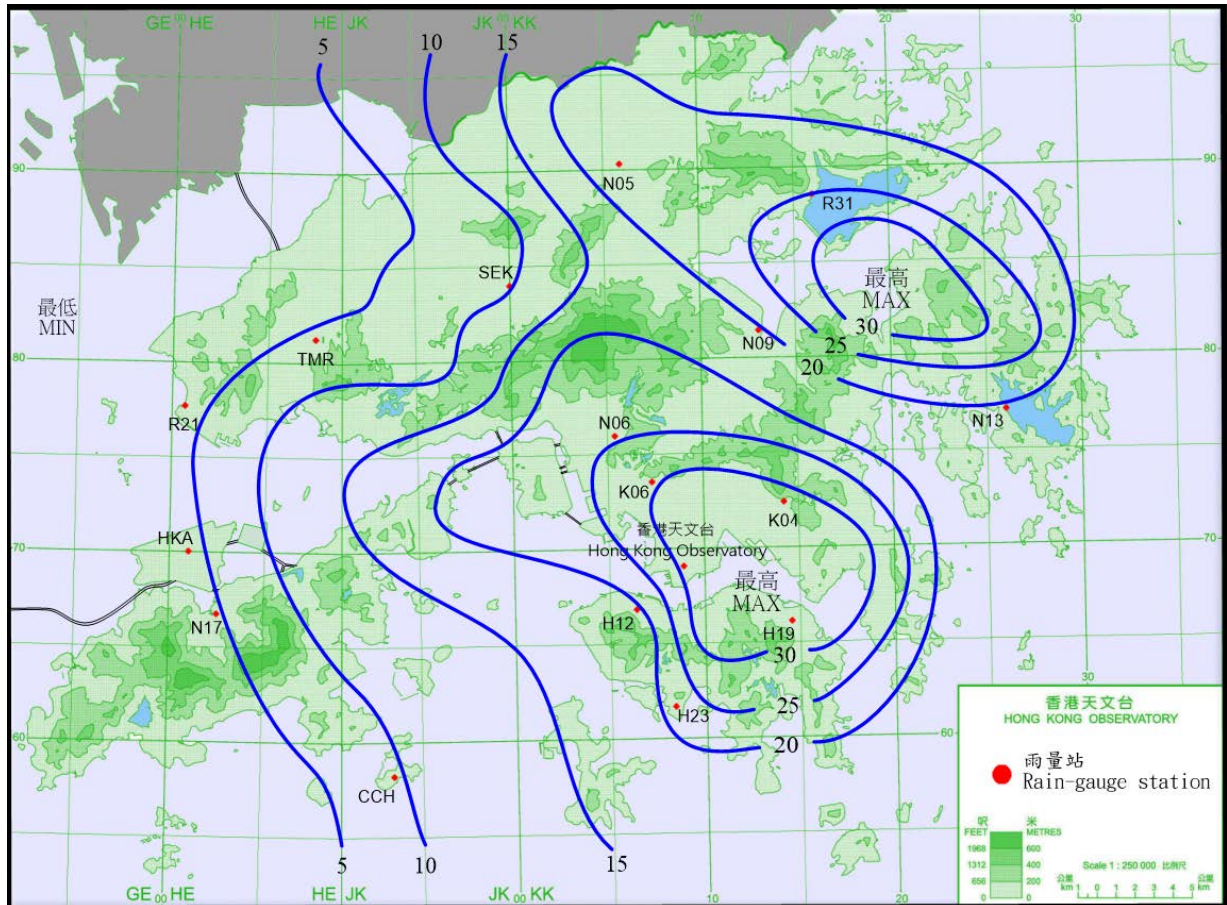


圖 3.2.2 二零二一年七月六日至七日的雨量分佈(等雨量線單位為毫米)。

Figure 3.2.2 Rainfall distribution on 6–7 July 2021 (isohyets in millimetres).

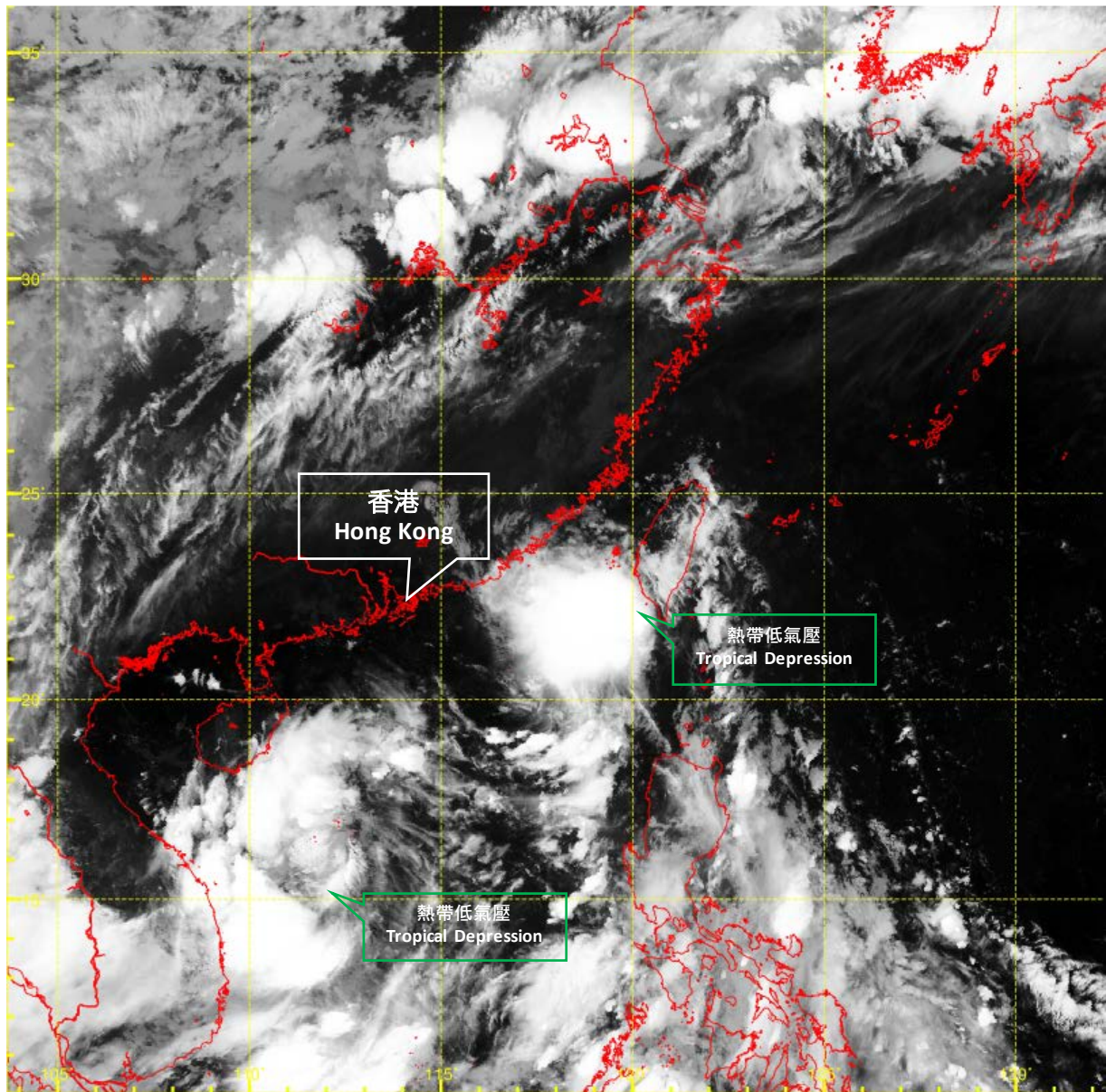


圖 3.2.3a 二零二一年七月六日上午5時左右的紅外線衛星圖片，當時第一個熱帶低氣壓集結在台灣南部附近，而第二個熱帶低氣壓則位於南海中部。

Figure 3.2.3a Infra-red satellite imagery around 5 a.m. on 6 July 2021, when the first tropical depression was near the southern part of Taiwan and the second tropical depression was over the central part of the South China Sea.

[此衛星圖像接收自日本氣象廳的向日葵8號衛星。]

[The satellite imagery was originally captured by Himawari-8 Satellite (H-8) of Japan Meteorological Agency (JMA).]

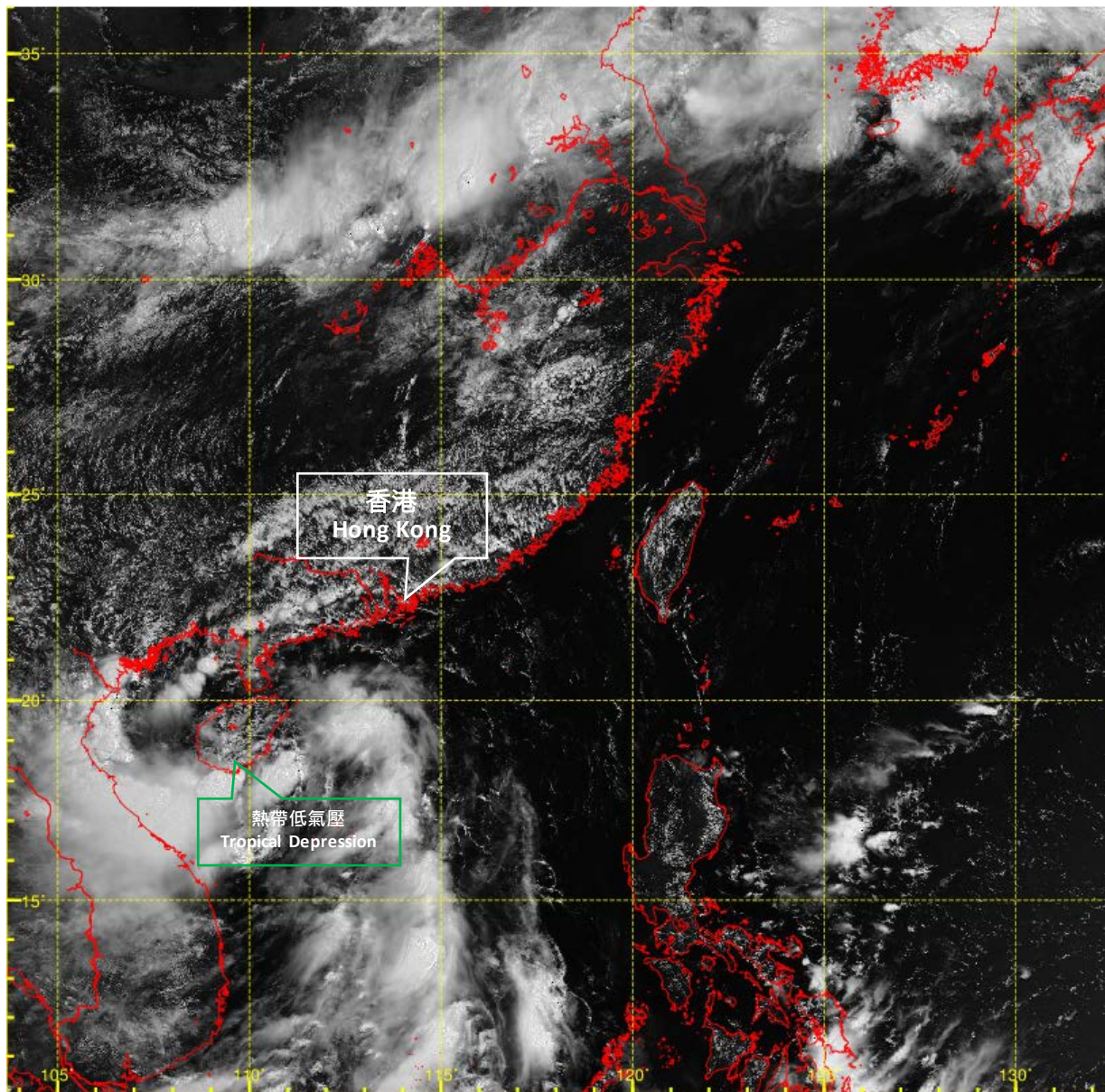


圖 3.2.3b 二零二一年七月七日上午11時左右的可見光衛星圖片，當時第二個熱帶低氣壓已登陸海南島，而副熱帶高壓脊為中國東南部及南海東北部帶來普遍晴朗的天氣。

Figure 3.2.3b Visible satellite imagery around 11 a.m. on 7 July 2021. The second tropical depression had already made landfall over Hainan Island at that time. The subtropical ridge was bringing generally fine weather to southeastern China and the northeastern part of the South China Sea.

〔此衛星圖像接收自日本氣象廳的向日葵8號衛星。〕

[The satellite imagery was originally captured by Himawari-8 Satellite (H-8) of Japan Meteorological Agency (JMA).]

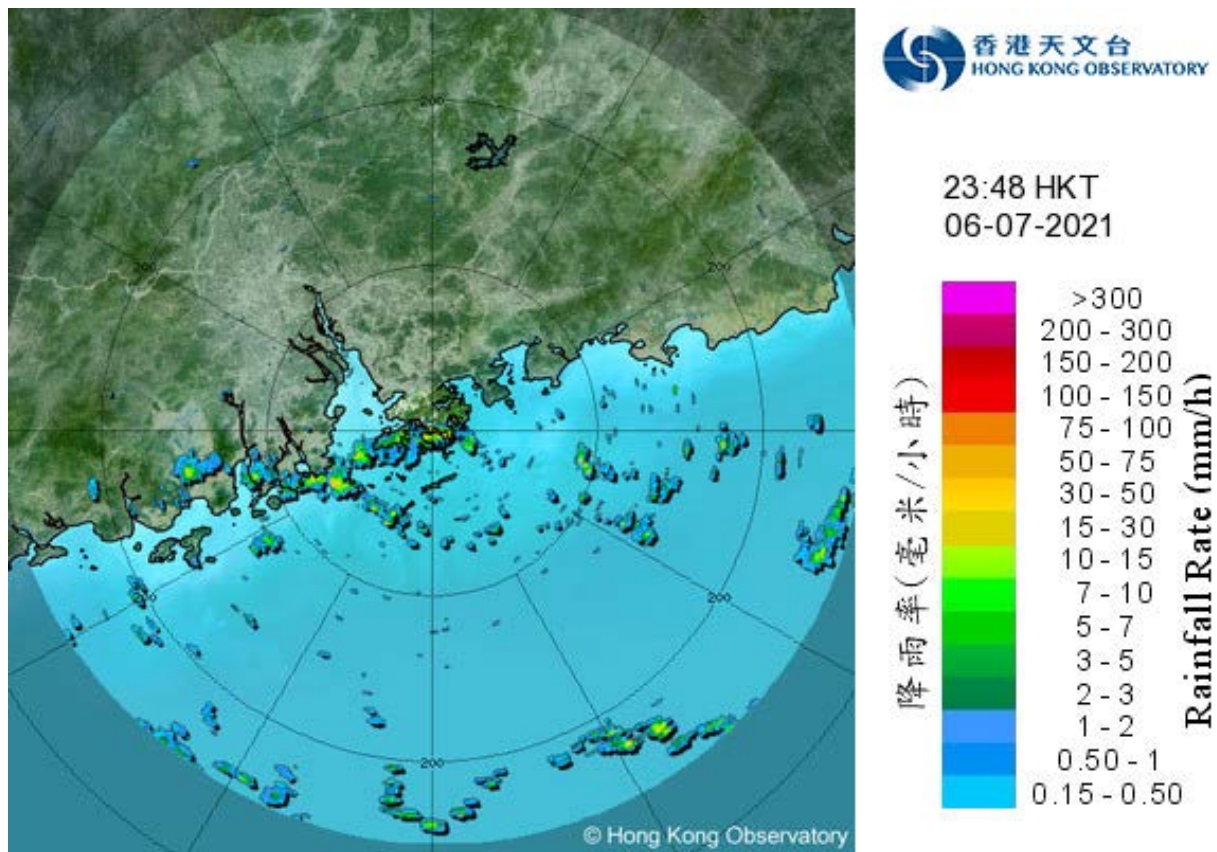


圖 3.2.4 二零二一年七月六日晚上11時48分的雷達回波圖像，當時與兩個熱帶低氣壓相關的外圍雨帶正影響香港。

Figure 3.2.4 Image of radar echoes at 11:48 p.m. on 6 July 2021. The outer rainbands associated with the two tropical depressions were affecting Hong Kong at that time.

3.3 颱風查帕卡(2107)：二零二一年七月十八日至二十四日

查帕卡是二零二一年第四個影響香港的熱帶氣旋。

熱帶低氣壓查帕卡於七月十八日晚上在香港之西南偏南約180公里的南海北部上形成，也是查帕卡最接近香港的時候。當晚查帕卡大致向西北至西北偏西方向緩慢移動，趨向廣東西部沿岸並迅速增強。七月二十日凌晨查帕卡增強為颱風並達到其最高強度，中心附近最高持續風速估計為每小時120公里，晚上查帕卡開始減弱並在陽江附近登陸。查帕卡於七月二十一日橫過廣東西部及廣西內陸，逐步減弱為熱帶低氣壓。查帕卡翌日轉向西南偏南移動，七月二十三日進入北部灣。最後於七月二十四日在北部灣減弱為一個低壓區。

七月十八日晚上查帕卡形成後，天文台在當晚9時40分發出一號戒備信號。當晚及翌日早上本港普遍吹和緩至清勁偏東風，離岸及高地間中吹強風。由於查帕卡逐漸靠近廣東西部沿岸及顯著增強，天文台在七月十九日下午4時10分發出三號強風信號，當時查帕卡集結在香港之西南約180公里。當晚及七月二十日初時本港離岸吹強風，高地間中吹烈風。隨著查帕卡逐漸遠離香港並減弱，本港風力緩和，天文台於七月二十日下午1時20分以一號戒備信號取代三號強風信號，到當晚7時40分取消所有熱帶氣旋警告信號。

在查帕卡的影響下，尖鼻咀錄得最高潮位(海圖基準面以上) 2.60米，而大埔滘則錄得最大風暴潮(天文潮高度以上) 0.41米。天文台總部於七月十九日下午4時09分錄得最低瞬時海平面氣壓1001.2百帕斯卡。

受查帕卡相關的外圍雨帶影響，本港七月十八日至二十日有狂風大驟雨及雷暴，期間天文台曾四度發出黃色暴雨警告，亦在七月二十日下午發出新界北部水浸特別報告。這三天本港大部分地區錄得超過200毫米雨量，新界東的雨量更超過350毫米。

查帕卡吹襲香港期間，本港有多宗塌樹及水浸報告。在強陣風下牛池灣有大樹倒塌並壓毀鐵絲網。一名男子於七月二十日在馬鞍山遠足時遭洪水沖走，其後被證實死亡。

3.3 Typhoon Cempaka (2107): 18 to 24 July 2021

Cempaka was the fourth tropical cyclone affecting Hong Kong in 2021.

Cempaka formed as a tropical depression over the northern part of the South China Sea about 180 km south-southwest of Hong Kong on the night of 18 July. It was also closest to Hong Kong at that time. Cempaka moved generally northwestwards to west-northwestwards slowly towards the coast of western Guangdong and intensified rapidly at night. Cempaka intensified into a typhoon in the small hours on 20 July and reached its peak intensity with an estimated maximum sustained wind of 120 km/h near its centre. It started to weaken at night and made landfall near Yangjiang. Cempaka moved across western Guangdong and inland Guangxi, and weakened into a tropical depression progressively on 21 July. It turned to move south-southwestwards the next day and entered Beibu Wan on 23 July. Cempaka finally degenerated into an area of low pressure over Beibu Wan on 24 July.

After the formation of Cempaka on the night of 18 July, the Hong Kong Observatory issued the Standby Signal, No.1 at 9:40 p.m. that night. Local winds were generally moderate to fresh easterlies that night and the next morning, occasionally reaching strong force offshore and on high ground. With Cempaka edging closer to the coast of western Guangdong and intensifying, the Strong Wind Signal, No.3 was issued at 4:10 p.m. on 19 July when Cempaka was about 180 km southwest of Hong Kong. Locally, there were strong winds offshore and occasional gales on high ground that night and on the morning of 20 July. As Cempaka moved away from Hong Kong gradually and weakened, local winds moderated and the Strong Wind Signal, No.3 was replaced by the Standby Signal, No.1 at 1:20 p.m. on 20 July. All tropical cyclone warning signals were cancelled at 7:40 p.m. that day.

Under the influence of Cempaka, a maximum sea level (above chart datum) of 2.60 m and a maximum storm surge of 0.41 m (above astronomical tide) were recorded at Tsim Bei Tsui and Tai Po Kau respectively. At the Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 1001.2 hPa was recorded at 4:09 p.m. on 19 July.

The outer rainbands associated with Cempaka brought heavy squally showers and thunderstorms to Hong Kong on 18 - 20 July. The Observatory issued the Amber Rainstorm Warning for four times during this period. The Special Announcement on Flooding in Northern New Territories was also issued on the afternoon of 20 July. More than 200 millimetres of rainfall were recorded over most part of Hong Kong during these three days, with rainfall exceeding 350 millimetres over the eastern part of the New Territories.

A number of fallen trees and flooding were reported in Hong Kong during the passage of Cempaka. A tree toppled at Ngau Chi Wan under intense gusts, damaging the wire fences. A man was washed away by flash floods while hiking in Ma On Shan on 20 July and confirmed dead later.

表 3.3.1 在查帕卡影響下，本港各站在熱帶氣旋警告信號生效時所錄得的最高陣風、最高每小時平均風速及風向

Table 3.3.1 Maximum gust peak speeds and maximum hourly mean winds with associated wind directions recorded at various stations when the tropical cyclone warning signals for Cempaka were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time	風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time
中環碼頭	Central Pier	東南偏東	ESE	55	20/7	03:22	東	E	32	19/7	11:00
長洲	Cheung Chau	東南偏東	ESE	75	19/7	12:05	東南偏東	ESE	44	20/7	00:00
長洲泳灘	Cheung Chau Beach	東北偏東	ENE	75	19/7	12:00	東北偏東	ENE	47	19/7	13:00
香港國際機場	Hong Kong International Airport	東	E	51	19/7	12:35	東	E	30	19/7	22:00
啟德	Kai Tak	東北	NE	63	19/7	00:18	東	E	25	19/7	15:00
京士柏	King's Park	東	E	53	19/7	20:42	東	E	21	19/7	21:00
南丫島	Lamma Island	東南偏東	ESE	60	19/7	12:06	東	E	27	19/7	13:00
流浮山	Lau Fau Shan	東	E	53	19/7	15:55	東	E	24	19/7	16:00
昂坪	Ngong Ping	東	E	96	20/7	06:10	東	E	69	19/7	18:00
北角	North Point	東	E	54	19/7	07:35	東	E	33	19/7	11:00
		東北偏東	ENE	54	19/7	10:47					
坪洲	Peng Chau	東	E	58	19/7	12:56	東	E	39	19/7	18:00
平洲	Ping Chau	東北偏東	ENE	34	19/7	09:44	東	E	12	19/7	19:00
西貢	Sai Kung	東	E	86	18/7	22:58	東北偏東	ENE	34	19/7	11:00
沙洲	Sha Chau	東南偏東	ESE	54	19/7	12:39	東南偏東	ESE	34	19/7	18:00
沙螺灣	Sha Lo Wan	東	E	53	19/7	16:50	東	E	25	19/7	17:00
沙田	Sha Tin	東	E	39	19/7	15:10	東北	NE	14	18/7	23:00
		東南	SE	39	19/7	16:47					
九龍天星碼頭	Star Ferry (Kowloon)	東	E	54	19/7	23:42	東	E	28	19/7	15:00
打鼓嶺	Ta Kwu Ling	東南偏東	ESE	50	19/7	13:57	東	E	16	19/7	16:00
大美督	Tai Mei Tuk	東	E	76	18/7	23:05	東	E	42	19/7	18:00
大帽山	Tai Mo Shan	東南偏東	ESE	89	19/7	18:55	東	E	62	19/7	18:00
大埔滘	Tai Po Kau	東	E	61	18/7	23:11	東	E	32	19/7	19:00
塔門東	Tap Mun East	東	E	89	18/7	22:53	東南偏東	ESE	48	19/7	15:00
大老山	Tate's Cairn	東南偏東	ESE	86	19/7	00:14	東南偏東	ESE	56	19/7	18:00
		東南偏東	ESE	86	19/7	00:15					
將軍澳	Tseung Kwan O	東北偏北	NNE	40	19/7	00:21	北	N	6	19/7	01:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東	E	51	19/7	02:46	東南偏東	ESE	19	20/7	19:00
屯門政府合署	Tuen Mun Government Offices	東北	NE	37	19/7	03:02	東北偏北	NNE	11	20/7	07:00
橫瀾島	Waglan Island	東南偏東	ESE	75	19/7	12:22	東	E	53	19/7	11:00
		東南偏東	ESE	75	19/7	12:24					
濕地公園	Wetland Park	東	E	36	18/7	23:35	東	E	12	19/7	19:00
黃竹坑	Wong Chuk Hang	-	-	51	19/7	00:36	-	-	18	19/7	11:00

黃麻角(赤柱)、青洲、石崗 - 沒有資料 Bluff Head (Stanley), Green Island, Shek Kong - data not available

黃竹坑 - 沒有風向資料 Wong Chuk Hang - wind direction not available

表 3.3.2 在查帕卡影響下，熱帶氣旋警告信號系統的八個參考測風站在熱帶氣旋警告信號生效時錄得持續風力達到強風程度的時段

Table 3.3.2 Periods during which sustained strong winds were attained at the eight reference anemometers in the tropical cyclone warning system when tropical cyclone warning signals for Cempaka were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最初達到強風*時間		最後達到強風*時間	
		Start time when strong wind speed* was attained		End time when strong wind speed* was attained	
		日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time
長洲	Cheung Chau	19/7	01:56	20/7	18:48
西貢	Sai Kung	18/7	23:04	19/7	00:14

香港國際機場、啟德、流浮山、沙田、打鼓嶺、青衣島蜆殼油庫的持續風力未達到強風程度。

The sustained wind speed did not attain strong force at Hong Kong International Airport, Kai Tak, Lau Fau Shan, Sha Tin, Ta Kwu Ling and Tsing Yi Shell Oil Depot.

* 十分鐘平均風速達每小時 41-62 公里

* 10-minute mean wind speed of 41- 62 km/h

註： 本表列出持續風力達到強風程度的起始及終結時間。期間風力可能高於或低於指定的風力。

Note: The table gives the start and end time of sustained strong winds. Winds might fluctuate above or below the specified wind speeds in between the times indicated.

表 3.3.3 查帕卡影響香港期間，香港天文台總部及其他各站所錄得的日雨量
Table 3.3.3 Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Cempaka

站(參閱圖 3.3.2) Station (See Fig. 3.3.2)			七月十八日 18 Jul	七月十九日 19 Jul	七月二十日 20 Jul	總雨量(毫米) Total rainfall (mm)
香港天文台 Hong Kong Observatory (HKO)			42.4	117.2	87.8	247.4
香港國際機場 Hong Kong International Airport (HKA)			12.6	104.5	137.1	254.2
長洲 Cheung Chau (CCH)			[38.5]	[142.0]	[128.0]	[308.5]
H23	香港仔	Aberdeen	57.5	93.5	82.5	233.5
N05	粉嶺	Fanling	5.0	52.5	109.5	167.0
N13	糧船灣	High Island	47.0	62.5	141.5	251.0
K04	佐敦谷	Jordan Valley	48.0	170.5	162.5	381.0
N06	葵涌	Kwai Chung	24.0	112.0	112.0	248.0
H12	半山區	Mid Levels	54.0	114.0	102.0	270.0
N09	沙田	Sha Tin	40.5	92.5	166.0	299.0
H19	筲箕灣	Shau Kei Wan	80.0	130.5	107.0	317.5
SEK	石崗	Shek Kong	[14.0]	[64.5]	[118.5]	[197.0]
K06	蘇屋邨	So Uk Estate	29.0	126.5	100.5	256.0
R31	大美督	Tai Mei Tuk	8.0	45.5	116.0	169.5
R21	踏石角	Tap Shek Kok	5.5	52.5	123.5	181.5
TMR	屯門水庫	Tuen Mun Reservoir	5.0	62.1	120.1	187.2

東涌 (N17) - 沒有資料 Tung Chung (N17) - data not available

註：[] 基於不完整的每小時雨量數據。Note : [] based on incomplete hourly data.

表 3.3.4 查帕卡影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮
Table 3.3.4 Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Cempaka

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高潮位(海圖基準面以上) Maximum sea level (above chart datum)			最大風暴潮(天文潮高度以上) Maximum storm surge (above astronomical tide)		
		高度(米) Height (m)	日期/月份 Date/Month	時間 Time	高度(米) Height (m)	日期/月份 Date/Month	時間 Time
鰂魚涌	Quarry Bay	2.34	20/7	05:14	0.31	20/7	05:14
石壁	Shek Pik	2.48	20/7	05:27	0.39	19/7	12:17
大廟灣	Tai Miu Wan	2.30	20/7	05:45	0.38	18/7	23:18
大埔滘	Tai Po Kau	2.36	20/7	05:24	0.41	20/7	05:09
尖鼻咀	Tsim Bei Tsui	2.60	20/7	06:37	0.34	20/7	10:55

橫瀾島 - 沒有資料 Waglan Island - data not available

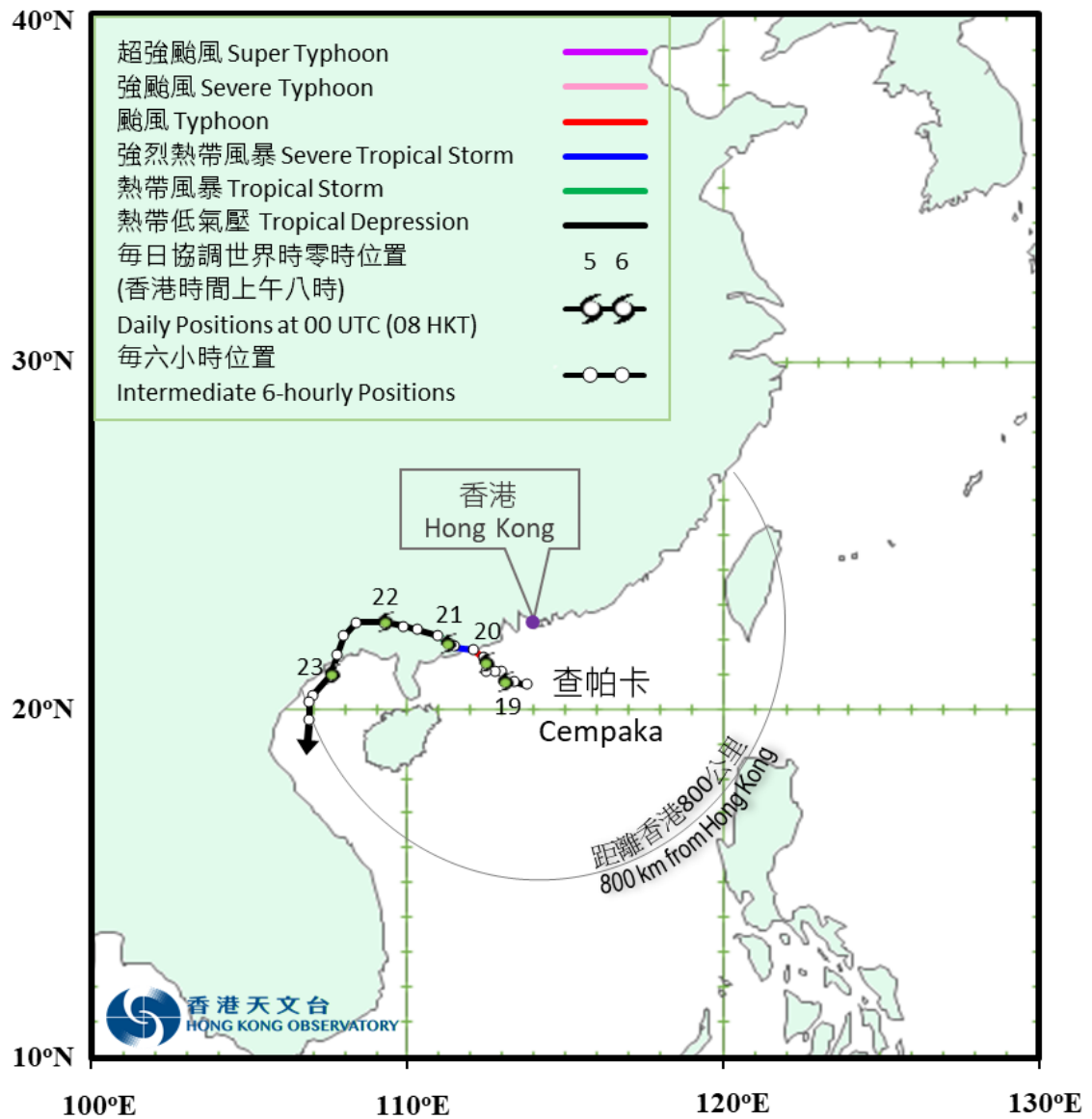


圖 3.3.1a 二零二一年七月十八日至二十四日查帕卡的路徑圖。

Figure 3.3.1a Track of Cempaka : 18 – 24 July 2021.

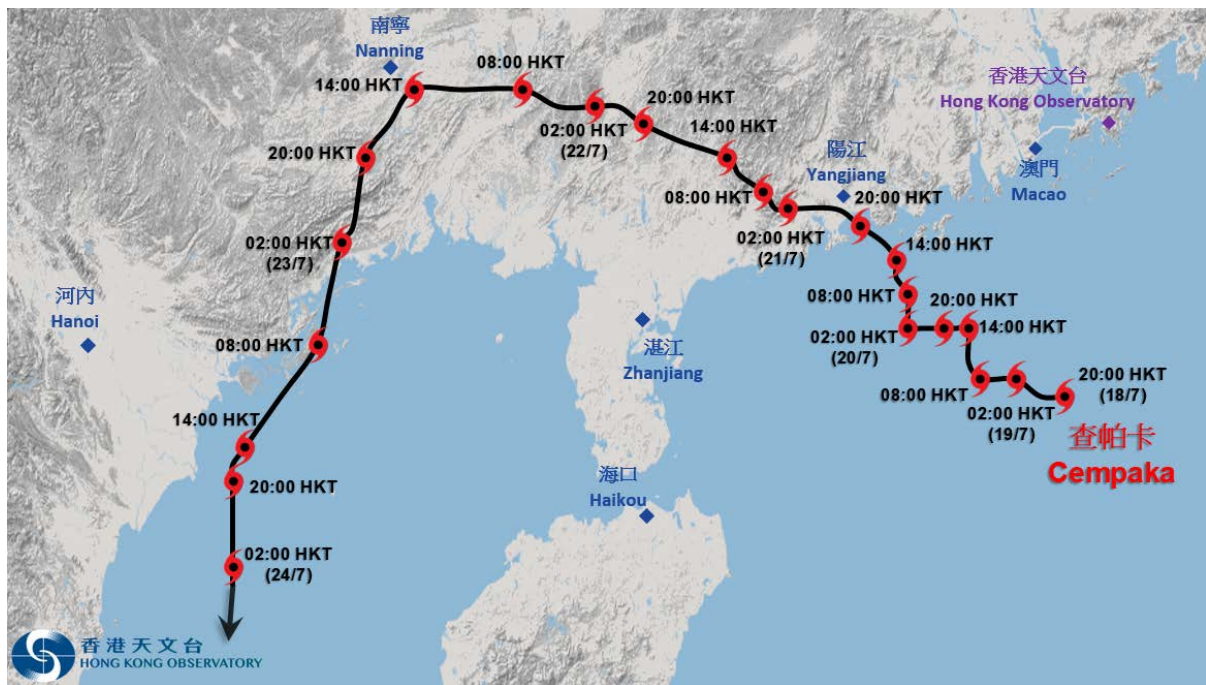


圖 3.3.1b 查帕卡接近香港時的路徑圖。
Figure 3.3.1b Track of Cempaka near Hong Kong.

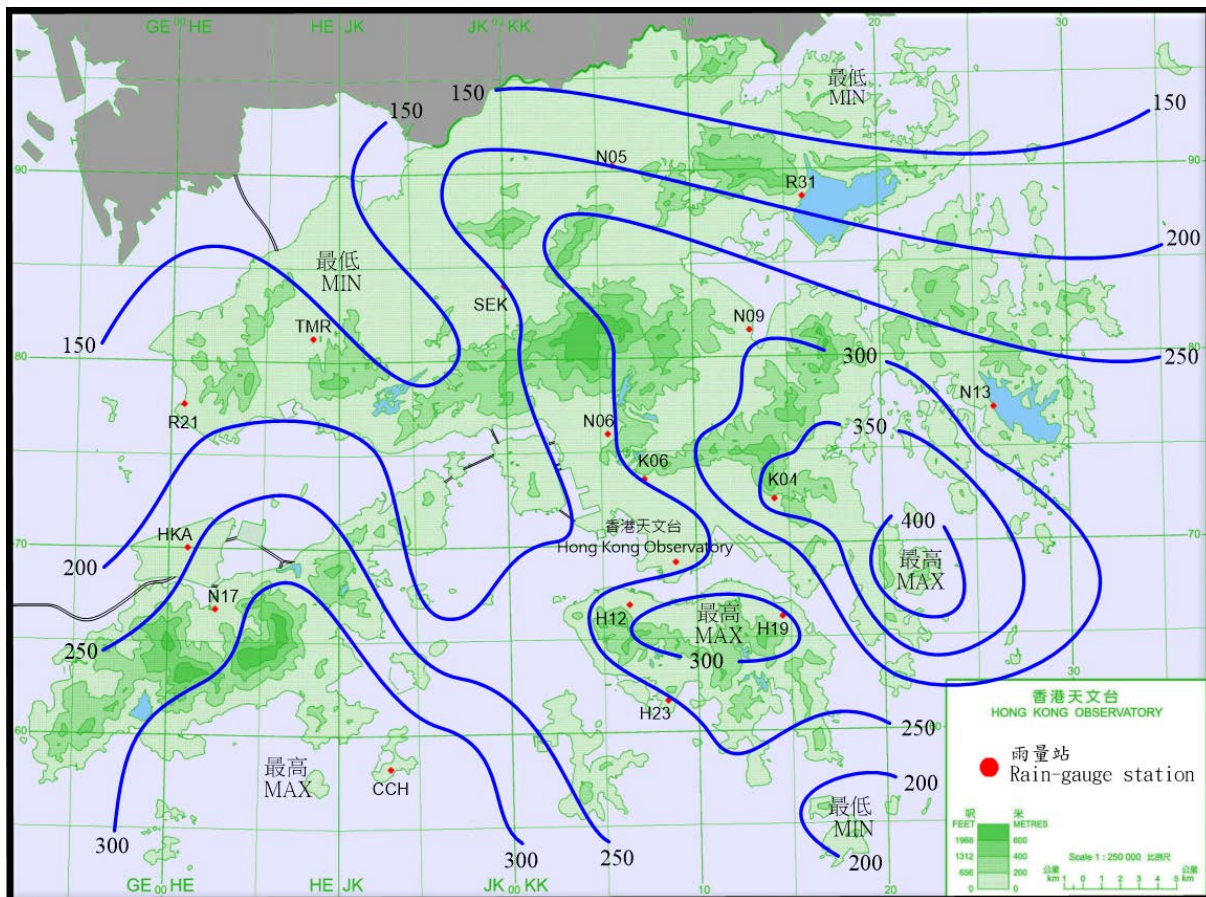


圖 3.3.2 二零二一年七月十八日至二十日的雨量分佈(等雨量線單位為毫米)。
Figure 3.3.2 Rainfall distribution on 18–20 July 2021 (isohyets in millimetres).

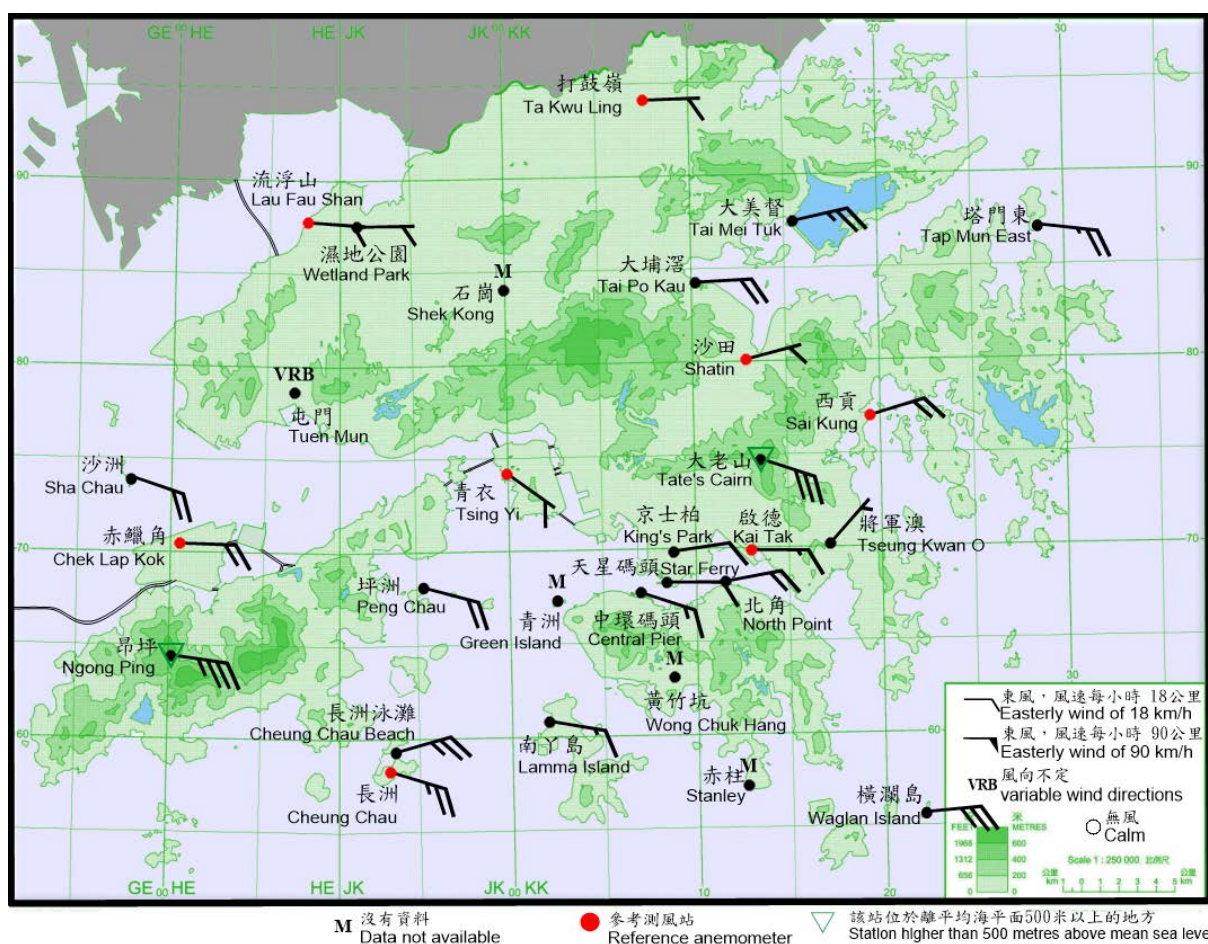


圖 3.3.3 二零二一年七月十九日下午 6 時正香港各站錄得的十分鐘平均風向和風速。當時昂坪的風力達到烈風程度，大老山、橫瀾島、長洲、長洲泳灘及大美督的風力達到強風程度。

Figure 3.3.3 10-minute mean wind direction and speed recorded at various stations in Hong Kong at 6:00 p.m. on 19 July 2021. Wind at Ngong Ping reached gale force at that time, while winds at Tate's Cairn, Waglan Island, Cheung Chau, Cheung Chau Beach and Tai Mei Tuk reached strong force.

註：屯門當時錄得的十分鐘平均風速為每小時10公里。

Note: The 10-minute mean wind speed recorded at Tuen Mun was 10 km/h at that time.

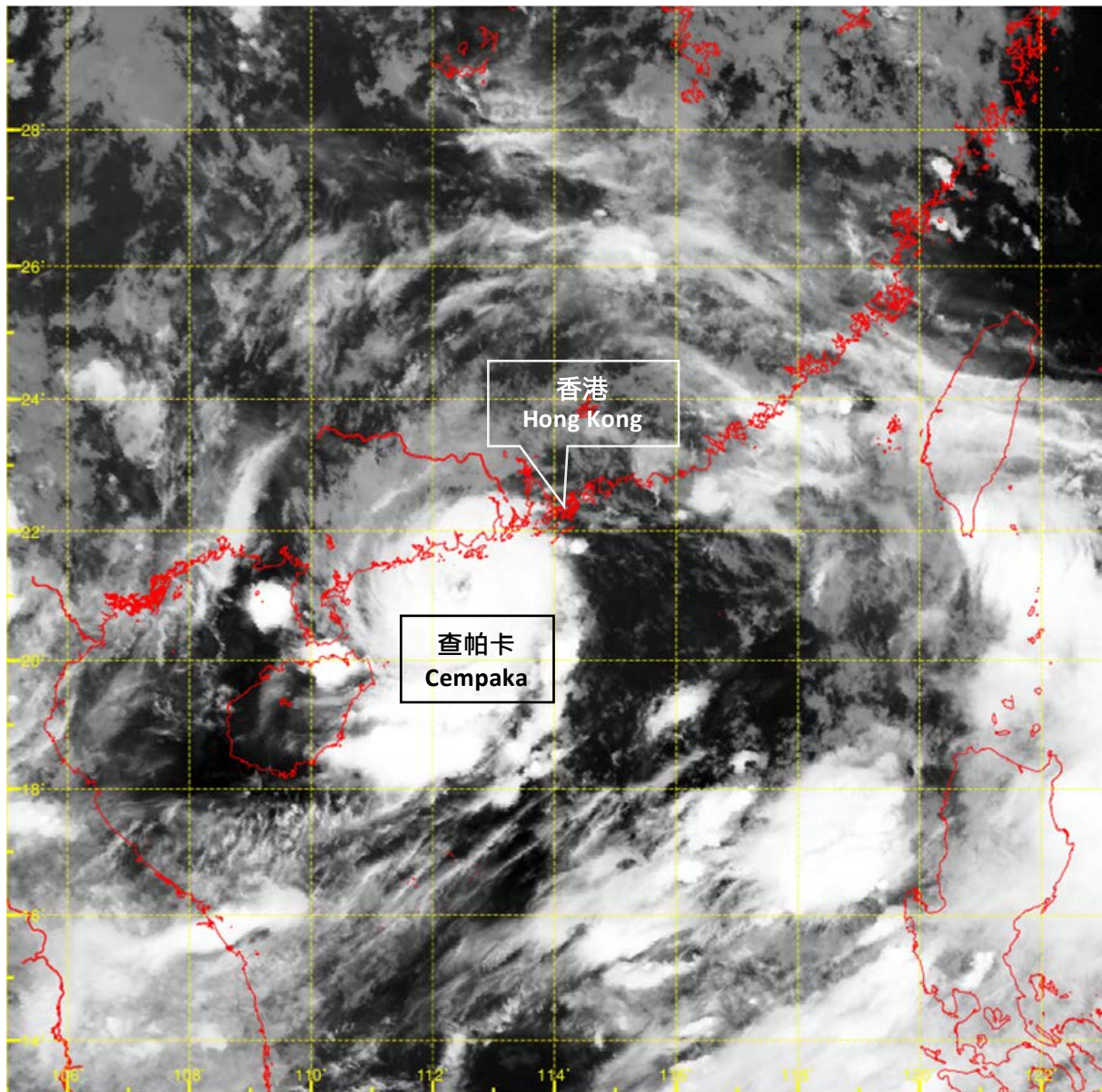


圖 3.3.4 二零二一年七月二十日上午 2 時左右的紅外線衛星圖片，當時查帕卡達到其最高強度，中心附近最高持續風速估計為每小時 120 公里。查帕卡的對流雲團較為細小，直徑只有約 350 公里。

Figure 3.3.4 Infra-red satellite imagery around 2 a.m. on 20 July 2021, when Cempaka was at its peak intensity with an estimated sustained wind of 120 km/h near its centre. The convection of Cempaka was relatively small with a diameter of only around 350 km.

[此衛星圖像接收自日本氣象廳的向日葵8號衛星。]

[The satellite imagery was originally captured by Himawari-8 Satellite (H-8) of Japan Meteorological Agency (JMA).]

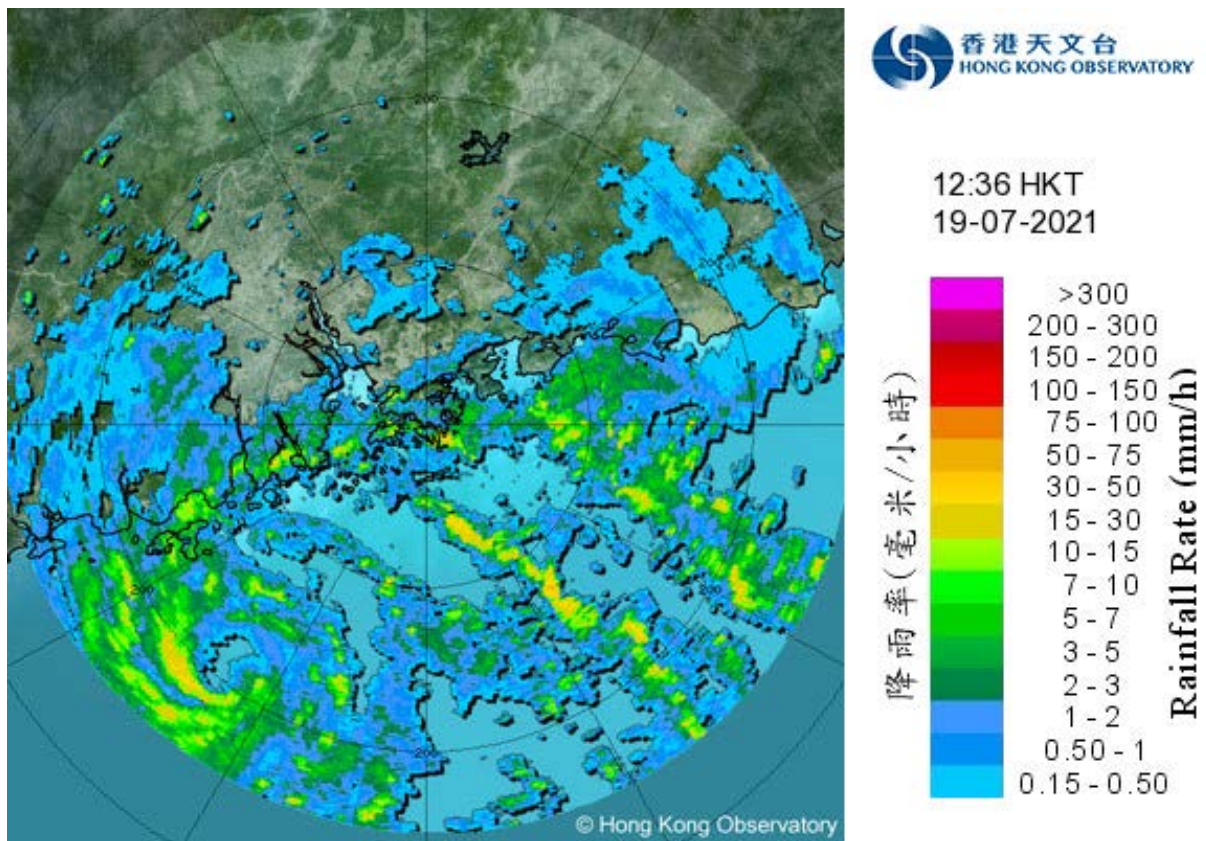


圖 3.3.5a 二零二一年七月十九日下午 12 時 36 分的雷達回波圖像，當時查帕卡的外圍雨帶正影響廣東沿岸及南海北部，黃色暴雨警告正在生效。

Figure 3.3.5a Image of radar echoes at 12:36 p.m. on 19 July 2021 when the outer rainbands of Cempaka were affecting the coast of Guangdong and the northern part of the South China Sea. Amber Rainstorm Warning was in force at that time.

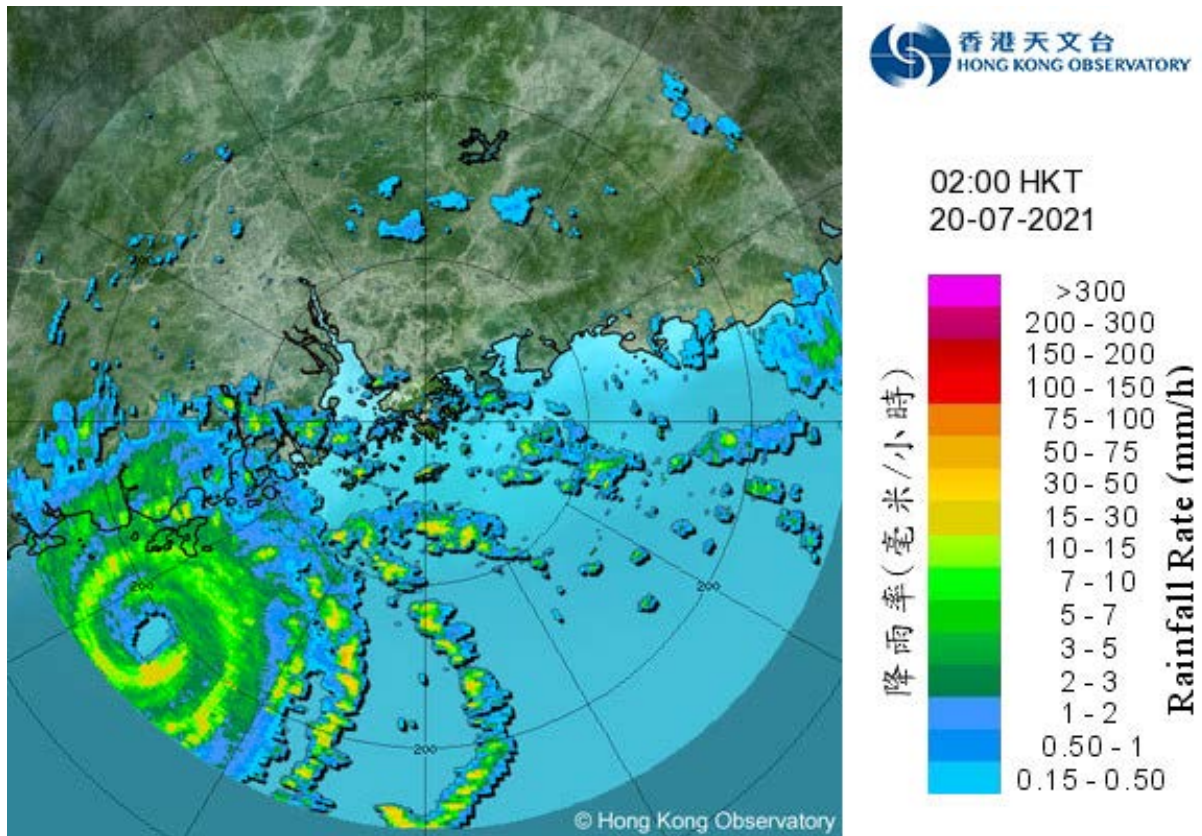


圖 3.3.5b 二零二一年七月二十日上午2時正的雷達回波圖像，查帕卡直徑約25公里的風眼清晰可見。

Figure 3.3.5b Image of radar echoes at 2:00 a.m. on 20 July 2021 showing clearly the eye of Cempaka with a diameter of about 25 km.

3.4 熱帶風暴盧碧 (2109)：二零二一年八月二日至九日

盧碧是二零二一年第五個影響香港的熱帶氣旋。

熱帶低氣壓盧碧於八月二日晚上在香港之西南約280公里的南海北部上形成，大致向東北偏東方向橫過南海北部並逐漸增強。八月三日早上盧碧移速減慢，下午轉向東南移動。隨後盧碧於八月四日凌晨轉向東北移動，早上增強為熱帶風暴。八月五日凌晨盧碧達到其最高強度，中心附近最高持續風速估計為每小時85公里。當日下午及翌日盧碧掠過福建沿岸地區，並減弱為熱帶低氣壓。八月七日凌晨盧碧在台灣海峽再度增強為熱帶風暴，並採取東北路徑移向日本，最後於八月九日在日本本州以北海域演變為一股溫帶氣旋。

根據報章報導，盧碧為台灣及日本九州帶來暴雨及水浸。

香港天文台在八月二日晚上9時40分發出一號戒備信號，當時盧碧集結在香港之西南約260公里。當晚本港普遍吹和緩的東至東南風。翌日盧碧逐漸靠近本港，下午本港風力有所增強。盧碧於八月三日下午2時左右最接近香港，其中心位於香港之西南偏南約110公里。由於盧碧相當接近香港，預料香港的風力會在晚間進一步增強，天文台在八月三日下午4時25分發出三號強風信號，當時盧碧集結在香港之西南偏南約120公里。當晚本港普遍吹和緩至清勁的東至東北風，離岸及高地間中吹強風。隨著盧碧移至香港的東南面及逐漸遠離香港，本港轉吹偏北風，風力有所緩和，天文台在八月四日上午4時20分以一號戒備信號取代三號強風信號。當日日間本港轉吹和緩至清勁的北至西北風。下午盧碧進一步遠離香港，天文台在當日下午6時20分取消所有熱帶氣旋警告信號。

在盧碧的影響下，尖鼻咀錄得最高潮位(海圖基準面以上) 2.33米，而大埔滘及大廟灣則錄得最大風暴潮(天文潮高度以上) 0.30米。天文台總部於八月四日下午4時21分錄得最低瞬時海平面氣壓993.0百帕斯卡。

八月二日本港短暫時間有陽光及有幾陣驟雨。受盧碧相關的雨帶影響，八月三日至五日本港間中有大驟雨及狂風雷暴。本港大部分地區在這三日錄得超過100毫米雨量，而港島中部、新界北部及大嶼山東北部更錄得超過140毫米雨量。天文台在八月四日傍晚曾發出黃色暴雨警告及新界北部水浸特別報告。

盧碧吹襲香港期間，本港有多宗水浸報告。在八月四日黃色暴雨警告生效期間，新界北部多處出現水浸，有人被困於汽車內，需要救援人員協助離開。

3.4 Tropical Storm Lupit (2109): 2 to 9 August 2021

Lupit was the fifth tropical cyclone affecting Hong Kong in 2021.

Lupit formed as a tropical depression over the northern part of the South China Sea at about 280 km southwest of Hong Kong on the night of 2 August. It moved generally east-northeastwards across the northern part of the South China Sea and intensified gradually. Lupit slowed down on the morning of 3 August and turned to move southeastwards in the afternoon. It then turned to move northeastwards in the small hours on 4 August and intensified into a tropical storm in the morning. Lupit reached its peak intensity in the small hours on 5 August with an estimated maximum sustained wind of 85 km/h near its centre. It skirted past the coastal areas of Fujian in the afternoon and the next day, and weakened into a tropical depression. Lupit re-intensified into a tropical storm over the Taiwan Strait in the small hours on 7 August and tracked northeastwards towards Japan. It finally evolved into an extratropical cyclone over the seas north of Honshu of Japan on 9 August.

According to press reports, Lupit brought torrential rain and flooding to Taiwan and Kyushu of Japan.

The Standby Signal, No.1 was issued at 9:40 p.m. on 2 August when Lupit was about 260 km southwest of Hong Kong. Local winds were generally moderate to fresh east to southeasterlies that night. Lupit gradually edged closer to Hong Kong the next day and local winds strengthened in the afternoon. Lupit was closest to Hong Kong at around 2 p.m. on 3 August with its centre about 110 km south-southwest of the territory. As Lupit was very close to Hong Kong and local winds were expected to strengthen further at night, the Strong Wind Signal, No.3 was issued at 4:25 p.m. on 3 August when Lupit was about 120 km south-southwest of Hong Kong. Local winds were generally moderate to fresh east to northeasterlies that night and occasionally reached strong force offshore and on high ground. As Lupit moved to the southeast of Hong Kong and gradually departed from the territory, local winds turned to northerly and weakened. The Strong Wind Signal, No.3 was replaced by the Standby Signal, No.1 at 4:20 a.m. on 4 August. Local winds became moderate to fresh north to northwesterlies during the day. With Lupit further departing from Hong Kong in the afternoon, all tropical cyclone warning signals were cancelled at 6:20 p.m. on 4 August.

Under the influence of Lupit, a maximum sea level (above chart datum) of 2.33 m was recorded at Tsim Bei Tsui. A maximum storm surge of 0.30 m (above astronomical tide) was recorded at Tai Po Kau and Tai Miu Wan. At the Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 993.0 hPa was recorded at 4:21 p.m. on 4 August.

There were sunny intervals and a few showers in Hong Kong on 2 August. The outer rainbands associated with Lupit brought occasional heavy showers and squally thunderstorms to Hong Kong on 3 - 5 August. More than 100 millimetres of rainfall were recorded over most parts of the territory on these three days, and rainfall even exceeded 140 millimetres over the central part of Hong Kong Island, the northern part of the New Territories and the northeastern part of Lantau Island. The Amber Rainstorm Warning and the Special Announcement on Flooding in Northern New Territories were issued on the evening of 4 August.

A number of flooding were reported in Hong Kong during the passage of Lupit. There were flooding over many places of the northern part of the New Territories on 4 August when the Amber Rainstorm Warning was in force. A person was trapped inside a vehicle and was taken to safety by rescuers.

表 3.4.1 在盧碧影響下，本港各站在熱帶氣旋警告信號生效時所錄得的最高陣風、最高每小時平均風速及風向

Table 3.4.1 Maximum gust peak speeds and maximum hourly mean winds with associated wind directions recorded at various stations when the tropical cyclone warning signals for Lupit were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time	風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time
中環碼頭	Central Pier	西北偏西	WNW	47	4/8	14:47	東	E	26	3/8	14:00
長洲	Cheung Chau	西北	NW	71	4/8	14:35	東南偏東	ESE	37	3/8	16:00
長洲泳灘	Cheung Chau Beach	東北偏東	ENE	65	3/8	14:02	東	E	39	3/8	16:00
		東北偏東	ENE	65	3/8	14:04					
青洲	Green Island	西北偏北	NNW	66	4/8	14:34	東北偏東	ENE	44	3/8	15:00
香港國際機場	Hong Kong International Airport	西北	NW	50	4/8	14:13	東	E	30	3/8	16:00
啟德	Kai Tak	東	E	40	3/8	14:13	東	E	20	3/8	15:00
京士柏	King's Park	東北偏東	ENE	37	3/8	13:54	東	E	16	3/8	14:00
							東	E	16	3/8	16:00
南丫島	Lamma Island	西北	NW	59	4/8	14:42	西北偏西	WNW	32	4/8	15:00
流浮山	Lau Fau Shan	西北偏北	NNW	67	4/8	13:56	東	E	26	3/8	16:00
昂坪	Ngong Ping	東南偏東	ESE	74	3/8	15:34	東	E	51	3/8	16:00
北角	North Point	西南偏西	WSW	47	4/8	15:05	東	E	26	3/8	14:00
坪洲	Peng Chau	西北偏北	NNW	58	4/8	14:29	東	E	33	3/8	16:00
平洲	Ping Chau	東北偏東	ENE	25	3/8	13:19	東	E	10	3/8	14:00
							東	E	10	3/8	15:00
西貢	Sai Kung	東北偏北	NNE	53	4/8	16:40	東北偏東	ENE	24	3/8	14:00
沙洲	Sha Chau	西北偏北	NNW	62	4/8	14:10	東南偏東	ESE	27	3/8	16:00
沙螺灣	Sha Lo Wan	東	E	46	3/8	14:55	東	E	19	3/8	16:00
沙田	Sha Tin	東北偏東	ENE	32	3/8	17:05	東北偏北	NNE	12	3/8	13:00
九龍天星碼頭	Star Ferry (Kowloon)	西北偏西	WNW	49	4/8	15:09	西	W	23	4/8	15:00
打鼓嶺	Ta Kwu Ling	東南偏東	ESE	33	3/8	17:00	東	E	14	3/8	16:00
							東	E	14	3/8	19:00
大美督	Tai Mei Tuk	東	E	51	3/8	15:03	東	E	33	3/8	16:00
大帽山	Tai Mo Shan	東北偏東	ENE	66	3/8	22:53	東北偏東	ENE	49	3/8	23:00
大埔滘	Tai Po Kau	東	E	42	3/8	12:56	東	E	26	3/8	16:00
塔門東	Tap Mun East	東南偏東	ESE	48	3/8	16:30	東南偏東	ESE	35	3/8	19:00
大老山	Tate's Cairn	東南偏東	ESE	60	3/8	14:58	東南偏東	ESE	39	3/8	16:00
將軍澳	Tseung Kwan O	東南	SE	34	3/8	14:06	東北偏北	NNE	3	3/8	14:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	西北	NW	43	4/8	14:20	西北偏北	NNW	17	4/8	07:00
屯門政府合署	Tuen Mun Government Offices	西北偏西	WNW	42	4/8	14:02	西北偏西	WNW	12	4/8	14:00
橫瀾島	Waglan Island	東	E	61	4/8	00:22	東	E	41	3/8	19:00
濕地公園	Wetland Park	西北偏北	NNW	32	4/8	14:00	東	E	12	3/8	16:00
黃竹坑	Wong Chuk Hang	-	-	44	3/8	18:22	-	-	14	3/8	19:00

黃麻角(赤柱)、石崗 - 沒有資料

Bluff Head (Stanley), Shek Kong - data not available

黃竹坑 - 沒有風向資料

Wong Chuk Hang - wind direction not available

表 3.4.2 在盧碧影響下，熱帶氣旋警告信號系統的八個參考測風站在熱帶氣旋警告信號生效時錄得持續風力達到強風程度的時段

Table 3.4.2 Periods during which sustained strong winds were attained at the eight reference anemometers in the tropical cyclone warning system when tropical cyclone warning signals for Lupit were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最初達到強風*時間		最後達到強風*時間	
		Start time when strong wind speed* was attained		End time when strong wind speed* was attained	
		日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time
長洲	Cheung Chau	3/8	15:30	4/8	14:43
流浮山	Lau Fau Shan	4/8	13:57	4/8	14:05

香港國際機場、啟德、西貢、沙田、打鼓嶺、青衣島蜆殼油庫的持續風力未達到強風程度。

The sustained wind speed did not attain strong force at Hong Kong International Airport, Kai Tak, Sai Kung, Sha Tin, Ta Kwu Ling and Tsing Yi Shell Oil Depot.

* 十分鐘平均風速達每小時 41-62 公里

* 10-minute mean wind speed of 41- 62 km/h

註： 本表列出持續風力達到強風程度的起始及終結時間。期間風力可能高於或低於指定的風力。

Note: The table gives the start and end time of sustained strong force winds. Winds might fluctuate above or below the specified wind speeds in between the times indicated.

表 3.4.3 盧碧影響香港期間，香港天文台總部及其他各站所錄得的日雨量
Table 3.4.3 Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Lupit

站 (參閱圖 3.4.2) Station (See Fig. 3.4.2)			八月二日 2 Aug	八月三日 3 Aug	八月四日 4 Aug	八月五日 5 Aug	總雨量(毫米) Total rainfall (mm)
香港天文台 Hong Kong Observatory (HKO)			微量 Trace	19.7	41.9	28.1	89.7
香港國際機場 Hong Kong International Airport (HKA)			微量 Trace	21.9	48.1	11.9	81.9
長洲 Cheung Chau (CCH)			0.0	7.0	51.5	17.0	75.5
H23	香港仔	Aberdeen	0.0	22.0	38.5	45.5	106.0
N05	粉嶺	Fanling	0.0	13.0	87.0	17.5	117.5
N13	糧船灣	High Island	0.0	11.0	33.0	16.5	60.5
K04	佐敦谷	Jordan Valley	0.0	35.5	52.5	20.0	108.0
N06	葵涌	Kwai Chung	0.0	14.5	56.5	19.0	90.0
H12	半山區	Mid Levels	0.5	17.0	58.0	64.0	139.5
N09	沙田	Sha Tin	8.5	31.0	45.5	16.5	101.5
H19	筲箕灣	Shau Kei Wan	0.5	19.5	60.0	43.0	123.0
SEK	石崗	Shek Kong	0.0	9.5	[97.0]	15.5	[122.0]
K06	蘇屋邨	So Uk Estate	0.0	19.5	44.0	24.0	87.5
R31	大美督	Tai Mei Tuk	3.0	21.0	59.0	17.0	100.0
R21	踏石角	Tap Shek Kok	0.0	12.5	65.5	12.0	90.0
N17	東涌	Tung Chung	0.0	25.0	50.5	25.5	101.0
TMR	屯門水庫	Tuen Mun Reservoir	0.0	4.5	85.8	12.0	102.3

註：[] 基於不完整的每小時雨量數據。 Note : [] based on incomplete hourly data.

表 3.4.4 盧碧影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮
Table 3.4.4 Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Lupit

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高潮位(海圖基準面以上) Maximum sea level (above chart datum)			最大風暴潮(天文潮高度以上) Maximum storm surge (above astronomical tide)		
		高度(米) Height (m)	日期/月份 Date/Month	時間 Time	高度(米) Height (m)	日期/月份 Date/Month	時間 Time
鰂魚涌	Quarry Bay	2.14	4/8	06:30	0.24	4/8	14:55
石壁	Shek Pik	2.20	4/8	06:29	0.19	4/8	13:47
大廟灣	Tai Miu Wan	2.15	4/8	05:59	0.30	4/8	14:41
大埔滘	Tai Po Kau	2.15	4/8	05:51	0.30	4/8	13:57
尖鼻咀	Tsim Bei Tsui	2.33	4/8	06:02	0.21	4/8	16:53

橫瀾島 - 沒有資料 Waglan Island - data not available

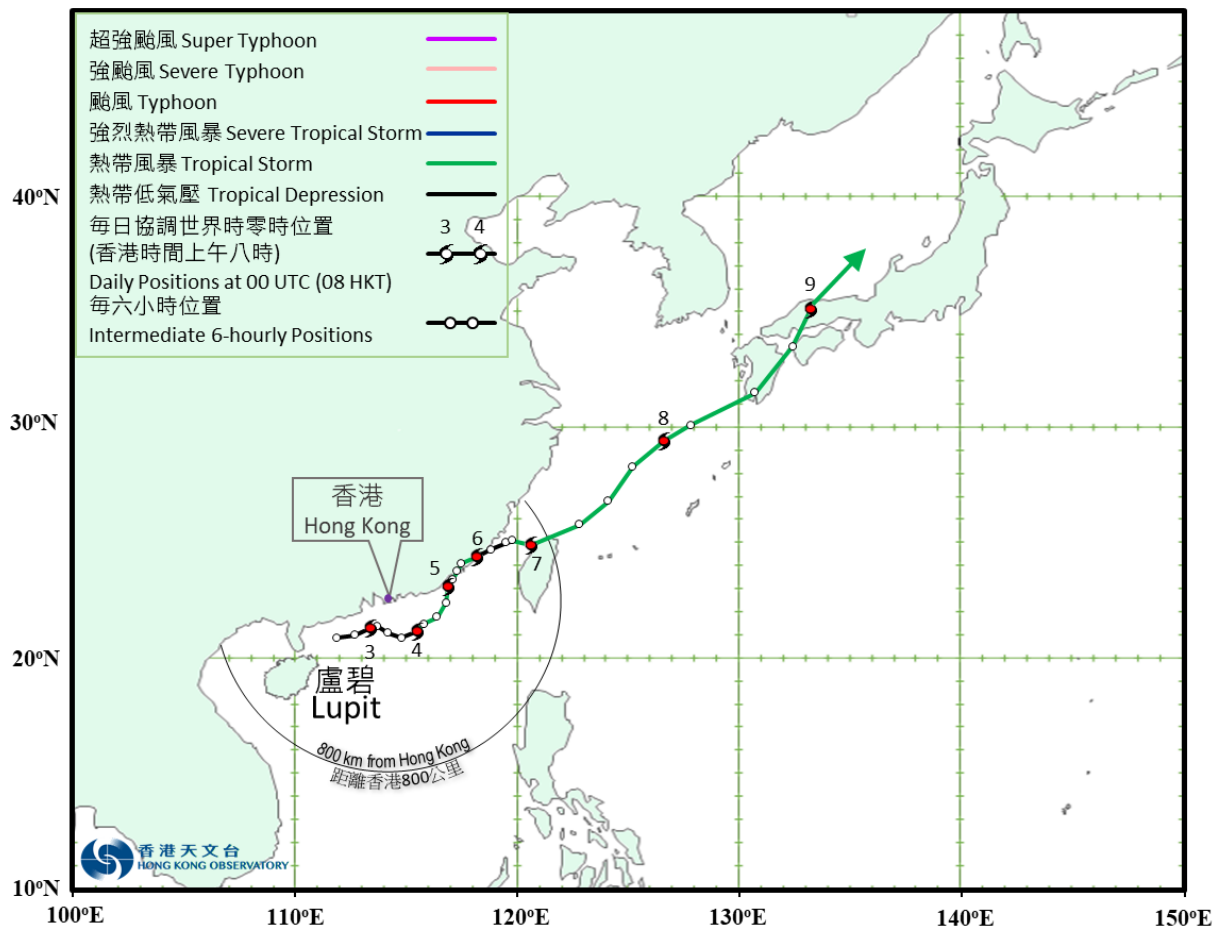


圖 3.4.1a 二零二一年八月二日至九日盧碧的路徑圖。

Figure 3.4.1a Track of Lupit : 2 – 9 August 2021.



圖 3.4.1b 盧碧接近香港時的路徑圖。

Figure 3.4.1b Track of Lupit near Hong Kong.

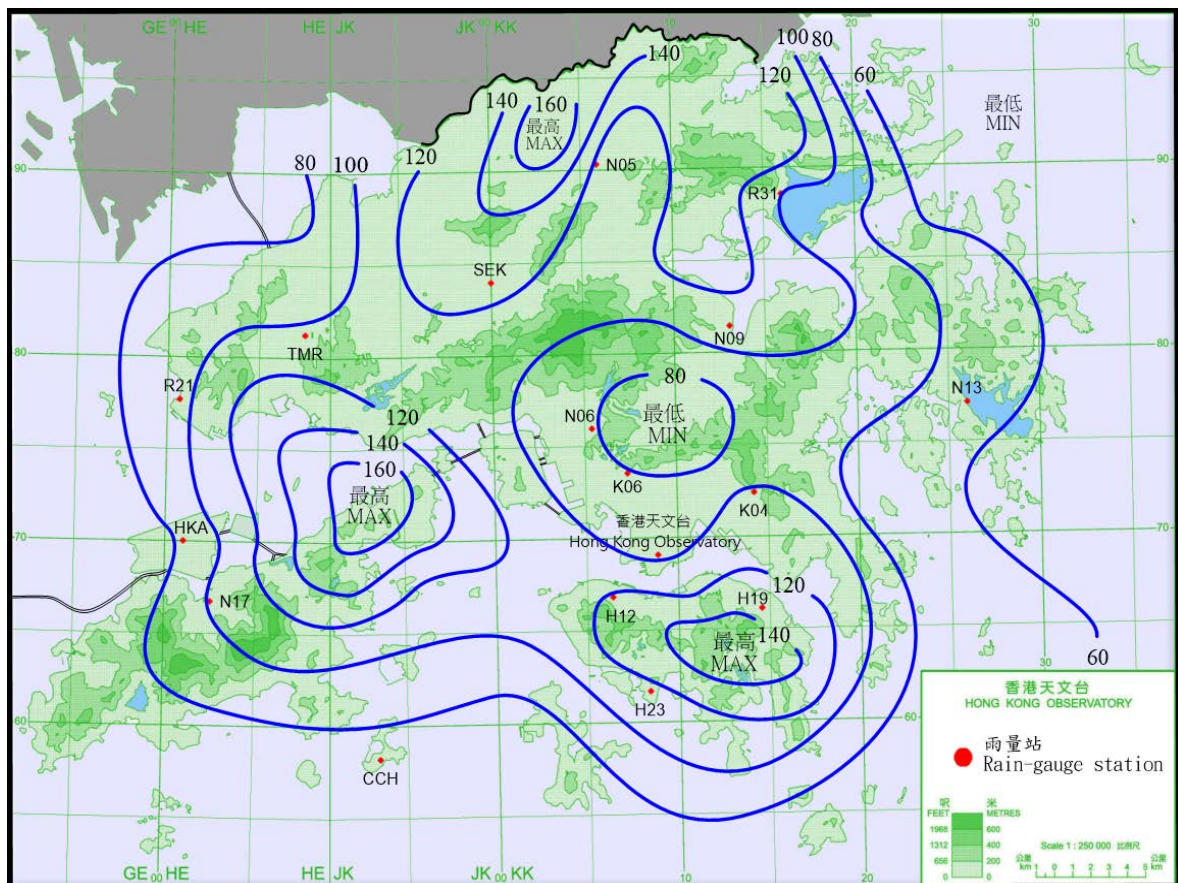


圖 3.4.2 二零二一年八月二日至五日的雨量分佈(等雨量線單位為毫米)。

Figure 3.4.2 Rainfall distribution on 2 – 5 August 2021 (isohyets in millimetres).

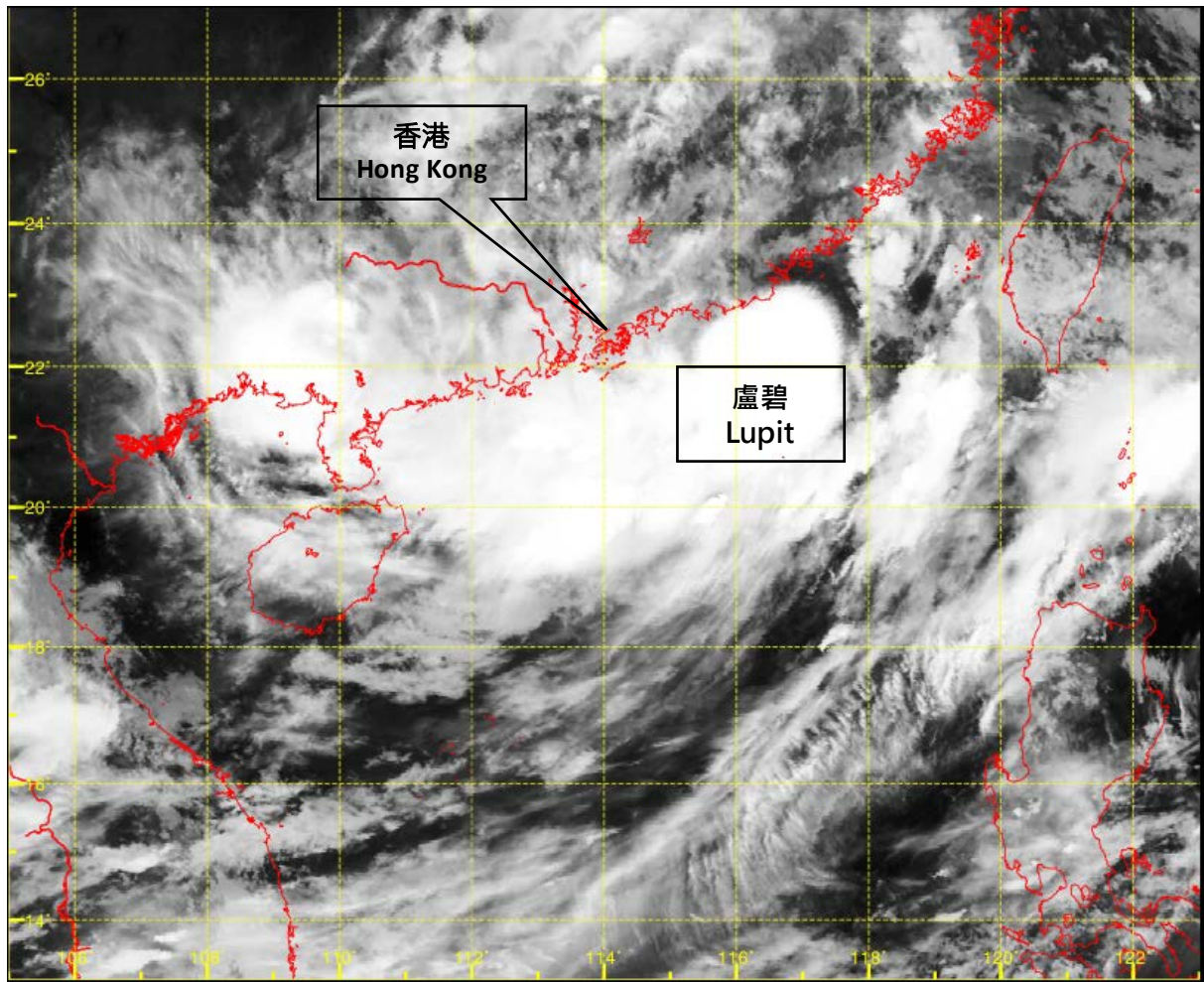


圖 3.4.3 二零二一年八月五日上午2時左右的紅外線衛星圖片，當時盧碧達到其最高強度，中心附近最高持續風速估計為每小時85公里。

Figure 3.4.3 Infra-red satellite imagery around 2 a.m. on 5 August 2021, when Lupit was at its peak intensity with an estimated sustained wind of 85 km/h near its centre.

〔此衛星圖像接收自日本氣象廳的向日葵8號衛星。〕

[The satellite imagery was originally captured by Himawari-8 Satellite (H-8) of Japan Meteorological Agency (JMA).]

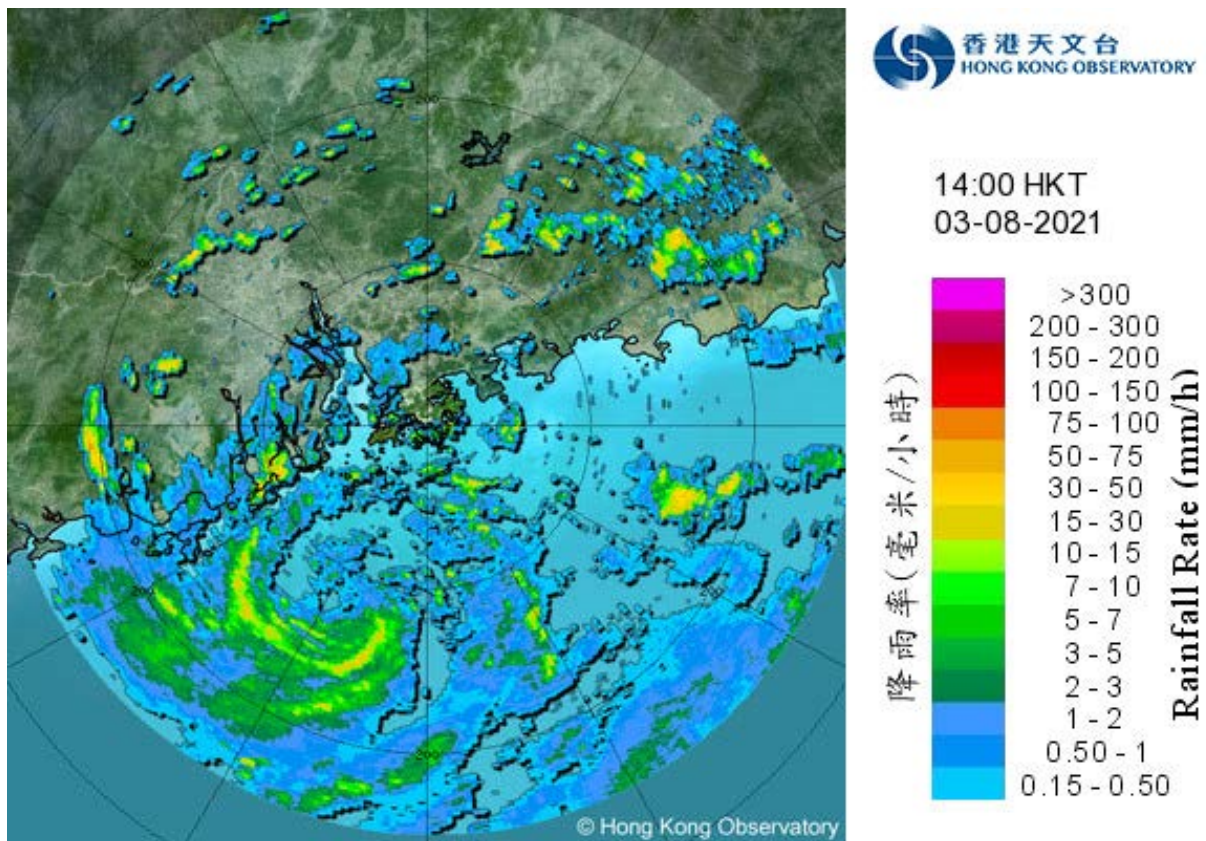


圖 3.4.4a 二零二一年八月三日下午 2 時正的雷達回波圖像，當時盧碧最接近香港，其中心位於本港之西南偏南約 110 公里。

Figure 3.4.4a Image of radar echoes at 2:00 p.m. on 3 August 2021. Lupit was closest to Hong Kong at the time with its centre about 110 km south-southwest of the territory.

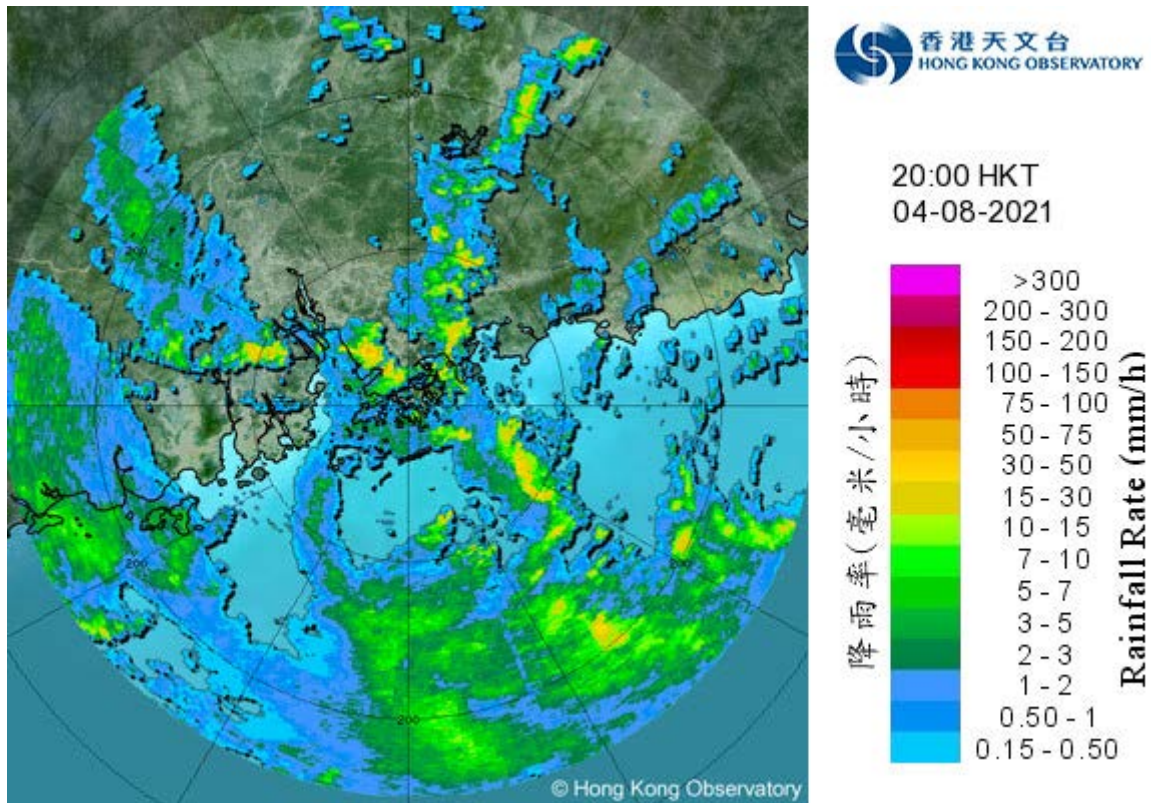


圖 3.4.4b 二零二一年八月四日下午 8 時正的雷達回波圖像，當時與盧碧相關的強雨帶正影響本港，黃色暴雨警告及新界北部水浸特別報告正在生效。

Figure 3.4.4b Image of radar echoes at 8:00 p.m. on 4 August 2021. Intense rainbands associated with Lupit were affecting Hong Kong at that time. Amber Rainstorm Warning and the Special Announcement on Flooding in Northern New Territories were in force.

3.5 熱帶風暴獅子山(2117)：二零二一年十月七日至十日

獅子山是二零二一年第六個影響香港的熱帶氣旋。雖然獅子山在香港約490公里掠過，在其廣闊環流與東北季候風的共同影響下，天文台需要發出今年首個八號烈風或暴風信號。獅子山亦是一九六一年以來距離香港最遠而需發出八號烈風或暴風信號的熱帶氣旋。

一個季風低壓於十月七日下午在三亞之東南偏東約290公里的南海中部上發展為熱帶低氣壓，大致向西北移向海南島。該熱帶低氣壓在十月八日上午被命名為獅子山，並增強為熱帶風暴。當日下午獅子山達到其最高強度，中心附近最高持續風速估計為每小時75公里。十月九日獅子山橫過海南島，期間路徑較為飄忽，以逆時針方向轉了一個圈。當日下午獅子山轉向西北偏西方向移動，在晚上進入北部灣。十月十日晚上獅子山在越南北部沿岸減弱為低壓區。

根據報章報導，獅子山在澳門造成六人受傷。此外，獅子山亦為珠海帶來暴雨，多處地區水浸。

天文台在十月六日晚上11時40分發出強烈季候風信號。在東北季候風及季風低壓的外圍環流共同影響下，十月七日香港普遍吹清勁偏東風，離岸吹強風。隨著該季風低壓發展為熱帶低氣壓及逐漸靠近海南島，天文台在十月八日上午4時40分發出三號強風信號，取代強烈季候風信號，當時獅子山集結在香港之西南偏南約630公里。在獅子山與東北季候風共同影響下，十月八日本港普遍吹強風，離岸及高地間中吹烈風。翌日清晨本港風力進一步增強，天文台在十月九日上午6時40分發出八號東南烈風或暴風信號，當時獅子山集結在香港之西南約550公里。在獅子山的外圍雨帶影響下，十月九日本港持續吹強風至烈風程度的東至東南風，離岸間中吹暴風，西南部高地風力更間中達颶風程度。獅子山在當日下午2時最接近本港，其中心集結在本港之西南約490公里。隨著獅子山移入北部灣及遠離香港，本港風力逐漸減弱，天文台在十月十日上午4時40分發出三號強風信號，取代八號東南烈風或暴風信號。隨著本港風力進一步緩和，天文台在十月十日下午12時40分以一號戒備信號取代三號強風信號，並於當日下午2時20分取消所有熱帶氣旋警告信號。

在獅子山的影響下，昂坪、長洲及橫瀾島錄得的最高每小時平均風速分別為每小時103、76及74公里，而最高陣風則分別為每小時154、123及101公里。尖鼻咀錄得最高潮位3.12米(海圖基準面以上)及最大風暴潮(天文潮高度以上) 0.60米。各站錄得的最低瞬時海平面氣壓如下：

站	最低瞬時 海平面氣壓 (百帕斯卡)	日期/月份	時間
香港天文台總部	1003.2	9/10	上午3時35分
香港國際機場	1002.3	9/10	上午5時03分
長洲	1002.3	9/10	上午3時06分
京士柏	1003.2	8/10	下午3時28分
流浮山	1003.0	9/10	上午3時10分
坪洲	1002.6	9/10	上午2時57分
沙田	1003.5	8/10	下午3時33分
上水	1003.2	9/10	上午4時25分
打鼓嶺	1003.3	9/10	上午4時25分
大埔	1003.5	9/10	上午4時02分
橫瀾島	1002.7	8/10	上午6時48分

獅子山的外圍雨帶在十月七日至九日為本港帶來狂風大驟雨及雷暴。十月八日的雨勢特別大而且持續，本港普遍錄得超過200毫米雨量，天文台需發出本年第二個黑色暴雨警告。山泥傾瀉警告及新界北部水浸特別報告在當日亦曾經生效。十月八日天文台錄得的雨量更達329.7毫米，是十月份月總雨量正常值120.3毫米的兩倍以上，亦是有記錄以來十月份日雨量的最高紀錄。隨著獅子山遠離本港，十月十日日間驟雨逐漸減少。在十月七日至十日的四天期間，本港普遍錄得超過400毫米雨量，港島部分地區的雨量更超過700毫米。

獅子山吹襲香港期間，有兩人死亡，至少14人受傷，另有超過1100宗塌樹報告、六宗水浸報告及三宗山泥傾瀉報告。約三百公頃的新界農地受影響。香港國際機場有15班航班需要轉飛其他地方。在十月七日強烈季候風信號生效期間，一艘雙體帆船在蒲台島附近海域被大浪掀翻，兩人墮海，其中一人溺斃。一艘途經香港果洲群島對開水域的貨輪有約10個貨櫃墮海。十月八日早上跑馬地一座住宅大廈的外牆棚架倒塌，釀成一死一傷。當日的傾盆大雨亦導致部分道路嚴重水浸，公主道、大坑道及順利邨道分別有車輛被洪水圍困。十月九日荃灣有建築地盤的棚架倒塌，九龍塘及深水灣分別有大樹塌下，壓毀三輛私家車及一輛警車。

3.5 Tropical Storm Lionrock (2117): 7 – 10 October 2021

Lionrock was the sixth tropical cyclone affecting Hong Kong in 2021. While Lionrock skirted past at about 490 km of Hong Kong, under the combined effect of Lionrock's extensive circulation and the northeast monsoon, the Observatory issued the first No. 8 Gale or Storm Signal in the year. Lionrock is also the farthest tropical cyclone necessitating the issuance of No. 8 Gale or Storm Signal in Hong Kong since 1961.

A monsoon depression developed into a tropical depression over the central part of the South China Sea about 290 km east-southeast of Sanya on the afternoon of 7 October. It generally tracked northwestwards towards Hainan Island. The tropical depression was named Lionrock on the morning of 8 October and intensified into a tropical storm. Lionrock reached its peak intensity in the afternoon with an estimated maximum sustained wind of 75 km/h near its centre. When Lionrock moved across Hainan Island on 9 October, it took on an erratic track and made an anti-clockwise loop. Lionrock turned to move west-northwestwards in that afternoon and entered Beibu Wan at night. It degenerated into an area of low pressure over the coast of northern Vietnam on the night of 10 October.

According to press reports, Lionrock left six injuries in Macao. Besides, it also brought torrential rain to Zhuhai and triggered extensive flooding.

The Strong Monsoon Signal was issued at 11:40 p.m. on 6 October. Under the combined effect of the northeast monsoon and the outer circulation of the monsoon depression, local winds were generally fresh easterlies, reaching strong force offshore on 7 October. With the monsoon depression developing into a tropical depression and edging closer to Hainan Island, the No. 3 Strong Wind Signal was issued to replace the Strong Monsoon Signal at 4:40 a.m. on 8 October when Lionrock was about 630 km south-southwest of Hong Kong. Under the combined effect of Lionrock and the northeast monsoon, local winds were generally strong with occasional gales offshore and on high ground on 8 October. Local winds further strengthened on the early morning of 9 October and the No. 8 Southeast Gale or Storm Signal was issued at 6:40 a.m. when Lionrock was about 550 km southwest of Hong Kong. Under the influence of the outer rainbands of Lionrock, local winds were strong to gale force east to southeasterlies, with occasional storm force winds offshore and even hurricane force occasionally on high ground over the southwestern part of Hong Kong on 9 October. Lionrock came closest to Hong Kong at around 2 p.m. on 9 October with its centre passing about 490 km southwest of Hong Kong. With Lionrock entering Beibu Wan and departing from Hong Kong, local wind moderated and the No. 3 Strong Wind Signal was issued to replace the No. 8 Southeast Gale or Storm Signal at 4:40 a.m. on 10 October. As local winds further subsided, the No. 1 Standby Signal was issued to replace the No. 3 Strong Wind Signal at 12:40 p.m. on 10 October and all tropical cyclone warning signals were cancelled at 2:20 p.m. on that day.

Under the influence of Lionrock, maximum hourly mean winds of 103, 76 and 74 km/h and maximum gusts of 154, 123 and 101 km/h were recorded at Ngong Ping, Cheung Chau and Waglan Island respectively. A maximum sea level (above chart datum) of 3.12 m and a maximum storm surge (above astronomical tide) of 0.60 m were recorded at Tsim Bei Tsui. The lowest instantaneous mean sea-level pressures recorded at some selected stations are as follows:

Station	Lowest Instantaneous		
	mean sea-level pressure (hPa)	Date/Month	Time
Hong Kong Observatory Headquarters	1003.2	9/10	3:35 a.m.
Hong Kong International Airport	1002.3	9/10	5:03 a.m.
Cheung Chau	1002.3	9/10	3:06 a.m.
King's Park	1003.2	8/10	3:28 p.m.
Lau Fau Shan	1003.0	9/10	3:10 a.m.
Peng Chau	1002.6	9/10	2:57 a.m.
Sha Tin	1003.5	8/10	3:33 p.m.
Sheung Shui	1003.2	9/10	4:25 a.m.
Ta Kwu Ling	1003.3	9/10	4:25 a.m.
Tai Po	1003.5	9/10	4:02 a.m.
Waglan Island	1002.7	8/10	6:48 a.m.

The outer rainbands of Lionrock brought squally heavy showers and thunderstorms to Hong Kong on 7 – 9 October. The rain was particularly heavy and persistent on 8 October with more than 200 millimetres of rainfall generally recorded over Hong Kong, necessitating the issuance of the second Black Rainstorm Warning this year. Landslip Warning and Special Announcement on Flooding in the northern New Territories were also in force on that day. The rainfall recorded at the Observatory on 8 October even reached 329.7 millimetres, more than two times of October's monthly total normal figure of 120.3 millimetres and the highest daily rainfall on record for the month of October. When Lionrock moved away from Hong Kong, showers eased off during the day on 10 October. More than 400 millimetres of rainfall were generally recorded over the territory during the four-day period of 7 – 10 October, with rainfall exceeding 700 millimetres over parts of Hong Kong Island.

Lionrock caused two deaths and at least 14 others injured in Hong Kong during its passage. There were over 1 100 reports of fallen trees, 6 reports of flooding and 3 reports of landslip. About 300 hectares of farmland in the New Territories were affected. 15 flights were diverted at the Hong Kong International Airport. A catamaran was overturned by huge waves over the waters near Po Toi Island on 7 October when the Strong Monsoon Signal was in force. Two people on board fell into the sea and one of them was drowned. About 10 containers fell into the sea from a freighter passing through the waters off the Ninepin Island. The scaffolding of a residential building in Happy Valley collapsed on the morning of 8 October, resulting in one death and one injury. The heavy downpour on that day also caused serious flooding to some roads. A number of vehicles were trapped by flood waters at Princess Margaret Road, Tai Hang Road and Shun Lee Tsuen Road. On 9 October, the scaffolding of a construction site in Tsuen Wan collapsed under strong wind. The fallen trees in Kowloon Tong and Deep Water Bay damaged three private cars and a police vehicle.

表 3.5.1 在獅子山影響下，本港各站在熱帶氣旋警告信號生效時所錄得的最高陣風、最高每小時平均風速及風向

Table 3.5.1 Maximum gust peak speeds and maximum hourly mean winds with associated wind directions recorded at various stations when the tropical cyclone warning signals for Lionrock were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高陣風 Maximum Gust				最高每小時平均風速 Maximum Hourly Mean Wind					
		風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time	風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time
中環碼頭	Central Pier	東南偏東	ESE	95	9/10	17:33	東南偏東	ESE	44	9/10	18:00
長洲	Cheung Chau	東南偏東	ESE	123	9/10	12:44	東南偏東	ESE	76	9/10	03:00
							東南偏東	ESE	76	9/10	07:00
長洲泳灘	Cheung Chau Beach	東	E	111	9/10	15:03	東	E	77	9/10	13:00
青洲	Green Island	東北偏東	ENE	99	8/10	10:19	東北偏東	ENE	54	10/10	01:00
香港國際機場	Hong Kong International Airport	東南偏東	ESE	89	9/10	16:18	東南偏東	ESE	48	9/10	17:00
啟德	Kai Tak	東	E	78	9/10	00:49	東	E	36	9/10	07:00
京士柏	King's Park	東	E	79	9/10	17:26	東	E	34	9/10	02:00
南丫島	Lamma Island	東南偏東	ESE	87	9/10	12:42	東	E	45	9/10	13:00
流浮山	Lau Fau Shan	東	E	69	9/10	22:10	東	E	36	9/10	23:00
昂坪	Ngong Ping	東	E	154	9/10	15:38	東	E	103	9/10	15:00
北角	North Point	東北偏東	ENE	82	8/10	10:15	東	E	49	10/10	01:00
坪洲	Peng Chau	東南	SE	80	9/10	12:49	東南偏東	ESE	50	9/10	13:00
平洲	Ping Chau	東北偏東	ENE	59	9/10	21:55	東	E	23	9/10	23:00
西貢	Sai Kung	東南	SE	81	8/10	13:17	東北偏東	ENE	46	10/10	00:00
沙螺灣	Sha Lo Wan	東南	SE	102	9/10	16:24	東	E	39	9/10	03:00
							東南	SE	39	9/10	17:00
沙田	Sha Tin	南	S	67	9/10	06:45	東南偏南	SSE	24	9/10	07:00
九龍天星碼頭	Star Ferry (Kowloon)	東南偏東	ESE	85	9/10	13:02	東	E	45	9/10	07:00
							東	E	45	9/10	21:00
打鼓嶺	Ta Kwu Ling	東	E	71	9/10	18:07	東	E	27	9/10	09:00
大美督	Tai Mei Tuk	東	E	99	9/10	12:55	東	E	62	9/10	14:00
大帽山	Tai Mo Shan	東南偏東	ESE	136	9/10	12:56	東南偏東	ESE	89	9/10	18:00
大埔滘	Tai Po Kau	東南	SE	82	9/10	06:55	東	E	46	10/10	00:00
大老山	Tate's Cairn	東南	SE	116	9/10	06:22	東南偏東	ESE	71	9/10	22:00
將軍澳	Tseung Kwan O	東	E	75	9/10	13:01	東南	SE	20	9/10	07:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東	E	75	9/10	13:23	東南偏東	ESE	26	9/10	03:00
							東南偏東	ESE	26	9/10	04:00
							東南偏東	ESE	26	9/10	16:00
屯門政府合署	Tuen Mun Government Offices	東南偏東	ESE	77	9/10	16:36	東南	SE	24	9/10	08:00
橫瀾島	Waglan Island	東南偏東	ESE	101	9/10	15:29	東	E	74	10/10	01:00
濕地公園	Wetland Park	東南偏東	ESE	59	9/10	14:38	東	E	18	9/10	23:00
黃竹坑	Wong Chuk Hang	東	E	89	9/10	08:19	東	E	30	9/10	02:00

黃麻角(赤柱)、沙洲、石崗、塔門東 - 沒有資料 Bluff Head (Stanley), Sha Chau, Shek Kong, Tap Mun East - data not available

表 3.5.2 在獅子山影響下，熱帶氣旋警告信號系統的八個參考測風站在熱帶氣旋警告信號生效時錄得持續風力達到強風及烈風程度的時段

Table 3.5.2 Periods during which sustained strong and gale force winds were attained at the eight reference anemometers in the tropical cyclone warning system when tropical cyclone warning signals for Lionrock were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最初達到強風* 時間		最後達到強風* 時間		最初達到烈風# 時間		最後達到烈風# 時間	
		Start time when strong wind speed* was attained		End time when strong wind speed* was attained		Start time when gale force wind speed# was attained		End time when gale force wind speed# was attained	
		日期/月份	時間	日期/月份	時間	日期/月份	時間	日期/月份	時間
		Date/Month	Time	Date/Month	Time	Date/Month	Time	Date/Month	Time
長洲	Cheung Chau	8/10	07:33	10/10	11:34	8/10	20:46	9/10	23:01
香港國際 機場	Hong Kong International Airport	8/10	08:02	9/10	23:19	9/10	13:06	9/10	13:06
流浮山	Lau Fau Shan	9/10	22:06	9/10	22:14	-			
啟德	Kai Tak	9/10	00:54	9/10	19:52	-			
西貢	Sai Kung	8/10	06:49	10/10	01:36	-			

沙田、打鼓嶺及青衣島蜆殼油庫的持續風力未達到強風程度。

The sustained wind speed did not attain strong force at Sha Tin, Ta Kwu Ling and Tsing Yi Shell Oil Depot.

- 未達到指定的風速

- not attaining the specified wind speed

* 十分鐘平均風速達每小時 41-62 公里

* 10-minute mean wind speed of 41- 62 km/h

十分鐘平均風速達每小時 63-87 公里

10-minute mean wind speed of 63-87 km/h

註： 本表列出持續風力達到強風及烈風程度的起始及終結時間。期間風力可能高於或低於指定的風力。

Note: The table gives the start and end time of sustained strong or gale force winds. Winds might fluctuate above or below the specified wind speeds in between the times indicated.

表 3.5.3 獅子山影響香港期間，香港天文台總部及其他各站所錄得的日雨量
Table 3.5.3 Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Lionrock

站(參閱圖 3.5.2) Station (See Fig. 3.5.2)			十月七日 7 Oct	十月八日 8 Oct	十月九日 9 Oct	十月十日 10 Oct	總雨量(毫米) Total rainfall (mm)
香港天文台 Hong Kong Observatory (HKO)			43.9	329.7	130.3	45.1	549.0
香港國際機場 Hong Kong International Airport (HKA)			23.0	276.9	154.3	63.0	517.2
長洲 Cheung Chau (CCH)			[26.5]	160.5	92.0	76.0	[355.0]
H23	香港仔	Aberdeen	43.5	269.0	163.5	49.0	525.0
N05	粉嶺	Fanling	21.5	238.0	101.0	16.0	376.5
N13	糧船灣	High Island	15.0	261.0	73.0	15.5	364.5
K04	佐敦谷	Jordan Valley	27.5	417.0	117.5	36.0	598.0
N06	葵涌	Kwai Chung	14.5	361.0	128.5	31.0	535.0
H12	半山區	Mid Levels	55.5	344.5	150.0	54.5	604.5
N09	沙田	Sha Tin	17.0	345.5	118.5	24.5	505.5
H19	筲箕灣	Shau Kei Wan	66.5	369.0	133.0	48.0	616.5
SEK	石崗	Shek Kong	[16.0]	274.5	130.5	29.0	[450.0]
K06	蘇屋邨	So Uk Estate	19.5	350.5	132.5	29.0	531.5
R31	大美督	Tai Mei Tuk	16.5	267.0	107.0	13.0	403.5
N17	東涌	Tung Chung	49.5	297.5	166.5	92.5	606.0
TMR	屯門水庫	Tuen Mun Reservoir	6.4	278.4	131.0	25.0	440.8

踏石角(R21) - 沒有資料

Tap Shek Kok (R21) - data not available

註：[] 基於不完整的每小時雨量數據。

Note: [] based on incomplete hourly data.

表 3.5.4 獅子山影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮
Table 3.5.4 Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Lionrock

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高潮位(海圖基準面以上) Maximum sea level (above chart datum)			最大風暴潮(天文潮高度以上) Maximum storm surge (above astronomical tide)		
		高度(米) Height (m)	日期/月份 Date/Month	時間 Time	高度(米) Height (m)	日期/月份 Date/Month	時間 Time
鰂魚涌	Quarry Bay	2.70	9/10	22:43	0.47	9/10	15:12
石壁	Shek Pik	2.91	9/10	22:25	0.56	9/10	05:39
大廟灣	Tai Miu Wan	2.71	9/10	23:06	0.48	9/10	15:20
大埔滘	Tai Po Kau	2.86	8/10	23:37	0.55	9/10	06:44
尖鼻咀	Tsim Bei Tsui	3.12	9/10	23:41	0.60	9/10	21:21

橫瀾島 - 沒有資料 Waglan Island - data not available

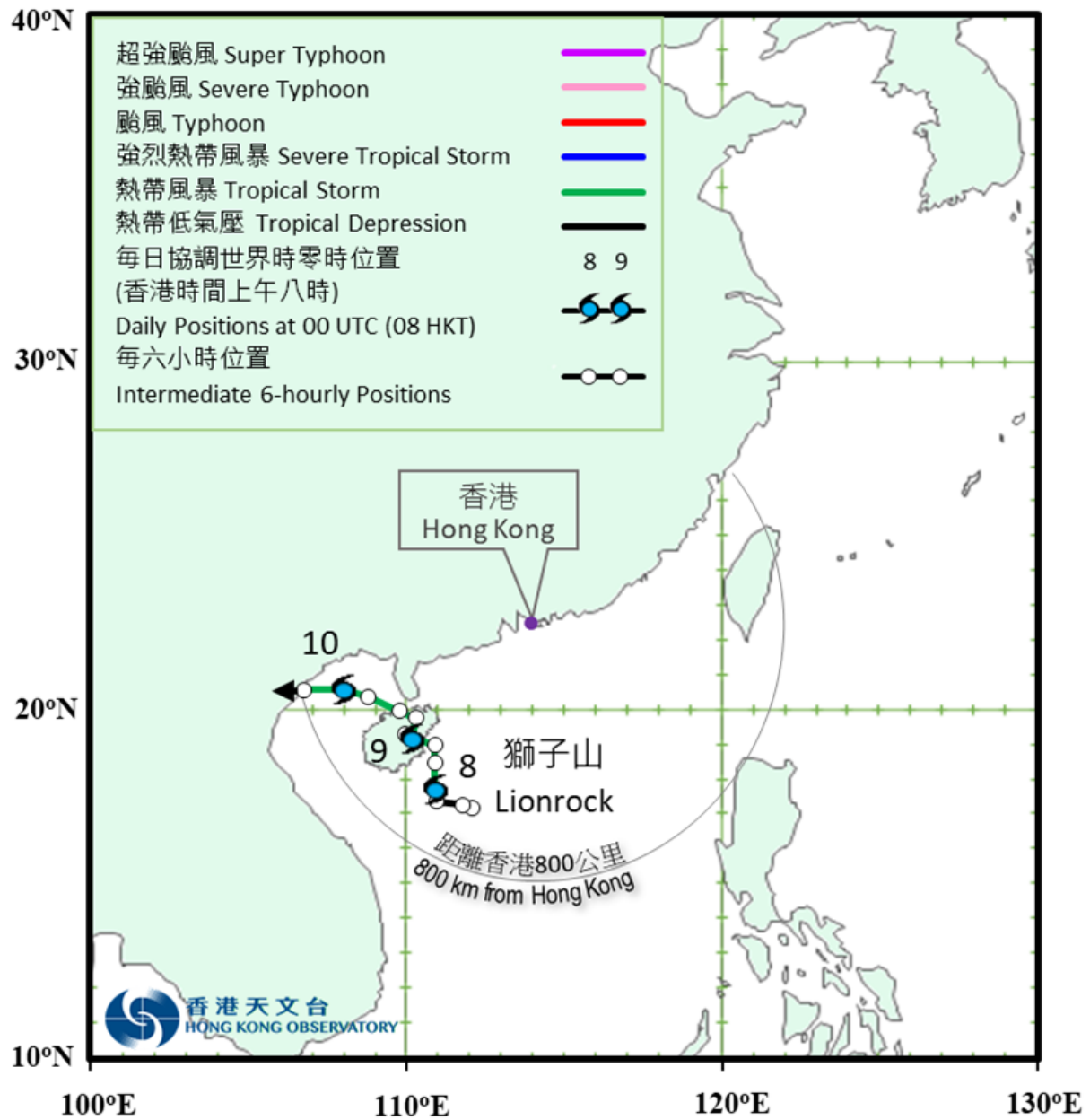


圖 3.5.1a 二零二一年十月七日至十日獅子山(2117)的路徑圖。

Figure 3.5.1a Track of Lionrock (2117): 7 - 10 October 2021.



圖 3.5.1b 獅子山接近海南島時的路徑圖。

Figure 3.5.1b Track of Lionrock near Hainan Island.

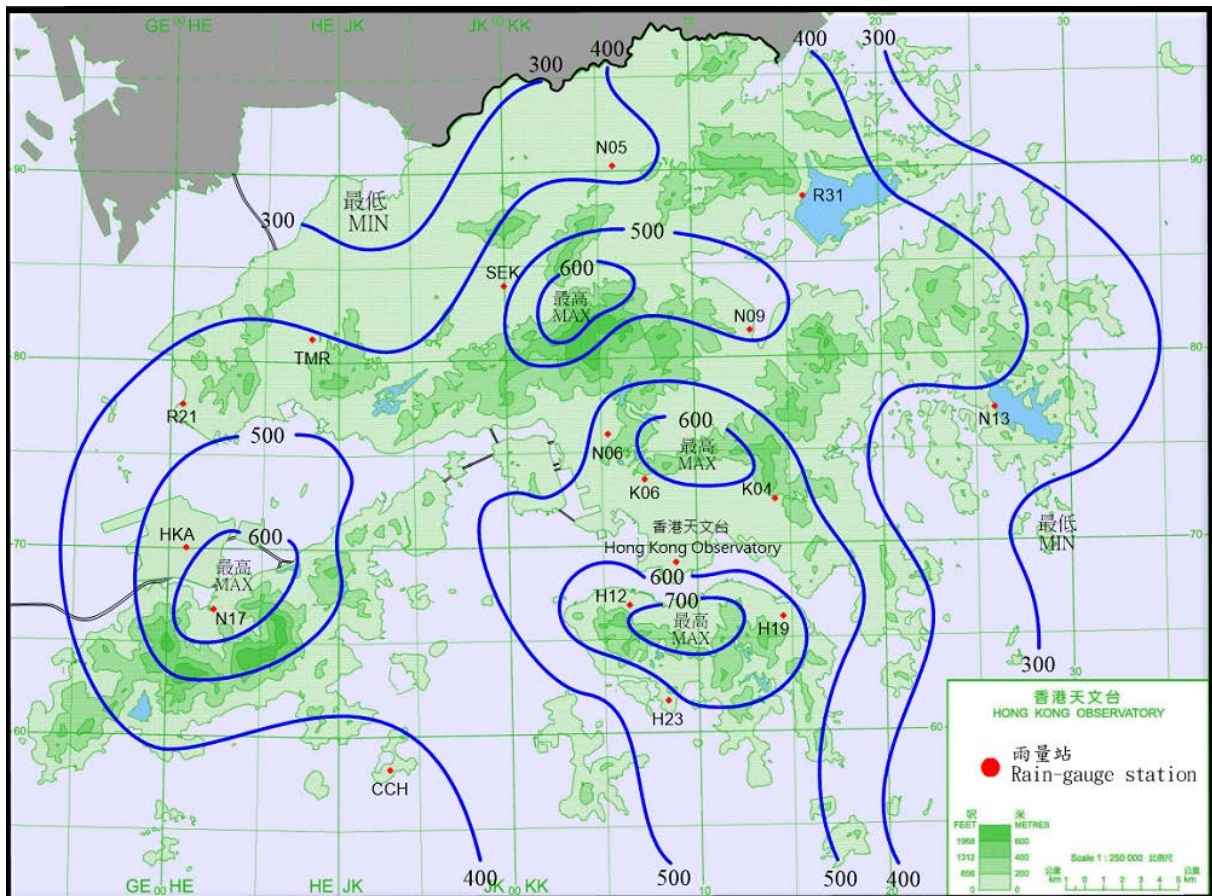


圖 3.5.2 二零二一年十月七日至十日的雨量分佈(等雨量線單位為毫米)。

Figure 3.5.2 Rainfall distribution on 7 – 10 October 2021 (isohyets are in millimetres).

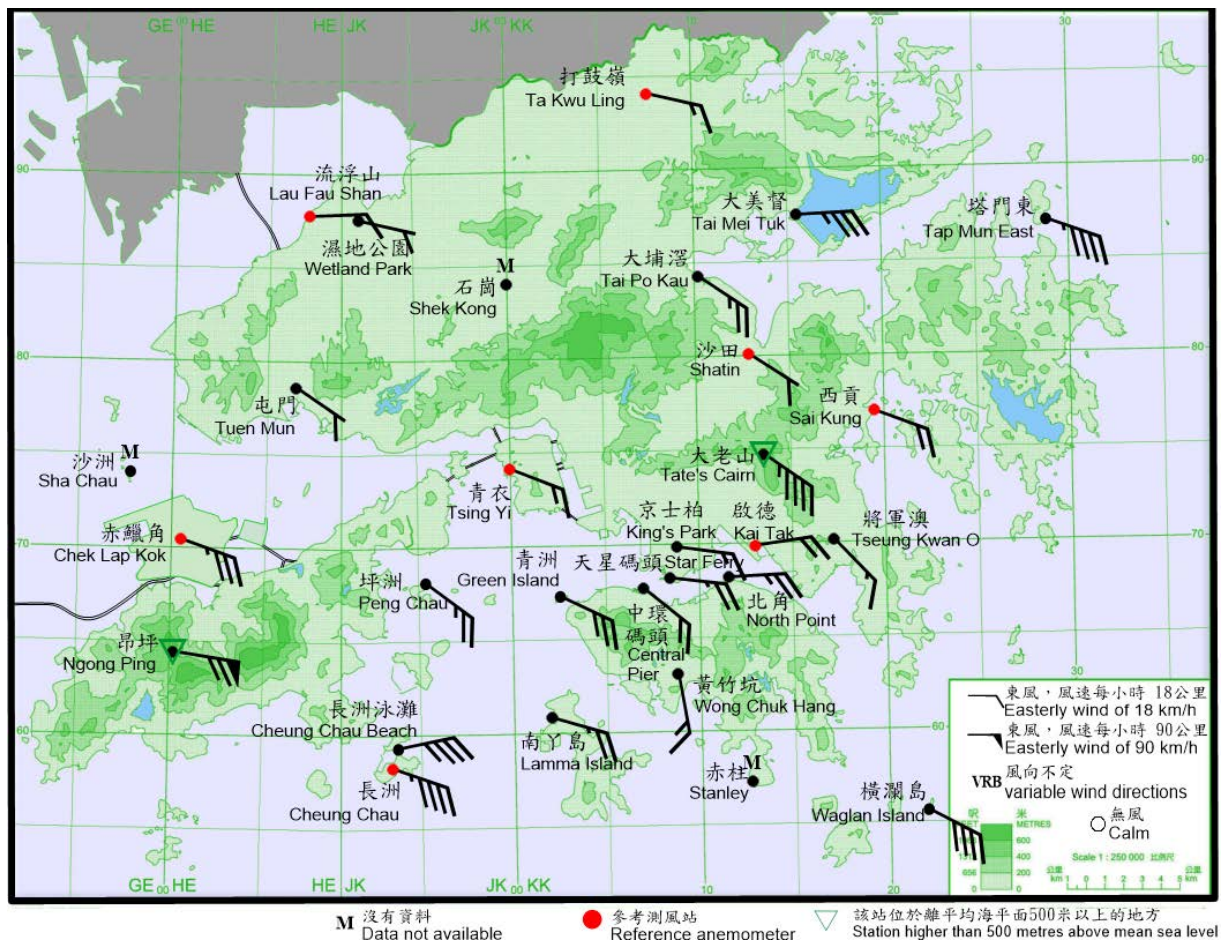


圖 3.5.3a 二零二一年十月九日下午三時四十分香港各站錄得的十分鐘平均風向和風速。當時昂坪風力達到颶風程度，而塔門東、大老山、橫瀾島、長洲及長洲泳灘的風力達到烈風程度。

Figure 3.5.3a 10-minute mean wind direction and speed recorded at various stations in Hong Kong at 3:40 p.m. on 9 October 2021. At that time, winds at Ngong Ping reached hurricane force, while winds at Tap Mun East, Tate's Cairn, Waglan Island, Cheung Chau and Cheung Chau Beach reached gale force.

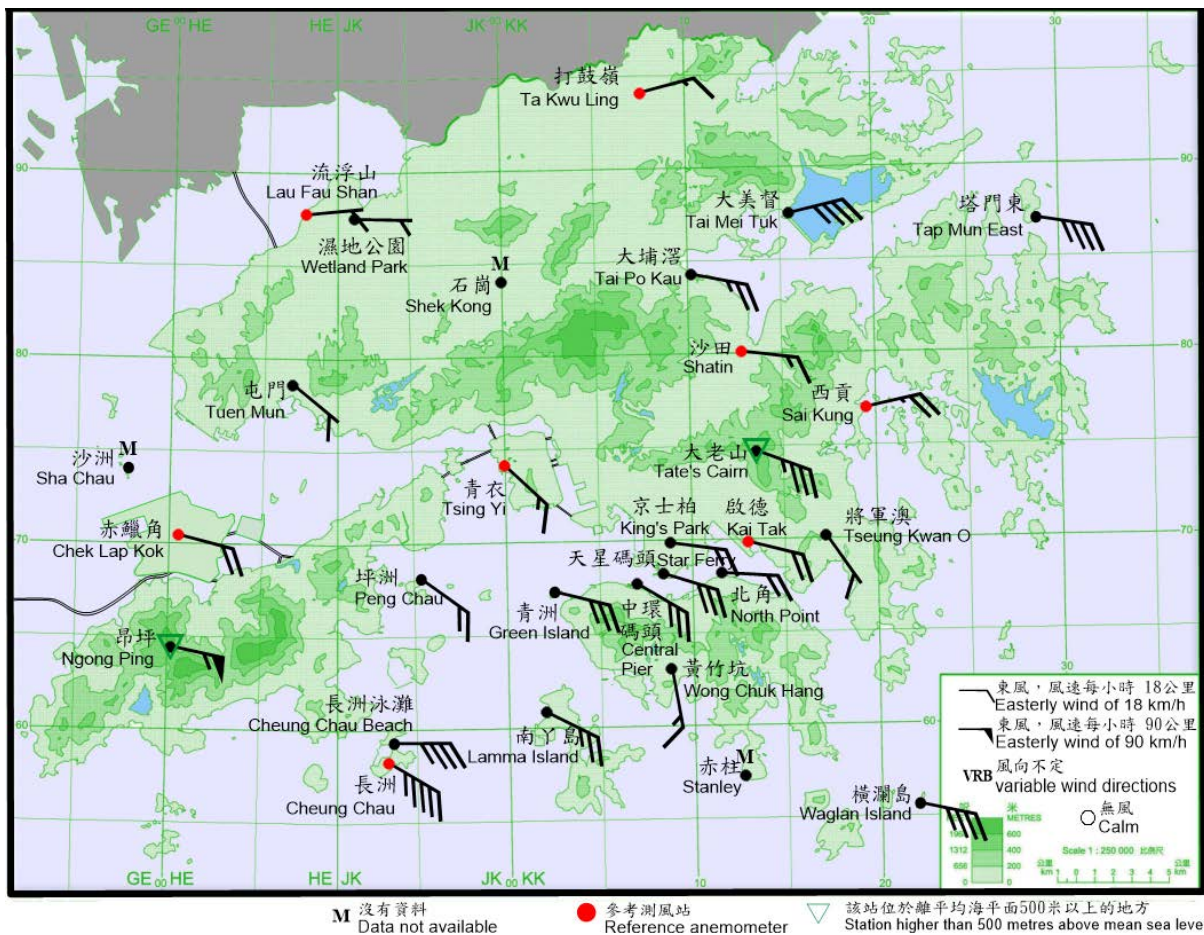


圖 3.5.3b 二零二一年十月九日下午八時二十分香港各站錄得的十分鐘平均風向和風速。當時昂坪風力達到暴風程度，而塔門東、大美督、橫瀾島、長洲及長洲泳灘的風力達到烈風程度。

Figure 3.5.3b 10-minute mean wind direction and speed recorded at various stations in Hong Kong at 8:20 p.m. on 9 October 2021. At that time, winds at Ngong Ping reached storm force, while winds at Tap Mun East, Tai Mei Tuk, Waglan Island, Cheung Chau and Cheung Chau Beach reached gale force.

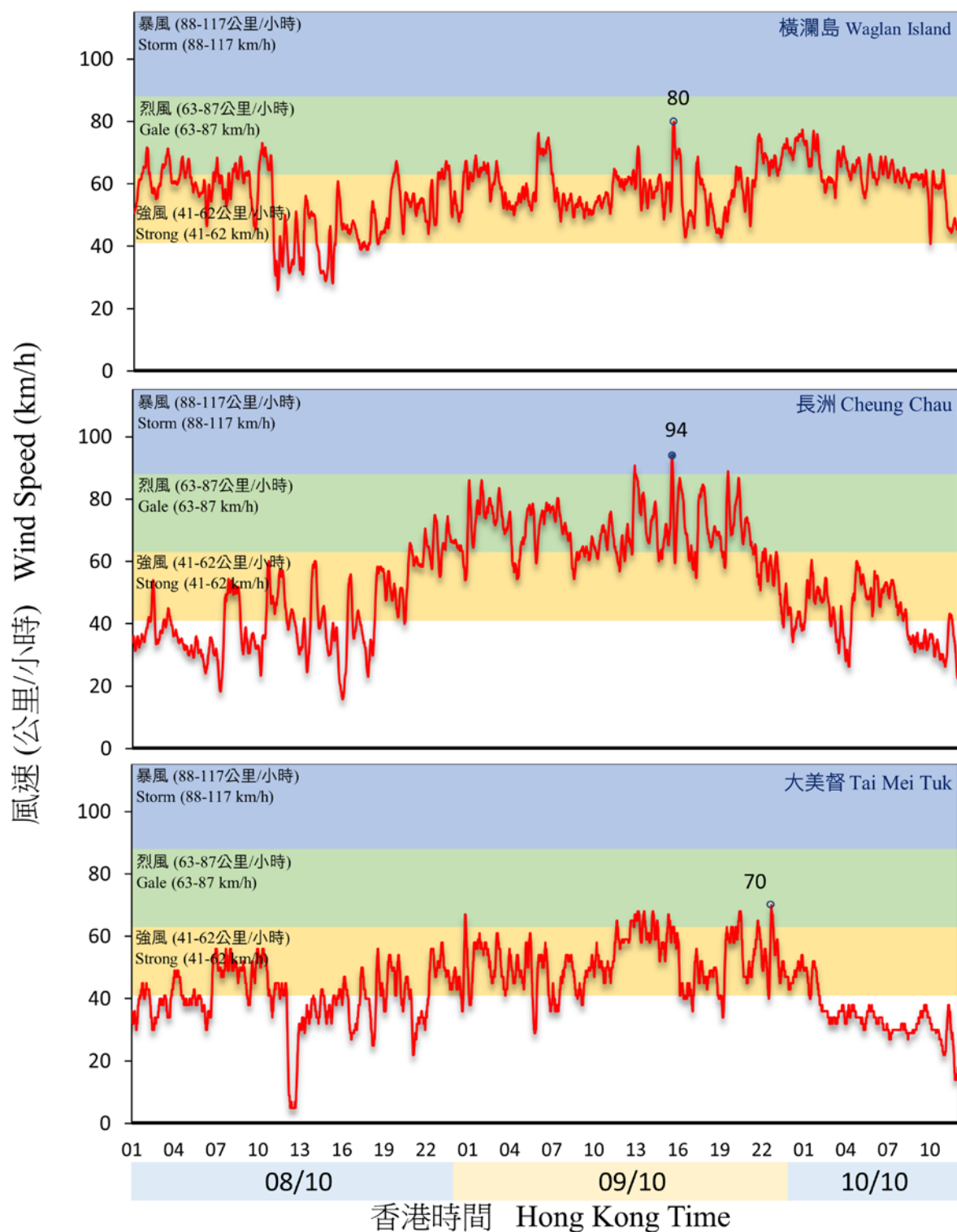


圖 3.5.4 二零二一年十月八日至十日橫瀾島、長洲及大美督錄得的十分鐘風速。
 Figure 3.5.4 Traces of 10-minute wind speed recorded at Waglan Island, Cheung Chau and Tai Mei Tuk on 8 - 10 October 2021.

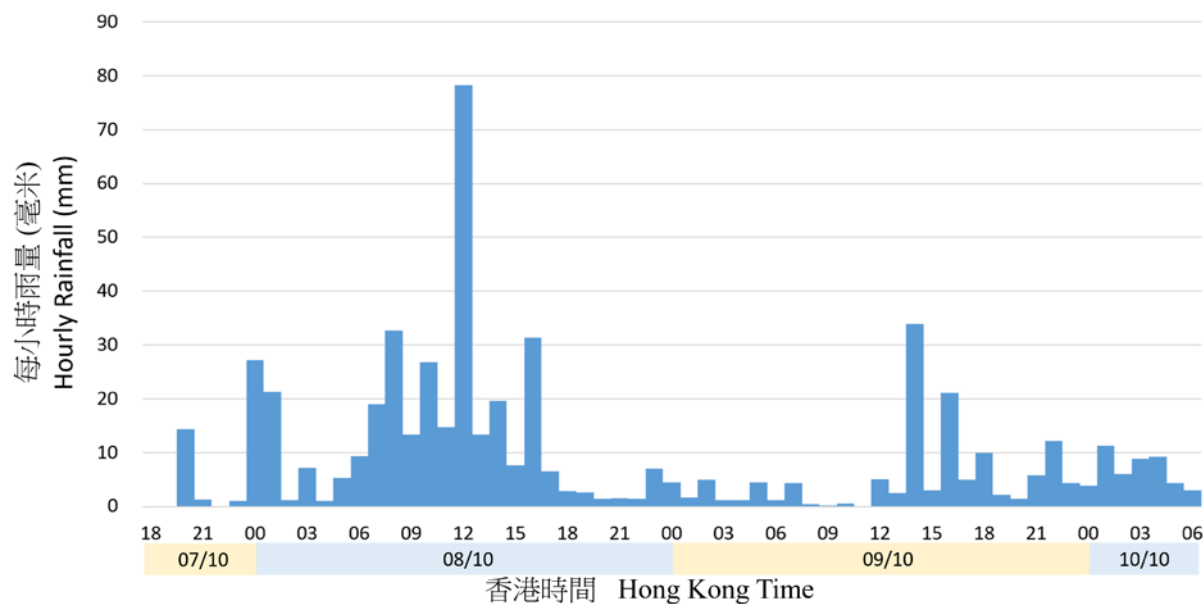


圖 3.5.5 二零二一年十月七日至十日在天文台錄得的每小時雨量。

Figure 3.5.5 Hourly rainfall recorded at the Observatory during 7 – 10 October 2021.

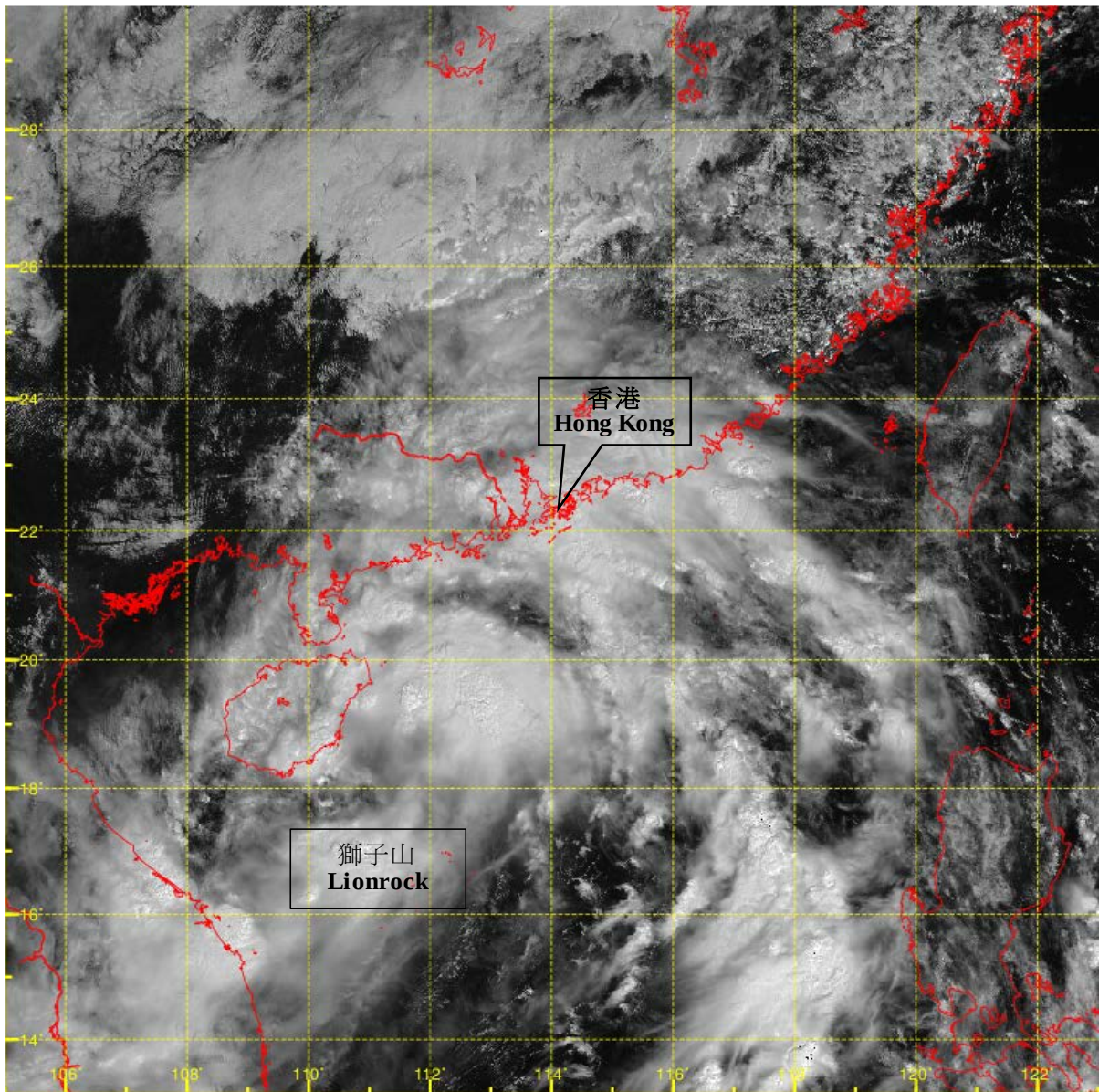


圖 3.5.6a 二零二一年十月八日上午11時左右的可見光衛星圖片，當時獅子山達到其最高強度，中心附近最高持續風速估計為每小時75公里。

Figure 3.5.6a Visible satellite imagery around 11 a.m. on 8 October 2021 when Lionrock was at its peak intensity with an estimated maximum sustained wind of 75 km/h near its centre.

[此衛星圖像接收自日本氣象廳的向日葵8號衛星。]

[The satellite imagery was originally captured by Himawari-8 Satellite (H-8) of Japan Meteorological Agency (JMA).]

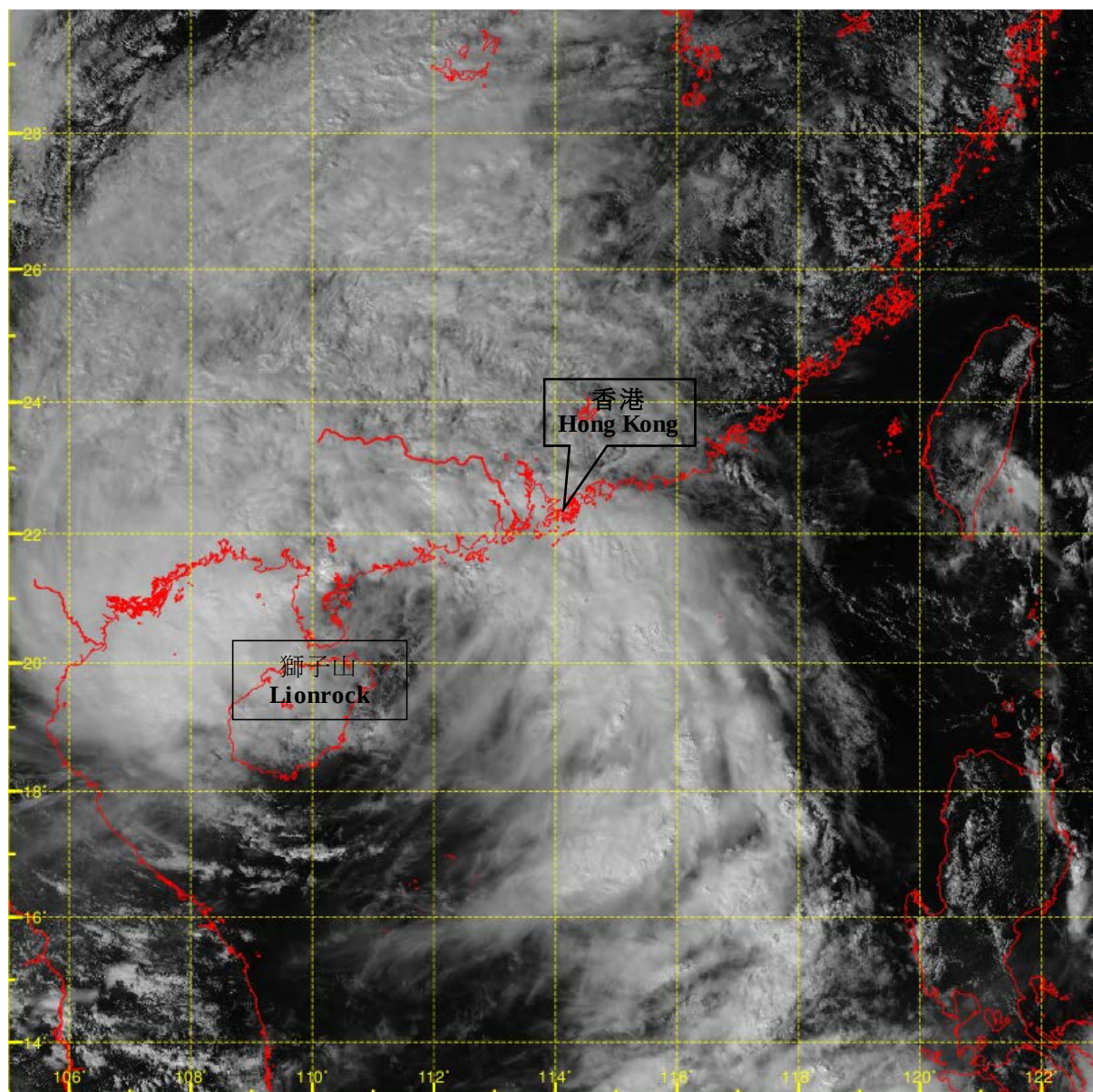


圖 3.5.6b 二零二一年十月九日下午2時左右的可見光衛星圖片，當時熱帶風暴獅子山正橫過海南島，而與獅子山相關的雨帶持續影響廣東沿岸地區。

Figure 3.5.6b Visible satellite imagery around 2 p.m. on 9 October 2021 when tropical storm Lionrock was moving across Hainan Island and the rainbands associated with it were persistently affecting the coastal areas of Guangdong.

〔此衛星圖像接收自日本氣象廳的向日葵8號衛星。〕

[The satellite imagery was originally captured by Himawari-8 Satellite (H-8) of Japan Meteorological Agency.]

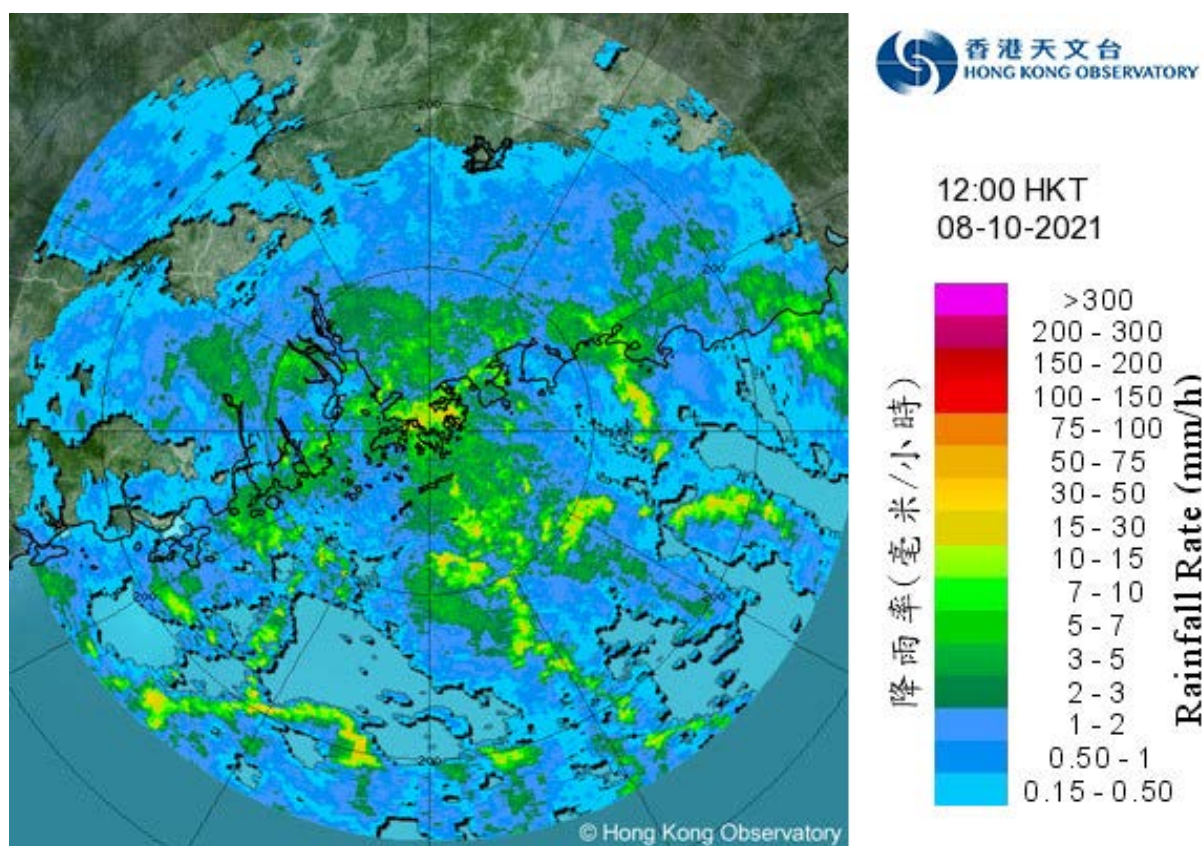


圖 3.5.7a 二零二一年十月八日中午12時的雷達回波圖像，當時與獅子山相關的強雨帶正影響香港，三號強風信號、黑色暴雨警告、山泥傾瀉警告、新界北部水浸特別報告及雷暴警告正在生效。

Figure 3.5.7a Radar echoes captured at noon on 8 October 2021 when the intense rainbands associated with Lionrock were affecting Hong Kong. The No. 3 Strong Wind Signal, Black Rainstorm Warning, Landslip Warning, Special Announcement on Flooding in the northern New Territories and thunderstorm warning were in force.

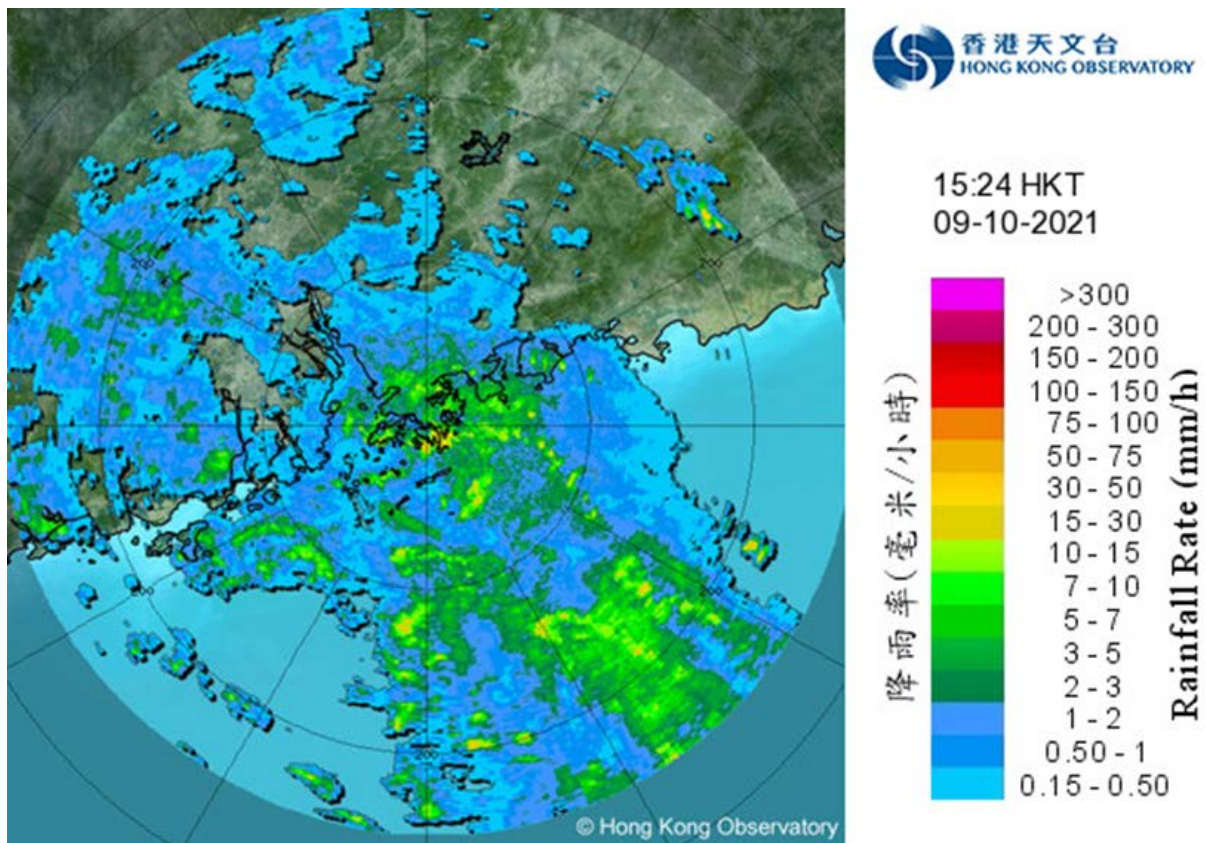


圖 3.5.7b 二零二一年十月九日下午3時24分的雷達回波圖像，與獅子山相關的雨帶持續影響香港。

Figure 3.5.7b Radar echoes captured at 3:24 p.m. on 9 October 2021. The rainbands associated with Lionrock continued to affect Hong Kong.



圖 3.5.8a 二零二一年十月八日跑馬地有棚架倒塌。(圖片由香港電台提供)

Figure 3.5.8a Scaffolding collapsed in Happy Valley on 8 October 2021.
(Courtesy of Radio Television Hong Kong)



圖 3.5.8b 二零二一年十月八日暴雨期間在大坑道(上)及維多利亞公園(下)附近的嚴重水浸。(圖片由香港電台(上)及 Cyril Tong(下)提供)

Figure 3.5.8b Serious flooding at Tai Hang Road (top) and Victoria Park (bottom) during the rainstorm on 8 October 2021. (Courtesy of Radio Television Hong Kong (top) and Cyril Tong (bottom))

3.6 颱風圓規(2118)：二零二一年十月八日至十四日

圓規是二零二一年第七個影響香港的熱帶氣旋。在十月九日至十二日短短四日內，香港接連受熱帶氣旋獅子山及圓規吹襲，天文台均需發出八號烈風或暴風信號。而獅子山的八號信號取消時間與圓規的八號信號發出時間僅相距60小時40分鐘，這是自一九四六年以來由兩個熱帶氣旋所引致的八號信號相距時間最短的紀錄。

圓規於十月八日晚上在馬尼拉以東約1 020公里的北太平洋西部上發展為熱帶低氣壓，初時向偏北方向移動，並逐漸增強。十月十日圓規加速向偏西方向移動，十月十一日發展為強烈熱帶風暴及橫過呂宋海峽。圓規在十月十二日向西橫過南海北部，翌日早上進一步發展為颱風並達到其最高強度，其中心附近最高持續風速估計為每小時120公里。十月十三日圓規橫過海南島並迅速減弱，十月十四日在北部灣減弱為低壓區。

根據報章報導，圓規吹襲菲律賓期間，造成40人死亡，5人受傷，17人失蹤，超過五十萬人須要撤離。此外，圓規帶來的暴雨令廣東的鹽田港及海南島的三個港口關閉，海上運輸服務暫停。

天文台在十月十一日下午4時正發出強烈季候風信號。在東北季候風及圓規的外圍環流共同影響下，當晚本港吹清勁北至東北風，離岸吹強風。隨著圓規進入南海東北部，天文台在十月十二日上午12時40分發出三號強風信號，取代強烈季候風信號，當時圓規集結在香港之東南偏東約770公里。當日早上本港普遍吹清勁至強風程度的北至東北風，離岸及高地間中吹烈風。由於圓規逐漸靠近廣東沿岸，預料本港風力會在晚上進一步增強，天文台在十月十二日下午5時20分發出八號東北烈風或暴風信號，當時圓規集結在香港之東南約480公里。十月十三日上午本港吹強風至烈風程度的東至東北風，離岸間中吹暴風，高地風力更達颶風程度。圓規在十月十三日上午4時最接近本港，在本港以南約360公里掠過。隨著圓規登陸海南島及逐漸遠離香港，下午本港風力有所減弱，天文台在十月十三日下午4時40分改發三號強風信號，取代八號東北烈風或暴風信號。翌日凌晨圓規繼續減弱及進一步遠離香港，天文台在十月十四日上午4時40分以一號戒備信號取代三號強風信號，並於當日早上6時20分取消所有熱帶氣旋警告信號。

在圓規的影響下，大老山、橫瀾島及長洲泳灘錄得的最高每小時平均風速分別為每小時111、85及76公里，而最高陣風則分別為每小時153、110及119公里。大埔濬錄得最高潮位3.53米(海圖基準面以上)，而石壁則錄得最大風暴潮(天文潮高度以上) 1.36米。各站錄得的最低瞬時海平面氣壓如下：

站	最低瞬時 海平面氣壓 (百帕斯卡)	日期/月份	時間
香港天文台總部	997.3	13/10	上午3時04分
香港國際機場	998.5	13/10	上午3時14分
長洲	996.6	13/10	上午3時13分
京士柏	997.2	13/10	上午3時08分
流浮山	998.7	13/10	上午3時07分
坪洲	997.5	13/10	上午3時11分
沙田	998.6	13/10	上午3時08分
上水	999.3	13/10	上午3時07分
打鼓嶺	999.1	13/10	上午3時14分
大埔	999.2	13/10	上午3時13分
橫瀾島	996.3	13/10	上午2時53分

受乾燥東北季候風影響，十月十一日本港大致天晴。圓規的外圍雨帶在十月十二日至十三日為本港帶來大驟雨。隨著圓規減弱及遠離香港，十月十四日本港雨勢減弱，短暫時間有陽光。十月十二日至十四日期間香港大部分地區錄得超過100毫米雨量。

圓規吹襲香港期間至少有20人受傷，另有877宗塌樹報告及10宗水浸報告。黃大仙及灣仔分別有大樹倒塌，壓毀五輛汽車。圓規所引發的風暴潮令本港多處地區的水位升高超過一米，由於適逢天文漲潮，兩者的疊加效應導致本港部分低窪地區出現水浸，當中沙田城門河一帶的單車徑及行人隧道被淹浸，杏花邨及小西灣藍灣半島對出長廊亦有輕微水浸，柴灣有工業大廈地下的停車場被海水湧入，一個保安更亭及水馬被沖毀。鯉魚門三家村有村屋出現水浸。大澳有一名居民因水浸被困家中，需要救援人員協助。

3.6 Typhoon Kompasu (2118): 8 - 14 October 2021

Kompasu was the seventh tropical cyclone affecting Hong Kong in 2021. Tropical Cyclones Lionrock and Kompasu successively hit Hong Kong within four days between 9 – 12 October and both necessitated the issuance of No. 8 Gale or Storm Signal. The time separation between the cancellation of the No. 8 signal for Lionrock and the issuance of the No. 8 signal for Kompasu was only 60 hours 40 minutes, the shortest record of break time between two No. 8 signals for two tropical cyclones since 1946.

Kompasu developed as a tropical depression over the western North Pacific about 1 020 km east of Manila on the night of 8 October. It moved northwards at first and intensified gradually. Kompasu picked up speed towards the west on 10 October. It developed into a severe tropical storm while moving across the Luzon Strait on 11 October. Kompasu moved westwards across the northern part of the South China Sea on 12 October. It further developed into a typhoon on the morning of next day, reaching its peak intensity with an estimated sustained wind of 120 km/h near its centre. Kompasu moved across Hainan Island on 13 October and weakened rapidly. It degenerated into an area of low pressure over Beibu Wan on 14 October.

According to press reports, Kompasu left 40 deaths, 5 injuries, 17 missing and over 500 000 people evacuated in the Philippines during its passage. Besides, the Yantian Port in Guangdong and 3 ports in Hainan Island were closed and the marine transportation services were suspended owing to the torrential rain brought by Kompasu.

The Strong Monsoon Signal was issued at 4:00 p.m. on 11 October. Under the combined effect of the northeast monsoon and the outer circulation of Kompasu, local winds were fresh north to northeasterlies, reaching strong force offshore. With Kompasu entering the northeastern part of the South China Sea, the No. 3 Strong Wind Signal was issued to replace the Strong Monsoon Signal at 12:40 a.m. on 12 October when Kompasu was about 770 km east-southeast of Hong Kong. Local winds were generally fresh to strong north to northeasterlies, occasionally reaching gale force offshore and on high ground that morning. Since Kompasu gradually edged closer to the coast of Guangdong, local winds were expected to strengthen further at night and the No. 8 Northeast Gale or Storm Signal was issued at 5:20 p.m. on 12 October when Kompasu was about 480 km southeast of Hong Kong. Local winds were strong to gale force east to northeasterlies, occasionally reaching storm force offshore and even hurricane force on high ground on the morning of 13 October. Kompasu came closest to Hong Kong at around 4 a.m. on 13 October when it skirted past about 360 km south of Hong Kong. With Kompasu making landfall over Hainan Island and gradually departing from Hong Kong, local winds moderated in the afternoon. The No. 3 Strong Wind Signal was issued to replace the No. 8 Northeast Gale or Storm Signal at 4:40 p.m. on 13 October. As Kompasu continued to weaken and further departed from Hong Kong in the next early morning, the No. 1 Standby Signal was issued to replace the No. 3 Strong Wind Signal at 4:40 a.m. on 14 October and all tropical cyclone warning signals were cancelled at 6:20 a.m. on that day.

Under the influence of Kompasu, maximum hourly mean winds of 111, 85 and 76 km/h and maximum gusts of 153, 110 and 119 km/h were recorded at Tate's Cairn, Waglan Island and Cheung Chau Beach respectively. A maximum sea level of 3.53 m (above chart datum) was recorded at Tai Po Kau and a maximum storm surge of 1.36 m (above astronomical tide) was recorded at Shek Pik. The lowest instantaneous mean sea-level pressures recorded at some selected stations are as follows:

Station	Lowest Instantaneous mean sea-level pressure (hPa)	Date/Month	Time
Hong Kong Observatory Headquarters	997.3	13/10	03:04 am
Hong Kong International Airport	998.5	13/10	03:14 am
Cheung Chau	996.6	13/10	03:13 am
King's Park	997.2	13/10	03:08 am
Lau Fau Shan	998.7	13/10	03:07 am
Peng Chau	997.5	13/10	03:11 am
Sha Tin	998.6	13/10	03:08 am
Sheung Shui	999.3	13/10	03:07 am
Ta Kwu Ling	999.1	13/10	03:14 am
Tai Po	999.2	13/10	03:13 am
Waglan Island	996.3	13/10	02:53 am

Affected by the dry northeast monsoon, local weather was mainly fine on 11 October. The outer rainbands of Kompasu brought heavy showers to Hong Kong on 12 – 13 October. With Kompasu weakening and moving away from Hong Kong, rain eased off locally and there were sunny intervals on 14 October. Over 100 millimetres of rainfall was recorded over most parts of the territory during 12 – 14 October.

In Hong Kong, at least 20 persons were injured during the passage of Kompasu. There were 877 reports of fallen trees and 10 reports of flooding. The fallen trees in Wong Tai Sin and Wan Chai damaged five vehicles. The storm surge brought by Kompasu raised the water level in Hong Kong generally by more than one metre. Coinciding with the astronomical high tide, the aggregated effect resulted in the inundation of some low-lying areas in Hong Kong. The cycle tracks and subways near Shing Mun River in Sha Tin were flooded. Minor flooding was also reported in the promenade of Heng Fa Chuen and Island Resort in Siu Sai Wan. With sea water flowing into the carpark of an industrial building in Chai Wan, a security guard post and water-filled barriers were washed away. Some village houses of Sam Ka Tsuen in Lei Yue Mun were inundated. A resident in Tai O was trapped by flooding and needed to be rescued.

表 3.6.1 在圓規影響下，本港各站在熱帶氣旋警告信號生效時所錄得的最高陣風、最高每小時平均風速及風向

Table 3.6.1 Maximum gust peak speeds and maximum hourly mean winds with associated wind directions recorded at various stations when the tropical cyclone warning signals for Kompas were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time	風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time
中環碼頭	Central Pier	東	E	91	13/10	10:24	東	E	53	13/10	10:00
長洲	Cheung Chau	東南	SE	103	13/10	10:41	東北偏北	NNE	65	13/10	04:00
長洲泳灘	Cheung Chau Beach	東北	NE	119	13/10	07:31	東北偏東	ENE	76	13/10	10:00
青洲	Green Island	東北偏北	NNE	125	13/10	03:35	東北偏北	NNE	78	13/10	04:00
香港國際機場	Hong Kong International Airport	東	E	75	13/10	10:59	東	E	44	13/10	12:00
		東	E	75	13/10	11:00					
啟德	Kai Tak	東北偏東	ENE	80	13/10	10:22	東	E	33	13/10	11:00
京士柏	King's Park	東北偏東	ENE	79	13/10	09:12	東	E	35	13/10	11:00
南丫島	Lamma Island	東北偏東	ENE	89	13/10	07:16	西北偏北	NNW	48	12/10	05:00
流浮山	Lau Fau Shan	東北偏北	NNE	75	13/10	03:32	北	N	40	12/10	16:00
昂坪	Ngong Ping	東北偏東	ENE	138	13/10	10:48	東	E	90	13/10	11:00
北角	North Point	東北偏東	ENE	86	13/10	11:52	東	E	57	13/10	10:00
坪洲	Peng Chau	東	E	98	13/10	10:38	東	E	66	13/10	11:00
西貢	Sai Kung	北	N	81	12/10	21:08	東北偏東	ENE	50	13/10	10:00
沙洲	Sha Chau	北	N	95	13/10	01:10	北	N	64	13/10	02:00
沙螺灣	Sha Lo Wan	東	E	71	13/10	10:39	東	E	36	13/10	12:00
沙田	Sha Tin	東	E	70	13/10	10:15	東北	NE	24	12/10	22:00
九龍天星碼頭	Star Ferry (Kowloon)	東	E	85	13/10	10:50	東	E	38	13/10	13:00
打鼓嶺	Ta Kwu Ling	東北偏北	NNE	72	12/10	22:02	東北偏北	NNE	34	12/10	23:00
大美督	Tai Mei Tuk	東北偏北	NNE	94	13/10	04:15	東北	NE	61	13/10	05:00
							東北偏東	ENE	61	13/10	12:00
大帽山	Tai Mo Shan	東南偏東	ESE	119	13/10	10:03	東	E	80	13/10	05:00
大埔滘	Tai Po Kau	東	E	79	13/10	11:37	東	E	48	13/10	12:00
塔門東	Tap Mun East	東	E	108	13/10	11:23	東	E	71	13/10	11:00
大老山	Tate's Cairn	東北	NE	153	13/10	04:28	東北偏東	ENE	111	13/10	05:00
將軍澳	Tseung Kwan O	西北偏北	NNW	67	12/10	07:02	北	N	27	12/10	08:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東	E	64	13/10	05:34	西北偏北	NNW	25	12/10	13:00
屯門政府合署	Tuen Mun Government Offices	東北偏北	NNE	55	12/10	23:08	北	N	21	13/10	00:00
		東北偏北	NNE	55	12/10	23:13					
橫瀾島	Waglan Island	東北	NE	110	13/10	04:37	東北	NE	85	13/10	06:00
濕地公園	Wetland Park	東北偏北	NNE	48	13/10	04:01	東北偏北	NNE	17	13/10	04:00
黃竹坑	Wong Chuk Hang	東	E	89	13/10	07:15	東北	NE	32	13/10	09:00
							東北	NE	32	13/10	10:00

黃麻角(赤柱)、平洲、石崗 - 沒有資料

Bluff Head (Stanley), Ping Chau, Shek Kong - data not available

表 3.6.2 在圓規影響下，熱帶氣旋警告信號系統的八個參考測風站在熱帶氣旋警告信號生效時錄得持續風力達到強風及烈風程度的時段

Table 3.6.2 Periods during which sustained strong and gale force winds were attained at the eight reference anemometers in the tropical cyclone warning system when tropical cyclone warning signals for Kompasu were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最初達到強風* 時間		最後達到強風* 時間		最初達到烈風# 時間		最後達到烈風# 時間	
		Start time when strong wind speed* was attained		End time when strong wind speed* was attained		Start time when gale force wind speed# was attained		End time when gale force wind speed# was attained	
		日期/月份	時間	日期/月份	時間	日期/月份	時間	日期/月份	時間
		Date/Month	Time	Date/Month	Time	Date/Month	Time	Date/Month	Time
長洲	Cheung Chau	12/10	00:40	14/10	05:14	13/10	03:05	13/10	14:59
香港國際 機場	Hong Kong International Airport	13/10	03:48	13/10	12:57	-			
流浮山	Lau Fau Shan	12/10	01:48	13/10	04:40	-			
西貢	Sai Kung	12/10	13:25	13/10	15:09	-			

啟德、沙田、打鼓嶺及青衣島蜆殼油庫的持續風力未達到強風程度。

The sustained wind speed did not attain strong force at Kai Tak, Sha Tin, Ta Kwu Ling and Tsing Yi Shell Oil Depot.

- 未達到指定的風速

- not attaining the specified wind speed

* 十分鐘平均風速達每小時 41 - 62 公里

* 10-minute mean wind speed of 41 - 62 km/h

十分鐘平均風速達每小時 63 - 87 公里

10-minute mean wind speed of 63 - 87 km/h

註： 本表列出持續風力達到強風及烈風程度的起始及終結時間。期間風力可能高於或低於指定的風力。

Note: The table gives the start and end time of sustained strong or gale force winds. Winds might fluctuate above or below the specified wind speeds in between the times indicated.

表 3.6.3 圓規影響香港期間，香港天文台總部及其他各站所錄得的日雨量
Table 3.6.3 Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Kompasu

站 (參閱圖 3.6.2) Station (See Fig. 3.6.2)			十月十二日 12 Oct	十月十三日 13 Oct	十月十四日 14 Oct	總雨量(毫米) Total rainfall (mm)
香港天文台 Hong Kong Observatory (HKO)			0.2	57.7	13.3	71.2
香港國際機場 Hong Kong International Airport (HKA)			微量 Trace	102.3	11.1	113.4
長洲 Cheung Chau (CCH)			0.0	90.5	2.0	92.5
H23	香港仔	Aberdeen	0.5	86.5	12.5	99.5
N05	粉嶺	Fanling	0.0	94.0	5.0	99.0
N13	糧船灣	High Island	1.0	68.5	11.5	81.0
K04	佐敦谷	Jordan Valley	0.5	70.0	14.0	84.5
N06	葵涌	Kwai Chung	0.0	77.5	25.5	103.0
H12	半山區	Mid Levels	0.0	73.5	10.0	83.5
N09	沙田	Sha Tin	0.0	97.5	12.5	110.0
H19	筲箕灣	Shau Kei Wan	0.5	67.5	9.5	77.5
SEK	石崗	Shek Kong	0.0	96.0	19.5	115.5
K06	蘇屋邨	So Uk Estate	0.0	79.0	13.5	92.5
R31	大美督	Tai Mei Tuk	0.0	89.5	13.5	103.0
N17	東涌	Tung Chung	0.0	160.0	7.0	167.0
TMR	屯門水庫	Tuen Mun Reservoir	0.3	69.4	8.5	78.2

踏石角(R21) - 沒有資料 Tap Shek Kok (R21) - data not available

表 3.6.4 圓規影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮
Table 3.6.4 Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Kompasu

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高潮位 (海圖基準面以上) Maximum sea level (above chart datum)			最大風暴潮 (天文潮高度以上) Maximum storm surge (above astronomical tide)		
		高度(米) Height (m)	日期/月份 Date/Month	時間 Time	高度(米) Height (m)	日期/月份 Date/Month	時間 Time
鰂魚涌	Quarry Bay	3.38	13/10	01:53	1.13	13/10	08:49
石壁	Shek Pik	3.38	13/10	02:26	1.36	13/10	09:32
大廟灣	Tai Miu Wan	3.48	13/10	02:16	1.21	13/10	08:42
大埔滘	Tai Po Kau	3.53	13/10	02:03	1.16	13/10	07:57
尖鼻咀	Tsim Bei Tsui	3.29	13/10	03:17	1.27	13/10	10:59

橫瀾島 - 沒有資料 Waglan Island - data not available

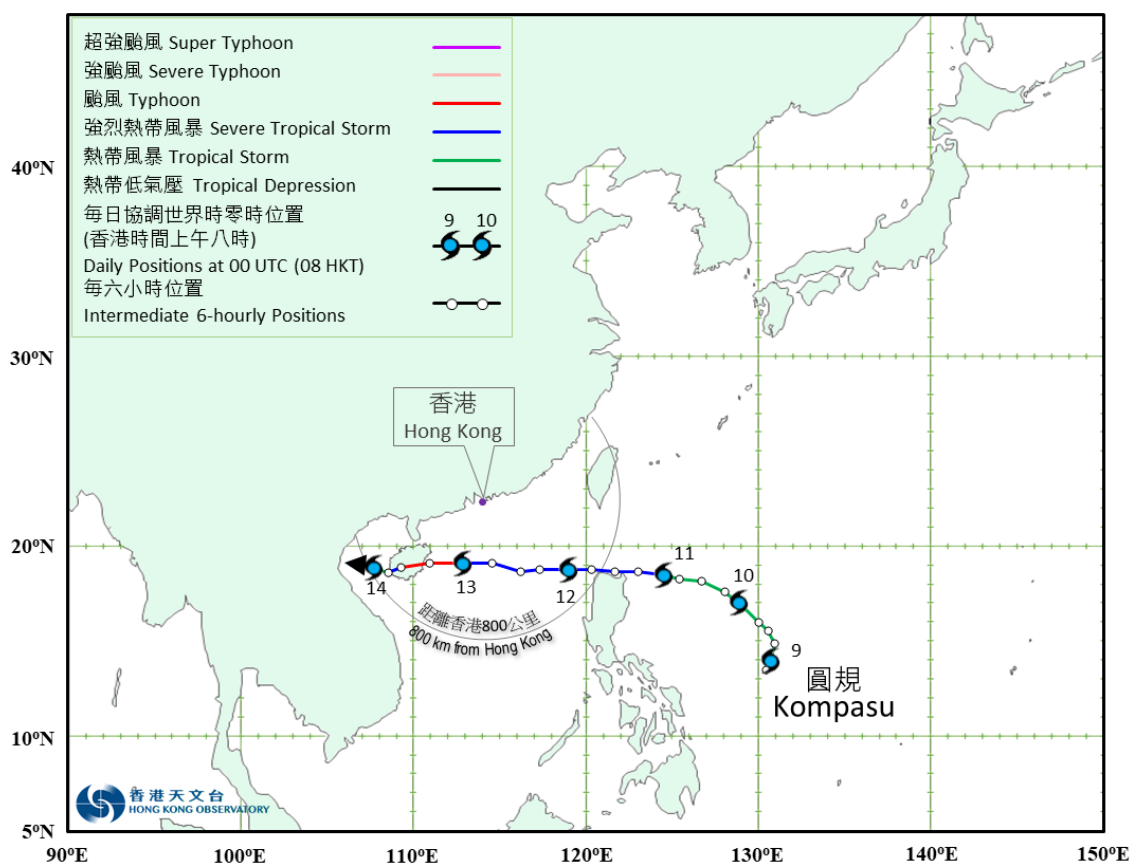


圖 3.6.1 二零二一年十月八日至十四日圓規(2118)的路徑圖。

Figure 3.6.1 Track of Kompasu (2118): 8 - 14 October 2021.

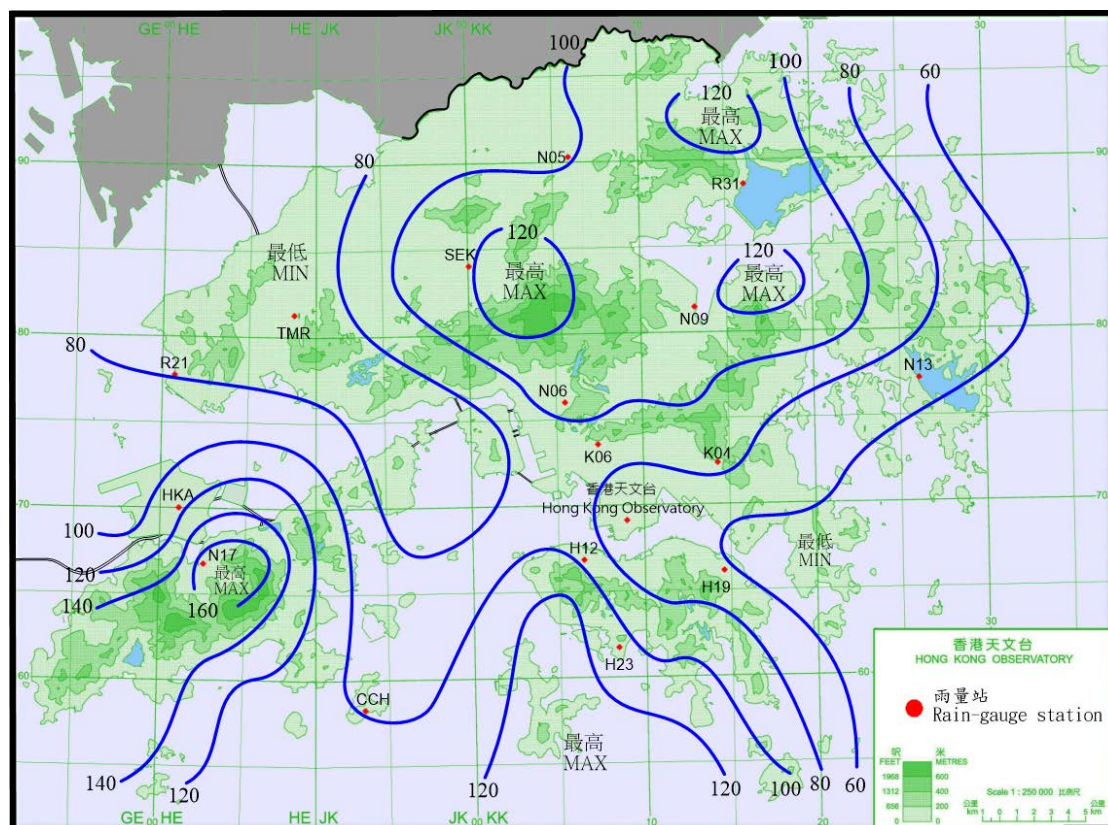


圖 3.6.2 二零二一年十月十二日至十四日的雨量分佈(等雨量線單位為毫米)。

Figure 3.6.2 Rainfall distribution on 12 – 14 October 2021 (isohyets are in millimetres).

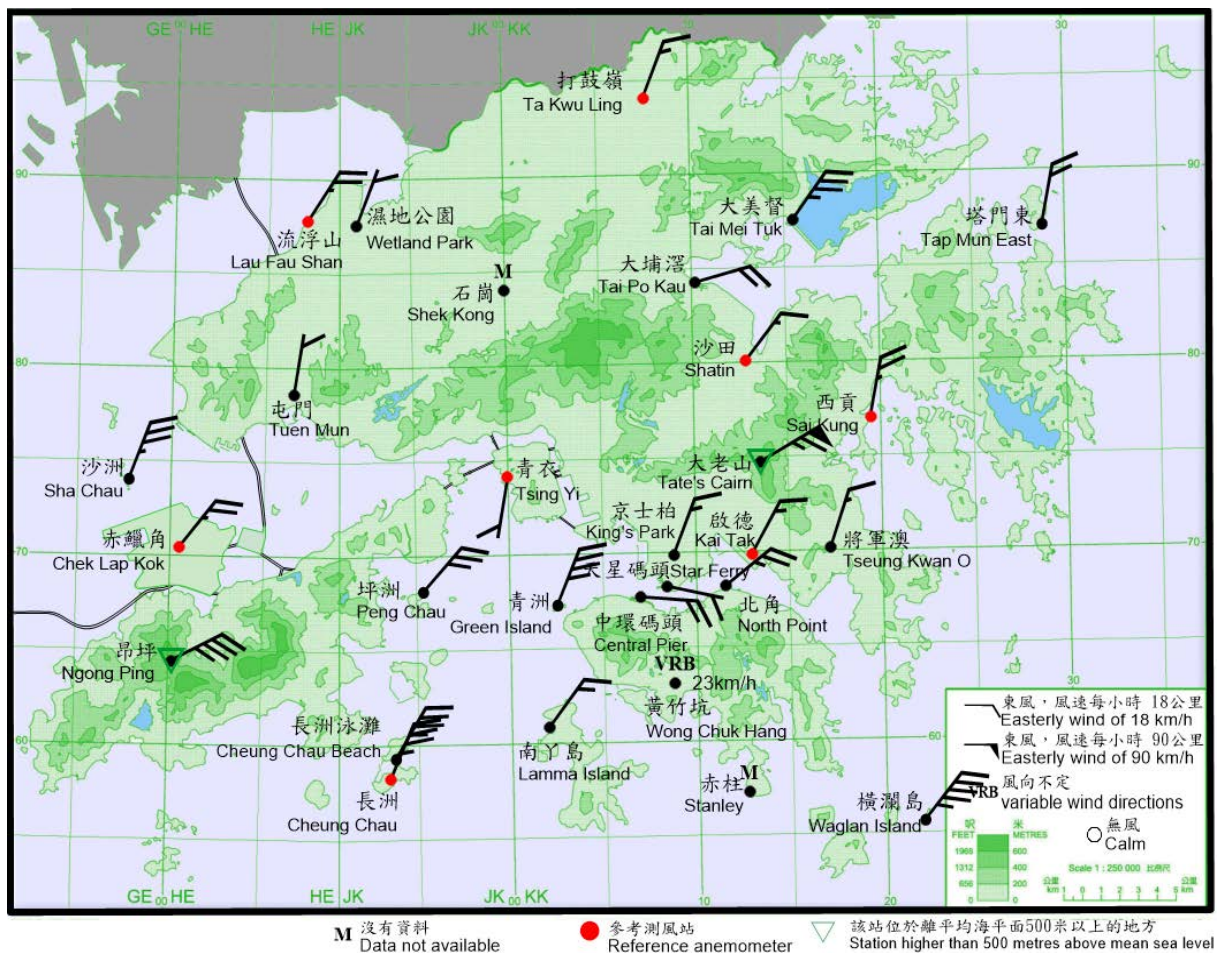


圖 3.6.3a 二零二一年十月十三日上午 4 時 20 分香港各站錄得的十分鐘平均風向和風速。當時大老山風力達到颶風程度，而青洲、昂坪、橫瀾島、長洲及長洲泳灘的風力達到烈風程度。

Figure 3.6.3a 10-minute mean wind direction and speed recorded at various stations in Hong Kong at 4:20 a.m. on 13 October 2021. At that time, winds at Tate's Cairn reached hurricane force, while winds at Green Island, Ngong Ping, Waglan Island, Cheung Chau and Cheung Chau Beach reached gale force.

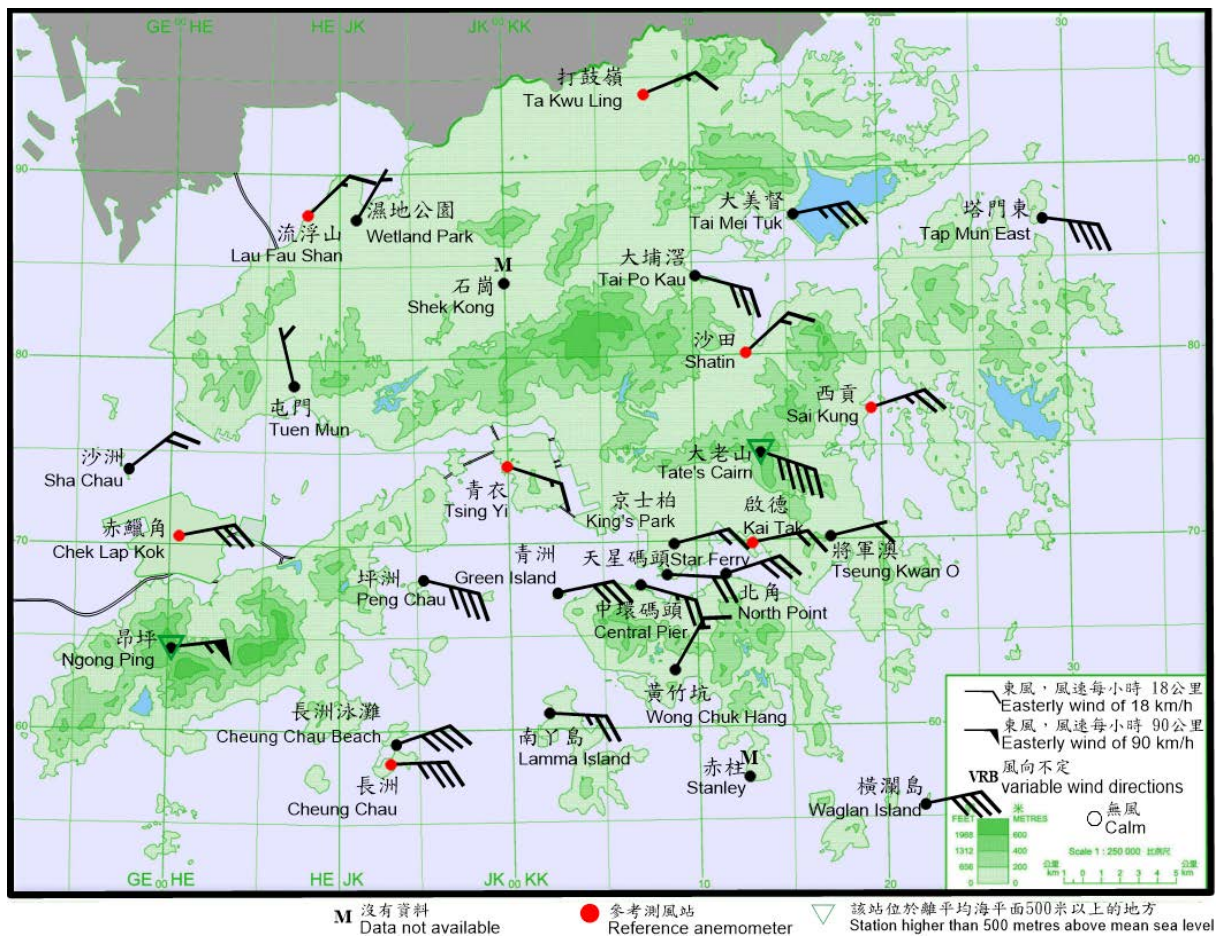


圖 3.6.3b 二零二一年十月十三日上午 11 時正香港各站錄得的十分鐘平均風向和風速。當時昂坪及大老山風力達到暴風程度，而長洲、長洲泳灘、坪洲、塔門東及橫瀾島風力達到烈風程度。

Figure 3.6.3b 10-minute mean wind direction and speed recorded at various stations in Hong Kong at 11:00 a.m. on 13 October 2021. At that time, winds at Ngong Ping and Tate's Cairn reached storm force, while winds at Cheung Chau, Cheung Chau Beach, Peng Chau, Tap Mun East and Waglan Island reached gale force.

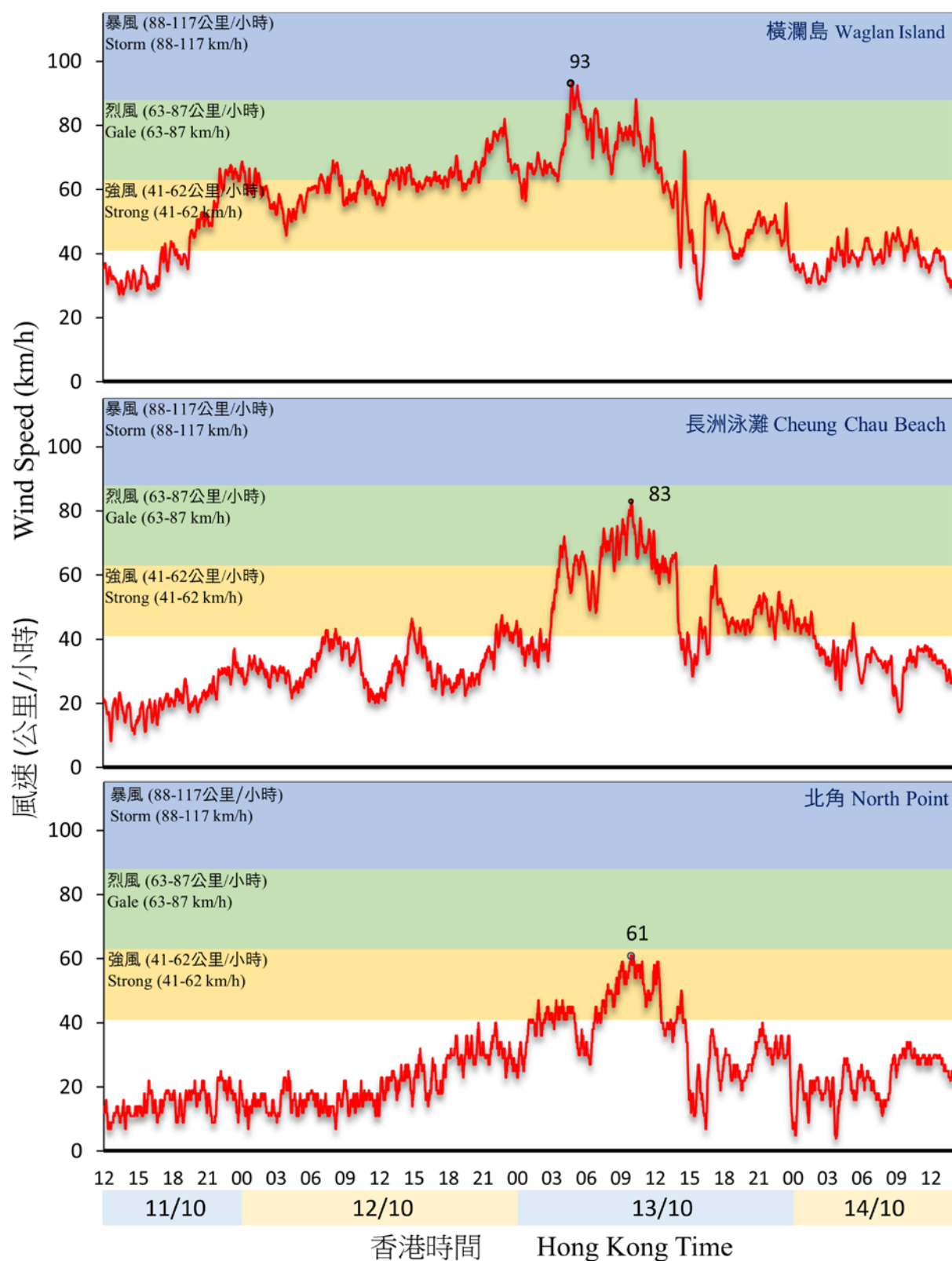


圖 3.6.4 二零二一年十月十一日至十四日橫瀾島、長洲泳灘及北角錄得的十分鐘風速。

Figure 3.6.4 Traces of 10-minute wind speed recorded at Waglan Island, Cheung Chau Beach and North Point on 11 - 14 October 2021.

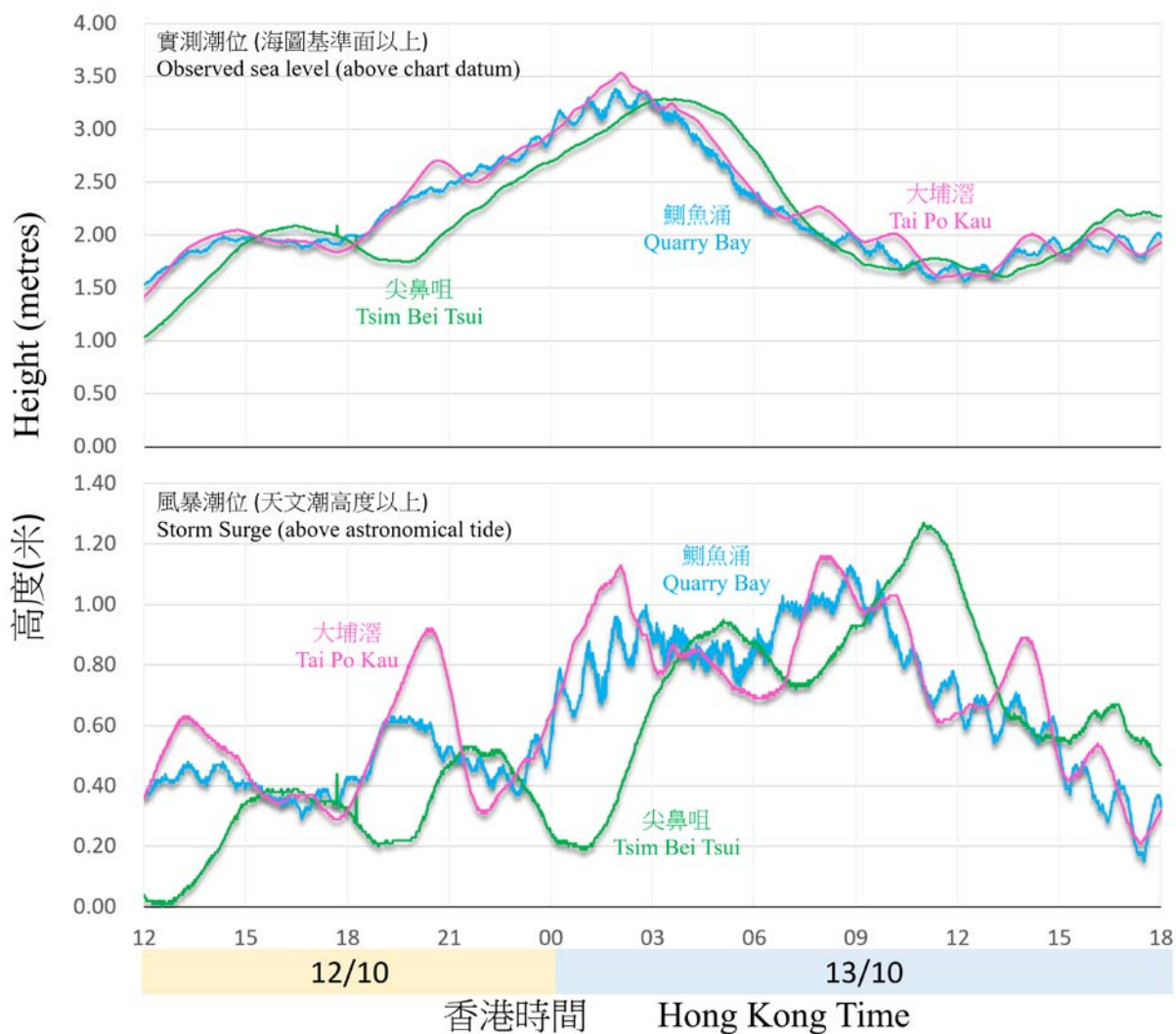


圖 3.6.5 二零二一年十月十二日至十三日在鰂魚涌、大埔滘及尖鼻咀錄得的潮位(海圖基準面以上)及風暴潮(天文潮高度以上)。

Figure 3.6.5 Traces of sea level (above chart datum) and storm surge (above astronomical tide) recorded at Quarry Bay, Tai Po Kau, and Tsim Bei Tsui on 12 - 13 October 2021.

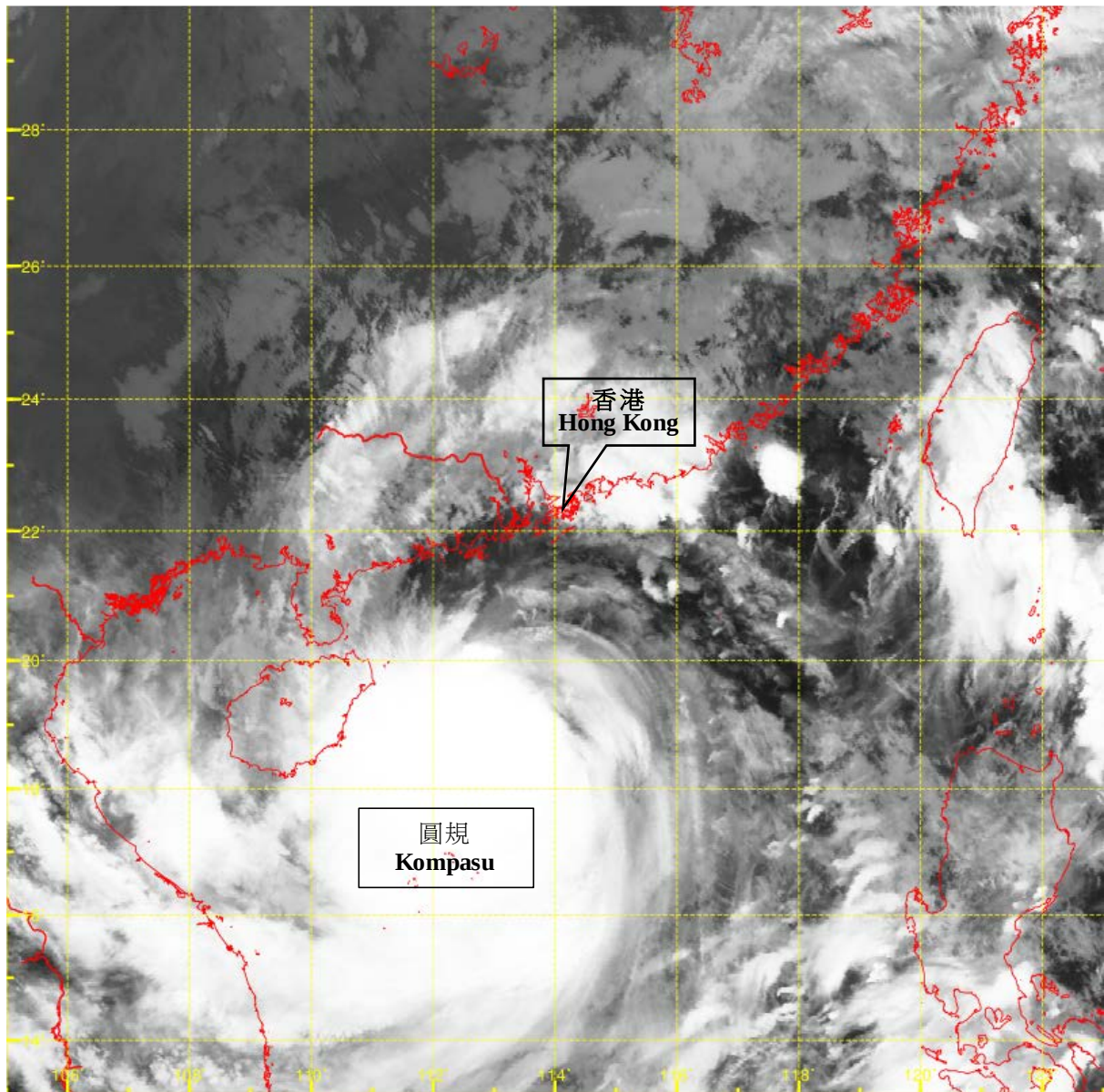


圖 3.6.6 二零二一年十月十三日上午 5 時左右的紅外線衛星圖片，當時圓規達到其最高強度，中心附近最高持續風速估計為每小時 120 公里。

Figure 3.6.6 Infra-red satellite imagery around 5 a.m. on 13 October 2021 when Kompasu was at its peak intensity with an estimated maximum sustained wind of 120 km/h near its centre.

[此衛星圖像接收自日本氣象廳的向日葵 8 號衛星。]

[The satellite imagery was originally captured by Himawari-8 Satellite (H-8) of Japan Meteorological Agency.]

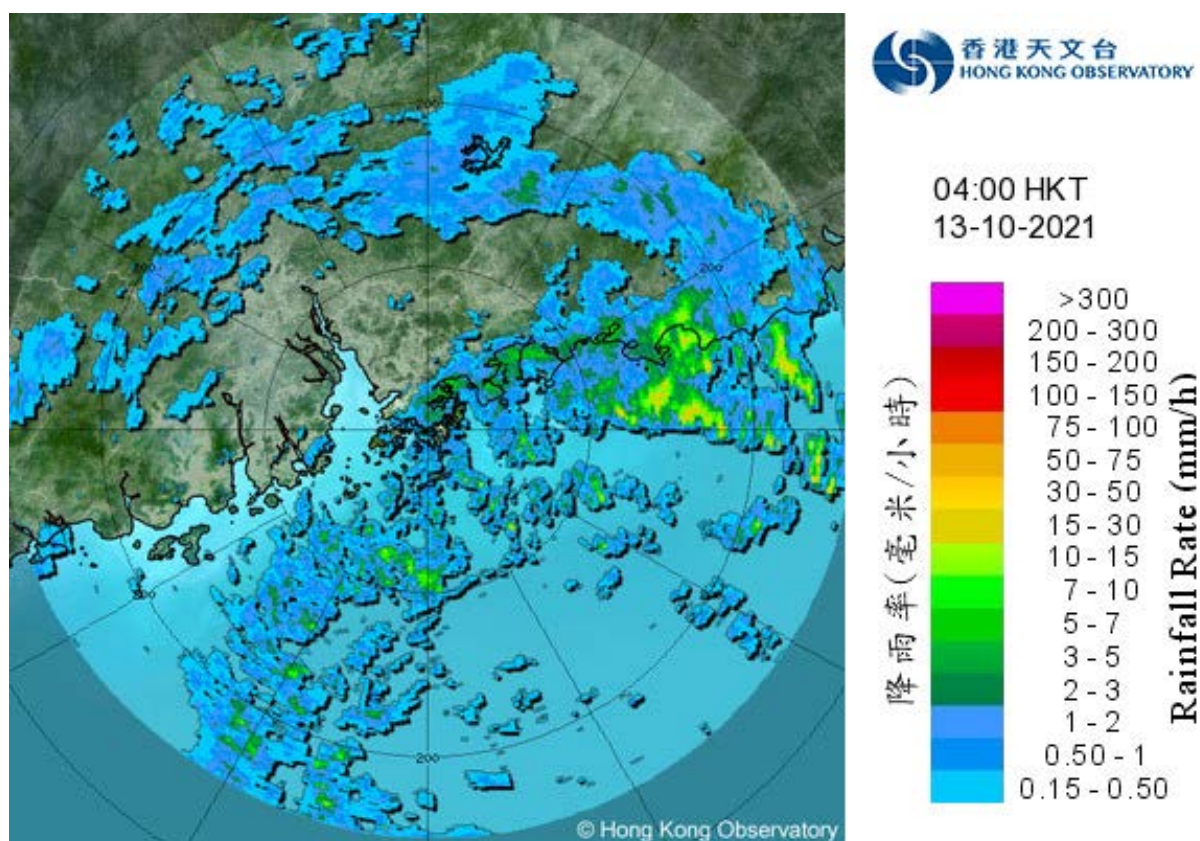


圖 3.6.7 二零二一年十月十三日上午 4 時的雷達回波圖像，當時圓規最接近本港，在本港以南約 360 公里掠過。與圓規相關的雨帶正影響廣東沿岸及南海北部。

Figure 3.6.7 Radar echoes captured at 4 a.m. on 13 October 2021 when Kompasu was closest to Hong Kong, skirting past about 360 km south of the territory. The rainbands associated with Kompasu were affecting the coast of Guangdong and the northern part of the South China Sea.

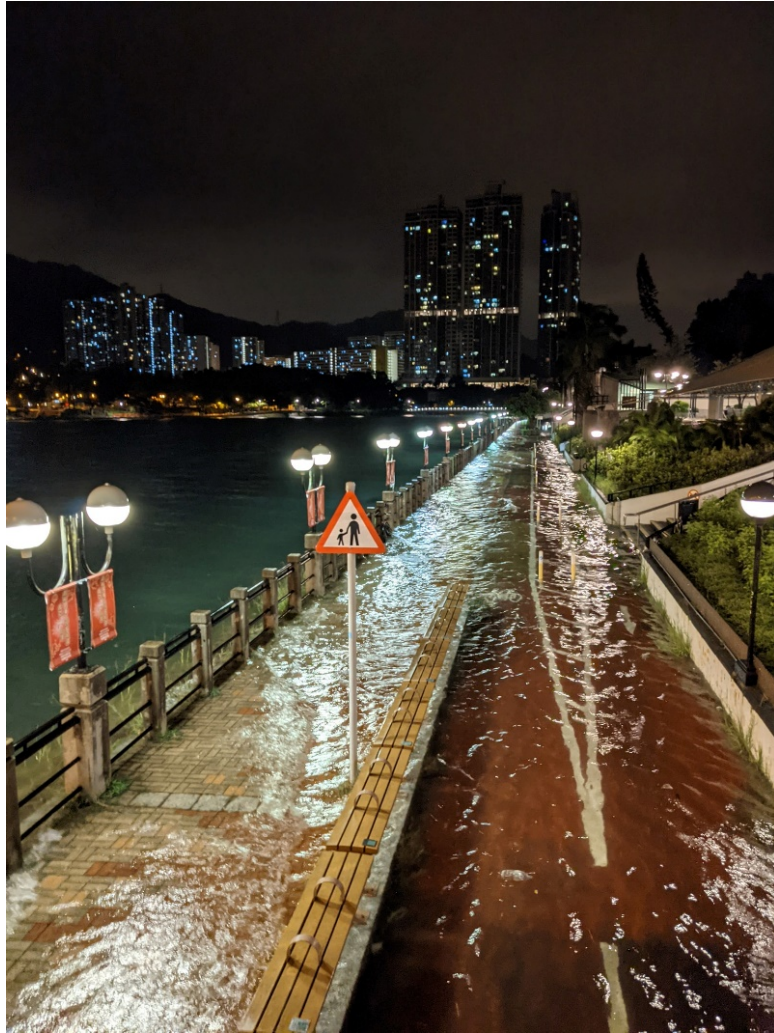


圖 3.6.8a 二零二一年十月十三日凌晨圓規引起的風暴潮導致城門河出現水浸。
(圖片由 Poon Chi Ming(上)及 Hiu Cheng Chow(下)提供)

Figure 3.6.8a Flooding of Shing Mun River due to storm surge induced by Kompasu on the early morning of 13 October 2021.
(Courtesy of Poon Chi Ming (top) and Hiu Cheng Chow (bottom))



圖 3.6.8b 二零二一年十月十三日圓規吹襲期間，黃大仙東頭邨有樹木被吹倒。
(圖片由香港電台提供)

Figure 3.6.8b A tree was blown down at Tung Tau Estate, Wong Tai Sin during the passage of Kompasu on 13 October 2021. (Courtesy of Radio Television Hong Kong)

3.7 超強颱風雷伊(2122)：二零二一年十二月十二日至二十一日

雷伊是二零二一年第八個影響香港的熱帶氣旋。香港入冬後一般甚少受熱帶氣旋直接威脅，然而雷伊在十二月二十日逐漸靠近廣東沿岸，天文台需要發出一號戒備信號。這是自一九四六年以來年內最遲發出的熱帶氣旋警告信號，打破了艾瑪於一九七四年十二月初創下的紀錄。

熱帶低氣壓雷伊於十二月十二日晚上在馬尼拉之東南偏東約 2 680 公里的太平洋西部上形成，向西北偏西方向移動並逐漸增強。雷伊於十二月十五日開始迅速增強，翌日發展為超強颱風。雷伊橫過菲律賓後減弱為強颱風，十二月十七日向西移動，橫過南海南部。雷伊翌日再度增強為超強颱風，成為自一九六一年以來首個在十二月於南海出現的超強颱風。十二月十九日凌晨雷伊達到其最高強度，中心附近最高持續風速估計為每小時 205 公里。隨後兩日雷伊逐漸轉向東北方向移動，靠近廣東沿岸並迅速減弱，最後於十二月二十一日正午過後在香港以南海域減弱為一個低壓區。

天文台在十二月二十日上午 11 時 20 分發出一號戒備信號，當時雷伊集結在香港之西南偏南約 630 公里。在雷伊及東北季候風的共同影響下，當日本港吹清勁東北風，離岸及高地間中吹強風。翌日雷伊加速向東北靠近廣東沿岸並迅速減弱。雷伊在十二月二十一日上午十一時左右最接近本港，其中心位於在本港之東南偏南約 140 公里。隨著雷伊正午過後在香港以南海域減弱為一個低壓區，天文台在當日下午 12 時 20 分取消所有熱帶氣旋警告信號。

在雷伊的影響下，尖鼻咀錄得最高潮位 2.93 米(海圖基準面以上)，而大廟灣則錄得最大風暴潮(天文潮高度以上) 0.28 米。天文台總部於十二月二十一日上午 5 時 31 分錄得最低瞬時海平面氣壓 1011.9 百帕斯卡。

受東北季候風及與雷伊相關的雲雨帶影響，十二月二十日至二十一日本港天氣清涼及有雨。這兩天大嶼山及新界西北部錄得超過 25 毫米雨量。

雷伊吹襲香港期間並沒有造成嚴重破壞。根據報章報導，雷伊吹襲菲律賓期間造成最少 409 人死亡，超過十萬人需要撤離。

3.7 Super Typhoon Rai (2122): 12 – 21 December 2021

Rai was the eighth tropical cyclone affecting Hong Kong in 2021. It is rare to have tropical cyclones directly threatening Hong Kong in winter. However, as Rai gradually edged closer to the coast of Guangdong, the Observatory issued the Standby Signal No. 1 on 20 December. This is the latest tropical cyclone warning signal in a year since 1946, breaking the record of Irma in early December 1974.

Rai formed as a tropical depression over the western North Pacific about 2 680 km east-southeast of Manila on the night of 12 December. It moved west-northwestwards and intensified gradually. Rai started to intensify rapidly on 15 December and developed into a super typhoon on the next day. After sweeping across the Philippines, Rai weakened into a severe typhoon and moved westwards across the southern part of the South China Sea on 17 December. Rai re-intensified into a super typhoon the next day and became the first super typhoon occurring over the South China Sea in December since 1961. It reached its peak intensity in the small hours on 19 December with an estimated maximum sustained wind of 205 km/h near its centre. Turning to move northeastwards gradually on the following two days, Rai edged closer to the coast of Guangdong and weakened rapidly. It finally degenerated into an area of low pressure over the seas south of Hong Kong shortly after noon on 21 December.

The Standby Signal No. 1 was issued at 11:20 am on 20 December when Rai was about 630 km south-southwest of Hong Kong. Under the combined effect of Rai and the northeast monsoon, local winds were fresh northeasterlies, occasionally reaching strong force offshore and on high ground on that day. Rai picked up speed to move northeastwards towards the coast of Guangdong and weakened rapidly the next day. It came closest to the territory around 11:00 a.m. on 21 December with its centre about 140 km south-southeast of Hong Kong. As Rai degenerated into an area of low pressure over the seas south of Hong Kong shortly after noon, all tropical cyclone warning signals were cancelled at 12:20 p.m. on that day.

Under the influence of Rai, a maximum sea level (above chart datum) of 2.93 m was recorded at Tsim Bei Tsui. A maximum storm surge of 0.28 m (above astronomical tide) was recorded at Tai Miu Wan. At the Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 1011.9 hPa was recorded at 5:31 a.m. on 21 December.

Affected by the northeast monsoon and the rain-bearing cloud band associated with Rai, it was rainy and cool in Hong Kong on 20 – 21 December. More than 25 millimeters of rainfall were recorded over Lantau Island and the northwestern part of the New Territories on these two days.

Rai did not cause significant damage in Hong Kong. According to press reports, Rai left at least 409 deaths and over 100 000 people were evacuated in the Philippines during its passage.

表 3.7.1 在雷伊影響下，本港各站在熱帶氣旋警告信號生效時所錄得的最高陣風、最高每小時平均風速及風向

Table 3.7.1 Maximum gust peak speeds and maximum hourly mean winds with associated wind directions recorded at various stations when the tropical cyclone warning signals for Rai were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time	風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time
中環碼頭	Central Pier	東	E	34	20/12	17:05	東南偏東	ESE	18	20/12	15:00
長洲	Cheung Chau	西北偏北	NNW	65	21/12	12:16	北	N	38	21/12	12:00
長洲泳灘	Cheung Chau Beach	東北	NE	60	21/12	11:47	東北偏北	NNE	33	21/12	02:00
青洲	Green Island	東北	NE	57	21/12	01:28	東北偏東	ENE	40	21/12	02:00
香港國際機場	Hong Kong International Airport	東北	NE	33	20/12	13:17	東北	NE	21	21/12	01:00
啟德	Kai Tak	東北偏東	ENE	39	20/12	14:31	西北偏西	WNW	14	21/12	11:00
京士柏	King's Park	東	E	41	20/12	20:44	東	E	17	20/12	22:00
南丫島	Lamma Island	西北	NW	48	21/12	12:16	西北	NW	34	21/12	12:00
流浮山	Lau Fau Shan	東北偏北	NNE	30	20/12	22:05	東	E	19	20/12	12:00
昂坪	Ngong Ping	東北偏東	ENE	60	20/12	19:40	東北偏東	ENE	46	20/12	20:00
		東北偏東	ENE	60	20/12	19:41					
北角	North Point	東	E	41	21/12	01:04	東	E	24	21/12	01:00
坪洲	Peng Chau	西北偏北	NNW	52	21/12	11:53	西北偏北	NNW	35	21/12	12:00
平洲	Ping Chau	東北	NE	30	20/12	22:18	西北	NW	8	21/12	06:00
							西北	NW	8	21/12	07:00
西貢	Sai Kung	東北偏北	NNE	48	21/12	11:23	北	N	22	21/12	12:00
沙洲	Sha Chau	北	N	45	21/12	02:35	北	N	35	20/12	20:00
沙螺灣	Sha Lo Wan	東北偏東	ENE	23	20/12	20:31	東北偏東	ENE	10	21/12	00:00
							東北	NE	10	21/12	01:00
沙田	Sha Tin	東北	NE	27	20/12	14:16	北	N	12	20/12	21:00
							北	N	12	21/12	03:00
九龍天星碼頭	Star Ferry (Kowloon)	東南偏東	ESE	30	20/12	14:36	東	E	17	20/12	12:00
打鼓嶺	Ta Kwu Ling	北	N	33	21/12	09:59	北	N	14	21/12	11:00
大美督	Tai Mei Tuk	東北偏北	NNE	53	21/12	01:31	東北偏北	NNE	31	21/12	03:00
		東北偏北	NNE	53	21/12	02:42					
大帽山	Tai Mo Shan	東南偏東	ESE	79	21/12	02:23	東	E	60	20/12	20:00
大埔滘	Tai Po Kau	西	W	30	21/12	10:11	西	W	19	21/12	11:00
塔門東	Tap Mun East	北	N	41	21/12	11:33	北	N	19	21/12	11:00
大老山	Tate's Cairn	東北	NE	66	21/12	01:14	東	E	48	20/12	21:00
將軍澳	Tseung Kwan O	東北偏北	NNE	34	21/12	02:32	東北偏東	ENE	12	21/12	10:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	西北	NW	23	21/12	07:20	西北	NW	9	21/12	05:00
		西北	NW	23	21/12	07:21					
屯門政府合署	Tuen Mun Government Offices	東北偏北	NNE	35	20/12	13:03	東北偏北	NNE	17	20/12	14:00
橫瀾島	Waglan Island	東北	NE	68	21/12	00:41	東北偏東	ENE	57	21/12	01:00
濕地公園	Wetland Park	東北偏東	ENE	23	20/12	11:35	東北偏東	ENE	10	20/12	12:00
黃竹坑	Wong Chuk Hang	北	N	53	20/12	22:19	東北偏東	ENE	21	21/12	02:00

黃麻角(赤柱)、石崗 - 沒有資料

Bluff Head (Stanley), Shek Kong - data not available

表 3.7.2 雷伊影響香港期間，香港天文台總部及其他各站所錄得的日雨量

Table 37.2 Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Rai

站 (參閱圖 3.7.2) Station (See Fig. 3.7.2)			十二月二十日 20 Dec	十二月二十一日 21 Dec	總雨量(毫米) Total rainfall (mm)
香港天文台 Hong Kong Observatory (HKO)			9.4	2.4	11.8
香港國際機場 Hong Kong International Airport (HKA)			15.5	12.8	28.3
長洲 Cheung Chau (CCH)			8.0	6.5	14.5
H23	香港仔	Aberdeen	5.5	1.0	6.5
N05	粉嶺	Fanling	12.5	9.0	21.5
N13	糧船灣	High Island	11.0	5.0	16.0
K04	佐敦谷	Jordan Valley	11.0	4.5	15.5
N06	葵涌	Kwai Chung	8.5	1.5	10.0
H12	半山區	Mid Levels	11.5	3.5	15.0
N09	沙田	Sha Tin	11.0	7.0	18.0
H19	筲箕灣	Shau Kei Wan	10.0	4.5	14.5
SEK	石崗	Shek Kong	12.5	6.5	19.0
K06	蘇屋邨	So Uk Estate	11.0	1.5	12.5
R31	大美督	Tai Mei Tuk	8.5	4.5	13.0
R21	踏石角	Tap Shek Kok	12.0	16.0	28.0
N17	東涌	Tung Chung	14.5	17.5	32.0
TMR	屯門水庫	Tuen Mun Reservoir	13.7	16.9	30.6

表 3.7.3 雷伊影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮

Table 3.7.3 Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Rai

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高潮位 (海圖基準面以上) Maximum sea level (above chart datum)			最大風暴潮 (天文潮高度以上) Maximum storm surge (above astronomical tide)		
		高度(米) Height (m)	日期/月份 Date/Month	時間 Time	高度(米) Height (m)	日期/月份 Date/Month	時間 Time
鯪魚涌	Quarry Bay	2.56	20/12	21:17	0.22	21/12	06:27
石壁	Shek Pik	2.68	20/12	21:00	0.25	21/12	03:37
大廟灣	Tai Miu Wan	2.53	20/12	21:05	0.28	21/12	06:08
大埔滘	Tai Po Kau	2.53	20/12	19:49	0.27	21/12	06:23
尖鼻咀	Tsim Bei Tsui	2.93	20/12	22:13	0.25	21/12	06:23

橫瀾島 - 沒有資料

Waglan Island - data not available

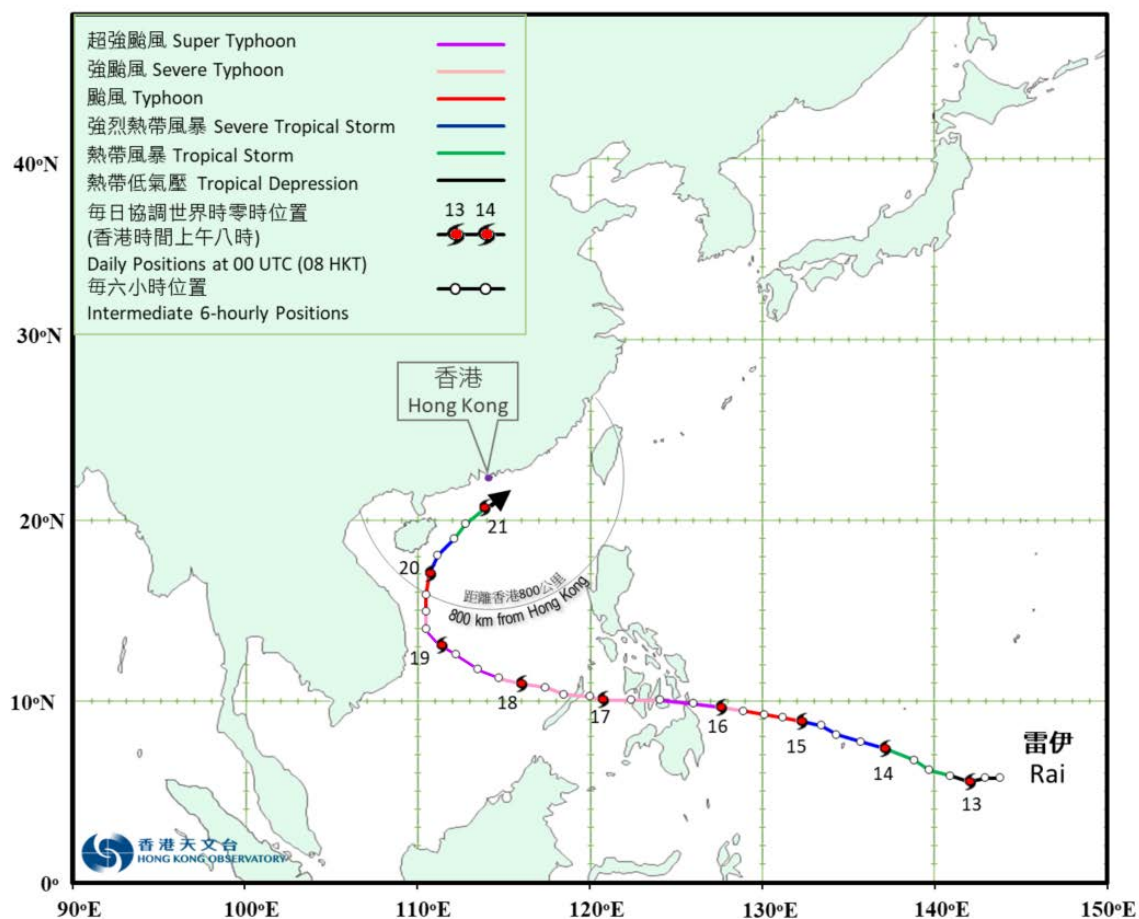


圖 3.7.1a 二零二一年十二月十二日至二十一日雷伊(2122)的路徑圖。

Figure 3.7.1a Track of Rai (2122): 12 - 21 December 2021.



圖 3.7.1b 雷伊接近香港時的路徑圖。

Figure 3.7.1b Track of Rai near Hong Kong.

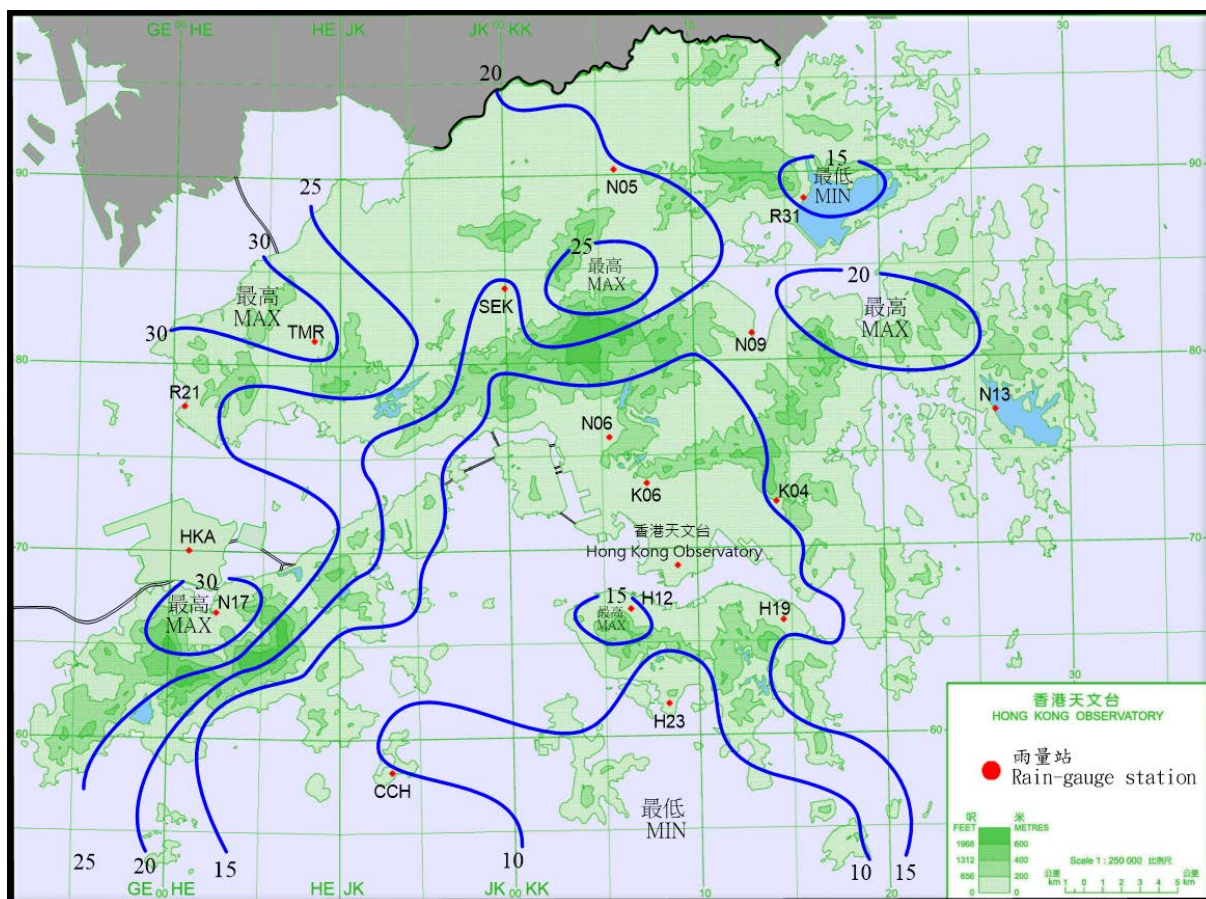


圖 3.7.2 二零二一年十二月二十日至二十一日之雨量分佈 (等雨量線單位為毫米)。
 Figure 3.7.2 Rainfall distribution on 20 – 21 December 2021 (isohyets are in millimetres).

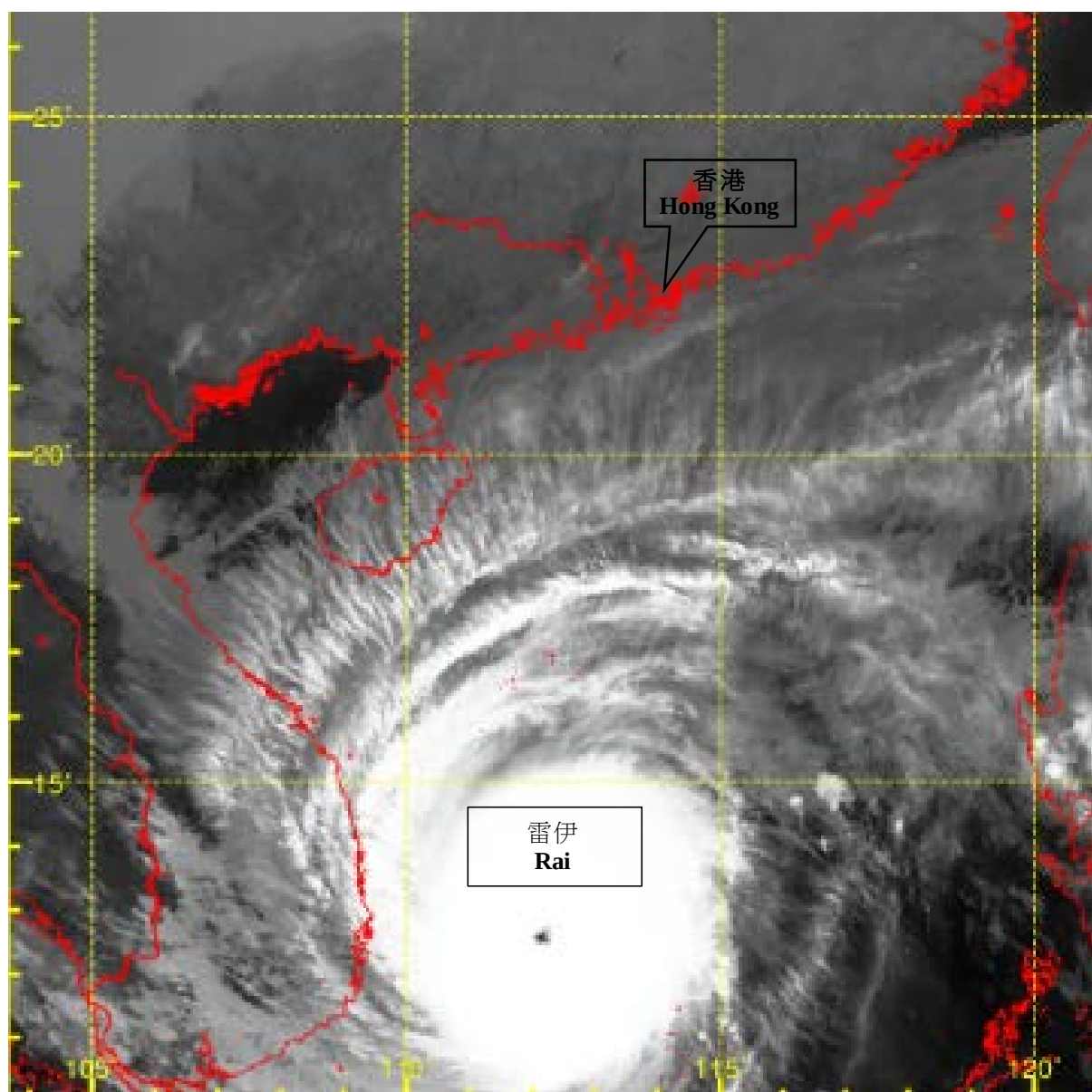


圖 3.7.3 二零二一年十二月十九日上午 2 時左右的紅外線衛星圖片，當時雷伊達到其最高強度，中心附近最高持續風速估計為每小時 205 公里。

Figure 3.7.3 Infra-red satellite imagery around 2 a.m. on 19 December 2021 when Rai was at its peak intensity with an estimated maximum sustained wind of 205 km/h near its centre.

〔此衛星圖像接收自日本氣象廳的向日葵 8 號衛星。〕

[The satellite imagery was originally captured by Himawari-8 Satellite (H-8) of Japan Meteorological Agency.]

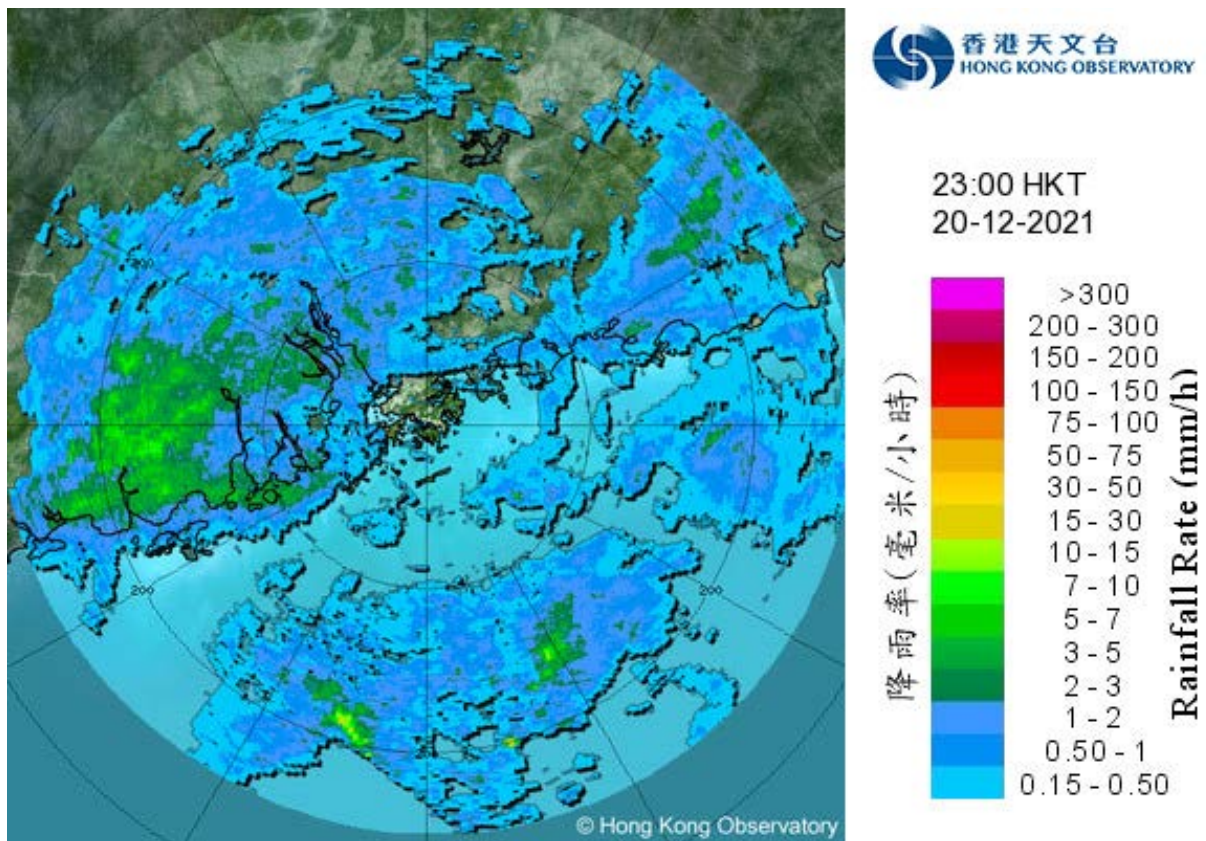


圖 3.7.4 二零二一年十二月二十日下午 11 時的雷達回波圖像，當時與雷伊相關的雨帶正影響廣東沿岸及南海北部。

Figure 3.7.4 Radar echoes captured at 11 p.m. on 20 December 2021 when the rainbands associated with Rai were affecting the coast of Guangdong and the northern part of the South China Sea.

第四節 熱帶氣旋統計表

表4.1是二零二一年在北太平洋西部及南海區域（即由赤道至北緯45度、東經100度至180度所包括的範圍）的熱帶氣旋一覽。表內所列出的日期只說明某熱帶氣旋在上述範圍內出現的時間，因而不一定包括整個風暴過程。這個限制對表內其他元素亦同樣適用。

表4.2是天文台在二零二一年為船舶發出的熱帶氣旋警告的次數、時段、首個及末個警告發出的時間。當有熱帶氣旋位於香港責任範圍內時（即由北緯10至30度、東經105至125度所包括的範圍），天文台會發出這些警告。表內使用的時間為協調世界時。

表4.3是二零二一年熱帶氣旋警告信號發出的次數及其時段的摘要。表內亦提供每次熱帶氣旋警告信號生效的時間和發出警報的次數。表內使用的時間為香港時間。

表4.4是一九五六至二零二一年間熱帶氣旋警告信號發出的次數及其時段的摘要。

表4.5是一九五六至二零二一年間每年位於香港責任範圍內以及每年引致天文台需要發出熱帶氣旋警告信號的熱帶氣旋總數。

表4.6是一九五六至二零二一年間天文台發出各種熱帶氣旋警告信號的最長、最短及平均時段。

表4.7是二零二一年當熱帶氣旋影響香港時本港的氣象觀測摘要。資料包括熱帶氣旋最接近香港時的位置及時間和當時估計熱帶氣旋中心附近的最低氣壓、京士柏、香港國際機場及橫瀾島錄得的最高風速、香港天文台錄得的最低平均海平面氣壓以及香港各潮汐測量站錄得的最大風暴潮（即實際水位高出潮汐表中預計的部分，單位為米）。

表4.8.1是二零二一年位於香港600公里範圍內的熱帶氣旋及其為香港所帶來的雨量。

表4.8.2是一八八四至一九三九年以及一九四七至二零二一年十個為香港帶來最多雨量的熱帶氣旋和有關的雨量資料。

表4.9是自一九四六年至二零二一年間，天文台發出十號颶風信號時所錄得的氣象資料，包括熱帶氣旋吹襲香港時的最近距離及方位、天文台錄得的最低平均海平面氣壓、香港各站錄得的最高60分鐘平均風速和最高陣風。

表4.10是二零二一年熱帶氣旋在香港所造成的損失。資料參考了各政府部門和公共事業機構所提供的報告、本地報章的報導及香港保險業聯會提供的數據。

表4.11是一九六零至二零二一年間熱帶氣旋在香港所造成的人命傷亡及破壞。資料參考了各政府部門和公共事業機構所提供的報告及本地報章的報導。

表4.12是二零二一年天文台發出的熱帶氣旋路徑預測驗證。

Section 4 TROPICAL CYCLONE STATISTICS AND TABLES

TABLE 4.1 is a list of tropical cyclones in 2021 in the western North Pacific and the South China Sea (i.e. the area bounded by the Equator, 45°N, 100°E and 180°). The dates cited are the residence times of each tropical cyclone within the above-mentioned region and as such might not cover the full life-span. This limitation applies to all other elements in the table.

TABLE 4.2 gives the number of tropical cyclone warnings for shipping issued by the Hong Kong Observatory in 2021, the durations of these warnings and the times of issue of the first and last warnings for all tropical cyclones in Hong Kong's area of responsibility (i.e. the area bounded by 10°N, 30°N, 105°E and 125°E). Times are given in hours and minutes in UTC.

TABLE 4.3 presents a summary of the occasions/durations of the issuing of tropical cyclone warning signals in 2021. The sequence of the signals displayed and the number of tropical cyclone warning bulletins issued for each tropical cyclone are also given. Times are given in hours and minutes in Hong Kong Time.

TABLE 4.4 presents a summary of the occasions/durations of the issuing of tropical cyclone warning signals from 1956 to 2021 inclusive.

TABLE 4.5 gives the annual number of tropical cyclones in Hong Kong's area of responsibility between 1956 and 2021 and also the annual number of tropical cyclones necessitated the issuing of tropical cyclone warning signals in Hong Kong.

TABLE 4.6 shows the maximum, mean and minimum durations of the tropical cyclone warning signals issued during the period 1956-2021.

TABLE 4.7 is a summary of meteorological information for each tropical cyclone affecting Hong Kong in 2021, including the position, time and the estimated minimum central pressure of each tropical cyclone during its closest approach to Hong Kong, the maximum winds at King's Park, Hong Kong International Airport and Waglan Island, the minimum mean sea-level pressure recorded at the Hong Kong Observatory and the maximum storm surge (the excess, in metres, of the actual water level over that predicted in the Tide Tables) recorded at various tide stations in Hong Kong.

TABLE 4.8.1 tabulates the amount of rainfall associated with each tropical cyclone that came within 600 km of Hong Kong in 2021.

TABLE 4.8.2 highlights the 10 wettest tropical cyclones in Hong Kong for the period 1884-1939 and 1947-2021.

TABLE 4.9 provides some meteorological information for those typhoons requiring the issuing of the Hurricane Signal No. 10 in Hong Kong from 1946 to 2021. The information presented includes the distances and bearings of nearest approach, the minimum mean sea-level pressures recorded at the Hong Kong Observatory and the maximum 60-minute mean winds and maximum gust peak speeds recorded at some stations in Hong Kong.

TABLE 4.10 contains damage caused by tropical cyclones in 2021. The information is based on reports from various government departments, public utility companies, local newspapers and data provided by the Hong Kong Federation of Insurers.

TABLE 4.11 presents casualties and damage caused by tropical cyclones in Hong Kong: 1960-2021. The information is based on reports from various government departments, public utility companies and local newspapers.

TABLE 4.12 shows verification of the tropical cyclone track forecasts issued by the Hong Kong Observatory in 2021.

表 4.1 二零二一年在北太平洋西部及南海區域的熱帶氣旋一覽

TABLE 4.1 LIST OF TROPICAL CYCLONES IN THE WESTERN NORTH PACIFIC AND THE SOUTH CHINA SEA IN 2021

熱帶氣旋名稱	Name of tropical cyclone	編號 Code	路徑起點 Beginning of track		最高強度 (估計) Peak intensity (estimated)		路徑終點 End of track		DISP: 消散 Dissipated XT: 變為溫帶氣旋 Became extratropical				
			日期/月份 Date/Month	時間 ⁺ Time ⁺	位置 Position		風力 (公里每小時) Winds (km/h)	氣壓 (百帕斯卡) Pressure (hPa)		日期/月份 Date/Month	時間 ⁺ Time ⁺	位置 Position	
					北緯 °N	東經 °E						北緯 °N	東經 °E
熱帶風暴杜鵑	Tropical Storm Dujan	2101	18 / 02	0000	7.0	132.6	75	995	22 / 02	0000	11.1	124.9	DISP
超強颱風舒力基	Super Typhoon Surigae	2102	13 / 04	1200	7.4	138.0	240	910	24 / 04	1800	21.9	134.1	XT
熱帶低氣壓	Tropical Depression	-	12 / 05	1800	6.9	129.7	55	1000	13 / 05	1800	7.3	127.2	DISP
熱帶風暴彩雲	Tropical Storm Choi-wan	2103	30 / 05	0000	5.9	133.8	75	992	04 / 06	2100	23.8	122.9	XT
熱帶風暴小熊	Tropical Storm Koguma	2104	11 / 06	0600	17.9	113.1	65	994	13 / 06	0300	19.8	105.1	DISP
颱風薔琵	Typhoon Champi	2105	21 / 06	0000	11.6	147.8	120	975	27 / 06	0600	31.8	142.3	XT
熱帶低氣壓	Tropical Depression	-	04 / 07	1800	16.7	127.5	55	1000	06 / 07	0300	23.1	120.0	DISP
熱帶低氣壓	Tropical Depression	-	05 / 07	1200	14.9	113.1	55	998	07 / 07	2100	19.6	106.1	DISP
颱風煙花	Typhoon In-fa	2106	16 / 07	1800	18.9	135.0	145	955	29 / 07	0600	35.6	117.1	DISP
颱風查帕卡	Typhoon Cempaka	2107	18 / 07	1200	20.7	113.8	120	970	23 / 07	2100	19.6	106.9	DISP
熱帶風暴尼伯特	Tropical Storm Nepartak	2108	23 / 07	1200	23.9	148.3	75	990	28 / 07	0000	39.1	141.4	DISP
熱帶風暴盧碧	Tropical Storm Lupit	2109	02 / 08	1200	20.9	111.9	85	984	09 / 08	0000	35.1	133.2	XT
熱帶風暴妮妲	Tropical Storm Nida	2111	04 / 08	0600	28.0	148.0	85	994	07 / 08	1200	38.8	162.5	XT
強烈熱帶風暴銀河	Severe Tropical Storm Mirinae	2110	05 / 08	0000	26.1	127.1	90	980	09 / 08	0600	38.2	149.8	XT
熱帶風暴奧麥斯	Tropical Storm Omais	2112	10 / 08	1800	12.4	178.0	85	990	23 / 08	0600	31.4	125.7	XT
熱帶低氣壓	Tropical Depression	-	01 / 09	1200	25.8	161.5	55	1006	04 / 09	0600	36.3	161.1	XT
強烈熱帶風暴康森	Severe Tropical Storm Conson	2113	05 / 09	0600	9.7	130.2	90	988	12 / 09	1200	15.3	109.1	DISP
超強颱風燦都	Super Typhoon Chanthu	2114	06 / 09	0600	14.0	138.4	240	910	18 / 09	0000	33.9	136.0	XT
熱帶風暴電母	Tropical Storm Dianmu	2115	22 / 09	1200	12.8	113.3	65	998	24 / 09	0600	16.0	105.5	DISP
超強颱風蒲公英	Super Typhoon Mindulle	2116	22 / 09	1800	11.8	147.4	220	920	01 / 10	1800	37.4	145.7	XT
熱帶風暴獅子山	Tropical Storm Lionrock	2117	07 / 10	0600	17.2	112.1	75	990	10 / 10	0900	20.6	106.7	DISP
颱風圓規	Typhoon Kompasu	2118	08 / 10	1200	13.5	130.4	120	970	14 / 10	0000	18.9	107.7	DISP
強烈熱帶風暴南川	Severe Tropical Storm Namtheun	2119	09 / 10	1200	16.9	162.1	90	990	16 / 10	1800	32.7	166.8	XT
颱風瑪瑙	Typhoon Malou	2120	24 / 10	0000	12.0	139.9	140	965	29 / 10	0000	30.0	144.6	XT
熱帶低氣壓	Tropical Depression	-	24 / 10	0600	10.6	116.9	55	1000	27 / 10	0600	12.6	108.3	DISP
超強颱風妮亞圖	Super Typhoon Nyatoh	2121	29 / 11	1200	12.0	141.3	185	940	03 / 12	1200	24.1	142.2	XT
超強颱風雷伊	Super Typhoon Rai	2122	12 / 12	1200	5.8	143.8	205	930	21 / 12	0300	21.1	114.5	DISP

⁺時間為協調世界時。

⁺Times are given in UTC.

表 4.2 二零二一年為船舶發出的熱帶氣旋警告

TABLE 4.2 TROPICAL CYCLONE WARNINGS FOR SHIPPING ISSUED IN 2021

熱帶氣旋	Tropical cyclone	發出警告 的次數 No. of warnings issued	發出的日期及時間 Date and time of issue of				時段 (小時) Duration (hours)
			首次警告 First warning		末次警告 Last warning		
			日期/月份 時間 ⁺ Date/Month Time ⁺	日期/月份 時間 ⁺ Date/Month Time ⁺	日期/月份 時間 ⁺ Date/Month Time ⁺	日期/月份 時間 ⁺ Date/Month Time ⁺	
熱帶風暴杜鵑	Tropical Storm Dujan	6	22 / 2	0000	22 / 2	1200	12
超強颱風舒力基	Super Typhoon Surigae	12	21 / 4	0300	22 / 4	0900	30
熱帶風暴彩雲	Tropical Storm Choi-wan	29	1 / 6	1800	5 / 6	0600	84
* 熱帶風暴小熊	* Tropical Storm Koguma	18	11 / 6	0600	13 / 6	0300	45
* 熱帶低氣壓	* Tropical Depression	10	5 / 7	0300	6 / 7	0600	27
* 熱帶低氣壓	* Tropical Depression	21	5 / 7	1200	8 / 7	0000	60
* 颱風查帕卡	* Typhoon Cempaka	21	18 / 7	1500	21 / 7	0300	60
		15	22 / 7	2100	24 / 7	1500	42
颱風煙花	Typhoon In-fa	18	23 / 7	0600	25 / 7	0900	51
* 熱帶風暴盧碧	* Tropical Storm Lupit	45	2 / 8	1200	7 / 8	1800	126
熱帶風暴奧麥斯	Tropical Storm Omais	5	22 / 8	1200	23 / 8	0000	12
強烈熱帶風暴康森	Severe Tropical Storm Conson	48	6 / 9	2100	12 / 9	1800	141
超強颱風燦都	Super Typhoon Chanthu	28	9 / 9	1800	13 / 9	0300	81
熱帶風暴電母	Tropical Storm Dianmu	14	22 / 9	0900	24 / 9	0000	39
* 熱帶風暴獅子山	* Tropical Storm Lionrock	30	7 / 10	0600	10 / 10	1200	78
* 颱風圓規	* Typhoon Kompas	31	11 / 10	0000	14 / 10	1500	87
熱帶低氣壓	Tropical Depression	23	24 / 10	0600	27 / 10	0000	66
* 超強颱風雷伊	* Super Typhoon Rai	39	16 / 12	1200	21 / 12	0600	114
	共 Total	413					1032

* 這些熱帶氣旋引致天文台需要發出熱帶氣旋警告信號。

* Tropical cyclones for which tropical cyclone warning signals were issued in Hong Kong.

⁺ 時間為協調世界時。

[†] Times are given in UTC.

表 4.3 二零二一年天文台所發出的熱帶氣旋警告信號及警報發出的次數

TABLE 4.3 TROPICAL CYCLONE WARNING SIGNALS ISSUED IN HONG KONG AND NUMBER OF WARNING BULLETINS ISSUED IN 2021

摘要 SUMMARY

信號 Signal	次數 No. of occasions	總時段 Total duration	
		時 h	分 min
1	9	141	45
3	6	95	45
8 西北 NW	0	0	0
8 西南 SW	0	0	0
8 東北 NE	1	23	20
8 東南 SE	1	22	0
9	0	0	0
10	0	0	0
共 Total	17	282	50

詳情 DETAILS

熱帶氣旋 Tropical cyclone	警報發出的次數 No. of warning bulletins issued	信號 Signal	發出 Issued		取消 Cancelled	
			日期/月份 Date/Month	時間* Time*	日期/月份 Date/Month	時間* Time*
熱帶風暴小熊 Tropical Storm Koguma	24	1	11/06	16:15	12/06	14:10
熱帶低氣壓(東)/熱帶低氣壓(西) Tropical Depression(E)/ Tropical Depression(W)	37	1	06/07	04:15	07/07	14:10
颱風查帕卡 Typhoon Cempaka	51	1	18/07	21:40	19/07	16:10
		3	19/07	16:10	20/07	13:20
		1	20/07	13:20	20/07	19:40
熱帶風暴盧碧 Tropical Storm Lupit	48	1	02/08	21:40	03/08	16:25
		3	03/08	16:25	04/08	04:20
		1	04/08	04:20	04/08	18:20
熱帶風暴獅子山 Tropical Storm Lionrock	61	3	08/10	04:40	09/10	06:40
		8 東南 SE	09/10	06:40	10/10	04:40
		3	10/10	04:40	10/10	12:40
		1	10/10	12:40	10/10	14:20
颱風圓規 Typhoon Kompasu	58	3	12/10	00:40	12/10	17:20
		8 東北 NE	12/10	17:20	13/10	16:40
		3	13/10	16:40	14/10	04:40
		1	14/10	04:40	14/10	06:20
超強颱風雷伊 Super Typhoon Rai	29	1	20/12	11:20	21/12	12:20

* 香港時間 (協調世界時加八小時)

* Hong Kong Time (UTC + 8 hours)

表 4.4 一九五六至二零二一年間每年各熱帶氣旋警告信號的發出次數及總時段

TABLE 4.4 FREQUENCY AND TOTAL DURATION OF DISPLAY OF TROPICAL CYCLONE WARNING SIGNALS : 1956-2021

年份 Year	信號 Signals	1	3	8 西北 NW	8 西南 SW	8 東北 NE	8 東南 SE	9	10	總時段 Total duration 時 分 h min
1956		5	4	0	0	0	0	0	0	191 25
1957		4	9	1	1	2	2	0	1	295 45
1958		4	5	0	0	1	0	0	0	214 5
1959		1	1	0	0	0	0	0	0	36 35
1960		11	7	0	2	2	2	1	1	432 35
1961		6	7	1	2	1	0	1	1	192 55
1962		4	3	0	1	1	0	1	1	158 10
1963		4	5	0	0	1	0	0	0	175 50
1964		11	14	1	3	5	3	3	2	570 15
1965		7	6	0	0	1	1	0	0	239 40
1966		6	5	0	0	2	2	0	0	284 40
1967		8	6	0	0	2	1	0	0	339 10
1968		7	7	0	1	1	0	1	1	290 10
1969		4	2	0	0	0	0	0	0	110 15
1970		6	8	2	1	2	0	0	0	286 45
1971		9	10	1	3	2	2	1	1	323 25
1972		8	6	0	0	1	1	0	0	288 20
1973		8	6	1	1	1	0	1	0	416 50
1974		12	10	0	0	2	1	1	0	525 20
1975		8	6	1	0	0	1	1	1	292 20
1976		6	6	0	0	1	2	0	0	351 30
1977		8	6	0	0	1	0	0	0	395 10
1978		8	9	1	1	3	2	0	0	462 10
1979		5	5	1	0	2	2	1	1	281 15
1980		10	8	0	0	1	1	0	0	414 5
1981		5	4	0	0	1	1	0	0	202 20
1982		7	4	0	0	0	0	0	0	247 35
1983		8	7	0	1	2	2	1	1	289 42
1984		6	6	0	0	1	0	0	0	280 2
1985		5	4	1	0	0	1	0	0	193 35
1986		6	7	0	1	1	0	0	0	305 0
1987		6	1	0	0	0	0	0	0	165 45
1988		6	4	0	0	0	0	0	0	204 10
1989		7	8	0	0	2	2	0	0	306 10
1990		6	4	0	0	0	0	0	0	245 10
1991		8	6	0	0	1	1	0	0	349 55
1992		5	5	0	0	1	1	0	0	167 5
1993		8	9	0	0	2	4	0	0	325 40
1994		4	3	0	0	0	0	0	0	138 10
1995		8	6	2	2	1	1	0	0	348 50
1996		7	2	0	0	0	1	0	0	189 0
1997		2	3	0	1	1	0	1	0	97 30
1998		5	2	0	0	0	0	0	0	188 35
1999		10	13	4	3	2	0	2	1	520 0
2000		7	3	0	0	0	0	0	0	329 5
2001		6	6	1	1	2	1	0	0	253 35
2002		3	2	0	0	0	1	0	0	144 25
2003		4	5	1	1	1	1	1	0	158 0
2004		3	2	1	1	1	0	0	0	77 35
2005		3	1	0	0	0	0	0	0	142 45
2006		10	3	0	0	0	0	0	0	317 50
2007		4	3	0	1	0	0	0	0	86 50
2008		8	9	2	2	3	2	1	0	347 0
2009		13	9	1	1	1	2	1	0	255 30
2010		8	3	0	0	0	0	0	0	220 0
2011		8	5	0	0	0	1	0	0	213 0
2012		9	7	0	0	2	3	1	1	252 45
2013		10	7	1	1	0	1	0	0	292 50
2014		6	3	0	0	0	1	0	0	145 45
2015		4	3	1	0	0	0	0	0	136 50
2016		11	7	2	2	0	0	0	0	283 0
2017		12	11	2	1	3	2	1	1	259 40
2018		12	7	0	0	1	1	1	1	422 25
2019		7	3	0	0	1	0	0	0	177 25
2020		6	7	0	0	2	1	1	0	194 45
2021		9	6	0	0	1	1	0	0	282 50
共 Total		452	371	29	35	68	55	23	15	17326 44
平均 Mean		6.8	5.6	0.4	0.5	1.0	0.8	0.3	0.2	262 32

表 4.5 一九五六至二零二一年間每年位於香港責任範圍內以及每年引致天文台需要發出熱帶氣旋警告信號的熱帶氣旋總數

TABLE 4.5 ANNUAL NUMBER OF TROPICAL CYCLONES IN HONG KONG'S AREA OF RESPONSIBILITY AND THE NUMBER THAT NECESSITATED THE DISPLAY OF TROPICAL CYCLONE WARNING SIGNALS IN HONG KONG : 1956-2021

年份 Year	每年位於香港責任範圍內的熱帶氣旋總數 Annual number of tropical cyclones in Hong Kong's area of responsibility	每年引致天文台需要發出熱帶氣旋警告信號的熱帶氣旋總數 Annual number of tropical cyclones necessitating the display of signals in Hong Kong
1956	23	5
1957	12	6
1958	15	5
1959	18	2
1960	18	9
1961	24	6
1962	20	4
1963	13	4
1964	26	10
1965	16	6
1966	17	6
1967	17	8
1968	12	6
1969	11	4
1970	20	6
1971	20	9
1972	15	5
1973	17	9
1974	21	11
1975	12	7
1976	10	5
1977	10	8
1978	20	8
1979	18	6
1980	17	10
1981	15	5
1982	16	5
1983	15	7
1984	14	5
1985	15	5
1986	16	4
1987	12	5
1988	17	6
1989	17	7
1990	18	6
1991	14	6
1992	11	5
1993	14	9
1994	20	4
1995	17	8
1996	15	7
1997	10	2
1998	15	5
1999	12	8
2000	20	7
2001	14	6
2002	10	3
2003	12	4
2004	15	3
2005	15	3
2006	16	7
2007	12	2
2008	17	6
2009	17	8
2010	11	5
2011	12	5
2012	14	5
2013	19	7
2014	10	4
2015	13	3
2016	15	9
2017	22	7
2018	17	6
2019	15	5
2020	18	5
2021	17	8
平均 Mean	15.7	5.9

表 4.6 一九五六至二零二一年間天文台發出熱帶氣旋警告信號的時段

TABLE 4.6 DURATION OF TROPICAL CYCLONE WARNING SIGNALS ISSUED IN HONG KONG : 1956-2021

信號 Signal	次數 Number of occasions	每次時段 Duration of each occasion			每年總時段 Total duration per year		
		平均 Mean	最長 Maximum	最短 Minimum	平均 Mean	最長 Maximum	最短 Minimum
		時 分 h min	時 分 h min	時 分 h min	時 分 h min	時 分 h min	時 分 h min
一號或以上 1 or higher	406	42 41	161 0 (桃麗達 Tilda, 1964)	4 30 (熱帶低氣壓 T.D., 2000)	262 32	570 15 (1964)	36 35 (1959)
三號或以上 3 or higher	272	29 0	124 15 (瑪麗 Mary, 1960)	4 5 (熱帶低氣壓 T.D., 2006)	119 32	306 35 (1974)	15 5 (2004)
八號或以上 8 or higher	101	14 32	66 50 (瑪麗 Mary, 1960)	2 40 (雲茵 Wynne, 1984)	22 15	100 55 (1964)	0 0
8 西北 NW	29	5 48	15 45	1 30	2 33	18 0	0 0
8 西南 SW	35	4 58	10 45	2 0	2 38	16 10	0 0
8 東北 NE	68	7 51	35 35	1 35	8 5	40 20	0 0
8 東南 SE	55	7 41	22 0	0 20	6 25	31 15	0 0
九號或以上 9 or higher	24	7 2	12 25 (約克 York, 1999)	2 0 (杜鵑 Dujuan, 2003)	2 34	19 25 (1964)	0 0
十號 10	15	6 26	11 0 (約克 York, 1999)	2 30 (愛麗斯 Alice, 1961)	1 28	12 10 (1964)	0 0

註：() 內為創造該記錄的熱帶氣旋名稱及年份。

Note: () are the years and the names of the tropical cyclones which created the record.

表 4.7 二零二一年當熱帶氣旋影響香港時本港的氣象觀測摘要

TABLE 4.7 A SUMMARY OF METEOROLOGICAL OBSERVATIONS RECORDED IN HONG KONG DURING THE PASSAGES OF TROPICAL CYCLONES IN 2021

熱帶氣旋 名稱 Name of tropical cyclone	當最接近香港時 Nearest approach to Hong Kong								香港天文台錄得的最低 海平面氣壓(百帕斯卡) Minimum M.S.L. pressure (hPa) at the Hong Kong Observatory				最大風暴潮(米) Maximum storm surge (metres)					
	月份 Month	日期 Date	時間* Hour*	方位 Direction	距離 (公里) Distance (km)	移動方向 及速度 (公里每小時) Movement (km/h)	估計最低 中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	月份 Month	日期 Date	時間* Hour*	瞬時 Inst.	鰂魚涌 Quarry Bay	石壁 Shek Pik	大廟灣 Tai Miu Wan	大埔滘 Tai Po Kau	尖鼻咀 Tsim Bei Tsui	橫瀾島 Waglan Island	
											每小時 Hourly							
熱帶風暴小熊 Tropical Storm Koguma	6	11	20:00	西南偏南 SSW	480	16	西 W	998	6	11	17:44 - 18:08#	1004.0	0.26	0.29	0.29	0.34	-	-
											18:00	1004.0						
熱帶低氣壓(東) / 熱帶低氣壓(西) Tropical Depression (E) / Tropical Depression (W)	7	6	12:00	東 E	610	18	西北偏北 NNW	1002	7	6	04:15 - 05:26#	1004.7	0.15	0.21	0.22	0.22	0.20	-
		7	02:00	西南偏南 SSW	570	18	西北偏西 WNW	998			05:00	1004.7						
颱風查帕卡 Typhoon Cempaka	7	18	20:00	西南偏南 SSW	180	8	西北偏西 WNW	998	7	19	16:09 - 17:48#	1001.2	0.31	0.39	0.38	0.41	0.34	-
											17:00	1001.2						
熱帶風暴盧碧 Tropical Storm Lupit	8	3	14:00	西南偏南 SSW	110	6	東南偏東 ESE	992	8	4	16:21 - 1631#	993.0	0.24	0.19	0.30	0.30	0.21	-
											16:00	993.6						
熱帶風暴獅子山 Tropical Storm Lionrock	10	9	14:00	西南 SW	490	10	西北偏西 WNW	990	10	9	03:35 - 1537#	1003.2	0.47	0.56	0.48	0.55	0.60	-
											06:00	1003.2						
颱風圓規 Typhoon Kompasu	10	13	04:00	南 S	360	25	西 W	975	10	13	03:04 - 03:12#	997.3	1.13	1.36	1.21	1.16	1.27	-
											03:00	997.6						
超強颱風雷伊 Super Typhoon Rai	12	21	11:00	東南偏南 SSE	140	25	東北 NE	1002	12	21	05:31 - 06:01#	1011.9	0.22	0.25	0.28	0.27	0.25	-
											06:00	1011.9						

* 香港時間 (協調世界時加八小時)

* Hong Kong Time (UTC + 8 hours)

最初及最後錄得的時間

First and last time recorded

- 沒有資料

- data not available

表 4.7 (續)

TABLE 4.7 (cont'd)

熱帶氣旋 名稱 Name of tropical cyclone	月份 Month	最高60分鐘平均風向及風速 (公里每小時) Maximum 60-min mean wind in points and km/h						最高10分鐘平均風向及風速 (公里每小時) Maximum 10-min mean wind in points and km/h						最高陣風風向及風速 (公里每小時) Maximum gust peak speed in km/h with direction in points					
		京士柏 King's Park		香港國際機場 Hong Kong International Airport		橫瀾島 Waglan Island		京士柏 King's Park		香港國際機場 Hong Kong International Airport		橫瀾島 Waglan Island		京士柏 King's Park		香港國際機場 Hong Kong International Airport		橫瀾島 Waglan Island	
熱帶風暴小熊 Tropical Storm Koguma	6	東 E	21	東 E	34	東 E	48	東 E	27	東南偏東 ESE	35	東南 SE	53	東, 東南偏東 E, ESE	51	東南偏東 ESE	59	東 E	66
熱帶低氣壓(東) / 熱帶低氣壓(西) Tropical Depression (E) / Tropical Depression (W)	7	東 E	18	東 E	29	東南偏東 ESE	40	東南 SE	24	東, 東南偏東 E, ESE	35	東南偏東 ESE	47	東 E	46	東南偏東 ESE	54	東南偏東 ESE	59
颱風查帕卡 Typhoon Cempaka	7	東 E	21	東 E	31	東 E	56	東 E	29	東 E	38	東北偏東 ENE	60	東 E	53	東 E	51	東南偏東 ESE	75
熱帶風暴盧碧 Tropical Storm Lupit	8	東 E	17	東 E	30	東 E	42	東 E	21	西北偏北 NNW	36	東北偏東 ENE	49	東北偏東 ENE	37	西北 NW	50	東 E	61
熱帶風暴獅子山 Tropical Storm Lionrock	10	東 E	37	東南偏東 ESE	50	東 E	74	東 E	41	東南偏東 ESE	63	東南偏東 ESE	80	東 E	79	東南偏東 ESE	89	東南偏東 ESE	101
颱風圓規 Typhoon Kompasu	10	東 E	37	東 E	46	東北 NE	89	東 E	42	東 E	51	東北 NE	93	東北偏東 ENE	79	東 E	75	東北 NE	110
超強颱風雷伊 Super Typhoon Rai	12	東 E	18	東北 NE	22	東北偏東 ENE	58	東北偏東 ENE	21	東北 NE	24	東北偏東 ENE	60	東 E	41	東北 NE	33	東北 NE	68

表 4.8.1 二零二一年位於香港600公里範圍內的熱帶氣旋及其為本港帶來的雨量期間，天文台錄得的雨量
TABLE 4.8.1 RAINFALL ASSOCIATED WITH EACH TROPICAL CYCLONE THAT CAME WITHIN 600 KM OF HONG KONG IN 2021

熱帶氣旋 名稱 Name of tropical cyclone	熱帶氣旋位於 香港600公里 範圍內的時期 Period when tropical cyclone within 600 km of Hong Kong (T ₁ → T ₂) 日期/月份 時間* Date/Month Time*	香港天文台錄得的雨量(毫米) Rainfall at the Hong Kong Observatory (mm)				
		(i) 在香港600公里內 within 600 km of Hong Kong (T ₁ → T ₂)	(ii) 在 T ₂ 之後 的24小時內 24-hour period after T ₂	(iii) 在 T ₂ 之後 的48小時內 48-hour period after T ₂	(iv) 在 T ₂ 之後 的72小時內 72-hour period after T ₂	(i) + (iv) 共 Total T ₁ → (T ₂ +72 小時 hours)
熱帶風暴彩雲 # Tropical Storm Choi-wan #	(T ₁) 3 / 6 2200 - (T ₂) 4 / 6 1500	7.5	微量 Trace	微量 Trace	微量 Trace	7.5
熱帶風暴小熊 Tropical Storm Koguma	(T ₁) 11 / 6 1400 - (T ₂) 12 / 6 0600	40.9	23.0	23.3	23.4	64.3
熱帶低氣壓 Tropical Depression	(T ₁) 7 / 7 0100 - (T ₂) 7 / 7 0800	11.4	0.3	1.8	1.8	13.2
颱風查帕卡 Typhoon Cempaka	(T ₁) 18 / 7 2000 - (T ₂) 22 / 7 1500	242.3	0.0	26.5	35.4	277.7
熱帶風暴盧碧 Tropical Storm Lupit	(T ₁) 2 / 8 2000 - (T ₂) 6 / 8 1800	119.7	1.0	4.1	40.1	159.8
熱帶風暴獅子山 Tropical Storm Lionrock	(T ₁) 8 / 10 1100 - (T ₂) 10 / 10 0200	340.3	27.7	27.7	28.7+	369.0
颱風圓規 Typhoon Kompasu	(T ₁) 12 / 10 1000 - (T ₂) 13 / 10 1900	56.2+	15.0	19.6	19.6	75.8
超強颱風雷伊 Super Typhoon Rai	(T ₁) 20 / 12 1200 - (T ₂) 21 / 12 1100	11.2	0.6	0.8	3.1	14.3
					共 Total	980.6

* 香港時間（協調世界時加八小時）。

該熱帶氣旋並未導致天文台需要發出熱帶氣旋警告信號。

T₁ 熱帶氣旋首次出現於香港600公里範圍內的時間。

T₂ 熱帶氣旋在香港600公里範圍內消散或離開該範圍的時間。

+ 颱風圓規的雨量與熱帶風暴獅子山的雨量出現了1.0毫米的重疊部份。

* Hong Kong Time (UTC + 8 hours) .

Tropical cyclone without issuing of tropical cyclone warning signal in Hong Kong.

T₁ The time when a tropical cyclone was first centred within 600 km of Hong Kong.

T₂ The time when a tropical cyclone was dissipated within or moved outside 600 km of Hong Kong.

+ Rainfall amount of Typhoon Kompasu overlapped the rainfall amount of Tropical Storm Lionrock by 1.0 mm.

表 4.8.2 一八八四至一九三九年及一九四七至二零二一年間十個為香港帶來最多雨量的熱帶氣旋

TABLE 4.8.2 TEN WETTEST TROPICAL CYCLONES IN HONG KONG (1884-1939, 1947-2021)

熱帶氣旋 Tropical Cyclone			香港天文台錄得的雨量(毫米) Rainfall at the Hong Kong Observatory (mm)				
年份 Year	月份 Month	名稱 Name	(i) 在香港600公里內 within 600 km of Hong Kong ($T_1 \rightarrow T_2$)	(ii) 在 T_2 之後的 24 小時內 24-hour period after T_2	(iii) 在 T_2 之後的 48 小時內 48-hour period after T_2	(iv) 在 T_2 之後的 72 小時內 72-hour period after T_2	(i) + (iv) 共 Total $T_1 \rightarrow$ ($T_2 + 72$ 小時 hours)
1999	8	森姆 Sam	368.1	178.9	248.1	248.4	616.5
1926	7	熱帶氣旋 T.C.	34.8 #	534.0 #	561.1 #	562.2 #	597.0
1916	6	熱帶氣旋 T.C.	494.8 #	27.9 #	59.4 #	67.2 #	562.0
1965	9	愛娜斯 Agnes	404.6	8.9	64.3	126.1	530.7
1978	7	愛娜斯 Agnes	502.4	12.3	12.3	16.6	519.0
1976	8	愛倫 Ellen	90.7	394.2	421.0	425.4	516.1
1993	9	黛蒂 Dot	459.6	37.9	37.9	37.9	497.5
1982	8	黛蒂 Dot	41.2	322.5	403.1	450.5	491.7
2016	10	莎莉嘉 Sarika	195.6	223.2	223.2	295.7 ⁺	491.3
1995	8	海倫 Helen	241.4	146.2	235.2	239.5	480.9

T_1 - 熱帶氣旋首次出現於香港600公里範圍內的時間。

T_2 - 熱帶氣旋在香港600公里範圍內消散或離開該範圍的時間。

對於一九六一年以前的熱帶氣旋，欄(i)顯示當它位於香港600公里範圍內的日子裡，天文台所錄得的總日雨量，欄(ii)至(iv)分別是指其後一至三天累積的日雨量。

+ 當中的72.5毫米雨量與超強颱風海馬重疊出現。

T_1 - The time when a tropical cyclone was first centred within 600 km of Hong Kong.

T_2 - The time when a tropical cyclone was dissipated within or moved outside 600 km of Hong Kong.

For years prior to 1961, column (i) is the sum of daily rainfall on those days when a tropical cyclone was centred within 600 km of Hong Kong, columns (ii) to (iv) show respectively the accumulated daily rainfall on the following one to three days.

+ 72.5 mm of rainfall overlapped with the rainfall of SuperT. Haima.

表 4.9 一九四六至二零二一年間引致天文台需要發出十號颶風信號的颱風

TABLE 4.9 TYPHOONS REQUIRING THE ISSUING OF THE HURRICANE SIGNAL NO. 10 DURING THE PERIOD 1946-2021

颱風 名稱 Name of typhoon	當最接近天文台時 Nearest approach to the Hong Kong Observatory			最低平均 海平面氣壓 (百帕斯卡) Minimum M.S.L. pressure (hPa)		最高60分鐘平均風向及風速 (公里每小時) Maximum 60-min mean wind in points and km/h								最高陣風風向及風速 (公里每小時) Maximum gust peak speed in km/h with direction in points																				
	日期/月份 Date/Month	年份 Year	方位 Direction	距離 (公里) Distance (km)	每小時 Hourly	瞬時 Inst.	香港天文台 Hong Kong Observatory	京士柏 King's Park	啟德 機場 # Kai Tak Airport #	橫瀾島 Waglan Island	長洲 Cheung Chau	大老山 Tate's Cairn	青洲 Green Island	香港天文台 Hong Kong Observatory	京士柏 King's Park	啟德 機場 # Kai Tak Airport #	橫瀾島 Waglan Island	長洲 Cheung Chau	大老山 Tate's Cairn	青洲 Green Island														
-	18 / 7	1946	南 S	70	985.7	-	東北 NE	-	-	-	-	-	-	-	-	-	-	-	-	-	-													
姬羅莉亞 Gloria	22 / 9	1957	西南 SW	55	986.2	984.3	東南偏東 ESE	115	-	東南偏東 ESE	72	東 E	113	-	-	-	東 E	187	-	東北偏東 ENE	158	東北偏東 ENE	185	-	-	-	-							
瑪麗 Mary	9 / 6	1960	西北偏西 WNW	10	974.3	973.8	東南偏南 SSE	96	-	東南偏南 SSE	92	西南偏南 SSW	112	-	-	-	東南偏南 SSE	191	-	東南 SE	164	西南偏南 SSW	194	-	-	-	-							
愛麗斯 Alice	19 / 5	1961		0	981.6	981.1	東北偏東 ENE	83	-	東 E	70	東南偏東 ESE	90	東北偏東 ENE	76	-	-	東 E	166	-	東北偏東 ENE	139	西南 SW	128	東北偏東 ENE	135	-	-						
溫黛 Wanda	1 / 9	1962	西南偏南 SSW	20	955.1	953.2	北 N	133	-	北 N	108	西北 NW	148	西北 NW	118	東南 SE	189	-	北 N	259	-	北 N	229	西北偏北 NNW	216	西北 NW	232	東南偏東 ESE	284	-				
露比 Ruby	5 / 9	1964	西南 SW	30	971.0	968.2	東 E	110	-	北 N	118	東北偏東 ENE	148	東北 NE	113	東南偏東 ESE	167	-	東北偏北 NNE	227	-	西北 NW	203	東 E	230	東北偏北 NNE	216	東 E	268	-				
黛蒂 Dot	13 / 10	1964	東 E	35	978.9	977.3	西北偏北 NNW	88	-	北 N	67	北 N	117	西北偏北 NNW	96	東北偏北 NNE	157	-	北 N	175	-	北 N	198	北 N	184	西北偏西 WNW	205	東北 NE	220	-				
雪麗 Shirley	21 / 8	1968		0	968.7	968.6	北 N	68	-	北 N	75	東北偏北 NNE	124	西南偏南 SSW	90	東北偏北 NNE	126	-	北 N	133	-	北 N	151	東北 NE	209	西南偏南 SSW	167	東北偏北 NNE	203	-				
露絲 Rose	17 / 8	1971	西南偏西 WSW	20	984.5	982.8	東南 SE	103	-	東南 SE	122	東南偏東 ESE	140	東南 SE	131	南 S	148	-	東南偏東 ESE	224	-	東南偏東 ESE	211	東南偏東 ESE	189	東南 SE	194	南 S	221	-				
愛茜 Elsie	14 / 10	1975	南 S	50	996.4	996.2	東北偏東 ENE	58	北 N	75	西北偏北 NNW	67	東北偏北 NNE	118	北 N	106	東北 NE	130	西北偏北 NNW	118	東北 NE	140	北 N	137	北 N	140	東北偏東 ENE	176	東北 NE	158	東北偏北 NNE	180	東北 NE	167
荷貝 Hope	2 / 8	1979	西北偏北 NNW	10	961.8	961.6	西 W	75	西北偏西 WNW	79	西 W	115	西南 SW	144	西南偏南 SSW	117	西北 NW	115	西 W	108	西 W	175	西北偏西 WNW	166	西北偏西 WNW	182	西南 SW	198	西南偏西 WSW	185	西北偏西 WNW	229	西 W	167
愛倫 Ellen	9 / 9	1983	西南 SW	45	983.9	983.1	東 E	92	東 E	88	東 E	112	東南偏東 ESE	169	東南偏東 ESE	171	東 E	126	南 S	137	東 E	185	東 E	167	東 E	203	東 E	227	東南偏南 SSE	238	東北偏東 ENE	218	南 S	220*
約克 York	16 / 9	1999	西南偏南 SSW	20	976.8	976.1	東 E	63	北 N	68	東北偏北 NNE	59	東北偏北 NNE	153	東北偏北 NNE	113	-	-	東 E	137	東北偏北 NNE	149	東北偏東 ENE	142	東北偏北 NNE	234	東北 NE	182	-	-	-			
韋森特 Vicente	24 / 7	2012	西南 SW	100	986.3	986.0	東 E	56	東南偏東 ESE	56	東南偏東 ESE	70	東 E	108	東南偏東 ESE	128	東 E	117	東北 NE	92	東南偏東 ESE	117	東南偏東 ESE	110	東 E	135	東南偏東 ESE	149	東 E	184	東南偏東 ESE	166	東北 NE	155
天鴿 Hato	23 / 8	2017	西南偏南 SSW	60	986.7	986.3	東 E	62	東南偏東 ESE	54	東南偏東 ESE	67	東 E	137	東南偏東 ESE	128	東北偏東 ENE	118	-	東 E	122	東南偏東 ESE	113	東北 NE	130	東 E	193	東南 SE	171	東北 NE	187	-		
山竹 Mangkhut	16 / 9	2018	西南偏南 SSW	100	977.6	977.0	東 E	81	東 E	70	東南偏東 ESE	81	東北 NE	161	東 E	157	東北偏東 ENE	166	東北 NE	128	東 E	169	東北偏北 NNE	161	東北偏東 ENE	142	東北 NE	220	東 E	212	東北偏東 ENE	256	東北偏北 NNE	229

隨著香港國際機場遷移到赤鱈角，啟德的氣象所已於一九九八年七月六日關閉。啟德測風站於一九九八年九月四日開始運作。

With the moving of the Hong Kong International Airport to Chek Lap Kok, the meteorological office at Kai Tak was closed on 6 July 1998. Kai Tak anemometer station started operation on 4 September 1998.

* 估計，超出風速記錄圖的上限。

* estimated, exceeding upper limit of anemogram.

表 4.10 二零二一年熱帶氣旋在香港所造成的損失
TABLE 4.10 DAMAGE CAUSED BY TROPICAL CYCLONES IN HONG KONG IN 2021

熱帶氣旋名稱 Name of tropical cyclone	月份 Month	物質損毀 Damage in physical terms							金錢損失 (百萬港元) * Damage in monetary terms (million HK\$)						保險索賠總額# (百萬港元) The total amount of insurance claims (million HK\$) (b)	估計直接經濟損失@ (百萬港元) Estimated direct economic loss (million HK\$) (a) + (b)
		農業 Agriculture	公用建設 (處) Public works facilities (site)	公用業務 (處) Public utilities (site)	物業單位 (個) Property (unit)	山泥傾瀉及斜坡倒塌 (宗) Landslip and collapse of slope (case)	受到損壞的船隻數目 (艘) Ships lost or damaged (number)	塌樹報告 (宗) Report(s) of fallen trees (case)	農業 Agriculture	公用建設 Public works facilities	公用業務 Public utilities	私人物業 Private property	工業 Industry	共 Total (a)		
熱帶風暴小熊 Tropical Storm Koguma	6									0.9010	0.0225			0.9235		
熱帶低氣壓 Tropical Depression	7						2									
颱風查帕卡 Typhoon Cempaka	7	農地 Farmland: 0.3 公頃 hectares	道路 Road: 1 空曠地區 Open Area: 1 通道 Access Road: 1		1	4	6			0.0180	0.0120			0.0300		
熱帶風暴盧碧 Tropical Storm Lupit	8		道路 Road: 2	供水 Water Supply: 2		3	2				0.0013			0.0013		
熱帶風暴獅子山 Tropical Storm Lionrock	10	農地 Farmland: 333 公頃 hectares 農作物 Crops: 2,166 噸 tons	道路 Road: 4 空曠地區 Open Area: 1 通道 Access Road: 4 噪音屏障 Noise Barriers: 1 避雨亭 Rain Shelter: 1 其他 Others: 7	鐵路 Railway: 2	10	20	7	1 100	33.7939	0.6545	0.2843	0.0103		34.7430	185.2840	220.0270
颱風圓規 Typhoon Kompasu	10		道路 Road: 4 50米 m 空曠地區 Open Area: 2 小徑 Footpath: 4 圍欄 Fence: 1 避雨亭 Rain Shelter: 1	室外空調裝置 Outdoor Air Condition Unit: 1 照明系統 Lighting System: 4 電力供應 Electric Supply: 2	34	4	1	877		0.3852	0.1543	0.4000		0.9395	33.8000	34.7395
超強颱風雷伊 Super Typhoon Rai	12									0.0040				0.0040		

#保險索償數據由香港保險業聯會提供，有關數據已經按參與調查的機構的所佔的市場份額作調整。請注意2021年的保險索償數據只涵蓋熱帶風暴獅子山及颱風圓規。
The insurance claim figure is provided by the Hong Kong Federation of Insurers. The data have been adjusted by the market shares of the companies participating in the survey. Note that the insurance claim figure is only available for Tropical Storm Lionrock and Typhoon Kompasu in 2021.
*資料由各有關政府部門及公共事業機構提供，並已扣除相關的保險索償 (截至2022年5月31日)。
* The data is provided by relevant government departments and public utility companies (up to 31 May 2022). Items with insurance claim made have been excluded.
@ 直接經濟損失估算僅供參考，可能受到調查數據和分析方法的各種不確定性的影響。估算詳情及免責聲明可參考附件一。
@ The estimates are for reference only and may be subject to various uncertainties in the survey responses and analysis method. Please refer to Annex 1 for details of estimation and disclaimer.
由於四捨五入關係，表內個別項目的數字加起來可能與總數略有出入。
The sum of figures may not add up to total due to rounding.

表 4.11 一九六零至二零二一年間熱帶氣旋在香港所造成的人命傷亡及破壞

TABLE 4.11 CASUALTIES AND DAMAGE CAUSED BY TROPICAL CYCLONES IN HONG KONG : 1960 - 2021

年份 Year	日期 / 月份 Date / Month	Name of tropical cyclone	熱帶氣旋 名稱	死亡人數 Persons dead	失蹤人數 Persons missing	受傷人數 Persons injured	遇事越洋 船舶 Ocean-going vessels in trouble	受到毀壞或翻沉 的小艇數目 Small craft sunk or wrecked	受到損壞的小 艇數目 Small craft damaged
1960	4 / 6 - 12 / 6	T. Mary	瑪麗	45	11	127	6	352	462
1961	17 / 5 - 21 / 5	T. Alice	愛麗斯	4	0	20	*	*	*
	7 / 9 - 10 / 9	S.T.S. Olga	奧嘉	7	0	0	0	1	0
1962	28 / 8 - 2 / 9	T. Wanda	溫黛	130	53	*	36	1 297	756
1963	1 / 9 - 9 / 9	T. Faye	菲爾	3	0	51	0	2	0
1964	26 / 5 - 28 / 5	T. Viola	維奧娜	0	0	41	5	18	18
	2 / 8 - 9 / 8	T. Ida	艾黛	5	4	56	3	7	60
	2 / 9 - 6 / 9	T. Ruby	露比	38	6	300	20	32	282
	4 / 9 - 10 / 9	T. Sally	莎莉	9	0	24	0	0	0
	7 / 10 - 13 / 10	T. Dot	黛蒂	26	10	85	2	31	59
1965	6 / 7 - 16 / 7	T. Freda	法妮黛	2	0	16	0	1	0
	25 / 9 - 28 / 9	T.S. Agnes	愛娜斯	5	0	3	0	0	0
1966	12 / 7 - 14 / 7	S.T.S. Lola	露娜	1	0	6	0	*	6
1967	19 / 8 - 22 / 8	S.T.S. Kate	姬蒂	0	0	3	3	1	0
1968	17 / 8 - 22 / 8	T. Shirley	雪麗	0	0	4	1	*	3
1969	22 / 7 - 29 / 7	T. Viola	維奧娜	0	0	0	0	3	0
1970	1 / 8 - 3 / 8	T.D. -	-	2 ⁺	0	0	0	0	0
	8 / 9 - 14 / 9	T. Georgia	喬治亞	0	0	0	2	0	*
1971	15 / 6 - 18 / 6	T. Freda	法妮黛	2	0	30	8	0	0
	16 / 7 - 22 / 7	T. Lucy	露茜	0	0	38	10	2	13
	10 / 8 - 17 / 8	T. Rose	露絲	110	5	286	33	303	*
1972	4 / 11 - 9 / 11	T. Pamela	柏美娜	1	0	8	3	0	0
1973	14 / 7 - 20 / 7	T. Dot	黛蒂	1	0	38	14	*	*
1974	7 / 6 - 14 / 6	T. Dinah	戴娜	0	0	0	1	*	*
	18 / 7 - 22 / 7	T. Ivy	艾菲	0	0	0	2	*	*
	15 / 10 - 19 / 10	T. Carmen	嘉曼	1	0	0	5	*	*
	21 / 10 - 27 / 10	T. Della	黛娜	0	0	0	2	*	*
1975	10 / 8 - 14 / 8	T.D. -	-	2	1	0	3	1	*
	9 / 10 - 14 / 10	T. Elsie	愛茜	0	0	46	7	2	1
	16 / 10 - 23 / 10	S.T.S. Flossie	霍蘿茜	0	0	0	1	*	*
1976	22 / 6 - 4 / 7	T. Ruby	露比	3	2	2	0	0	0
	21 / 7 - 26 / 7	S.T.S. Violet	維奧莉	2	1	1	0	0	0
	5 / 8 - 6 / 8	S.T.S. Clara	嘉麗	0	0	4	0	0	0
	21 / 8 - 24 / 8	T.S. Ellen	愛倫	27	3	65	0	4	7
	15 / 9 - 21 / 9	T. Iris	愛莉斯	0	0	27	6	0	1
1977	4 / 7 - 6 / 7	T.D. -	-	0	0	2	0	0	0
	3 / 9 - 5 / 9	T.S. Carla	嘉娜	0	0	1	1	0	0
	22 / 9 - 25 / 9	S.T.S. Freda	法妮黛	1	0	37	2	0	0
1978	24 / 7 - 30 / 7	S.T.S. Agnes	愛娜斯	3	0	134	0	25	42
	9 / 8 - 12 / 8	T.S. Bonnie	邦妮	0	0	0	2	0	0
	23 / 8 - 28 / 8	S.T.S. Elaine	伊蘭	1	0	51	8	5	8
	22 / 9 - 26 / 9	S.T.S. Kit	吉蒂	0	7	0	0	1	0
	7 / 10 - 16 / 10	S.T.S. Nina	蓮娜	0	0	2	0	0	0
	17 / 10 - 29 / 10	T. Rita	麗妲	0	0	3	1	5	0
1979	1 / 7 - 6 / 7	T. Ellis	艾利斯	0	0	0	0	2	0
	26 / 7 - 30 / 7	T.S. Gordon	戈登	0	0	0	0	2	0
	28 / 7 - 3 / 8	T. Hope	荷貝	12	0	260	29	167	207
	6 / 8 - 9 / 8	T.D. -	-	0	0	0	0	3	0
	16 / 9 - 24 / 9	S.T.S. Mac	麥克	1	0	67	2	12	0
1980	5 / 7 - 12 / 7	S.T.S. Ida	艾黛	0	0	0	1	0	0
	18 / 7 - 23 / 7	T. Joe	喬伊	2	1	59	4	0	1
	20 / 7 - 28 / 7	T. Kim	甘茵	0	0	0	0	2	1
	29 / 10 - 2 / 11	T.S. Cary	卡里	0	0	0	0	0	2
1981	3 / 7 - 7 / 7	S.T.S. Lynn	林茵	0	0	32	0	0	3
1982	27 / 6 - 2 / 7	T.S. Tess	戴絲	0	0	16	0	1	0
	22 / 7 - 30 / 7	T. Andy	安迪	0	0	0	0	0	1
	5 / 9 - 16 / 9	T. Irving	伊文	0	0	0	0	0	2
1983	12 / 7 - 19 / 7	T. Vera	維娜	0	0	0	0	1	0
	29 / 8 - 9 / 9	T. Ellen	愛倫	10	12	333	44	135	225
	10 / 10 - 14 / 10	T. Joe	喬伊	0	0	58	2	0	3
	20 / 10 - 26 / 10	S.T.S. Lex	力士	0	0	0	0	0	1
1984	27 / 8 - 7 / 9	T. Ike	艾克	0	0	1	0	0	0

表 4.11 (續)
TABLE 4.11 (cont'd)

年份 Year	日期 / 月份 Date / Month	Name of tropical cyclone	熱帶氣旋 名稱	死亡人數 Persons dead	失蹤人數 Persons missing	受傷人數 Persons injured	遇事越洋 船舶 Ocean-going vessels in trouble	受到毀壞或翻沉 的小艇數目 Small craft sunk or wrecked	受到損壞的小 艇數目 Small craft damaged
1985	19 / 6 - 25 / 6	T. Hal	哈爾	0	1	13	0	4	2
	1 / 9 - 7 / 9	T. Tess	戴絲	2	0	12	6	1	3
	13 / 10 - 22 / 10	T. Dot	黛蒂	0	0	1	0	0	0
1986	3 / 7 - 12 / 7	T. Peggy	蓓姬	1	0	26	3	0	3
	9 / 8 - 12 / 8	T.D. -	-	0	0	3	0	1	5
	18 / 8 - 6 / 9	T. Wayne	韋恩	3	1	15+	0	3	0
	11 / 10 - 19 / 10	T. Ellen	愛倫	0	0	4	1	2	1
1987	16 / 10 - 27 / 10	T. Lynn	林茵	0	0	1	0	0	0
1988	14 / 7 - 20 / 7	T. Warren	華倫	0	1	12	1	2	1
	19 / 9 - 22 / 9	T. Kit	吉蒂	0	0	0	0	0	1
	18 / 10 - 23 / 10	T. Pat	帕特	2	0	1	0	0	0
	21 / 10 - 29 / 10	T. Ruby	露比	0	0	4	0	0	0
1989	16 / 5 - 21 / 5	T. Brenda	布倫達	6	1	119	0	3	5
	11 / 7 - 19 / 7	T. Gordon	戈登	2	0	31	1	0	8
	8 / 10 - 14 / 10	T. Dan	丹尼	0	0	0	1	0	1
1990	15 / 5 - 19 / 5	T. Marian	瑪麗安	0	0	0	0	0	1
	15 / 6 - 19 / 6	S.T.S. Nathan	彌敦	5	1	1	1	0	2
	21 / 6 - 30 / 6	T. Percy	珀西	1	0	0	0	0	0
	27 / 7 - 31 / 7	S.T.S. Tasha	泰莎	0	0	1	0	1	0
	25 / 8 - 30 / 8	T. Becky	貝姬	0	1	0	0	0	0
	10 / 9 - 20 / 9	T. Ed	義德	0	0	1	0	0	0
1991	15 / 7 - 20 / 7	T. Amy	艾美	0	0	1	1	0	2
	20 / 7 - 24 / 7	S.T.S. Brendan	布倫登	0	0	17	1	1	13
	13 / 8 - 18 / 8	T. Fred	法雷德	0	0	0	0	1	0
1992	9 / 7 - 14 / 7	T. Eli	艾里	0	0	23	0	0	1
	17 / 7 - 18 / 7	T.S. Faye	菲爾	2	0	24	1	0	3
	19 / 7 - 23 / 7	S.T.S. Gary	加里	0	0	18	2	0	0
1993	21 / 6 - 28 / 6	T. Koryn	高蓮	0	0	183	0	0	2
	16 / 8 - 21 / 8	T. Tasha	泰莎	0	0	35	0	0	7
	9 / 9 - 14 / 9	T. Abe	艾貝	1	0	0	0	0	0
	15 / 9 - 17 / 9	S.T.S. Becky	貝姬	1	0	130	0	0	10
	23 / 9 - 27 / 9	T. Dot	黛蒂	0	1	48	0	1	0
	28 / 10 - 5 / 11	T. Ira	艾拉	2	0	30	0	1	0
1994	23 / 6 - 25 / 6	T.S. Sharon	莎朗	0	0	5	0	1	1
	25 / 8 - 29 / 8	S.T.S. Harry	夏里	1	0	2	0	0	2
1995	7 / 8 - 12 / 8	S.T.S. Helen	海倫	3	0	35	0	0	0
	25 / 8 - 1 / 9	T. Kent	肯特	0	0	5	0	0	0
	28 / 9 - 4 / 10	T. Sibyl	斯寶	0	0	14	0	0	0
1996	5 / 9 - 10 / 9	T. Sally	莎莉	2	0	4	0	0	0
	18 / 9 - 23 / 9	S.T.S. Willie	威利	0	1	0	0	0	0
1997	31 / 7 - 3 / 8	T. Victor	維克托	1	0	58	0	0	0
	20 / 8 - 23 / 8	T. Zita	思蒂	0	0	3	0	0	0
1998	7 / 8 - 11 / 8	S.T.S. Penny	彭妮	1	0	1	0	0	0
	12 / 9 - 14 / 9	T.D. -	-	0	0	10	0	0	0
	15 / 10 - 27 / 10	T. Babs	寶絲	0	0	14	0	0	0
1999	28 / 4 - 2 / 5	T. Leo	利奧	0	0	14	0	0	0
	2 / 6 - 8 / 6	T. Maggie	瑪姬	0	0	5	0	2	0
	25 / 7 - 28 / 7	T.S. -	-	0	0	18	0	0	0
	19 / 8 - 23 / 8	T. Sam	森姆	4	0	328	0	0	0
	12 / 9 - 17 / 9	T. York	約克	2	0	500	3	*	*
	24 / 9 - 26 / 9	S.T.S. Cam	錦雯	1	0	23	0	0	0
2000	15 / 7 - 16 / 7	T.D. -	-	0	1	6	0	0	0
	27 / 8 - 1 / 9	S.T.S. Maria	瑪莉亞	2	0	0	0	0	0
	5 / 9 - 10 / 9	T. Wukong	悟空	0	0	1	0	0	1
2001	30 / 6 - 3 / 7	T. Durian	榴槤	0	0	1	0	0	0
	1 / 7 - 8 / 7	T. Utor	尤特	1	0	1	0	1	0
	23 / 7 - 26 / 7	T. Yutu	玉兔	0	0	10	0	0	0
	28 / 8 - 1 / 9	T.S. Fitow	菲特	2	0	0	0	0	0
2002	15 / 8 - 20 / 8	S.T.S. Vongfong	黃蜂	0	0	2	0	0	1
	10 / 9 - 13 / 9	S.T.S. Hagupit	黑格比	0	0	32	0	0	3
2003	16 / 7 - 23 / 7	S.T.S. Koni	天鵝	0	0	15	0	0	0
	17 / 7 - 25 / 7	T. Imbudo	伊布都	1	0	45	0	2	8
	17 / 8 - 26 / 8	T. Krovanh	科羅旺	0	0	11	0	0	2
	29 / 8 - 3 / 9	T. Dujuan	杜鵑	0	4	24	0	1	4

表 4.11 (續)
TABLE 4.11 (cont'd)

年份 Year	日期 / 月份 Date / Month	Name of tropical cyclone	熱帶氣旋 名稱	死亡人數 Persons dead	失蹤人數 Persons missing	受傷人數 Persons injured	遇事越洋 船舶 Ocean-going vessels in trouble	受到毀壞或翻沉 的小艇數目 Small craft sunk or wrecked	受到損壞的小 艇數目 Small craft damaged
2004	14 / 7 - 16 / 7	T.S. Kompas	圓規	0	0	12	0	0	0
2005	10 / 8 - 14 / 8	S.T.S. Sanvu	珊瑚	0	0	0	0	0	1
	16 / 9 - 19 / 9	T.S. Vicente	韋森特	2	0	0	0	0	0
	21 / 9 - 28 / 9	T. Damrey	達維	0	0	5	0	0	1
2006	9 / 5 - 18 / 5	T. Chanchu	珍珠	0	0	6	0	1	0
	27 / 6 - 29 / 6	T.S. Jelawat	杰拉華	1	0	0	0	0	0
	31 / 7 - 4 / 8	T. Prapiroon	派比安	0	0	8	0	1	4
	6 / 8 - 10 / 8	S.T.S. Bopha	寶霞	0	0	0	0	0	1
	23 / 8 - 25 / 8	T.D. -	-	0	0	0	0	0	1
	12 / 9 - 13 / 9	T.D. -	-	0	0	1	0	0	0
	27 / 10 - 6 / 11	T. Cimarón	西馬侖	0	0	4	0	0	0
2007	5 / 8 - 11 / 8	S.T.S. Pabuk	帕布	1	0	17	0	0	0
2008	15 / 4 - 20 / 4	T. Neoguri	浣熊	0	0	2	0	0	0
	18 / 6 - 26 / 6	T. Fengshen	風神	0	0	17	0	0	0
	4 / 8 - 8 / 8	S.T.S. Kammuri	北冕	0	0	37	0	0	0
	17 / 8 - 23 / 8	T. Nuri	鸚鵡	2	0	112	0	0	0
	19 / 9 - 25 / 9	T. Hagupit	黑格比	0	0	58	0	10	0
2009	15 / 7 - 19 / 7	T. Molave	莫拉菲	0	0	5	0	3	0
	1 / 8 - 9 / 8	S.T.S. Goni	天鵝	4	0	10	0	1	0
	9 / 9 - 12 / 9	T.S. Mujigae	彩虹	0	0	1	0	0	0
	12 / 9 - 16 / 9	T. Koppu	巨爵	0	0	74	0	0	0
2010	19 / 7 - 23 / 7	T. Chanthu	燦都	4	0	30	0	0	0
2011	18 / 6 - 25 / 6	T.S. Haima	海馬	0	0	3	0	1	0
	25 / 7 - 31 / 7	S.T.S. Nock-ten	洛坦	0	0	4	0	0	1
	23 / 9 - 1 / 10	T. Nesat	納沙	0	0	26	0	1	1
	27 / 9 - 5 / 10	S.T. Nalgae	尼格	0	0	1	0	0	0
2012	26 / 6 - 30 / 6	T.S. Doksuri	杜蘇芮	0	0	2	0	1	0
	20 / 7 - 25 / 7	S.T. Vicente	韋森特	0	0	138	0	1	0
	12 / 8 - 18 / 8	T. Kai-tak	啟德	0	0	1	0	0	0
	18 / 8 - 30 / 8	S.T. Tembin	天秤	1	0	1	0	0	0
2013	9 / 8 - 16 / 8	SuperT. Utor	尤特	0	1	9	0	0	0
	17 / 9 - 23 / 9	SuperT. Usagi	天兔	0	0	17	0	0	1
2014	14 / 6 - 15 / 6	T.S. Hagibis	海貝思	0	0	1	0	0	0
	14 / 9 - 17 / 9	T. Kalmaegi	海鷗	0	0	29	0	0	0
2016	31 / 7 - 2 / 8	T. Nida	妮妲	0	0	12	0	0	0
	16 / 10 - 18 / 10	SuperT. Sarika	莎莉嘉	0	1	2	0	0	0
	20 / 10 - 21 / 10	SuperT. Haima	海馬	0	0	13	0	0	3
2017	11 / 6 - 13 / 6	S.T.S. Merbok	苗柏	0	0	10	0	0	2
	22 / 7 - 23 / 7	T.S. Roke	洛克	0	0	0	0	0	2
	22 / 8 - 23 / 8	SuperT. Hato	天鴿	0	0	129	1	0	36
	26 / 8 - 27 / 8	S.T.S. Pakhar	帕卡	0	0	62	0	0	15
	2 / 9 - 4 / 9	T.S. Mawar	瑪娃	0	0	0	0	0	8
	14 / 10 - 16 / 10	S.T. Khanun	卡努	0	0	22	0	0	3
2018	5 / 6 - 8 / 6	T.S. Ewiniar	艾雲尼	0	0	1	0	0	6
	17 / 7 - 24 / 7	T.S. Son-Tinh	山神	0	0	2	0	0	1
	9 / 8 - 15 / 8	S.T.S. Bebinca	貝碧嘉	0	0	1	0	0	13
	11 / 9 - 13 / 9	T.S. Barijat	百里嘉	0	0	0	0	0	2
	14 / 9 - 17 / 9	SuperT. Mangkhut	山竹	0	0	458	0	0	708
	31 / 10 - 2 / 11	SuperT. Yutu	玉兔	1	0	0	0	0	2
2019	2 / 7 - 3 / 7	T.D. Mun	木恩	0	0	0	0	0	2
	30 / 7 - 3 / 8	T.S. Wipha	韋帕	0	0	20	0	0	8
	24 / 8 - 25 / 8	S.T.S. Bailu	白鹿	0	0	0	0	0	2
2020	12 / 6 - 14 / 6	T.S. Nuri	鸚鵡	1	0	1	0	1	5
	31 / 7 - 1 / 8	T.S. Sinlaku	森拉克	0	0	4	0	0	4
	18 / 8 - 19 / 8	T. Higos	海高斯	0	0	7	0	0	0
	11 / 10 - 14 / 10	T.S. Nangka	浪卡	0	0	3	0	0	2
	22 / 10 - 24 / 10	T. Saudel	沙德爾	0	0	0	0	0	1
2021	6 / 7 - 7 / 7	T.D. -	-	0	0	0	0	0	2
	18 / 7 - 20 / 7	T. Cempaka	查帕卡	1	0	0	0	0	6
	2 / 8 - 4 / 8	T.S. Lupit	盧碧	0	0	0	0	0	2
	8 / 10 - 10 / 10	T.S. Lionrock	獅子山	2	0	14	0	0	7
	12 / 10 - 14 / 10	T. Kompas	圓規	0	0	20	0	0	1

備註：資料由各有關政府部門及公共事業機構提供，同時亦參考了本地報章上的損毀報導。

- * 缺乏數據
- + 被雷電擊中

N.B.: Based on information supplied by relevant government departments and public utility companies. Damage reports in the local press were also examined and collated.

- * Data unavailable.
- + Struck by lightning.

表 4.12 二零二一年天文台發出的熱帶氣旋路徑預測驗證 (誤差單位為公里)

TABLE 4.12 VERIFICATION OF THE TROPICAL CYCLONE TRACK FORECASTS ISSUED BY THE HONG KONG OBSERVATORY IN 2021 (ERROR IN THE UNIT OF KM)

熱帶氣旋 名稱	Name of tropical cyclone	編號 Code	最高強度 Maximum Intensity	24 小時預測位置 24-hour forecast position		48 小時預測位置 48-hour forecast position		72 小時預測位置 72-hour forecast position		96 小時預測位置 96-hour forecast position		120 小時預測位置 120-hour forecast position	
				平均誤差 Average error	預測數目 No. of forecasts	平均誤差 Average error	預測數目 No. of forecasts	平均誤差 Average error	預測數目 No. of forecasts	平均誤差 Average error	預測數目 No. of forecasts	平均誤差 Average error	預測數目 No. of forecasts
杜鵑	Dujuan	2101	T.S.	157	11	301	7	421	6	369	2	-	-
舒力基	Surigae	2102	SuperT.	42	42	67	38	86	34	84	30	119	26
彩雲	Choi-wan	2103	T.S.	125	17	281	9	392	7	371	5	314	1
小熊	Koguma	2104	T.S.	71	5	150	1	-	-	-	-	-	-
薔琵	Champi	2105	T.	101	8	216	5	102	1	-	-	-	-
煙花	In-fa	2106	T.	53	48	102	44	186	40	278	34	381	30
查帕卡	Cempaka	2107	T.	48	20	64	9	197	9	390	6	572	4
盧碧	Lupit	2109	T.S.	114	22	243	17	454	15	565	11	320	7
銀河	Mirinae	2110	S.T.S.	118	11	108	9	164	4	202	1	-	-
奧麥斯	Omais	2112	T.S.	85	8	72	4	-	-	-	-	-	-
康森	Conson	2113	S.T.S.	117	22	204	18	313	14	360	10	400	6
燦都	Chanthu	2114	SuperT.	93	44	162	39	226	34	261	30	309	26
電母	Dianmu	2115	T.S.	70	4	-	-	-	-	-	-	-	-
蒲公英	Mindulle	2116	SuperT.	59	26	76	22	106	18	112	14	96	10
獅子山	Lionrock	2117	T.S.	41	10	59	6	91	2	-	-	-	-
圓規	Kompasu	2118	T.	70	22	65	18	102	14	156	10	189	6
瑪瑙	Malou	2120	T.	54	15	85	13	132	9	278	5	521	1
妮亞圖	Nyatoh	2121	SuperT.	55	12	78	8	219	4	-	-	-	-
雷伊	Rai	2122	SuperT.	56	25	82	21	133	17	197	13	275	9
熱帶低氣壓 (7月5日至6日)	Tropical Depression (5 - 6 Jul)	-	T.D.	174	1	-	-	-	-	-	-	-	-
熱帶低氣壓 (7月5日至8日)	Tropical Depression (5 - 8 Jul)	-	T.D.	53	6	48	3	-	-	-	-	-	-
熱帶低氣壓(10月24日至27日)	Tropical Depression (24 - 27 Oct)	-	T.D.	76	9	57	5	-	-	-	-	-	-
平均誤差 Average Error				75		121		197		245		277	
預測總數 Total number of forecasts				388		296		228		171		126	

註：

- 驗證包括當熱帶氣旋中心位於北緯7至36度，東經100至140度內，香港天文台發出觀測時間為協調世界時00時、06時、12時及18時的熱帶氣旋路徑。
- 誤差是指香港天文台最佳路徑位置(見第五節)及預測位置的距離，單位為公里。

Note:

- Verification includes tropical cyclone forecast tracks issued by the Hong Kong Observatory at 00, 06, 12 and 18 UTC for tropical cyclones within the area bounded by 7°N and 36°N, 100°E to 140°E.
- Error refers to the distance between the tropical cyclone best track position (see Section 5) and forecast position of the Hong Kong Observatory, in the unit of km.

第五節 二零二一年熱帶氣旋的位置及強度數據

以下是二零二一年位於北太平洋西部及南海區域（即由赤道至北緯45度、東經100度至180度所包括的範圍）的熱帶氣旋。其每六小時之位置及強度刊於本節。

熱帶氣旋名稱	頁
熱帶風暴杜鵑 (2101)	152
超強颱風舒力基 (2102)	152-153
熱帶低氣壓 (由五月十三日至十四日)	154
熱帶風暴彩雲 (2103)	154
熱帶風暴小熊 (2104)	155
颱風薔琵 (2105)	155
熱帶低氣壓 (由七月五日至六日)	156
熱帶低氣壓 (由七月五日至八日)	156
颱風煙花 (2106)	157
颱風查帕卡 (2107)	158
熱帶風暴尼伯特 (2108)	159
熱帶風暴盧碧 (2109)	160
熱帶風暴妮妲 (2111)	161
強烈熱帶風暴銀河 (2110)	161
熱帶風暴奧麥斯 (2112)	162
熱帶低氣壓 (由九月一日至四日)	163
強烈熱帶風暴康森 (2113)	164
超強颱風燦都 (2114)	165
熱帶風暴電母 (2115)	166
超強颱風蒲公英 (2116)	166-167
熱帶風暴獅子山 (2117)	167
颱風圓規 (2118)	168
強烈熱帶風暴南川 (2119)	169
颱風瑪瑙 (2120)	170
熱帶低氣壓 (由十月二十四日至二十七日)	170
超強颱風妮亞圖 (2121)	171
超強颱風雷伊 (2122)	172

在本節，風速均取10分鐘內的平均值，單位為米每秒（1米每秒約為1.94海里或3.6公里每小時）。熱帶氣旋的強度分為：-

- (a) T.D.: - 熱帶低氣壓
- (b) T.S.: - 熱帶風暴
- (c) S.T.S.: - 強烈熱帶風暴
- (d) T.: - 颱風
- (e) S.T.: - 強颱風
- (f) Super T.: - 超強颱風

Section 5 TROPICAL CYCLONE POSITION AND INTENSITY DATA, 2021

Six-hourly position and intensity data are tabulated in this section for the following tropical cyclones in 2021 over the western North Pacific and the South China Sea (i.e. the area bounded by the Equator, 45°N, 100°E and 180°).

Name of tropical cyclone	Page
Tropical Storm Djuan (2101)	152
Super Typhoon Surigae (2102)	152-153
Tropical Depression of 13 – 14 May	154
Tropical Storm Choi-wan (2103)	154
Tropical Storm Koguma (2104)	155
Typhoon Champi (2105)	155
Tropical Depression of 5 – 6 July	156
Tropical Depression of 5 – 8 July	156
Typhoon In-fa (2106)	157
Typhoon Cempaka (2107)	158
Tropical Storm Nepartak (2108)	159
Tropical Storm Lupit (2109)	160
Tropical Storm Nida (2111)	161
Severe Tropical Storm Mirinae (2110)	161
Tropical Storm Omais (2112)	162
Tropical Depression of 1 – 4 September	163
Severe Tropical Storm Conson (2113)	164
Super Typhoon Chanthu (2114)	165
Tropical Storm Dianmu (2115)	166
Super Typhoon Mindulle (2116)	166-167
Tropical Storm Lionrock (2117)	167
Typhoon Kompasu (2118)	168
Severe Tropical Storm Namtheun (2119)	169
Typhoon Malou (2120)	170
Tropical Depression of 24 – 27 October	170
Super Typhoon Nyatoh (2121)	171
Super Typhoon Rai (2122)	172

In this section, surface winds refer to wind speeds averaged over a period of 10 minutes given in the unit of m/s (1 m/s is about 1.94 knots or 3.6 km/h). Intensities of tropical cyclones are classified as follows:-

- (a) T.D. : - tropical depression
- (b) T.S. : - tropical storm
- (c) S.T.S. : - severe tropical storm
- (d) T. : - typhoon
- (e) S.T. : - severe typhoon
- (f) Super T. : - super typhoon

熱帶風暴杜鵑(2101)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF
TROPICAL STORM DUJUAN (2101)

月份	日期	時間 (協調世界時)	強度	估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)	北緯	東經
Month	Date	Time (UTC)	Intensity	Estimated minimum central pressure (hPa)	Estimated maximum surface winds (m/s)	Lat. °N	Long. °E
二月 FEB	18	0000	T.D.	1002	13	7.0	132.6
		0600	T.D.	1000	16	7.2	132.2
		1200	T.S.	998	18	7.2	131.8
		1800	T.S.	998	18	7.1	131.6
	19	0000	T.S.	995	21	7.0	131.2
		0600	T.S.	995	21	7.0	129.9
		1200	T.S.	998	18	6.8	130.2
		1800	T.D.	1000	16	6.5	130.5
	20	0000	T.D.	1000	16	6.6	131.2
		0600	T.D.	1000	16	7.2	131.0
		1200	T.D.	1000	16	7.5	130.8
		1800	T.D.	1000	16	8.3	130.2
	21	0000	T.D.	1000	16	8.5	130.0
		0600	T.D.	1000	16	8.9	128.4
		1200	T.D.	1000	16	9.6	127.5
		1800	T.D.	1000	16	10.3	126.8
	22	0000	T.D.	1002	13	11.1	124.9
			消散				
			Dissipated				

超強颱風舒力基(2102)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF
SUPER TYPHOON SURIGAE (2102)

月份	日期	時間 (協調世界時)	強度	估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)	北緯	東經
Month	Date	Time (UTC)	Intensity	Estimated minimum central pressure (hPa)	Estimated maximum surface winds (m/s)	Lat. °N	Long. °E
四月 APR	13	1200	T.D.	1000	13	7.4	138.0
		1800	T.D.	998	16	7.7	137.8
	14	0000	T.S.	995	18	8.1	137.6
		0600	T.S.	995	18	8.4	137.2
		1200	T.S.	988	23	8.7	137.0
		1800	T.S.	988	23	8.8	136.7
	15	0000	S.T.S.	984	25	8.8	136.3
		0600	S.T.S.	984	25	8.8	136.1
		1200	S.T.S.	980	28	8.9	135.6
		1800	S.T.S.	978	31	8.9	135.3
	16	0000	T.	974	33	8.9	134.7
		0600	T.	970	36	9.1	133.7
		1200	T.	960	41	9.3	133.1
		1800	S.T.	945	49	10.0	132.1

超強颱風舒力基(2102)的每六小時位置及強度 (續)

SIX-HOURLY POSITION AND INTENSITY DATA OF
SUPER TYPHOON SURIGAE (2102) (CON'T)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低 中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計 最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
四月 APR	17	0000	SuperT.	930	57	10.7	131.1
		0600	SuperT.	915	64	11.3	130.1
		1200	SuperT.	910	67	12.0	129.2
		1800	SuperT.	910	67	12.5	128.4
	18	0000	SuperT.	910	67	13.1	127.7
		0600	SuperT.	915	64	13.5	127.1
		1200	SuperT.	920	61	13.5	126.8
		1800	SuperT.	920	61	14.0	126.5
	19	0000	SuperT.	925	59	14.2	126.3
		0600	SuperT.	925	59	14.5	126.3
		1200	SuperT.	930	57	14.8	126.3
		1800	SuperT.	940	52	15.2	126.3
	20	0000	S.T.	945	49	15.6	126.1
		0600	S.T.	945	49	15.8	125.9
		1200	S.T.	945	49	16.4	125.9
		1800	S.T.	945	49	16.9	125.4
	21	0000	S.T.	945	49	17.5	125.2
		0600	S.T.	950	46	18.1	124.9
		1200	S.T.	950	46	18.8	124.8
		1800	S.T.	955	43	19.3	124.7
	22	0000	S.T.	955	43	19.7	124.9
		0600	S.T.	955	43	20.3	125.4
		1200	T.	960	41	21.0	126.1
		1800	T.	965	39	21.6	127.0
	23	0000	T.	970	36	22.4	127.8
		0600	T.	974	33	23.1	129.0
		1200	S.T.S.	978	31	23.4	129.9
		1800	S.T.S.	980	28	23.4	130.4
	24	0000	S.T.S.	984	25	23.1	131.1
		0600	T.S.	988	23	22.8	131.9
		1200	T.S.	988	23	22.2	132.8
		1800	T.S.	990	21	21.9	134.1

變為溫帶氣旋

Became Extratropical

熱帶低氣壓(由五月十三日至十四日)的每六小時位置及強度

SIX-HOURLY POSITION AND INTENSITY DATA OF
TROPICAL DEPRESSION OF 13 - 14 MAY

月份	日期	時間 (協調世界時)	強度	估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)	北緯	東經
Month	Date	Time (UTC)	Intensity	Estimated minimum central pressure (hPa)	Estimated maximum surface winds (m/s)	Lat. °N	Long. °E
五月 MAY	12	1800	T.D.	1002	13	6.9	129.7
		0000	T.D.	1000	16	7.2	129.1
	13	0600	T.D.	1002	13	7.3	128.2
		1200	T.D.	1002	13	7.3	127.7
		1800	T.D.	1002	13	7.3	127.2
			消散 Dissipated				

熱帶風暴彩雲(2103)的每六小時位置及強度

SIX-HOURLY POSITION AND INTENSITY DATA OF
TROPICAL STORM CHOI-WAN (2103)

月份	日期	時間 (協調世界時)	強度	估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)	北緯	東經
Month	Date	Time (UTC)	Intensity	Estimated minimum central pressure (hPa)	Estimated maximum surface winds (m/s)	Lat. °N	Long. °E
五月 MAY	30	0000	T.D.	1000	13	5.9	133.8
		0600	T.D.	1000	13	6.2	133.3
		1200	T.D.	1000	13	6.9	132.9
		1800	T.D.	998	16	7.1	131.6
	31	0000	T.D.	998	16	8.0	130.8
		0600	T.S.	996	18	8.8	129.8
		1200	T.S.	996	18	9.4	129.4
		1800	T.S.	992	21	9.7	128.3
	六月 JUN	0000	T.S.	992	21	10.0	127.2
		0600	T.S.	992	21	11.1	126.7
		1200	T.S.	996	18	11.8	125.6
		1800	T.S.	996	18	12.2	124.4
六月 JUN	2	0000	T.S.	996	18	12.7	122.4
		0600	T.S.	996	18	13.1	121.6
		1200	T.S.	996	18	13.8	120.8
		1800	T.S.	996	18	15.0	120.2
	3	0000	T.S.	996	18	16.7	118.9
		0600	T.S.	996	18	17.5	118.2
		1200	T.S.	996	18	18.4	118.4
		1800	T.S.	996	18	19.3	118.4
	4	0000	T.S.	996	18	20.1	118.6
		0600	T.S.	996	18	20.9	119.5
		1200	T.D.	998	16	21.9	121.1
		1800	T.D.	1000	13	23.1	122.4
		2100	T.D.	1000	13	23.8	122.9
			變為溫帶氣旋 Became Extratropical				

熱帶風暴小熊(2104)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF
TROPICAL STORM KOGUMA (2104)

				估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)		
				Estimated minimum	Estimated maximum		
月份	日期	時間 (協調世界時)	強度	central pressure	surface winds	北緯	東經
Month	Date	Time (UTC)	Intensity	(hPa)	(m/s)	° N	° E
六月 JUN	11	0600	T.D.	998	13	17.9	113.1
		1200	T.D.	998	13	18.3	112.3
		1800	T.D.	996	16	18.3	111.5
	12	0000	T.D.	996	16	18.2	110.1
		0600	T.D.	996	16	19.0	108.6
		1200	T.S.	994	18	19.7	107.4
	13	1800	T.S.	994	18	19.7	106.5
		0000	T.S.	994	18	19.7	105.6
		0300	T.D.	998	13	19.8	105.1
消散 Dissipated							

颱風薔琵(2105)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF
TYPHOON CHAMPI (2105)

				估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)		
時間 (協調世界時)				Estimated minimum central pressure	Estimated maximum surface winds	北緯	東經
月份	日期	Time	強度	(hPa)	(m/s)	°N	Long. °E
Month	Date	(UTC)	Intensity				
六月 JUN	21	0000	T.D.	1006	13	11.6	147.8
		0600	T.D.	1006	13	11.9	146.7
		1200	T.D.	1006	13	12.3	145.9
		1800	T.D.	1006	13	12.9	144.9
	22	0000	T.D.	1006	13	13.4	143.7
		0600	T.D.	1004	16	14.1	142.6
		1200	T.D.	1004	16	14.8	142.3
		1800	T.D.	1004	16	15.5	141.7
	23	0000	T.S.	1002	18	16.1	140.9
		0600	T.S.	1002	18	16.9	140.6
		1200	T.S.	1000	21	17.8	140.4
		1800	T.S.	1000	21	18.4	140.2
	24	0000	T.S.	995	23	18.6	140.1
		0600	T.S.	995	23	19.3	139.9
		1200	T.S.	995	23	19.7	139.7
		1800	S.T.S.	988	25	20.0	139.5
	25	0000	S.T.S.	985	28	20.8	139.0
		0600	S.T.S.	980	31	21.9	139.0
		1200	T.	975	33	22.8	139.2
		1800	T.	975	33	23.8	139.3
	26	0000	T.	975	33	24.9	139.7
		0600	T.	975	33	25.8	140.1
		1200	S.T.S.	980	31	26.9	140.3
		1800	S.T.S.	984	28	28.3	140.9
27	0000	T.S.	990	23	30.0	141.5	
	0600	T.S.	995	21	31.8	142.3	
變為溫帶氣旋 Became Extratropical							

熱帶低氣壓(由七月五日至六日)的每六小時位置及強度

SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION OF 5 - 6 JULY

				估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)			
時間 (協調世界時)				Estimated minimum	Estimated maximum			
月份	日期	Time	強度	central pressure	surface winds	北緯	東經	
Month	Date	(UTC)	Intensity	(hPa)	(m/s)	°N	°E	
七月 JUL	4	1800	T.D.	1002	13	16.7	127.5	
		5	0000	T.D.	1002	13	18.3	125.1
			0600	T.D.	1002	13	19.4	123.5
			1200	T.D.	1000	16	20.8	122.0
			1800	T.D.	1000	16	21.6	120.8
	6	0000	T.D.	1002	13	22.3	120.1	
		0300	T.D.	1002	13	23.1	120.0	
		消散 Dissipated						

熱帶低氣壓(由七月五日至八日)的每六小時位置及強度

SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION OF 5 - 8 JULY

				估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)		
				Estimated minimum central pressure	Estimated maximum surface winds	北緯	東經
月份	日期	時間 (協調世界時)	強度	(hPa)	(m/s)	Lat. ° N	Long. ° E
Month	Date	Time (UTC)	Intensity				
七月 JUL	5	1200	T.D.	1000	13	14.9	113.1
		1800	T.D.	1000	13	15.0	112.6
		6	0000	T.D.	1000	13	15.2
		0600	T.D.	1000	13	15.7	112.1
		1200	T.D.	998	16	16.8	111.8
		1800	T.D.	998	16	17.8	111.5
	7	0000	T.D.	998	16	18.2	110.5
		0600	T.D.	998	16	18.7	109.0
		1200	T.D.	998	16	19.2	107.8
		1800	T.D.	1000	13	19.5	106.7
		2100	T.D.	1000	13	19.6	106.1
消散 Dissipated							

颱風煙花(2106)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF
TYPHOON IN-FA (2106)

				估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)		
				Estimated minimum central pressure	Estimated maximum surface winds	北緯	東經
月份	日期	時間 (協調世界時)	強度	(hPa)	(m/s)	Lat. °N	Long. °E
Month	Date	Time (UTC)	Intensity				
七月 JUL	16	1800	T.D.	1000	13	18.9	135.0
	17	0000	T.D.	1000	13	20.3	134.5
		0600	T.D.	998	16	21.3	133.9
		1200	T.D.	998	16	21.5	133.2
		1800	T.S.	994	18	22.1	132.9
	18	0000	T.S.	994	18	22.7	132.6
		0600	T.S.	994	18	22.9	132.3
		1200	T.S.	994	18	23.3	131.9
		1800	T.S.	988	23	23.8	131.6
	19	0000	S.T.S.	984	25	23.9	131.6
		0600	S.T.S.	984	25	24.0	131.6
		1200	S.T.S.	980	28	24.0	131.5
		1800	S.T.S.	980	28	24.2	131.3
	20	0000	S.T.S.	975	31	24.4	130.8
		0600	S.T.S.	975	31	24.6	129.8
		1200	T.	970	33	24.5	129.0
		1800	T.	960	39	24.2	128.2
	21	0000	T.	955	41	24.1	127.8
		0600	T.	955	41	24.2	127.2
		1200	T.	955	41	24.0	126.6
		1800	T.	955	41	23.7	126.2
	22	0000	T.	955	41	23.5	125.9
		0600	T.	955	41	23.5	125.8
		1200	T.	955	41	23.6	125.7
		1800	T.	955	41	23.6	125.5
	23	0000	T.	955	41	24.2	125.4
		0600	T.	955	41	24.5	125.0
		1200	T.	960	39	24.8	125.0
		1800	T.	960	39	25.4	125.0
	24	0000	T.	960	39	26.4	124.7
		0600	T.	960	39	27.2	124.3
		1200	T.	960	39	28.0	123.9
		1800	T.	965	36	28.6	123.7
	25	0000	T.	970	33	29.6	123.0
		0600	T.	970	33	30.0	122.4
		1200	T.	970	33	30.2	122.0
		1800	S.T.S.	975	31	30.4	121.6
	26	0000	S.T.S.	978	28	30.6	121.3
		0600	S.T.S.	980	25	30.8	121.0
		1200	T.S.	982	23	31.0	120.5
		1800	T.S.	984	21	31.2	120.0
	27	0000	T.S.	984	21	31.3	119.5
		0600	T.S.	986	18	31.4	119.0
		1200	T.D.	988	16	31.6	118.9
		1800	T.D.	988	16	32.1	118.3
	28	0000	T.D.	988	16	32.7	117.6
		0600	T.D.	988	16	33.1	117.0
		1200	T.D.	990	13	33.2	116.7
		1800	T.D.	990	13	33.8	116.7
	29	0000	T.D.	990	13	34.8	116.7
		0600	T.D.	990	13	35.6	117.1
			消散 Dissipated				

颱風查帕卡(2107)的每六小時位置及強度
 SIX-HOURLY POSITION AND INTENSITY DATA OF
 TYPHOON CEMPAKA (2107)

			估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)			
			Estimated minimum central pressure (hPa)	Estimated maximum surface winds (m/s)	北緯	東經	
月份	日期	時間 (協調世界時)	強度		Lat.	Long.	
Month	Date	Time (UTC)	Intensity		° N	° E	
七月 JUL	18	1200	T.D.	998	13	20.7	113.8
		1800	T.D.	996	16	20.8	113.4
	19	0000	T.S.	992	21	20.8	113.1
		0600	T.S.	990	23	21.1	113.0
		1200	S.T.S.	980	28	21.1	112.8
	20	1800	T.	970	33	21.1	112.5
		0000	T.	970	33	21.3	112.5
		0600	T.	970	33	21.5	112.4
	21	1200	S.T.S.	975	31	21.7	112.1
		1800	S.T.S.	984	25	21.8	111.5
		0000	T.S.	992	18	21.9	111.3
	22	0600	T.D.	994	16	22.1	111.0
		1200	T.D.	994	16	22.3	110.3
		1800	T.D.	994	16	22.4	109.9
	23	0000	T.D.	998	13	22.5	109.3
		0600	T.D.	998	13	22.5	108.4
		1200	T.D.	998	13	22.1	108.0
		1800	T.D.	998	13	21.6	107.8
		0000	T.D.	998	13	21.0	107.6
		0600	T.D.	998	13	20.4	107.0
		1200	T.D.	998	13	20.2	106.9
		1800	T.D.	998	13	19.7	106.9
			2100	T.D.	998	13	19.6
消散							
Dissipated							

熱帶風暴尼伯特(2108)的每六小時位置及強度
 SIX-HOURLY POSITION AND INTENSITY DATA OF
 TROPICAL STORM NEPARTAK (2108)

月份	日期	時間 (協調世界時)	強度	估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)	北緯	東經
Month	Date	Time (UTC)	Intensity	Estimated minimum central pressure (hPa)	Estimated maximum surface winds (m/s)	Lat. °N	Long. °E
七月 JUL	23	1200	T.D.	996	16	23.9	148.3
		1800	T.S.	994	18	25.1	149.3
	24	0000	T.S.	994	18	25.4	149.5
		0600	T.S.	994	18	26.1	150.1
		1200	T.S.	994	18	27.3	150.6
		1800	T.S.	994	18	28.5	150.6
	25	0000	T.D.	996	16	29.2	150.6
		0600	T.D.	996	16	30.0	150.6
		1200	T.D.	996	16	30.3	150.4
		1800	T.D.	996	16	31.5	149.7
	26	0000	T.D.	996	16	33.6	148.4
		0600	T.D.	996	16	34.8	146.8
		1200	T.S.	994	18	35.1	144.1
		1800	T.S.	990	21	34.3	142.9
	27	0000	T.S.	990	21	34.9	142.6
		0600	T.S.	990	21	35.9	142.2
		1200	T.S.	990	21	36.6	142.1
		1800	T.S.	992	18	37.8	142.0
	28	0000	T.D.	994	16	39.1	141.4
			消散				
			Dissipated				

熱帶風暴盧碧(2109)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF
TROPICAL STORM LUPIT (2109)

月份	日期	時間 (協調世界時)	強度	估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)	北緯	東經
Month	Date	Time (UTC)	Intensity	Estimated minimum central pressure (hPa)	Estimated maximum surface winds (m/s)	Lat. °N	Long. °E
八月 AUG	2	1200	T.D.	994	13	20.9	111.9
		1800	T.D.	994	13	21.0	112.7
	3	0000	T.D.	994	13	21.3	113.4
		0600	T.D.	992	16	21.4	113.7
		1200	T.D.	992	16	21.1	114.2
		1800	T.D.	992	16	20.9	114.8
	4	0000	T.S.	990	18	21.2	115.5
		0600	T.S.	990	18	21.5	115.8
		1200	T.S.	988	21	21.8	116.4
		1800	T.S.	984	23	22.4	116.8
	5	0000	T.S.	984	23	23.1	116.9
		0600	T.S.	988	21	23.4	117.1
		1200	T.S.	990	18	23.8	117.3
		1800	T.S.	990	18	24.1	117.5
	6	0000	T.D.	992	16	24.4	118.2
		0600	T.D.	992	16	24.7	118.8
		1200	T.D.	992	16	25.0	119.5
		1800	T.S.	990	18	25.1	119.8
	7	0000	T.S.	990	18	24.9	120.6
		0600	T.S.	990	18	25.8	122.8
		1200	T.S.	990	18	26.8	124.1
		1800	T.S.	990	18	28.3	125.2
	8	0000	T.S.	990	18	29.4	126.6
		0600	T.S.	988	21	30.1	127.8
		1200	T.S.	988	21	31.5	130.7
		1800	T.S.	988	21	33.5	132.4
	9	0000	T.S.	988	21	35.1	133.2
			變為溫帶氣旋				
			Became Extratropical				

熱帶風暴妮妲(2111)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF
TROPICAL STORM NIDA (2111)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低 中心氣壓 (百帕斯卡) Estimated minimum central pressure	估計 最高風速 (米每秒) Estimated maximum surface winds	北緯 Lat. °N	東經 Long. °E
				(hPa)	(m/s)		
八月 AUG	4	0600	T.D.	1002	13	28.0	148.0
		1200	T.D.	1000	16	28.8	148.0
		1800	T.D.	1000	16	30.2	147.7
	5	0000	T.D.	1000	16	31.6	147.4
		0600	T.S.	998	18	32.5	147.7
		1200	T.S.	998	18	33.6	148.2
	6	1800	T.S.	998	18	34.4	148.2
		0000	T.S.	996	21	35.4	149.7
		0600	T.S.	996	21	36.4	151.2
	7	1200	T.S.	996	21	36.7	152.6
		1800	T.S.	994	23	38.0	154.9
		0000	T.S.	994	23	38.7	158.0
	7	0600	T.S.	994	23	38.8	160.1
		1200	T.S.	996	21	38.8	162.5

變為溫帶氣旋
Became Extratropical

強烈熱帶風暴銀河(2110)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF
SEVERE TROPICAL STORM MIRINAE (2110)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低 中心氣壓 (百帕斯卡) Estimated minimum central pressure	估計 最高風速 (米每秒) Estimated maximum surface winds	北緯 Lat. °N	東經 Long. °E
				(hPa)	(m/s)		
八月 AUG	5	0000	T.D.	996	13	26.1	127.1
		0600	T.D.	994	16	26.4	128.5
		1200	T.S.	992	18	26.5	128.8
		1800	T.S.	992	18	26.7	130.1
	6	0000	T.S.	988	21	26.9	131.6
		0600	T.S.	988	21	27.3	133.1
		1200	T.S.	988	21	28.0	134.6
		1800	T.S.	988	21	28.4	136.2
	7	0000	T.S.	984	23	29.3	137.6
		0600	T.S.	984	23	30.9	138.4
		1200	T.S.	984	23	31.7	138.9
		1800	S.T.S.	980	25	33.3	139.3
	8	0000	S.T.S.	980	25	34.1	140.6
		0600	S.T.S.	980	25	35.0	142.0
		1200	T.S.	984	23	36.0	143.5
		1800	T.S.	984	23	36.8	145.1
	9	0000	T.S.	984	23	37.7	147.5
		0600	T.S.	984	23	38.2	149.8

變為溫帶氣旋
Became Extratropical

熱帶風暴奧麥斯(2112)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF
TROPICAL STORM OMAIS (2112)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低 中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計 最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
八月 AUG	10	1800	T.D.	1004	13	12.4	178.0
		11	T.D.	1002	16	12.4	177.3
			T.D.	1002	16	12.4	176.6
			T.D.	1002	16	12.2	175.9
			T.D.	1002	16	12.3	175.1
	12	0000	T.D.	1002	16	12.4	174.4
		0600	T.D.	1002	16	12.6	173.3
		1200	T.D.	1002	16	12.7	172.0
		1800	T.D.	1002	16	12.7	171.5
	13	0000	T.D.	1002	16	12.7	169.5
		0600	T.D.	1002	16	12.7	168.2
		1200	T.D.	1002	16	12.8	166.3
		1800	T.D.	1002	16	12.8	164.9
	14	0000	T.D.	1002	16	12.8	163.7
		0600	T.D.	1002	16	12.8	162.0
		1200	T.D.	1002	16	12.8	160.5
		1800	T.D.	1002	16	12.8	159.0
	15	0000	T.D.	1004	13	12.8	157.0
		0600	T.D.	1004	13	12.9	155.7
		1200	T.D.	1004	13	12.9	154.4
		1800	T.D.	1004	13	13.3	153.1
	16	0000	LOW	1006	11	13.8	151.5
		1200	LOW	1006	11	14.4	148.0
	17	0000	LOW	1006	11	14.9	145.0
		1200	LOW	1006	11	15.4	140.5
	18	0000	LOW	1006	11	16.0	138.5
		1200	LOW	1006	11	16.5	136.0
	19	0000	LOW	1006	11	17.0	134.2
		1200	LOW	1006	11	17.6	132.2
	20	0000	LOW	1006	11	18.2	131.3
		0600	T.D.	1004	13	18.6	130.4
		1200	T.D.	1000	16	19.3	129.6
		1800	T.S.	998	18	20.1	129.4
	21	0000	T.S.	994	21	21.1	128.4
		0600	T.S.	990	23	22.0	127.3
		1200	T.S.	990	23	22.6	127.1
		1800	T.S.	990	23	23.3	126.5
	22	0000	T.S.	994	21	24.3	125.8
		0600	T.S.	994	21	25.1	125.3
		1200	T.S.	994	21	26.0	125.0
		1800	T.S.	998	18	27.3	124.8
	23	0000	T.D.	1000	16	29.0	125.4
		0600	T.D.	1000	16	31.4	125.7

變為溫帶氣旋

Became Extratropical

LOW : 低壓區 Low Pressue Area

熱帶低氣壓(由九月一日至四日)的每六小時位置及強度

SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION OF 1 - 4 SEPTEMBER

				估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)		
		時間 (協調世界時)		Estimated minimum central pressure	Estimated maximum surface winds (m/s)	北緯	東經
月份 Month	日期 Date	Time (UTC)	強度 Intensity	(hPa)		°N	°E
九月 SEP	1	1200	T.D.	1008	13	25.8	161.5
		1800	T.D.	1008	13	26.2	160.3
	2	0000	T.D.	1006	16	26.8	159.6
		0600	T.D.	1006	16	27.3	158.6
		1200	T.D.	1006	16	27.7	158.3
		1800	T.D.	1006	16	29.0	158.0
	3	0000	T.D.	1006	16	29.7	157.6
		0600	T.D.	1006	16	30.6	157.8
		1200	T.D.	1006	16	31.5	158.3
		1800	T.D.	1008	13	32.9	159.0
	4	0000	T.D.	1008	13	34.9	159.4
		0600	T.D.	1008	13	36.3	161.1
變為溫帶氣旋 Became Extratropical							

強烈熱帶風暴康森(2113)的每六小時位置及強度

SIX-HOURLY POSITION AND INTENSITY DATA OF
SEVERE TROPICAL STORM CONSON (2113)

				估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)		
		時間 (協調世界時)		Estimated minimum central pressure	Estimated maximum surface winds	北緯	東經
月份 Month	日期 Date	Time (UTC)	強度 Intensity	(hPa)	(m/s)	° N	° E
九月 SEP	5	0600	T.D.	1002	13	9.7	130.2
		1200	T.D.	1002	13	10.0	129.6
		1800	T.D.	1000	16	10.0	128.5
	6	0000	T.S.	998	18	10.5	128.0
		0600	T.S.	994	21	10.8	126.9
		1200	T.S.	994	21	11.3	126.2
	7	1800	T.S.	990	23	11.7	125.1
		0000	S.T.S.	988	25	12.1	124.2
		0600	S.T.S.	988	25	12.6	123.5
	8	1200	S.T.S.	988	25	13.1	122.9
		1800	S.T.S.	988	25	13.3	122.1
		0000	S.T.S.	988	25	13.9	121.6
	9	0600	S.T.S.	988	25	14.3	120.6
		1200	S.T.S.	988	25	15.0	120.0
		1800	T.S.	992	23	15.5	119.1
	10	0000	T.S.	992	23	15.7	118.0
		0600	T.S.	992	23	15.8	116.3
		1200	S.T.S.	988	25	15.8	115.0
	11	1800	S.T.S.	988	25	15.9	113.9
		0000	S.T.S.	988	25	15.7	112.9
		0600	S.T.S.	988	25	15.7	112.2
	12	1200	S.T.S.	988	25	15.6	111.4
		1800	S.T.S.	988	25	15.6	110.7
		0000	T.S.	990	23	15.6	110.1
	11	0600	T.S.	990	23	15.5	109.7
		1200	T.S.	992	21	15.3	109.3
		1800	T.S.	994	18	15.2	109.2
	12	0000	T.D.	996	16	15.4	109.2
		0600	T.D.	998	13	15.3	109.2
		1200	T.D.	998	13	15.3	109.1
消散 Dissipated							

超強颱風燦都(2114)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF
SUPER TYPHOON CHANTHU (2114)

				估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)		
				Estimated minimum central pressure (hPa)	Estimated maximum surface winds (m/s)	北緯	東經
月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity			Lat. °N	Long. °E
九月 SEP	6	0600	T.D.	1000	13	14.0	138.4
		1200	T.D.	998	16	14.6	138.0
		1800	T.S.	994	18	15.0	137.2
	7	0000	T.S.	992	21	15.5	136.6
		0600	S.T.S.	982	28	16.1	135.6
		1200	T.	965	39	16.3	134.6
	8	1800	S.T.	945	49	16.3	133.5
		0000	SuperT.	930	57	16.0	132.4
		0600	SuperT.	930	57	15.6	131.3
	9	1200	SuperT.	930	57	15.5	130.3
		1800	SuperT.	920	61	15.4	129.1
		0000	SuperT.	920	61	15.5	128.1
	10	0600	SuperT.	925	59	15.8	127.1
		1200	SuperT.	925	59	16.1	125.9
		1800	SuperT.	925	59	16.6	124.9
	11	0000	SuperT.	920	61	17.1	124.1
		0600	SuperT.	915	64	17.8	123.5
		1200	SuperT.	910	67	18.7	122.9
	12	1800	SuperT.	910	67	19.5	122.3
		0000	SuperT.	920	61	20.3	122.0
		0600	SuperT.	930	57	21.0	121.5
	13	1200	SuperT.	935	54	21.8	121.8
		1800	SuperT.	935	54	22.8	122.0
		0000	SuperT.	935	54	23.7	122.3
	14	0600	SuperT.	935	54	25.2	122.3
		1200	S.T.	945	49	26.2	122.6
		1800	S.T.	950	46	27.7	123.1
	15	0000	S.T.	955	43	29.0	123.5
		0600	T.	960	41	30.7	123.3
		1200	T.	965	39	30.9	123.2
	16	1800	T.	974	33	31.3	123.4
		0000	S.T.S.	978	31	31.2	123.7
		0600	S.T.S.	982	28	30.9	124.3
	17	1200	S.T.S.	984	25	30.5	124.6
		1800	S.T.S.	984	25	30.2	125.2
		0000	S.T.S.	984	25	30.4	125.6
	18	0600	S.T.S.	984	25	30.3	125.8
		1200	S.T.S.	984	25	30.2	125.7
		1800	S.T.S.	984	25	30.2	125.4
	19	0000	S.T.S.	984	25	30.4	125.1
		0600	S.T.S.	984	25	31.1	125.3
		1200	S.T.S.	984	25	31.7	125.8
	20	1800	S.T.S.	984	25	32.3	126.5
		0000	T.S.	988	23	32.9	127.6
		0600	T.S.	988	23	33.5	129.2
	21	1200	T.S.	990	21	33.8	131.5
		1800	T.S.	994	18	33.9	134.2
		0000	T.D.	998	16	33.9	136.0

變為溫帶氣旋
Became Extratropical

熱帶風暴電母(2115)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF
TROPICAL STORM DIANMU (2115)

月份	日期	時間 (協調世界時)	強度	估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)	北緯	東經
Month	Date	Time (UTC)	Intensity	Estimated minimum central pressure (hPa)	Estimated maximum surface winds (m/s)	Lat. °N	Long. °E
九月 SEP	22	1200	T.D.	1002	13	12.8	113.3
		1800	T.D.	1002	13	13.2	112.6
	23	0000	T.D.	1000	16	13.6	111.8
		0600	T.D.	1000	16	14.7	110.6
		1200	T.S.	998	18	15.4	109.5
		1800	T.S.	998	18	15.7	108.3
	24	0000	T.D.	1000	16	15.9	106.7
		0600	T.D.	1002	13	16.0	105.5
	消散 Dissipated						

超強颱風蒲公英(2116)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF
SUPER TYPHOON MINDULLE (2116)

月份	日期	時間 (協調世界時)	強度	估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)	北緯	東經
Month	Date	Time (UTC)	Intensity	Estimated minimum central pressure (hPa)	Estimated maximum surface winds (m/s)	Lat. °N	Long. °E
九月 SEP	22	1800	T.D.	1000	13	11.8	147.4
		0000	T.D.	998	16	12.5	145.9
	23	0600	T.D.	998	16	13.3	144.5
		1200	T.S.	995	18	13.6	143.3
		1800	T.S.	992	21	14.1	142.0
	24	0000	T.S.	990	23	14.6	141.1
		0600	T.S.	990	23	15.2	140.5
		1200	S.T.S.	986	25	15.9	139.3
		1800	S.T.S.	978	31	16.4	138.6
	25	0000	T.	970	36	17.0	138.2
		0600	T.	960	41	17.6	137.7
		1200	S.T.	945	49	18.2	137.5
		1800	SuperT.	940	52	18.4	137.1
	26	0000	SuperT.	925	59	18.6	136.8
		0600	SuperT.	920	61	18.8	136.7
		1200	SuperT.	930	57	19.0	136.7
		1800	SuperT.	935	54	19.4	136.7
	27	0000	SuperT.	940	52	19.6	136.7
		0600	SuperT.	940	52	19.9	136.6
		1200	S.T.	945	49	20.2	136.4
		1800	S.T.	950	46	20.4	136.3
	28	0000	S.T.	950	46	20.9	136.2
		0600	S.T.	950	46	21.6	135.8
		1200	S.T.	950	46	22.0	135.4
		1800	S.T.	945	49	22.6	135.5

超強颱風蒲公英(2116)的每六小時位置及強度 (續)

**SIX-HOURLY POSITION AND INTENSITY DATA OF
SUPER TYPHOON MINDULLE (2116) (CON'T)**

				估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)		
時間 (協調世界時)				Estimated minimum central pressure	Estimated maximum surface winds	北緯	東經
月份	日期	Time	強度	(hPa)	(m/s)	°N	°E
Month	Date	(UTC)	Intensity				
九月 SEP	29	0000	S.T.	945	49	23.3	135.4
		0600	S.T.	945	49	24.2	135.3
		1200	S.T.	945	49	25.0	135.6
		1800	S.T.	945	49	25.9	135.9
	30	0000	S.T.	950	46	26.7	136.4
		0600	S.T.	950	46	28.0	137.2
		1200	S.T.	955	43	29.2	138.1
		1800	S.T.	955	43	30.4	139.2
十月 OCT	1	0000	T.	965	39	32.0	141.1
		0600	T.	965	39	33.6	142.0
		1200	T.	970	36	35.6	143.8
		1800	T.	974	33	37.4	145.7
變為溫帶氣旋 Became Extratropical							

熱帶風暴獅子山(2117)的每六小時位置及強度

SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM LIONROCK (2117)

				估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)		
				Estimated minimum central pressure	Estimated maximum surface winds (m/s)	北緯 Lat. ° N	東經 Long. ° E
月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	(hPa)			
十月 OCT	7	0600	T.D.	994	16	17.2	112.1
		1200	T.D.	994	16	17.3	111.8
		1800	T.D.	994	16	17.4	111.0
	8	0000	T.S.	992	18	17.7	110.9
		0600	T.S.	990	21	18.5	110.9
		1200	T.S.	990	21	19.0	110.9
	9	1800	T.S.	990	21	19.3	110.0
		0000	T.S.	990	21	19.2	110.2
		0600	T.S.	990	21	19.8	110.3
	10	1200	T.S.	990	21	20.0	109.8
		1800	T.S.	994	18	20.4	108.8
		0000	T.S.	994	18	20.6	108.0
		0600	T.D.	998	13	20.6	106.8
0900		T.D.	998	13	20.6	106.7	
消散 Dissipated							

颱風圓規(2118)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF
TYPHOON KOMPASU (2118)

				估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)		
				Estimated minimum central pressure (hPa)	Estimated maximum surface winds (m/s)	北緯	東經
月份	日期	時間 (協調世界時)	強度			Lat.	Long.
Month	Date	Time (UTC)	Intensity			° N	° E
十月 OCT	8	1200	T.D.	994	16	13.5	130.4
		1800	T.S.	990	21	13.8	130.7
	9	0000	T.S.	990	21	14.0	130.7
		0600	T.S.	990	21	14.9	130.9
		1200	T.S.	988	23	15.6	130.5
		1800	T.S.	988	23	16.0	130.0
	10	0000	T.S.	988	23	17.0	128.9
		0600	T.S.	988	23	17.6	128.0
		1200	T.S.	988	23	18.2	126.7
		1800	T.S.	988	23	18.3	125.4
	11	0000	S.T.S.	984	25	18.5	124.5
		0600	S.T.S.	984	25	18.7	123.0
		1200	S.T.S.	980	28	18.7	121.7
		1800	S.T.S.	980	28	18.8	120.3
	12	0000	S.T.S.	980	28	18.8	119.0
		0600	S.T.S.	975	31	18.8	117.3
		1200	S.T.S.	975	31	18.7	116.2
		1800	S.T.S.	975	31	19.1	114.6
	13	0000	T.	970	33	19.1	112.9
		0600	T.	970	33	19.1	110.9
		1200	S.T.S.	984	25	18.9	109.3
		1800	T.S.	992	18	18.6	108.5
	14	0000	T.D.	996	13	18.9	107.7
	消散 Dissipated						

強烈熱帶風暴南川(2119)的每六小時位置及強度

SIX-HOURLY POSITION AND INTENSITY DATA OF
SEVERE TROPICAL STORM NAMTHEUN (2119)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低 中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計 最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
十月 OCT	9	1200	T.D.	1002	13	16.9	162.1
		1800	T.D.	1000	16	16.9	161.0
	10	0000	T.S.	998	18	17.0	160.3
		0600	T.S.	998	18	17.1	159.4
		1200	T.S.	998	18	17.2	159.2
		1800	T.S.	998	18	17.9	157.9
	11	0000	T.S.	994	21	18.1	157.3
		0600	T.S.	994	21	18.6	156.0
		1200	T.S.	994	21	19.2	155.2
		1800	T.S.	994	21	18.8	153.2
	12	0000	T.S.	994	21	19.5	152.5
		0600	T.S.	994	21	19.6	152.0
		1200	T.S.	994	21	20.1	151.9
		1800	T.S.	994	21	21.2	152.4
	13	0000	T.S.	994	21	21.7	152.4
		0600	T.S.	994	21	22.4	152.9
		1200	T.S.	994	21	22.7	153.6
		1800	T.S.	994	21	23.7	154.7
	14	0000	T.S.	992	23	24.0	155.8
		0600	T.S.	992	23	24.3	157.4
		1200	T.S.	992	23	24.4	157.9
		1800	T.S.	992	23	25.2	159.3
	15	0000	T.S.	992	23	25.8	160.0
		0600	T.S.	992	23	26.3	161.0
		1200	T.S.	992	23	27.0	161.8
		1800	T.S.	992	23	28.0	162.9
	16	0000	S.T.S.	990	25	29.2	164.3
		0600	S.T.S.	990	25	30.7	165.1
		1200	T.S.	994	21	31.9	165.7
		1800	T.D.	1000	16	32.7	166.8

變為溫帶氣旋

Became Extratropical

颱風瑪瑙(2120)的每六小時位置及強度

SIX-HOURLY POSITION AND INTENSITY DATA OF TYPHOON MALOU (2120)

				估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)		
		時間 (協調世界時)		Estimated minimum central pressure	Estimated maximum surface winds	北緯	東經
月份	日期	Time (UTC)	強度 Intensity	(hPa)	(m/s)	°N	°E
十月 OCT	24	0000	T.D.	1002	13	12.0	139.9
		0600	T.D.	1002	13	13.1	139.7
		1200	T.D.	1000	16	14.4	139.8
		1800	T.D.	1000	16	15.8	139.8
	25	0000	T.S.	998	18	16.4	139.0
		0600	T.S.	998	18	17.4	138.7
		1200	T.S.	998	18	18.1	138.5
		1800	T.S.	995	21	18.7	138.4
	26	0000	T.S.	992	23	19.1	138.4
		0600	T.S.	992	23	19.4	138.8
		1200	S.T.S.	988	25	20.2	139.0
		1800	S.T.S.	984	28	20.5	139.3
	27	0000	S.T.S.	980	31	20.9	139.3
		0600	S.T.S.	980	31	21.3	139.4
		1200	T.	975	33	21.8	139.7
		1800	T.	970	36	22.7	140.1
	28	0000	T.	970	36	23.4	140.7
		0600	T.	965	39	24.7	141.6
		1200	T.	970	36	26.3	142.4
1800		T.	970	36	27.9	143.4	
29	0000	T.	975	33	30.0	144.6	

變為溫帶氣旋

Became Extratropical

熱帶低氣壓(由十月二十四日至二十七日)的每六小時位置及強度

SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION OF 24 - 27 OCTOBER

				估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)		
				Estimated minimum central pressure	Estimated maximum surface winds (m/s)	北緯	東經
月份	日期	時間 (協調世界時)	強度			Lat.	Long.
Month	Date	Time (UTC)	Intensity	(hPa)	(m/s)	°N	°E
十月 OCT	24	0600	T.D.	1004	13	10.6	116.9
		1200	T.D.	1004	13	10.7	116.1
		1800	T.D.	1004	13	10.6	114.9
	25	0000	T.D.	1004	13	10.8	113.8
		0600	T.D.	1004	13	11.1	112.6
		1200	T.D.	1004	13	11.0	112.1
	26	1800	T.D.	1004	13	11.0	111.9
		0000	T.D.	1004	13	11.1	111.6
		0600	T.D.	1000	16	11.7	110.9
	27	1200	T.D.	1000	16	11.8	110.4
		1800	T.D.	1000	16	12.0	109.9
		0000	T.D.	1000	16	12.3	109.1
	0600	T.D.	1004	13	12.6	108.3	

消散

Dissipated

超強颱風妮亞圖(2121)的每六小時位置及強度
 SIX-HOURLY POSITION AND INTENSITY DATA OF
 SUPER TYPHOON NYATOH (2121)

月份	日期	時間 (協調世界時)	強度	估計最低 中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計 最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
Month	Date	Time (UTC)	Intensity				
十一月 NOV	29	1200	T.D.	1000	13	12.0	141.3
		1800	T.D.	998	16	12.5	140.1
	30	0000	T.S.	994	18	12.6	139.3
		0600	T.S.	994	18	12.9	138.1
		1200	T.S.	990	21	13.1	137.4
		1800	T.S.	988	23	13.4	136.6
十二月 DEC	1	0000	S.T.S.	985	25	13.7	136.2
		0600	S.T.S.	985	25	14.3	135.8
		1200	S.T.S.	978	31	15.1	135.7
		1800	T.	975	33	15.9	135.6
	2	0000	T.	970	36	16.5	135.5
		0600	T.	960	41	17.4	135.7
		1200	S.T.	945	49	18.3	136.7
		1800	SuperT.	940	52	19.5	137.5
	3	0000	SuperT.	940	52	20.9	138.7
		0600	SuperT.	940	52	22.7	140.4
		1200	S.T.	945	49	24.1	142.2
			變為溫帶氣旋 Became Extratropical				

超強颱風雷伊(2122)的每六小時位置及強度
 SIX-HOURLY POSITION AND INTENSITY DATA OF
 SUPER TYPHOON RAI (2122)

				估計最低 中心氣壓 (百帕斯卡)	估計 最高風速 (米每秒)		
		時間 (協調世界時)		Estimated minimum central pressure	Estimated maximum surface winds	北緯	東經
月份 Month	日期 Date	Time (UTC)	強度 Intensity	(hPa)	(m/s)	° N	° E
十二月 DEC	12	1200	T.D.	1002	13	5.8	143.8
		1800	T.D.	1002	13	5.8	142.9
	13	0000	T.D.	1000	16	5.6	142.0
		0600	T.S.	998	18	5.9	140.9
		1200	T.S.	998	18	6.2	139.7
		1800	T.S.	995	21	6.8	138.8
	14	0000	S.T.S.	988	25	7.4	137.1
		0600	S.T.S.	988	25	7.8	135.7
		1200	S.T.S.	984	28	8.2	134.3
		1800	S.T.S.	980	31	8.7	133.4
	15	0000	T.	975	33	8.9	132.3
		0600	T.	970	36	9.1	131.2
		1200	T.	965	39	9.3	130.1
		1800	S.T.	955	43	9.5	128.9
	16	0000	SuperT.	935	54	9.7	127.6
		0600	SuperT.	935	54	9.9	126.0
		1200	S.T.	945	49	10.1	124.1
		1800	S.T.	950	46	10.1	122.4
	17	0000	S.T.	955	43	10.1	120.8
		0600	S.T.	955	43	10.3	120.0
		1200	S.T.	955	43	10.4	118.5
		1800	S.T.	950	46	10.8	117.4
	18	0000	S.T.	945	49	11.0	116.0
		0600	SuperT.	940	52	11.3	114.7
		1200	SuperT.	935	54	11.8	113.5
		1800	SuperT.	930	57	12.6	112.2
	19	0000	SuperT.	940	52	13.1	111.4
		0600	S.T.	950	46	14.0	110.5
		1200	T.	960	41	15.0	110.5
		1800	T.	970	36	15.9	110.5
	20	0000	S.T.S.	980	31	17.1	110.7
		0600	S.T.S.	988	25	18.1	111.2
		1200	T.S.	995	21	19.0	112.1
		1800	T.S.	998	18	19.8	112.8
	21	0000	T.D.	1002	13	20.7	113.9
		0300	T.D.	1002	13	21.1	114.5
		消散					
		Dissipated					

附件一

熱帶風暴獅子山(2117)及颱風圓規(2118)引致香港直接經濟損失的估算

1. 數據收集

(A) 政府部門、公共事業機構及其他組織報告的損失

香港天文台在 2022 年 1 月至 5 月向以下的政府部門、公共事業機構及其他組織進行調查，收集熱帶風暴獅子山及颱風圓規所造成的破壞及經濟損失的數據：

政府部門

漁農自然護理署、建築署、屋宇署、民航處、土木工程拓展署、渠務署、機電工程署、環境保護署、消防處、食物環境衛生署、政府產業署、路政署、民政事務總署、房屋署、地政總署、康樂及文化事務署、海事處、社會福利署、水務署。

公共事業機構及其他組織

中華電力有限公司、中國移動香港有限公司、城巴有限公司、愉景灣航運服務有限公司、環球全域電訊有限公司、香港中華煤氣有限公司、香港機場管理局、香港寬頻網絡有限公司、香港電燈有限公司、香港紅十字會、香港鐵路有限公司、香港電訊有限公司、香港電車有限公司、國際環球通訊網絡(香港)有限公司、九龍巴士(一九三三)有限公司、珀麗灣客運有限公司、新渡輪服務有限公司、信德中旅船務管理有限公司及天星小輪有限公司。

截至 2022 年 5 月 31 日，政府部門、公共事業機構及其他組織報告的損失如下：

	政府部門、公共事業機構及其他組織報告的損失 (港元)
熱帶風暴獅子山	34,742,939
颱風圓規	939,530

為避免與(B)保險索償數據重複計算，相關的保險索償已在數據中扣除。

(B) 保險索償數據

因熱帶風暴獅子山及颱風圓規而產生的香港保險索償統計數字由香港保險業聯會根據其成員調查提供。調查的資料如下：

	參與調查的保險公司的數目	根據保險業監管局發佈的 2020 年度一般保險業務的統計數字的市場份額
熱帶風暴獅子山	53	71%
颱風圓規	49	68%

(B1) 熱帶風暴獅子山保險索償數據

截至 2021 年 12 月 9 日，根據調查所得的保險索償數字如下：

	索償總額 (港元)
(i) 財產損壞、業務中斷、工程保險 - 物料損壞	125,269,247
(ii) 僱員補償、汽車及旅遊	6,282,451

按參與調查的機構所佔的市場份額(71%)作調整，獅子山保險索償數字估計為
 $(125,269,247 \text{ 港元} + 6,282,451 \text{ 港元}) / 71\% = 185,284,082 \text{ 港元}$

(B2) 颱風圓規保險索償數據

截至 2021 年 12 月 12 日，根據調查所得的保險索償數字如下：

	索償總額 (港元)
(i) 財產損壞、業務中斷、工程保險 - 物料損壞	22,288,956
(ii) 僱員補償、汽車及旅遊	694,999

按參與調查的機構所佔的市場份額(68%)作調整，圓規保險索償數字估計為
 $(22,288,956 \text{ 港元} + 694,999 \text{ 港元}) / 68\% = 33,799,933 \text{ 港元}$

2. 熱帶風暴獅子山及颱風圓規引致直接經濟損失的估算

熱帶風暴獅子山引致直接經濟損失的估算是 (A)政府部門、公共事業機構及其他組織報告的損失 (扣除相關的保險索償)及 (B1)保險索償數字 (按參與調查的機構的所佔的市場份額作調整)的總和。

$$= 34,742,939 \text{ 港元} + 185,284,082 \text{ 港元}$$

$$= 220,027,021 \text{ 港元 (約 2.20 億港元)}$$

颱風圓規引致直接經濟損失的估算是 (A)政府部門、公共事業機構及其他組織報告的損失 (扣除相關的保險索償)及 (B2)保險索償數字 (按參與調查的機構的所佔的市場份額作調整)的總和。

$$= 939,530 \text{ 港元} + 33,799,933 \text{ 港元}$$

$$= 34,739,463 \text{ 港元 (約 3 千 5 百萬港元)}$$

3. 免責聲明

直接經濟損失的估算是基於香港天文台向政府部門、公共事業機構及其他組織所收集的經濟損失數據、香港保險業聯會向成員收集的保險索償統計數字，以及相關政府報告所作出的。由於所收集的數據並非詳盡無遺，估算的損失亦有可能受到調查回應和分析方法的各種局限所影響，因此直接經濟損失估算僅供參考。

鳴謝

香港天文台感謝所有參與調查的政府部門、公共事業機構及其他組織、香港保險業聯會提供保險索償數字，以及政府統計處為經濟損失調查及估算方法提供的專業意見。

Annex 1
Estimated Direct Economic Losses in Hong Kong caused
by Tropical Storm Lionrock (2117) and Typhoon Kompasu (2118)

1. Data collection

(A) Losses reported by government departments, public utility companies and other organizations

The Hong Kong Observatory conducted a survey to collect data on damages and economic losses caused by Tropical Storm Lionrock and Typhoon Kompasu from the following government departments, public utilities and other organizations between January and May 2022:

Government departments

Agriculture, Fisheries and Conservation Department, Architectural Services Department, Buildings Department, Civil Aviation Department, Civil Engineering and Development Department, Drainage Services Department, Electrical and Mechanical Services Department, Environmental Protection Department, Fire Services Department, Food and Environmental Hygiene Department, Government Property Agency, Highways Department, Home Affairs Department, Housing Department, Lands Department, Leisure and Cultural Services Department, Marine Department, Social Welfare Department, Water Supplies Department.

Public utility companies and other organizations

China Light and Power Company Limited, China Mobile Hong Kong Company Limited, City Bus Limited, Discovery Bay Transportation Services Limited, HGC Global Communications Limited, Hong Kong and China Gas Company Limited, Hong Kong Airport Authority, Hong Kong Broadband Network Limited, Hong Kong Electric Company Limited, Hong Kong Red Cross, Mass Transit Railway Corporation Limited, Hong Kong Telecommunications Limited, Hong Kong Tramways Limited, Reach Networks Hong Kong Limited, Kowloon Motor Bus Company (1933) Limited, Park Island Transport Company Limited, Sun Ferry Services Company Limited, Shun Tak China Travel Shipping Management Limited and the “Star” Ferry Company, Limited.

As of 31 May 2022, the losses reported from government departments, public utilities and other organizations are as follow:

	The losses reported from government departments, public utilities and other organizations (HK\$)
Tropical Storm Lionrock	34,742,939
Typhoon Kompasu	939,530

To avoid double counting the insurance claims data in part (B), items with insurance claims covered have been excluded.

(B) Insurance claims data

The insurance claims statistics incurred by Tropical Storm Lionrock and Typhoon Kompasu in Hong Kong are provided by the Hong Kong Federation of Insurers (HKFI) based on its member surveys. Details of the statistics are as follows :

	Number of insurance companies participated in the survey	Market share according to the Annual Statistics for General Business 2020 issued by the Insurance Authority
Tropical Storm Lionrock	53	71%
Typhoon Kompasu	49	68%

(B1) Insurance claims data of Tropical Storm Lionrock

The insurance claims incurred as of 9 December 2021 are as follows :

	Total claims incurred (HK\$)
(i) Property Damage, Business Interruption and Contractors' All Risks (CAR)	125,269,247
(ii) Employees' Compensation (EC), Motor and Travel	6,282,451

Adjusted by market share of the participating companies (71%), the insurance claims incurred by Lionrock is estimated to be $(\text{HK\$ } 125,269,247 + \text{HK\$ } 6,282,451) / 71\% = \text{HK\$ } 185,284,082$

(B2) Insurance claims data of Typhoon Kompasu

The insurance claims incurred as of 12 December 2021 are as follows :

	Total claims incurred (HK\$)
(i) Property Damage, Business Interruption and Contractors' All Risks (CAR)	22,288,956
(ii) Employees' Compensation (EC), Motor and Travel	694,999

Adjusted by market share of the participating companies (68%), the insurance claims incurred by Kompasu is estimated to be $(\text{HK\$ } 22,288,956 + \text{HK\$ } 694,999) / 68\% = \text{HK\$ } 33,799,933$

2. Estimation of direct economic losses caused by Tropical Storm Lionrock and Typhoon Kompasu

The estimated direct economic losses due to Tropical Storm Lionrock in Hong Kong are considered to be the sum of **(A)** total reported losses of government departments, public utilities and other organizations (net of related insurance claims) and **(B1)** insurance claims (adjusted by market share of companies participating in the survey):

= HK\$ 34,742,939 + HK\$ 185,284,082

= **HK\$ 220,027,021 (around HK\$ 220 million)**

The estimated direct economic losses due to Typhoon Kompasu in Hong Kong are considered to be the sum of **(A)** total reported losses of government departments, public utilities and other organizations (net of related insurance claims) and **(B2)** insurance claims (adjusted by market share of companies participating in the survey):

= HK\$ 939,530 + HK\$ 33,799,933

= **HK\$ 34,739,463 (around HK\$ 35 million)**

3. Disclaimer

The estimated direct economic losses are based on the best available information from the responses of government departments, public utilities and other organizations to the survey conducted by the Hong Kong Observatory, statistics on insurance claims collected from the members of the Hong Kong Federation of Insurers and other relevant government reports at the time of assessment. The estimates are for reference only as the data collection are by no means exhaustive and may be subject to various limitations in the survey responses and analysis method.

Acknowledgement

The Hong Kong Observatory gratefully acknowledges the government departments, public utilities and other organizations involved in the survey, the Hong Kong Federation of Insurers for providing insurance claims, and the Census and Statistics Department for providing professional advice to the survey and analysis methods of economic losses.