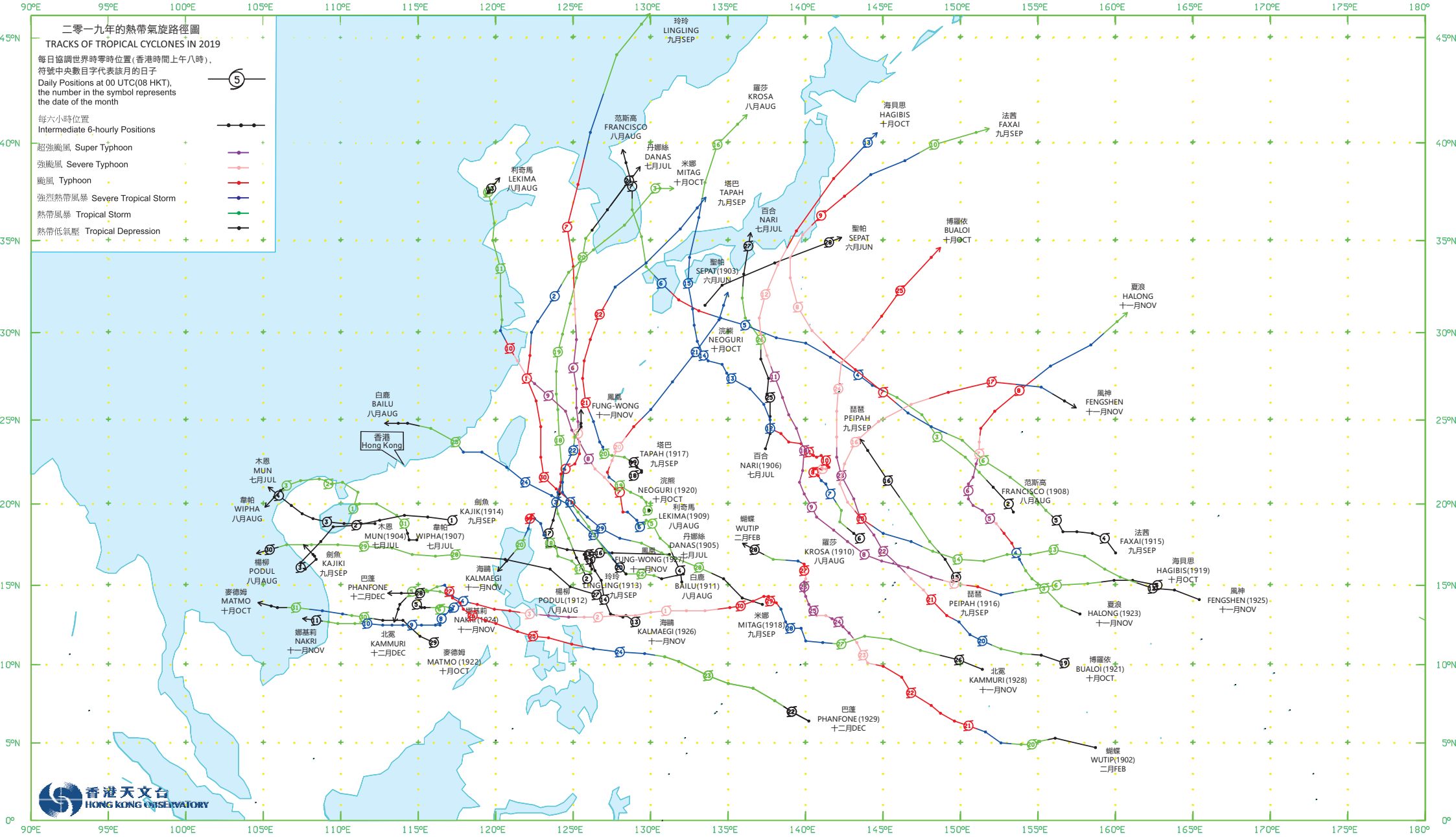
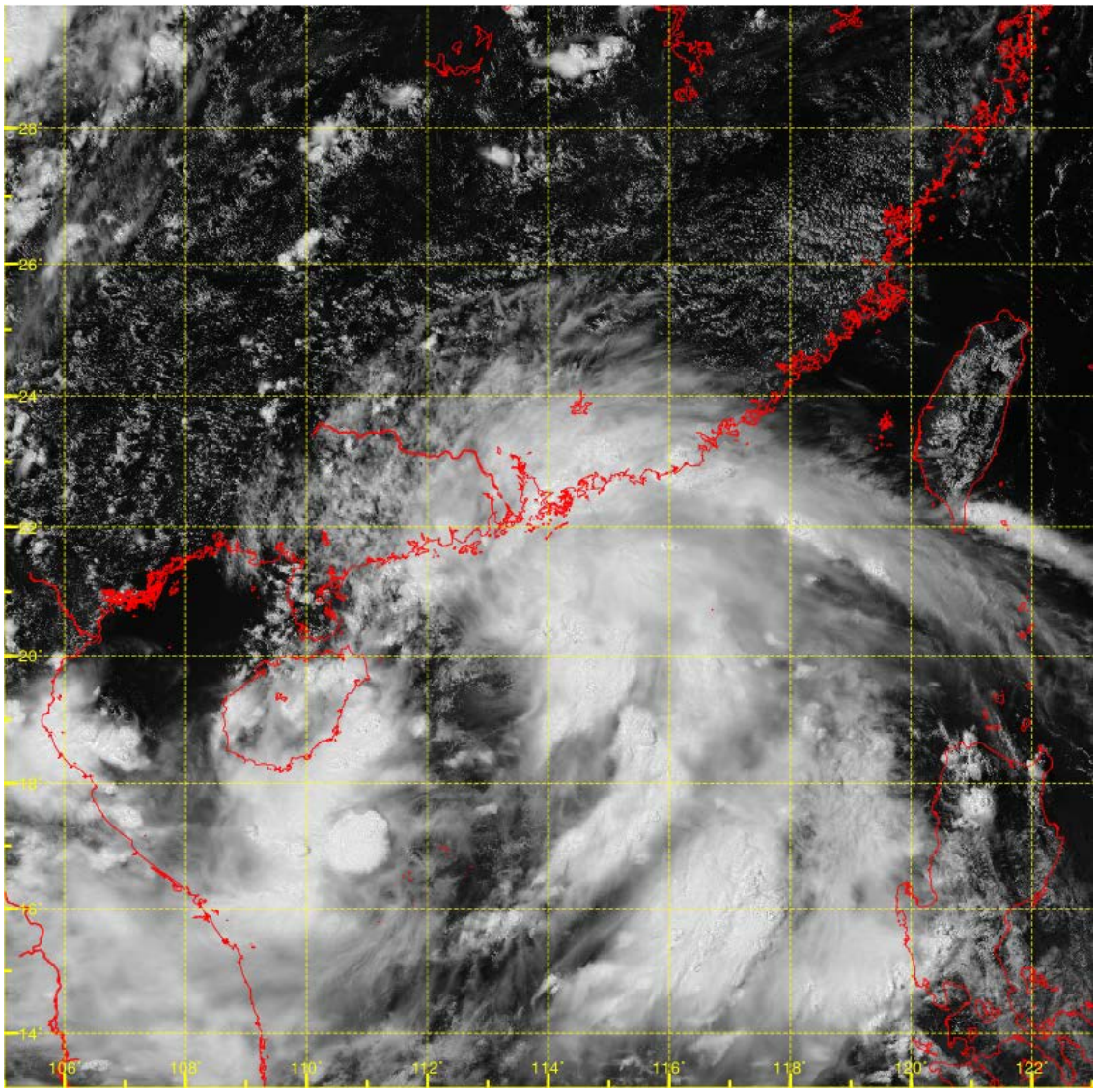

二零一九年的熱帶氣旋路徑圖
TRACKS OF TROPICAL CYCLONES IN 2019
每日協調世界時零時位置(香港時間上午八時),
符號中央數目字代表該月的日子
Daily Positions at 00 UTC(08 HKT),
the number in the symbol represents
the date of the month
每六小時位置
Intermediate 6-hourly Positions
超強颱風 Super Typhoon
強颱風 Severe Typhoon
颱風 Typhoon
強烈熱帶風暴 Severe Tropical Storm
熱帶風暴 Tropical Storm
熱帶低氣壓 Tropical Depression
香港
Hong Kong
香港天文台
HONG KONG OBSERVATORY

香港天文台
HONG KONG OBSERVATORY

二零一九年熱帶氣旋

TROPICAL CYCLONES IN 2019



二零二零年七月出版
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香港天文台編製
香港九龍彌敦道134A

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Hong Kong Observatory
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Kowloon, Hong Kong

551.515.2:551.506.1(512.317)

封面

二零一九年七月三十一日下午二時的可見光衛星圖像，當時位於南海北部的熱帶風暴韋帕正移向海南島。韋帕的對流分佈相當不對稱，其右半圓發展較旺盛。

Cover

Visible satellite imagery around 2 p.m. on 31 July 2019, when tropical storm Wipha over the northern part of the South China Sea was moving towards Hainan Island. The convection of Wipha was highly asymmetric with more intense development on its right semicircle.

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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，並將整理好的數據撮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63公里以下。
(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“1902”代表在二零一九年區內第二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，例如超強颱風蝴蝶（1902）。

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。

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。

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

年報第二節是二零一九年所有影響北太平洋西部及南海區域的熱帶氣旋的概述。

年報第三節是二零一九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。

二零一九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。至於在熱帶氣旋的敍述中，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 2019 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 less than 63 km/h.
(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 second tropical cyclone of tropical storm intensity or above, as classified by Japan Meteorological Agency, within the region in 2019 was assigned the code "1902". In this report, the associated code immediately follows the name of the tropical cyclone in bracket, e.g. Super Typhoon Wutip (1902).

[#] 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 2019 is presented.

The reports in Section 3 are individual accounts of the life history of tropical cyclones affecting Hong Kong in 2019. 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 2019 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 2019 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　　二零一九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 2019

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	玉兔 Yutu	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	北冕 Kammuri	小熊 Koguma	蝎虎 Tokage
老撾	Lao PDR	布拉萬 Bolaven	帕布 Pabuk	巴蓬 Phanfone	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	利奇馬 Lekima	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	法茜 Faxai	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	溫比亞 Rumbia	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	海貝思 Hagibis	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	山竹 Mangkhut	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：在二零一九年，西北太平洋和南海的熱帶氣旋名單上新增了三個新名字「山貓」、「鴛鴦」及「小犬」分別取代舊有名字「天鴿」、「啟德」及「天秤」。

Note: In 2019, three new names "Yamaneko", "Yun-yeung" and "Koinu" have been adopted for tropical cyclones in the western North Pacific and the South China Sea, replacing "Hato", "Kai-tak" and "Tembin" 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) Elevation of barometer above M.S.L. (m)
		北緯 Latitude N	東經 Longitude E	
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) Elevation of anemometer above M.S.L. (m)
		北緯 Latitude N	東經 Longitude E	
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
大埔滘	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

所指風速表在北跑道近中間位置

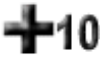
Refer to the wind sensor at the middle of the north runway

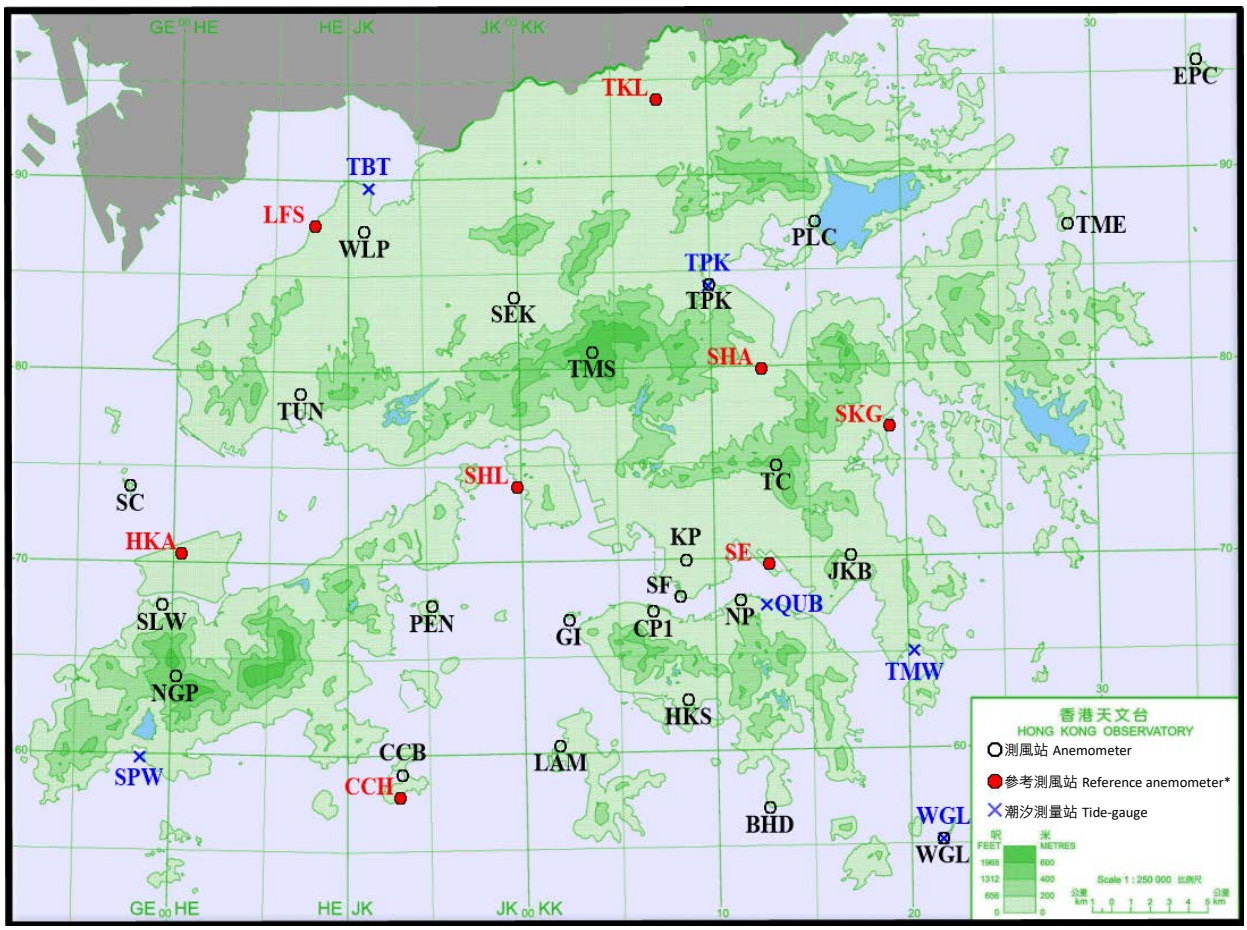
* 參考測風站

* Reference anemometer

表 1.4　　二零一九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 2019

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 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 expected or blowing 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 expected or blowing 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 expected or blowing with sustained speed reaching upwards from 118 km/h 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	鰂魚涌 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　　二零一九年熱帶氣旋概述

2.1　二零一九年的熱帶氣旋回顧

2.1.1 北太平洋西部(包括南海區域)的熱帶氣旋

二零一九年有28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1961-2010年約30個的長期年平均數目。全年有16個熱帶氣旋達到颱風或以上強度，略多於1961-2010年約15個的長期年平均數目，其中有七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是二零一九年在北太平洋西部及南海區域熱帶氣旋數目之逐月分佈。

二零一九年內有六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陸，一個橫過台灣。四個熱帶氣旋登陸朝鮮半島，五個登陸日本，四個橫過菲律賓及六個登陸越南。十一月的超強颱風夏浪(1923)（圖2.3）是二零一九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250公里，而最低海平面氣壓為905百帕斯卡（表4.1）。

2.1.2 香港責任範圍內的熱帶氣旋

在二零一九年的28個熱帶氣旋中，有15個出現在香港責任範圍（即北緯10至30度、東經105至125度），略少於 1961-2010年約16個的長期年平均數目（表2.1），當中有五個在香港責任範圍內形成。年內，香港天文台總共發出349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

二零一九年共有九個熱帶氣旋影響南海區域（即北緯10至25度、東經105至120度），較1961-2010年約12個的長期年平均數目少，當中有五個在南海上形成。

2.1.4 影響香港的熱帶氣旋

二零一九年香港的颱風季節始於七月二日，當天隨著熱帶低氣壓木恩(1904)在南海北部上形成，天文台發出一號戒備信號。九月三日熱帶低氣壓劍魚(1914)繼續遠離香港，本港風力減弱，二零一九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。

年內共有五個熱帶氣旋影響香港（圖2.2），略少於1961-2010年約六個的長期年平均數目(表2.2)。這五個熱帶氣旋分別為七月的熱帶低氣壓木恩(1904)、七月至八月的熱帶風暴韋帕(1907)、八月的強烈熱帶風暴白鹿(1911)及熱帶風暴楊柳(1912)、以及九月的熱帶低氣壓劍魚(1914)。韋帕影響香港期間，天文台在七月三十一日曾發出八號烈風或暴風信號，是年內發出的最高熱帶氣旋警告信號，韋帕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風暴。熱帶低氣壓劍魚引致天文台發出三號強風信號。

2.1.5 熱帶氣旋的雨量

二零一九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856.9毫米（表4.8.1），約佔年內總雨量2396.2毫米的百分之35.8，比1961-2010年長期年平均值的728.8毫米多約18%。

強烈熱帶風暴白鹿 (1911)為天文台總部帶來269.6毫米的雨量(表4.8.1)，是年內雨量最多的熱帶氣旋。

2.2 每月概述

這一節逐月介紹二零一九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

二零一九年一月並無熱帶氣旋在北太平洋西部及南海區域上形成。有關熱帶氣旋帕布(1901)的概況，請參閱二零一八年的熱帶氣旋年報。

二月

熱帶低氣壓蝴蝶(1902)於二月十九日在關島之東南偏東約1 810公里的北太平洋西部上形成，向西漂移並迅速增強。蝴蝶於二月二十一日轉向西北方向移動，兩日後發展為超強颱風。蝴蝶於二月二十五日達到其最高強度，中心附近最高持續風速估計為每小時210公里，是自一九六一年以來在北太平洋西部二月最強的熱帶氣旋。隨後蝴蝶向北緩慢移動並開始減弱，最後於二月二十八日在北太平洋西部上減弱為一個低壓區。

三月至五月

二零一九年三月至五月並無熱帶氣旋在北太平洋西部及南海區域上形成。

六月

熱帶低氣壓聖帕(1903)於六月二十七日在大阪之西南偏南約400公里的北太平洋西部上形成，向東北偏東方向移動，其中心附近最高持續風速估計為每小時55公里。翌日聖帕在日本以東的海域演變為一股溫帶氣旋。

根據報章報導，與聖帕相關的暴雨嚴重影響日本九州地區的陸空交通。

七月至八月

熱帶低氣壓木恩(1904)於七月二日下午在海口之東南約240公里的南海北部上形成，大致向西移動。木恩於七月三日早上橫過海南島後，進入北部灣並稍為增強，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。其後木恩採取西北路徑橫過北部灣，七月四日早上在越南北部減弱為一個低壓區。

根據報章報導，木恩對海南島海陸空交通造成嚴重影響。

熱帶低氣壓丹娜絲(1905)於七月十五日下午在馬尼拉之東北偏東約1 120公里的北太平洋西部上形成，初時向西移動，七月十七日轉向東北偏北移動。丹娜絲於七月十八日上午增強為熱帶風暴，翌日達到其最高強度，中心附近最高持續風速估計為每小時85公里。七月二十日丹娜絲繼續採取東北偏北路徑橫過朝鮮半島，並逐漸減弱，最後於七月二十一日在朝鮮半島以東的海域演變為一股溫帶氣旋。

根據報章報導，與丹娜絲相關的暴雨在菲律賓造成最少四人死亡。

熱帶低氣壓百合(1906)於七月二十四日上午在硫黃島之西南偏西約430公里的北太平洋西部上形成，大致向北移動。七月二十六日早上百合增強為熱帶風暴並達到其最高強度，中心附最高持續風速估計為每小時65公里。其後百合逐漸減弱，七月二十七日下午在日本本州減弱為一個低壓區。

熱帶低氣壓韋帕(1907)於七月三十日下午在香港以南約510公里的南海北部上形成，晚間至翌日早上向北緩慢移動。韋帕於七月三十一日早上增強為熱帶風暴，其後達到最高強度時，中心附近最高持續風速估計為每小時85公里。韋帕於當日下午開始加速向西北偏西移向海南島，八月一日清晨韋帕移速減慢，以逆時針方向在海南島東北部沿岸徘徊，早上再度加速向北移動，晚上向西橫過雷州半島。八月二日韋帕橫過廣西沿岸至北部灣一帶，並逐漸減弱，翌日晚上在越南北部減弱為一個低壓區。

根據報章報導，韋帕在澳門造成六人受傷。韋帕亦為越南北部帶來暴雨，引致廣泛地區水浸，共造成最少10人死亡，11人失蹤。

熱帶低氣壓范斯高(1908)於八月二日清晨在硫黃島之東南偏東約1 370公里的北太平洋西部上形成，採取西北路徑移向日本九州一帶，並逐漸增強。范斯高於八月五日晚間增強為颱風，並達到其最高強度，中心附近最高持續風速估計為每小時130公里。翌日范斯高橫過日本九州並逐漸減弱。隨後范斯高向北橫過朝鮮半島，最後於八月七日晚上在朝鮮半島以東的海域演變為一股溫帶氣旋。

根據報章報導，范斯高吹襲日本九州期間帶來狂風暴雨，造成最少一人死亡及三人受傷，超過17 000戶停電。

熱帶低氣壓利奇馬(1909)於八月四日清晨在馬尼拉以東約1 180公里的北太平洋西部上形成，大致向西北移向台灣以東海域，並逐漸增強。利奇馬於八月七日增強為颱風，翌日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205公里。隨後兩天利奇馬橫過東海，並逐漸減弱。利奇馬於八月十日清晨在浙江沿岸登陸，其後轉向偏北方向橫過華東沿岸地區並減弱為熱帶風暴。八月十二日利奇馬在渤海緩慢移動，翌日下午演變為一股溫帶氣旋。

根據報章報導，受利奇馬影響，浙江、上海、江蘇、山東、安徽、福建、河北、遼寧、吉林九省市暴雨成災，共造成最少56人死亡和14人失蹤、逾一千四百萬人受災及直接經濟損失超過五百一十五億元人民幣。利奇馬引致的暴雨在台灣造成至少兩死11傷。利奇馬吹襲琉球群島期間亦造成最少四人受傷和15 000多戶停電。

熱帶低氣壓羅莎(1910)於八月六日早上在硫黃島之東南偏南約800公里的北太平洋西部上形成，移動緩慢並迅速增強。羅莎於八月九日增強為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155公里。隨後羅莎開始減弱，八月十二日開始加速向西北移動。羅莎於八月十四日轉向北移向日本九州至四國一帶。羅莎於八月十五日先後橫過日本四國及本州西部，翌日在本州以北的海域演變為一股溫帶氣旋。

根據報章報導，羅莎吹襲日本期間帶來狂風暴雨，造成最少三人死亡及55人受傷，逾800航班取消。

熱帶低氣壓白鹿(1911)於八月二十一日下午在高雄之東南偏東約1 460公里的北太平洋西部上形成，初時向西移動。翌日白鹿增強為熱帶風暴，下午開始採取西北路徑移向台灣南部。當晚白鹿進一步增強為強烈熱帶風暴，八月二十三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105公里。白鹿於八月二十四日橫過台灣南部，其後採取

西北偏西路徑橫過台灣海峽。翌日早上白鹿在福建登陸並減弱為熱帶風暴，日間繼續移入內陸，八月二十六日凌晨在廣東內陸減弱為低壓區。

根據報章報導，白鹿吹襲台灣期間造成至少一人死亡和九人受傷，逾10萬戶停電。福建亦有至少44萬戶停電，陸空交通受影響。

熱帶低氣壓楊柳(1912)於八月二十七日早上在馬尼拉以東約590公里的北太平洋西部上形成，向西北偏西迅速移動，當晚橫過呂宋。翌日楊柳繼續迅速向西橫過南海中部並增強為熱帶風暴，並在八月二十九日凌晨達其最高強度，中心附近最高持續風速估計為每小時85公里。八月三十日凌晨楊柳在越南北部登陸，日間在中南半島減弱為低壓區。

根據報章報導，楊柳吹襲菲律賓期間，一人被巨浪捲走而死亡。楊柳在海南島誘發龍捲風，造成至少八人死亡和兩人受傷。楊柳在越南亦造成至少六人死亡和兩人失蹤。

九月至十月

熱帶低氣壓劍魚(1914)於九月一日早上在香港之東南約480公里的南海北部上形成，向西橫過南海北部。日間劍魚稍為增強，其中心附近最高持續風速估計為每小時55公里。劍魚於九月二日早上橫過海南島東南部後轉向西南方向移動。劍魚於九月三日在越南中部沿岸一帶徘徊打轉，翌日在越南中部沿岸海域減弱為一個低壓區。

根據報章報導，劍魚吹襲越南期間造成至少六人死亡和十人失蹤。

熱帶低氣壓玲玲(1913)於九月二日早上在高雄之東南約1 000公里的北太平洋西部上形成，大致向北移向台灣以東海域，並迅速增強。玲玲於九月五日在日本宮古島附近增強為超強颱風，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。隨後玲玲先後橫過東海和黃海，於九月七日登陸朝鮮半島北部，最後於九月八日在中國東北部演變為一股溫帶氣旋。

根據報章報導，玲玲掠過日本宮古島期間帶來狂風暴雨，造成最少五人受傷。玲玲吹襲韓國期間造成最少三人死亡和24人受傷，超過16萬戶停電。玲玲亦在朝鮮造成最少五人死亡及三人受傷。

熱帶低氣壓法茜(1915)於九月四日清晨在硫黃島之東南偏東約2 120公里的北太平洋西部上形成，向西北移向日本以南海域，並逐漸增強。法茜於九月八日增強為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175公里。隨後法茜逐漸轉向東北方向移動，九月九日清晨掠過東京附近並減弱。法茜於九月十日在日本以東海域上演變為一股溫帶氣旋。

受法茜正面吹襲，關東地區多處錄得破紀錄的風速。根據報章報導，法茜吹襲日本期間造成最少四人死亡和150人受傷，關東地區有超過93萬戶停電，東京亦有至少350宗水浸報告。關東地區的海陸空交通大受影響，至少283航班取消，來往成田機場的交通一度中斷，約17 000名旅客滯留在機場。

熱帶低氣壓琵琶(1916)於九月十五日早上在硫黃島之東南約1 350公里的北太平洋西部上形成，向西北方向移動並逐漸增強。琵琶於當晚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。翌日琵琶迅速減弱，下午在海上減弱為一個低壓區。

熱帶低氣壓塔巴(1917)於九月十八日早上在台北之東南偏東約840公里的北太平洋西部上形成，初時移動緩慢。塔巴於九月二十一日早上增強為颱風，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。當日塔巴加速向北橫過東海。塔巴於九月二十二日轉向東北移動，翌日早上在日本本州以北的海域上演變為一股溫帶氣旋。

根據報章報導，塔巴吹襲日本期間造成至少兩人死亡和56人受傷。塔巴在韓國亦造成至少一人死亡、26人受傷。

熱帶低氣壓米娜(1918)於九月二十七日下午在馬尼拉以東約1 750公里的北太平洋西部上形成，向西北至西北偏西移動並逐漸增強。米娜於九月二十九日增強為颱風，翌日轉向偏北方向移動，橫過台灣以東海域並達到其最高強度，中心附近最高持續風速估計為每小時145公里。隨後米娜移向華東沿岸並逐漸減弱。米娜於十月一日晚上橫過華東沿海一帶並減弱為強烈熱帶風暴。翌日米娜轉向東北方向移動，橫過朝鮮半島南部，最後於十月三日在朝鮮半島以東的海域上演變為一股溫帶氣旋。

根據報章報導，米娜吹襲台灣期間共造成最少12人受傷，超過六萬戶停電。受米娜影響，浙江最少有三人死亡及一人失蹤，直接經濟損失達18億元人民幣。米娜在韓國亦造成最少12人死亡、11人受傷和兩人失蹤。

熱帶低氣壓海貝思(1919)於十月五日在關島以東約1 930公里的北太平洋西部上形成，向西移動並迅速增強。海貝思於十月七日發展為超強颱風及達到其最高強度，中心附近最高持續風速估計為每小時230公里。隨後四天海貝思逐漸轉向北至西北偏北移向日本以南海域。海貝思於十月十二日掠過東京及關東地區，當晚減弱為颱風，最後於十月十三日在北海道以東的海域上演變為一股溫帶氣旋。

受海貝思正面吹襲，日本關東地區多處錄得破紀錄的雨量。其中十月十二日在神奈川縣箱根錄得922.5毫米的日雨量，是日本有記錄以來最高的日降雨量。根據報章報導，海貝

思吹襲日本期間帶來狂風暴雨，引致廣泛地區水浸及大範圍電力中斷，造成最少98人死亡、468人受傷及七人失蹤，逾40萬戶停電。關東地區的海陸空交通癱瘓。

熱帶低氣壓浣熊(1920)於十月十八日清晨在馬尼拉之東北偏東約1 100公里的北太平洋西部上形成，初時移動緩慢並迅速增強，翌日晚上轉向東北偏北移向琉球群島一帶。浣熊於十月二十日增強為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165公里。隨後浣熊逐漸減弱，翌日傍晚在日本本州以南海域上演變為一股溫帶氣旋。

熱帶低氣壓博羅依(1921)於十月十九日早上在關島之東南偏東約1 350公里的北太平洋西部上形成，大致向西北方向移動並迅速增強。博羅依於十月二十二日下午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205公里。隨後兩天博羅依轉向東北方向移動，並逐漸減弱，最後於十月二十五日下午在日本以東海域上演變為一股溫帶氣旋。

熱帶低氣壓麥德姆(1922)於十月二十九日早上在南沙之東北偏東約210公里的南海南部上形成，大致向西移向越南南部並逐漸增強。麥德姆於翌日晚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。麥德姆於十月三十一日橫過越南南部，當日黃昏在中南半島減弱為一個低壓區。

十一月至十二月

熱帶低氣壓夏浪(1923)於十一月二日晚上在關島以東約1 390公里的北太平洋西部上形成，向西北移動並逐漸增強。夏浪於十一月五日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250公里。隨後三日夏浪逐漸轉向北至東北移動並減弱，最後於十一月九日在海上演變為一股溫帶氣旋。

熱帶低氣壓娜基莉(1924)於十一月五日早上在南沙以北約380公里的南海南部上形成，初時移動緩慢，在南海南部徘徊。娜基莉於十一月七日早上增強為強烈熱帶風暴，翌日下午達到其最高強度，中心附近最高持續風速估計為每小時110公里。隨後娜基莉向西移向越南中部。最後娜基莉於十一月十一日在越南中部減弱為低壓區。

根據報章報導，娜基莉吹襲越南期間共造成最少兩人死亡。

熱帶低氣壓風神(1925)於十一月十一日晚上在關島以東約2 220公里的北太平洋西部上形成，大致向西至西北偏西移動並逐漸增強。風神於十一月十五日早上增強為颱風並開始向東北轉向。風神於當晚進一步增強為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165公里。風神於十一月十七日再轉向東南移動，並迅速減弱，當晚在海上減弱為低壓區。

熱帶低氣壓海鷗(1926)於十一月十三日早上在馬尼拉之東南偏東約890公里的北太平洋西部上形成，初時大致向西北至西北偏北移向呂宋以東海域。海鷗於十一月十五至十六日移速減慢，並在呂宋以東海域徘徊。海鷗於十一月十七日清晨增強為熱帶風暴，並大致向西北移向呂宋海峽一帶。海鷗於十一月十九日早上進一步增強為颱風，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。海鷗翌日轉向西南偏南方向移動並登陸呂宋北部。海鷗登陸後迅速減弱，最後於十一月二十日下午在呂宋減弱為低壓區。

熱帶低氣壓鳳凰(1927)於十一月二十日清晨在馬尼拉以東約800公里的北太平洋西部上形成，移向台灣以東海域並逐漸增強。鳳凰於十一月二十一日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110公里。隨後鳳凰迅速減弱，最後於十一月二十三日淩晨在台灣以東海域減弱為低壓區。

熱帶低氣壓北冕(1928)於十一月二十六日清晨在關島之東南偏東約830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。北冕於十一月二十九日增強為颱風，向西移向菲律賓以東海域。北冕於十二月二日晚上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。翌日北冕橫過菲律賓中部進入南海，並迅速減弱。北冕於十二月五日轉向西南移動，晚上在南海南部減弱為低壓區。

根據報章報導，北冕為菲律賓帶來狂風暴雨，造成最少17人死亡、兩人失蹤及322受傷。受北冕影響，呂宋東南部廣泛地區停電。馬尼拉機場亦被迫關閉，超過500班航班取消。

熱帶低氣壓巴蓬(1929)於十二月二十二日清晨在雅蒲島之東南約410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。巴蓬於十二月二十四日下午增強為颱風並橫過菲律賓中部，翌日上午達到其最高強度，中心附近最高持續風速估計為每小時145公里。受乾燥的東北季候風影響，巴蓬進入南海後於十二月二十七日移速減慢，在南海中部迅速減弱，最後於十二月二十八日下午在南海中部減弱為低壓區。

根據報章報導，巴蓬吹襲菲律賓期間帶來狂風暴雨，造成最少57人死亡、六人失蹤及369人受傷、逾320萬人受災，超過53萬間房屋受損。

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 2019

2.1 Review of tropical cyclones in 2019

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

In 2019, a total of 28 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 - 2010) average figure of around 30. During the year, 16 of the tropical cyclones attained typhoon intensity or above, slightly more than the long-term average (1961 - 2010) of about 15, with seven 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 2019.

During the year, six tropical cyclones made landfall over China, with one of them crossing the south China coast within 300 km of Hong Kong and one crossing Taiwan. Four tropical cyclones made landfall over the Korean Peninsula, five made landfall over Japan, four traversed the Philippines and six made landfall over Vietnam. With an estimated maximum sustained wind speed of 250 km/h and a minimum sea-level pressure of 905 hPa near the centre (Table 4.1), Super Typhoon Halong (1923) in November (Figure 2.3) was the most intense tropical cyclone over the WNP and the SCS in 2019.

2.1.2 Tropical cyclones in Hong Kong's area of responsibility

Amongst the 28 tropical cyclones in 2019, 15 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 less than the long-term annual average figure of around 16 (Table 2.1). Five of them developed within Hong Kong's area of responsibility. Altogether, 349 tropical cyclone warnings to ships and vessels were issued by the Hong Kong Observatory in 2019 (Table 4.2).

2.1.3 Tropical cyclones over the South China Sea

Nine tropical cyclones affected SCS bounded by 10°N, 25°N, 105°E and 120°E in 2019, less than the long-term annual average of around 12. Five of them formed within SCS.

2.1.4 Tropical cyclones affecting Hong Kong

In 2019, the typhoon season in Hong Kong started on 2 July when Tropical Depression Mun (1904) formed in the northern part of the South China Sea, necessitating the issuance of the Standby Signal No. 1. The typhoon season ended with the cancellation of all tropical cyclone warning signals on 3 September when Tropical Depression Kajiki (1914) moved away from Hong Kong and local winds were weakened that day.

Five tropical cyclones affected Hong Kong during 2019 (Figure 2.2), slightly less than the long-term (1961-2010) average of about six in a year (Table 2.2). They were Tropical Depression Mun (1904) in July, Tropical Storm Wipha (1907) in July to August, Severe Tropical Storm Bailu (1911) and Tropical Storm Podul (1912) in August, and Tropical Depression Kajiki (1914) in September. Wipha necessitated the issuance of the No.8 Gale or Storm Signal on 31 July which was the highest

tropical cyclone warning signal issued in 2019. Wipha is also the farthest tropical storm necessitating the issuance of the No.8 Gale or Storm Signal in Hong Kong since 1961. Tropical Depression Kajiki necessitated the issuance of the Strong Wind Signal No. 3 in Hong Kong.

2.1.5 Tropical cyclone rainfall

Tropical cyclone rainfall (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 2019 was 856.9 mm (Table 4.8.1). This accounted for approximately 35.8 % of the year's total rainfall of 2396.2 mm and was about 18 % above the 1961-2010 long-term average of 728.8 mm.

Severe Tropical Storm Bailu (1911) brought 269.6 mm of rainfall to the Hong Kong Observatory Headquarters (Table 4.8.1) and was the wettest tropical cyclone in 2019.

2.2 Monthly overview

A monthly overview of tropical cyclones in 2019 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 2019. For the overview of tropical cyclone Pabuk (1901), please refer to the tropical cyclone annual report 2018.

FEBURARY

Wutip (1902) formed as a tropical depression over the western North Pacific about 1 810 km east-southeast of Guam on 19 February. It intensified rapidly when drifting westwards. Wutip turned to move northwestwards on 21 February and developed into a super typhoon two days later. Wutip reached its peak intensity on 25 February with an estimated maximum sustained wind of 210 km/h near its centre, which is the most intense tropical cyclone over the western North Pacific in February since 1961. Wutip then turned to track northwards slowly and started to weaken, before finally degenerating into an area of low pressure over the western North Pacific on 28 February.

MARCH TO MAY

No tropical cyclone formed over the western North Pacific and the South China Sea from March to May 2019.

JUNE

Sepat (1903) formed as a tropical depression over the western North Pacific about 400 km south-southwest of Osaka on 27 June. It moved east-northeastwards with an estimated sustained wind of 55 km/h near its centre. Sepat evolved into an extratropical cyclone over the seas east of Japan on 28 June.

According to press reports, the territorial rain associated with Sepat severely affected the land and air traffic of Kyushu in Japan.

JULY TO AUGUST

Mun (1904) formed as a tropical depression over the northern part of the South China Sea about 240 km southeast of Haikou on the afternoon of 2 July and moved generally westwards. After moving across Hainan Island on the morning of 3 July, Mun entered Beibu Wan and intensified slightly, reaching its peak intensity with an estimated sustained wind of 55 km/h near its centre. Moving northwestwards across Beibu Wan, Mun weakened into an area of low pressure over the northern part of Vietnam on the morning of 4 July.

According to press reports, Mun disrupted sea, land, air transportation in Hainan Island.

Danas (1905) formed as a tropical depression over the western North Pacific about 1 120 km east-northeast of Manila and moved westwards at first. It turned to move north-northeastwards on 17 July. Danas intensified into a tropical storm on the morning of 18 July, reaching its peak intensity next day with an estimated sustained wind of 85 km/h near its centre. It continued to track north-northeastwards across the Korean Peninsula on 20 July and weakened gradually. Danas finally evolved into an extratropical cyclone over the sea areas east of the Korean Peninsula on 21 July.

According to press reports, the torrential rain associated with Danas caused at least four deaths in the Philippines.

Nari (1906) formed as a tropical depression over the western North Pacific about 430 km west-southwest of Iwo Jima on the morning of 24 July and moved generally northwards. It intensified into a tropical storm on the morning of 26 July, reaching its peak intensity with an estimated sustained wind of 65 km/h near its centre. Nari then weakened gradually and degenerated into an area of low pressure over Honshu of Japan on the afternoon of 27 July.

Wipha (1907) formed as a tropical depression over the northern part of the South China Sea about 510 km south of Hong Kong on the afternoon of 30 July. It drifted northwards slowly during that night and next morning. Wipha intensified into a tropical storm on the morning of 31 July, later reaching its peak intensity with an estimated maximum sustained wind of 85 km/h near its centre. It started to pick up speed to move west-northwest towards Hainan Island in the afternoon. Wipha slowed down on the early morning of 1 August, making an anti-clockwise loop around the northeastern coast of Hainan Island. It picked up its speed to move northward again in the morning and then moved westward across the Leizhou Peninsula that night. Wipha moved across the coast of Guangxi and the vicinity of Beibu Wan on 2 August and weakened gradually. It degenerated into an area of low pressure over the northern part of Vietnam the next night.

According to press reports, at least six people were injured in Macao during the passage of Wipha. Wipha also brought torrential rain to the northern part of Vietnam, which triggered extensive flooding. At least 10 people were killed and 11 were reported missing.

Francisco (1908) formed as a tropical depression over the western North Pacific about 1 370 km east-southeast of Iwo Jima on the small hours of 2 August. It took on a northwest course towards the vicinity of Kyushu of Japan and intensified gradually. Francisco intensified into a

typhoon on the night of 5 August, reaching its peak intensity with an estimated sustained wind of 130 km/h near its centre. It swept across Kyushu of Japan the next day and weakened gradually. Francisco then moved northward across the Korean Peninsula and finally evolved into an extratropical cyclone over the sea areas east of the Korean Peninsula on the night of 7 August.

According to press reports, Francisco brought torrential rain and squalls to Kyushu of Japan during its passage, leading to at least one dead and three injuries. There were more than 17 000 households without electricity supply.

Lekima (1909) formed as a tropical depression over the western North Pacific about 1180 km east of Manila on the small hours of 4 August. It tracked generally northwest towards the sea areas east of Taiwan and intensified gradually. Lekima intensified into a typhoon on 7 August and further developed into a super typhoon the next day, reaching its peak intensity with an estimated sustained wind of 205 km/h near its centre. Lekima moved across the East China Sea and weakened gradually in the following two days. Lekima made landfall over the coast of Zhejiang on the small hours of 10 August. It then turned northwards across the coastal region of eastern China and weakened into a tropical storm. Lekima moved slowly over the Bohai Sea on 12 August and evolved into an extratropical cyclone the next afternoon.

According to press reports, Lekima wreaked havoc with torrential rain in nine provinces and cities including Zhejiang, Shanghai, Jiangsu, Shandong, Anhui, Fujian, Hebei, Liaoning and Jilin. There were at least 56 deaths and 14 missing. Over 14 million people were affected with direct economic loss exceeding 51.5 billion RMB. Under the influence of torrential rain brought by Lekima, there were at least two deaths and 11 injuries in Taiwan. At least four people were also injured in Ryukyu Islands during the passage of Lekima. Electricity supply to over 15 000 households was affected.

Krosa (1910) formed as a tropical depression over the western North Pacific about 800 km south-southeast of Iwo Jima on the morning of 6 August. While moving slowly, it intensified rapidly and developed into a severe typhoon on 9 August, reaching its peak intensity with an estimated sustained wind of 155 km/h near its centre. Krosa then started to weaken and picked up its speed to move northwards towards the vicinity of Kyushu and Shikoku of Japan on 14 August. After moving across Shikoku and the western part of Honshu of Japan on 15 August, Krosa finally evolved into an extratropical cyclone over the sea areas north of Honshu the next day.

According to press reports, Krosa brought torrential rain and squalls during its passage to Japan, leading to at least three deaths and 55 injuries. Over 800 flights were cancelled.

Bailu (1911) formed as a tropical depression over the western North Pacific about 1 460 km east-southeast of Gaoxiong on the afternoon of 21 August and drifted westwards at first. Bailu intensified into a tropical storm on 22 August and started to take on a northwesterly course towards the southern part of Taiwan in the afternoon. Bailu further intensified into a severe tropical storm that night. It reached its peak intensity on the night of 23 August with an estimated maximum sustained wind of 105 km/h near its centre. After sweeping across the southern part of Taiwan on 24 August, Bailu moved across the Taiwan Strait. It made landfall over Fujian the next morning and weakened into a tropical storm. Bailu moved further inland during the day and weakened into an area of low pressure over inland Guangdong on the small hours of 26 August.

According to press reports, Bailu brought at least one death and nine injuries to Taiwan during its passage. Over 100 000 households were without electricity supply. In Fujian, electricity supply to over 440 000 households was also interrupted. Air and land transportations were affected.

Podul (1912) formed as a tropical depression over the western North Pacific about 590 km east of Manila on the morning of 27 August. Drifting west-northwestwards quickly, it moved across Luzon that night. Podul continued to move westwards quickly across the central part of the South China Sea and intensified into a tropical storm on 28 August. Podul reached its peak intensity on the small hours of 29 August with an estimated maximum sustained wind of 85 km/h near its centre. Podul made landfall over the northern part of Vietnam on the small hours of 30 August and finally weakened into an area of low pressure over the Indo-China during the day.

According to press report, one person was killed by strong waves during the passage of Podul in the Philippines. Podul also triggered a tornado in Hainan Island, killing at least eight people and leaving two others injured. Podul also left at least six deaths and two missing in Vietnam.

SEPTEMBER TO OCTOBER

Kajiki (1914) formed as a tropical depression over the northern part of the South China Sea at about 480 km southeast of Hong Kong on the morning of 1 September and moved westwards across the northern part of the South China Sea. Kajiki intensified slightly during the day with an estimated maximum sustained wind of 55 km/h near its centre. It turned to track southwestwards after moving across the southeastern part of Hainan Island on the morning of 2 September. Kajiki lingered over the vicinity of the coast of central Vietnam on 3 September and finally degenerated into an area of low pressure over the coastal waters of central Vietnam the next day.

According to press reports, Kajiki left at least six deaths and ten missing in Vietnam during its passage.

Lingling (1913) formed as a tropical depression over the western North Pacific about 1 000 km southeast of Gaoxiong on the morning of 2 September. It tracked generally northwards towards the sea areas east of Taiwan and intensified rapidly. It developed into a super typhoon near Miyakojima of Japan on 5 September and reached its peak intensity with an estimated sustained wind of 205 km/h near its centre. Lingling moved across the East China Sea and then the Yellow Sea afterwards. It made landfall over the northern part of the Korean Peninsula on 7 September. Lingling finally evolved into an extratropical cyclone over the northeastern part of China on 8 September.

According to press reports, Lingling brought torrential rain and squalls to Miyakojima of Japan during its passage, leading to at least five injuries. In the Republic of Korea, Lingling caused at least three deaths and 24 injuries, and more than 160 000 households without electricity supply. Lingling also left at least five people dead and three others injured in DPR Korea.

Faxai (1915) formed as a tropical depression over the western North Pacific about 2 120 km east-southeast of Iwo Jima on the small hours of 4 September. It tracked northwestwards towards the sea areas south of Japan and intensified gradually. Faxai intensified into a severe typhoon on 8 September and reached its peak intensity with an estimated sustained wind of 175 km/h near its centre. It then turned to move northeastwards gradually. Faxai skirted past

near Tokyo on the small hours of 9 September and weakened. It evolved into an extratropical cyclone over the sea areas east of Japan on 10 September.

Facing the direct hit of Faxai, record-breaking wind speeds were registered in many places of Kanto of Honshu. According to press reports, Faxai brought torrential rain and squalls to Japan during its passage, leaving at least four deaths and 150 injuries. There were over 930 000 households without electricity supply in Kanto of Honshu and at least 350 flooding reports in Tokyo. Transportation services in Kanto of Honshu were paralyzed with at least 283 flights cancelled. The traffic to Narita International Airport was also suspended, forcing over 17 000 passengers to stay at the airport.

Peipah (1916) formed as a tropical depression over the western North Pacific about 1 350 km southeast of Iwo Jima on the morning of 15 September. It moved northwestwards and intensified gradually. Peipah developed into a tropical storm on the night of 15 September and reached its peak intensity with an estimated sustained wind of 65 km/h near its centre. Peipah weakened rapidly the next day and degenerated into an area of low pressure over sea on the afternoon.

Tapah (1917) formed as a tropical depression over the western North Pacific about 840 km east-southeast of Taibei on the morning of 18 September and drifted slowly at first. Tapah intensified into a typhoon on the morning of 21 September and reached its peak intensity with an estimated sustained wind of 120 km/h near its centre. Tapah picked up speed to move north across the East China Sea that day. It turned to move northeastwards on 22 September and evolved into an extratropical cyclone over the sea areas north of Honshu, Japan the next morning.

According to press reports, Tapah caused at least two deaths and 56 injuries in Japan during its passage. Tapah also left at least one death and 26 injuries in the Republic of Korea.

Mitag (1918) formed as a tropical depression over the western North Pacific about 1 750 km east of Manila on the afternoon of 27 September and moved towards northwest to west-northwest and intensified gradually. Mitag developed into a typhoon on 29 September. It turned to move northwards across the sea areas east of Taiwan the next day and attended its peak intensity with an estimated maximum sustained wind of 145 km/h near its centre. Mitag then moved towards the east China coast and weakened gradually. It moved across the east China coastal waters on the night of 1 October and weakened into a severe tropical storm. Mitag turned to move northeast across the southern part of the Korean Peninsula the next day. It finally evolved into an extratropical cyclone over the seas east of the Korean Peninsula on 3 October.

According to press reports, Mitag brought at least 12 injuries and over 60 000 households without electricity supply in Taiwan during its passage. Under the influence of Mitag, there were at least three deaths and one missing in Zhanjiang, with direct economic loss of around 1.8 billion RMB. Mitag also caused at least 12 deaths, 11 injuries and two missing in the Republic of Korea.

Hagibis (1919) formed as a tropical depression over the western North Pacific about 1 930 km east of Guam on 5 October. It move westwards and intensified rapidly. Hagibis developed into a super typhoon on 7 October and reached its peak intensity with an estimated sustained wind of 230 km/h near its centre. Hagibis then turned to move north to north-northwest gradually towards the sea areas south of Japan in the following four days. It swept across Tokyo and Kanto region on 12 October and weakened into a typhoon that night. Hagibis finally evolved into an extratropical cyclone over the sea areas east of Hokkaido, Japan on 13 October.

Facing the direct hit of Hagibis, record-breaking rainfall were registered in many places of Kanto region of Japan. The daily rainfall of 922.5 mm recorded in Hakone of Kanagawa on 12 October is the highest record in Japan. According to press reports, Hagibis brought torrential rain and squalls to Japan which triggered extensive flooding and power outage, leaving at least 98 deaths, 468 injuries and seven others missing. There were over 400 000 households without electricity supply. Transportation services in Kanto region were paralyzed.

Neoguri (1920) formed as a tropical depression over the western North Pacific about 1 100 km east-northeast of Manila on the small hours of 18 October. It moved slowly at first and intensified rapidly. Neoguri turned to move north-northeast towards the vicinity of the Ryukyu Islands the next night. It intensified into a severe typhoon on 20 October and reached its peak intensity with an estimated sustained wind of 165 km/h near its centre. Neoguri then weakened gradually and evolved into an extratropical cyclone over sea areas south of Honshu, Japan the next evening.

Bualoi (1921) formed as a tropical depression over the western North Pacific about 1 350 km east-southeast of Guam on the morning of 19 October. It tracked generally northwestwards and intensified rapidly. Bualoi intensified into a super typhoon on the afternoon of 22 October and reached its peak intensity with an estimated sustained wind of 205 km/h near its centre. It turned to track northeast and weakened gradually in the following two days. Bualoi finally evolved into an extratropical cyclone over sea areas east of Japan on the afternoon of 25 October.

Matmo (1922) formed as a tropical depression over the southern part of the South China Sea about 210 km east-northeast of Nansha on the morning of 29 October. It moved generally westward towards the southern part of Vietnam and intensified gradually. Matmo intensified into a severe tropical storm the next night and reached its peak intensity with an estimated sustained wind of 90 km/h near its centre. Matmo moved across the southern part of Vietnam on 31 October and then degenerated into an area of low pressure over Indo-China in the evening.

NOVEMBER TO DECEMBER

Halong (1923) formed as a tropical depression over the western North Pacific about 1 390 km east of Guam on the night of 2 November. It tracked northwestwards and intensified gradually. Halong developed into a super typhoon on 5 November and reached its peak intensity with an estimated sustained wind of 250 km/h near its centre. Halong then turned to move north to northeastwards gradually and weakened in the following three days. It finally evolved into an extratropical cyclone over the seas on 9 November.

Nakri (1924) formed as a tropical depression over the southern part of the South China Sea about 380 km north of Nansha on the morning of 5 November. It moved slowly at first and lingered over the southern part of the South China Sea. Nakri developed into a severe tropical storm on the morning of 7 November and reached its peak intensity on the afternoon of 8 November with an estimated sustained wind of 110 km/h near its centre. Nakri turned to move west towards the central part of Vietnam afternoon and finally degenerated into an area of low pressure over the central part of Vietnam on 11 November.

According to press reports, Nakri brought at least two deaths during its passage to Vietnam.

Fengshen (1925) formed as a tropical depression over the western North Pacific about 2 220 km east of Guam on the night of 11 November. It generally moved west to west-northwest and intensified gradually. Fengshen intensified into a typhoon on the morning of 15 November and started to turn northeastwards. It further intensified into a severe typhoon that night and reached its peak intensity with an estimated sustained wind of 165 km/h near its centre. Fengshen turned to move southeast on 17 November and weakened rapidly. It degenerated into an area of low pressure over sea areas that night.

Kalmaegi (1926) formed as a tropical depression over the western North Pacific about 890 km east-southeast of Manila on the morning of 13 November. It generally move northwest to north-northwest towards the seas east of Luzon at first. Kalmaegi slowed down on 15 and 16 November, and lingered over the seas east of Luzon. It intensified into a tropical storm on the small hours of 17 November and tracked generally northwest towards the vicinity of Luzon Strait. Kalmaegi further intensified into a typhoon on the morning of 19 November and reached its peak intensity with an estimated sustained wind of 120 km/h near its centre. Kalmaegi turned to move south-southwest and made landfall over the northern part of Luzon the next day. Kalmaegi weakened rapidly after landfall and finally degenerated into an area of low pressure over Luzon on the afternoon of 20 November.

Fung-wong (1927) formed as a tropical depression over the western North Pacific about 800 km east of Manila on small hours of 20 November. It moved towards the seas east of Taiwan and intensified gradually. Fung-wong developed into a severe tropical storm on 21 November and reached its peak intensity with an estimated maximum sustained wind of 110 km/h near its centre. Fung-wong weakened rapidly afterwards and finally degenerated into an area of low pressure over the sea areas east of Taiwan on the small hours of 23 November.

Kammuri (1928) formed as a tropical depression over the western North Pacific about 830 km east-southeast of Guam on the small hours of 26 November. It moved west-northwest and intensified gradually. Kammuri developed into a typhoon on 29 November and moved west towards the sea areas east of the Philippines. Kammuri further developed into a super typhoon on the night of 2 December and reached its peak intensity with an estimated maximum sustained wind of 185 km/h near its centre. It moved across the central part of the Philippines and entered the South China Sea on 3 December, and then weakened rapidly. Kammuri turned to move southwestwards on 5 December and finally degenerated into an area of low pressure over the southern part of the South China Sea that night.

According to press reports, Kammuri brought torrential rain and squalls to the Philippines, leading to at least 17 deaths, two missing and 322 injuries. Under the influence of Kammuri, there was widespread power outage across the southeastern part of Luzon. Manila Airport was also closed with over 500 flights cancelled.

Phanfone (1929) formed as a tropical depression over the western North Pacific about 410 km southeast of Yap on the early morning of 22 December. It moved west-northwest and intensified gradually. Phanfone intensified into a typhoon on the afternoon of 24 December and crossed the central part of the Philippines. It reached its peak intensity with an estimated maximum sustained wind of 145 km/h near its centre in the next afternoon. After entering the South China Sea, Phanfone slowed down on 27 December and weakened rapidly over the central part of the South China Sea under the influence of the dry northeast monsoon. Phanfone finally degenerated into an area of low pressure over the central part of the South China Sea on the afternoon of 28 December.

According to press reports, Phanfone brought torrential rain and squalls to the Philippines during its passage, leading to at least 57 deaths, six missing and 369 injuries, with more than 3.2 million people affected and over 530 000 houses damaged.

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

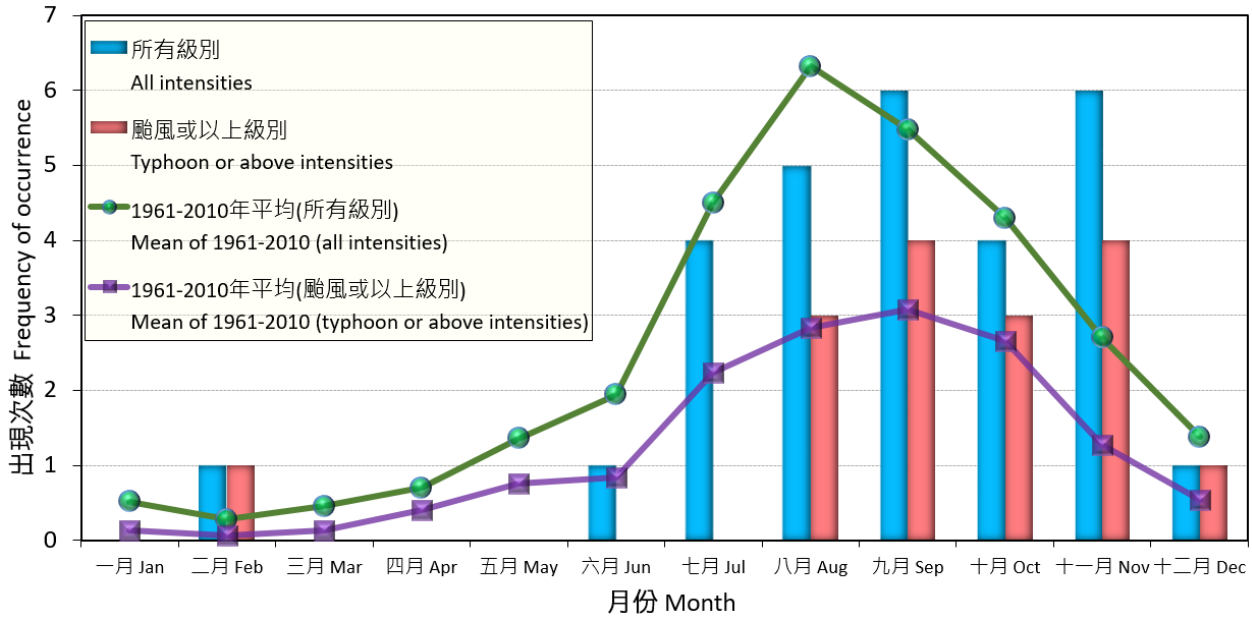


圖 2.1　二零一九年在北太平洋西部及南海區域的熱帶氣旋出現次數之每月分佈 (以熱帶氣旋在該月初次出現為準，假如一熱帶氣旋在九月形成並在十月首次增強為颱風或以上級別，它在「所有級別」及「颱風或以上級別」的統計數字將分別計算在九月及十月份內)。

Figure 2.1 Monthly frequencies of the occurrence of tropical cyclones in the western North Pacific and the South China Sea in 2019 (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).

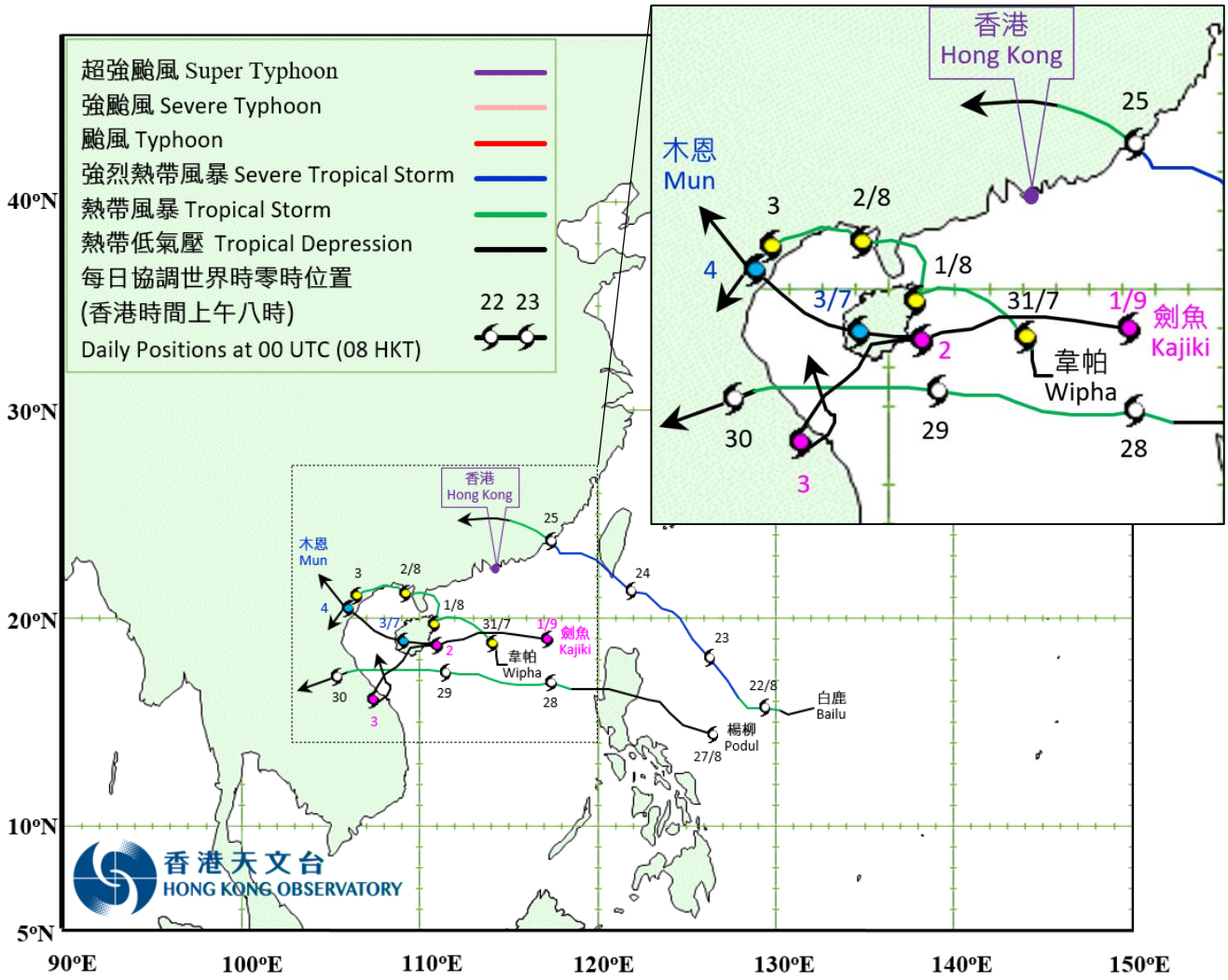


圖 2.2　　二零一九年五個影響香港的熱帶氣旋的路徑圖。

Figure 2.2　　Tracks of the five tropical cyclones affecting Hong Kong in 2019.

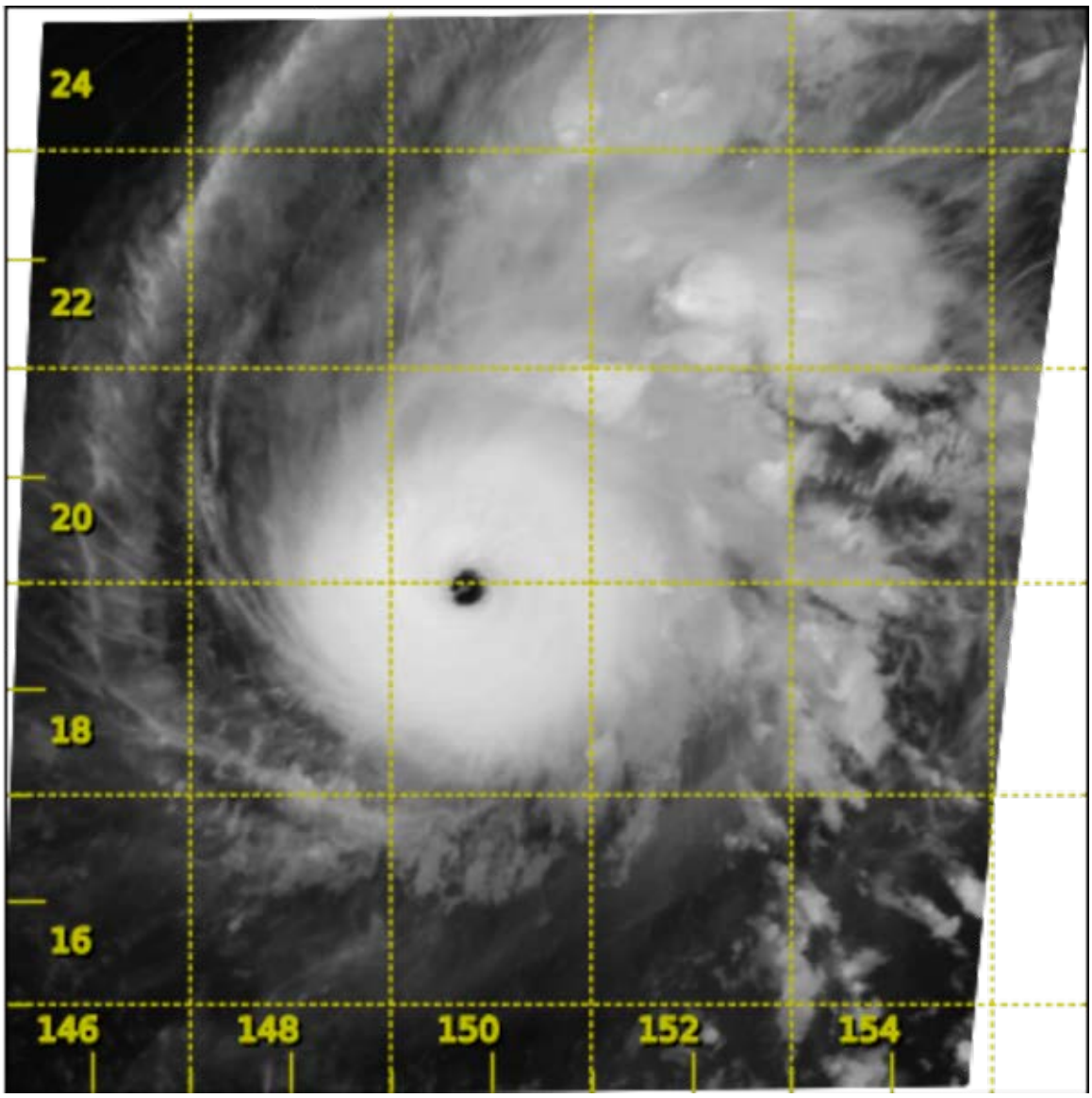


圖2.3　二零一九年十一月五日下午8時左右超強颱風夏浪(1923)的紅外線衛星圖片，當時夏浪達到其最高強度，中心附近最高持續風速估計為每小時250公里，而最低中心氣壓為905百帕斯卡。

Figure 2.3　Infra-red satellite imagery of Super Typhoon Halong (1923) around 8 p.m. on 5 November 2019, when Halong was at peak intensity with estimated maximum sustained winds of 250 km/h near its centre and minimum sea-level pressure of 905 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 the 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
平均 Average (1961-2010)	0.1	0.0	0.1	0.2	0.8	1.4	2.6	3.1	2.7	2.1	1.7	0.6	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
平均 Average (1961-2010)	0.0	0.0	0.0	0.1	0.2	0.7	1.5	1.3	1.5	0.9	0.1	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　二零一九年影響香港的熱帶氣旋

3.1　熱帶低氣壓木恩 (1904)：二零一九年七月二日至四日

木恩是二零一九年首個影響香港的熱帶氣旋。

熱帶低氣壓木恩於七月二日下午在海口之東南約 240 公里的南海北部上形成，大致向西移動。木恩於七月三日早上橫過海南島後，進入北部灣並稍為增強，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。其後木恩採取西北路徑橫過北部灣，七月四日早上在越南北部減弱為一個低壓區。

七月二日木恩於香港之西南偏南約 440 公里形成後，天文台於下午 4 時 15 分發出一號戒備信號，當時亦是木恩最接近香港的時候。天文台總部於當日下午 4 時 39 分錄得最低瞬時海平面氣壓 1000.3 百帕斯卡。晚間本港普遍吹和緩至清勁東至東南風，離岸及高地間中吹強風。隨著木恩對本港的威脅減退，天文台於七月三日上午 5 時 40 分取消所有熱帶氣旋警告信號。

木恩影響香港期間，尖鼻咀錄得最高潮位(海圖基準面以上) 2.07 米及錄得最大風暴潮(天文潮高度以上) 0.38 米。

在木恩相關的雨帶影響下，七月二日及三日本港間中有狂風大驟雨及雷暴。這兩天本港普遍錄得超過 80 毫米雨量，東部地區及大嶼山的雨量更錄得超過 120 毫米。

木恩並沒有對香港造成嚴重破壞。根據報章報導，木恩對海南島海陸空交通造成嚴重影響。

表3.1.1 - 3.1.3分別是木恩影響香港期間各站錄得的最高風速、香港的日雨量及最高潮位資料。 圖3.1.1 - 3.1.2分別為木恩的路徑圖和本港的雨量分佈圖。 圖3.1.3 - 3.1.4分別為木恩的衛星及雷達圖像。

Section 3 TROPICAL CYCLONES AFFECTING HONG KONG IN 2019

3.1 Tropical Depression Mun (1904): 2 – 4 July 2019

Mun was the first tropical cyclone affecting Hong Kong in 2019.

Mun formed as a tropical depression over the northern part of the South China Sea about 240 km southeast of Haikou on the afternoon of 2 July and moved generally westward. After moving across Hainan Island on the morning of 3 July, Mun entered Beibu Wan and slightly intensified, reaching its peak intensity with an estimated sustained wind of 55 km/h near its centre. Moving northwestwards across Beibu Wan, Mun weakened into an area of low pressure over the northern part of Vietnam on the morning of 4 July.

After the formation of Mun about 440 km south-southwest of Hong Kong on 2 July, the Hong Kong Observatory issued the Standby Signal No. 1 at 4:15 p.m. It was also closest to Hong Kong at that time. At the Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 1000.3 hPa was recorded at 4:39 p.m. that day. Local winds were generally moderate to fresh east to southeasterlies during that night, occasionally strong offshore and on high ground. As the threat of Mun to Hong Kong diminished, all tropical cyclone warning signals were cancelled at 5:40 a.m. on 3 July.

Under the influence of Mun, a maximum sea level (above chart datum) of 2.07 m and a maximum storm surge of 0.38 m (above astronomical tide) were recorded at Tsim Bei Tsui.

Under the influence of rainbands associated with Mun, there were occasional heavy squally showers and thunderstorms on 2 and 3 July. More than 80 millimetres of rainfall were generally recorded over the territory during these two days, and rainfall even exceeded 120 millimetres over Lantau Island and the eastern part of Hong Kong.

Mun did not cause any significant damage in Hong Kong. According to press report, Mun disrupted sea, land, air transportation in Hainan Island.

Information on the maximum wind, daily rainfall and maximum sea level reached in Hong Kong during the passage of Mun is given in Tables 3.1.1 - 3.1.3 respectively. Figures 3.1.1 - 3.1.2 show respectively the track of Mun and the rainfall distribution for Hong Kong. Figures 3.1.3 - 3.1.4 show respectively a satellite imagery and a radar imagery of Mun.

表 3.1.1　在木恩影響下，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 Mun 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
黃麻角(赤柱)	Bluff Head (Stanley)	南	S	59	3/7	04:22	東	E	23	2/7	17:00
中環碼頭	Central Pier	東	E	41	2/7	17:56	東南偏東	ESE	23	2/7	17:00
長洲	Cheung Chau	東南偏東	ESE	83	2/7	23:59	東	E	34	2/7	17:00
長洲泳灘	Cheung Chau Beach	東	E	72	2/7	23:59	東	E	38	2/7	17:00
青洲	Green Island	東南偏南	SSE	65	3/7	04:36	東北偏東	ENE	41	2/7	17:00
							東北偏東	ENE	41	2/7	19:00
香港國際機場	Hong Kong International Airport	東南偏東	ESE	43	2/7	17:16	東	E	31	2/7	17:00
啟德	Kai Tak	東南偏東	ESE	47	2/7	21:43	東	E	22	2/7	17:00
京士柏	King's Park	東	E	41	2/7	21:47	東	E	16	2/7	17:00
南丫島	Lamma Island	東南偏東	ESE	47	3/7	04:28	東	E	25	2/7	17:00
流浮山	Lau Fau Shan	東北偏東	ENE	41	2/7	19:10	東北偏東	ENE	25	2/7	20:00
北角	North Point	東	E	45	2/7	21:42	東	E	22	2/7	17:00
坪洲	Peng Chau	東	E	47	2/7	16:25	東	E	34	2/7	18:00
平洲	Ping Chau	東南	SE	25	2/7	22:15	東	E	9	2/7	22:00
西貢	Sai Kung	東南	SE	47	2/7	21:52	東北偏東	ENE	13	2/7	19:00
沙洲	Sha Chau	東南	SE	56	3/7	00:28	東南	SE	31	2/7	18:00
沙螺灣	Sha Lo Wan	東北偏東	ENE	47	2/7	17:04	東	E	20	2/7	17:00
沙田	Sha Tin	東南偏東	ESE	51	3/7	04:55	東	E	12	2/7	17:00
石崗	Shek Kong	東	E	40	2/7	19:39	東	E	23	2/7	18:00
九龍天星碼頭	Star Ferry (Kowloon)	東	E	43	2/7	21:44	東	E	22	2/7	17:00
打鼓嶺	Ta Kwu Ling	東南偏東	ESE	41	2/7	17:08	東	E	20	2/7	18:00
大美督	Tai Mei Tuk	東	E	56	2/7	22:11	東北偏東	ENE	27	2/7	20:00
大帽山	Tai Mo Shan	東南偏東	ESE	81	2/7	16:15	東	E	62	2/7	17:00
		東	E	81	2/7	16:53					
大埔滘	Tai Po Kau	東南偏東	ESE	54	2/7	22:14	東	E	22	2/7	17:00
塔門東	Tap Mun East	東南偏東	ESE	56	2/7	21:57	東南偏東	ESE	40	2/7	17:00
大老山	Tate's Cairn	南	S	70	3/7	04:46	東	E	36	2/7	17:00
將軍澳	Tseung Kwan O	西南	SW	47	3/7	04:43	北	N	9	2/7	19:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東	E	45	2/7	22:02	東南偏東	ESE	14	2/7	18:00
							東	E	14	2/7	19:00
							東	E	14	3/7	01:00
屯門政府合署	Tuen Mun Government Offices	東南偏南	SSE	43	3/7	00:27	東南偏南	SSE	12	2/7	23:00
橫瀾島	Waglan Island	南	S	72	3/7	04:26	東	E	45	2/7	17:00
濕地公園	Wetland Park	東南	SE	27	2/7	16:55	東南偏東	ESE	13	2/7	17:00
黃竹坑	Wong Chuk Hang	西	W	45	3/7	04:31	東	E	19	2/7	17:00

昂坪 - 沒有資料　Ngong Ping - data not available

表 3.1.2　　木恩掠過期間，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 Mun

站 (參閱圖 3.1.2) Station (See Fig. 3.1.2)			七月二日 2 Jul	七月三日 3 Jul	總雨量(毫米) Total rainfall (mm)
香港天文台 Hong Kong Observatory (HKO)			19.1	79.1	98.2
香港國際機場 Hong Kong International Airport (HKA)			19.4	86.8	106.2
長洲 Cheung Chau (CCH)			25.0	59.5	84.5
H23	香港仔	Aberdeen	26.5	69.0	95.5
N05	粉嶺	Fanling	5.0	55.0	60.0
N13	糧船灣	High Island	16.5	72.0	88.5
K04	佐敦谷	Jordan Valley	31.5	97.0	128.5
N06	葵涌	Kwai Chung	15.5	78.0	93.5
H12	半山區	Mid Levels	24.5	71.5	96.0
N09	沙田	Sha Tin	15.0	93.0	108.0
H19	筲箕灣	Shau Kei Wan	36.5	102.5	139.0
SEK	石崗	Shek Kong	4.5	58.5	63.0
K06	蘇屋邨	So Uk Estate	19.5	75.5	95.0
R31	大美督	Tai Mei Tuk	10.0	95.0	105.0
R21	踏石角	Tap Shek Kok	[10.0]	[94.5]	[104.5]
N17	東涌	Tung Chung	31.5	128.0	159.5
TMR	屯門水庫	Tuen Mun Reservoir	10.5	88.3	98.8

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

表 3.1.3　　木恩掠過期間，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 Mun

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	1.61	2/7	22:37	0.22	2/7	23:40
石壁	Shek Pik	1.71	2/7	22:13	0.30	2/7	19:09
大廟灣	Tai Miu Wan	1.60	2/7	22:20	0.28	2/7	22:13
大埔滘	Tai Po Kau	1.67	2/7	22:23	0.35	2/7	17:53
尖鼻咀	Tsim Bei Tsui	2.07	2/7	23:35	0.38	2/7	23:38

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

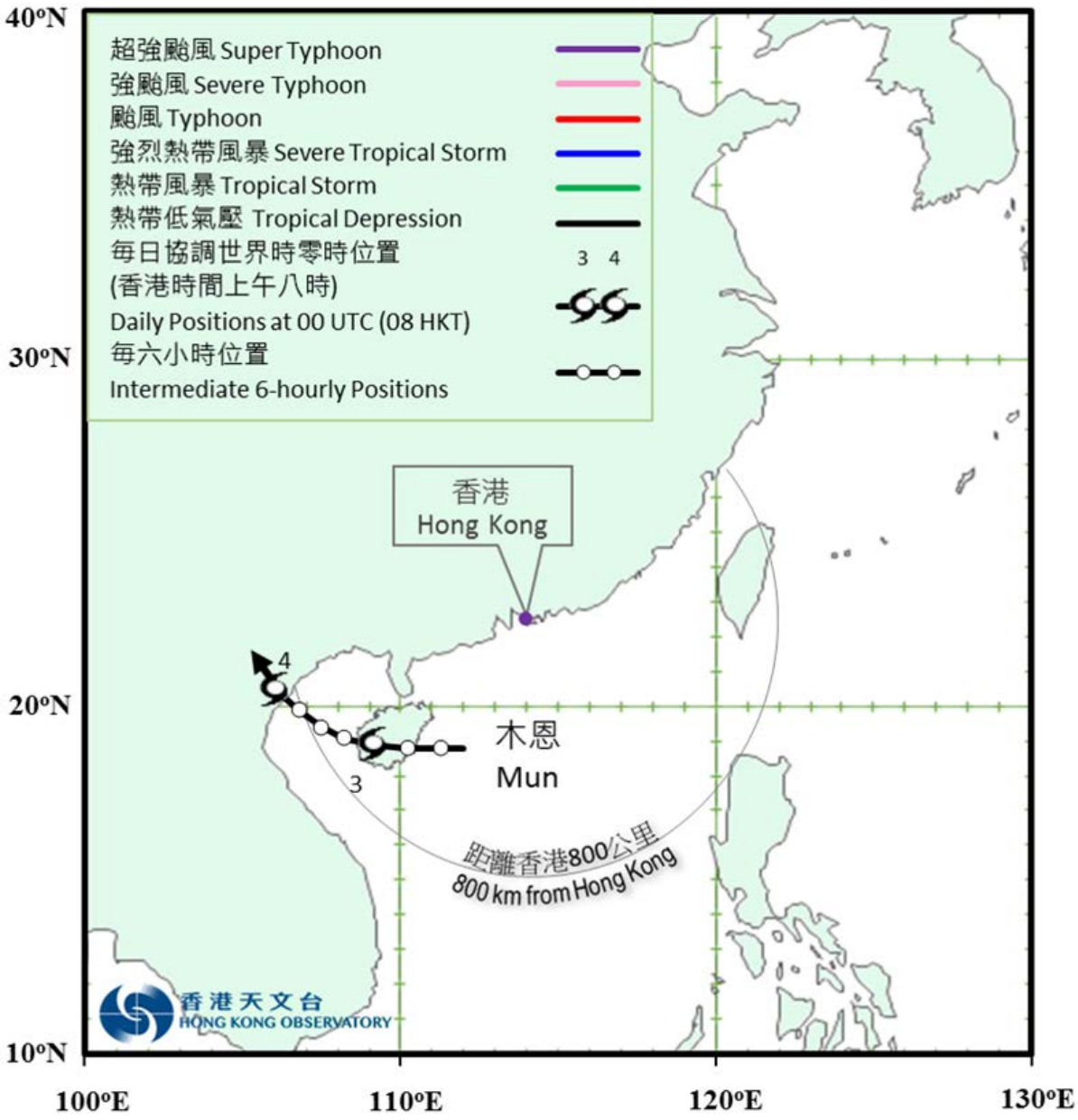


圖 3.1.1　　二零一九年七月二日至四日木恩的路徑圖。

Figure 3.1.1　　Track of the Mun: 2 – 4 July 2019.

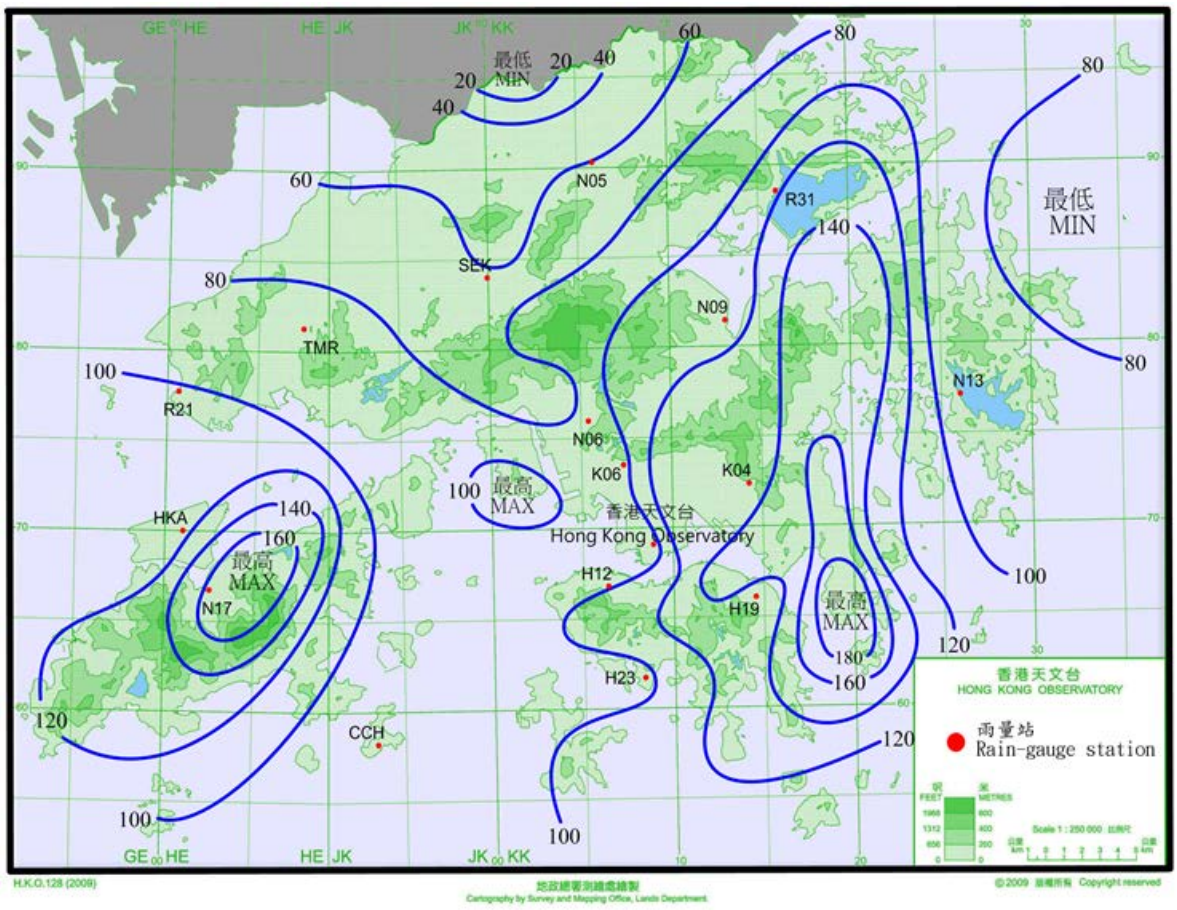


圖 3.1.2　　二零一九年七月二日至三日的雨量分佈(等雨量線單位為毫米)。

Figure 3.1.2　Rainfall distribution on 2 – 3 July 2019 (isohyets are in millimetres).

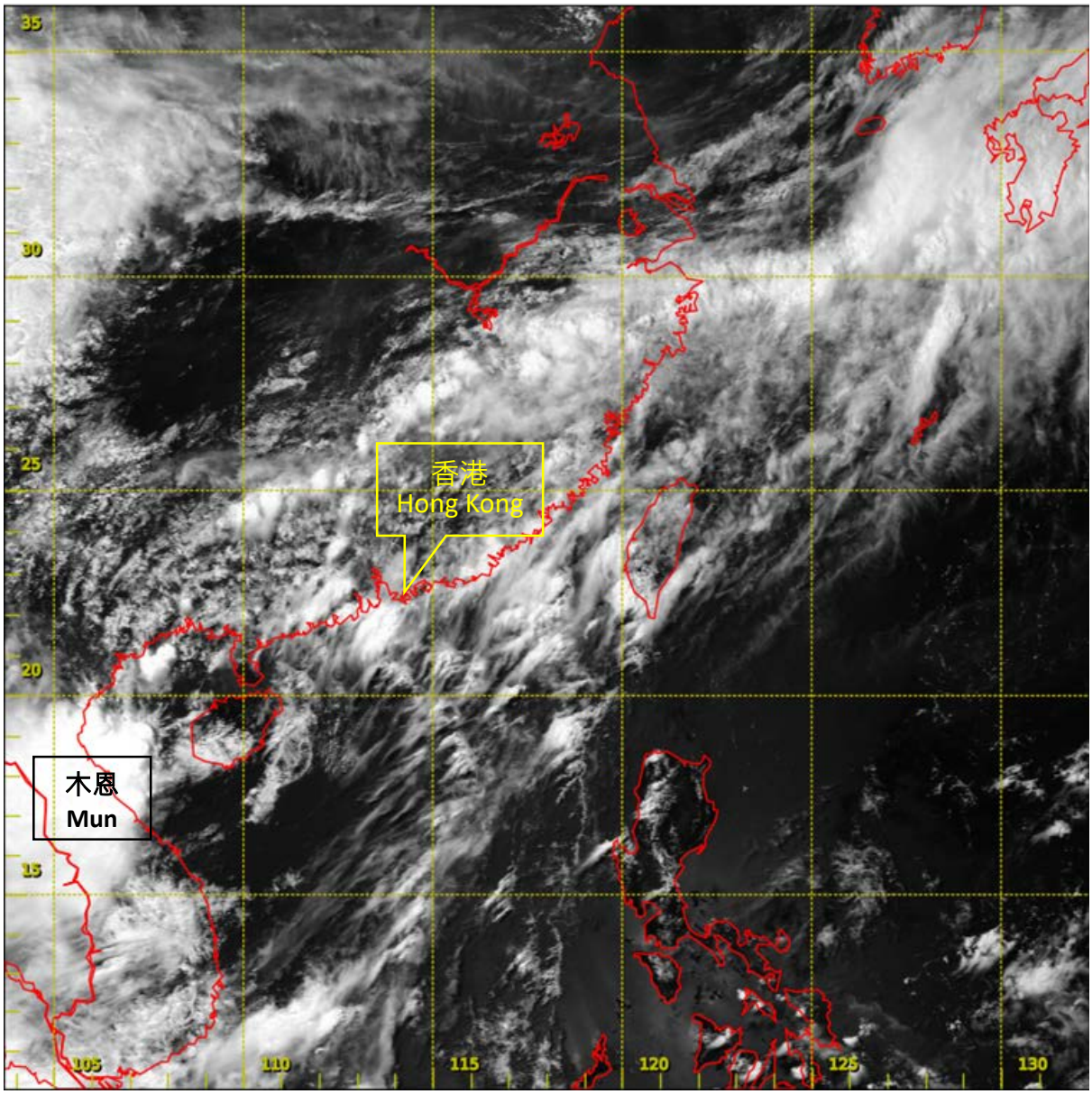


圖 3.1.3　二零一九年七月三日下午 2 時左右的可見光衛星圖片，當時木恩達到其最高強度，中心附近最高持續風速估計為每小時 55 公里。

Figure 3.1.3 Visible satellite imagery around 2 p.m. on 3 July 2019, when Mun was at peak intensity with estimated maximum sustained winds of 55 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 the Himawari-8 (H-8) of Japan Meteorological Agency (JMA).]

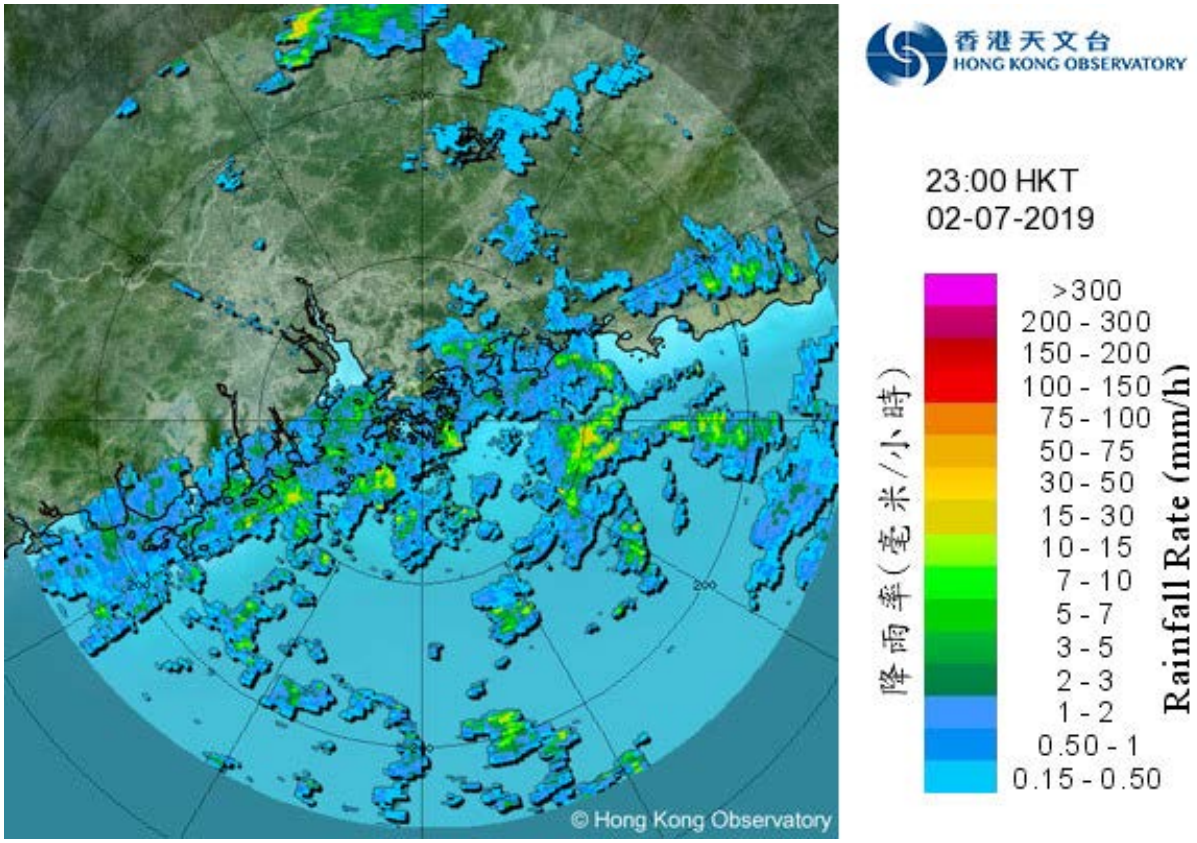


圖 3.1.4　二零一九年七月二日晚上 11 時的雷達回波圖像，當時與木恩相關的雨帶正影響廣東沿岸及南海北部。

Figure 3.1.4　Image of radar echoes at 11:00 p.m. on 2 July 2019. The rainbands associated with Mun were affecting the coast of Guangdong and the northern part of the South China Sea at that time.

3.2 熱帶風暴韋帕 (1907)：二零一九年七月三十日至八月三日

韋帕是二零一九年第二個影響香港的熱帶氣旋。雖然熱帶風暴韋帕在香港約310公里掠過，但其廣闊的環流及不對稱的風力結構令天文台需要發出今年唯一一個八號烈風或暴風信號。韋帕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風暴。

熱帶低氣壓韋帕於七月三十日下午在香港以南約510公里的南海北部上形成，晚間至翌日早上向北緩慢移動。韋帕於七月三十一日早上增強為熱帶風暴，其後達到最高強度時，中心附近最高持續風速估計為每小時85公里。韋帕於當日下午開始加速向西北偏西移向海南島，八月一日清晨韋帕移速減慢，以逆時針方向在海南島東北部沿岸徘徊，早上再度加速向北移動，晚上向西橫過雷州半島。八月二日韋帕橫過廣西沿岸至北部灣一帶，並逐漸減弱，翌日晚上在越南北部減弱為一個低壓區。

七月三十日下午韋帕於南海北部發展為熱帶低氣壓後，香港天文台在下午3時40分發出一號戒備信號，當時韋帕集結在香港以南約500公里。下午本港吹清勁偏東風，離岸及高地吹強風。隨著韋帕逐漸增強，天文台在當晚9時15分發出三號強風信號，當時韋帕位於香港以南約500公里。晚間本港吹清勁至強風程度的東至東北風。由於韋帕於七月三十一日上午採取較偏北路徑移動，進一步靠近廣東沿岸及增強，天文台在當日下午1時40分發出八號東北烈風或暴風信號，當時韋帕集結在香港以南約340公里。受韋帕右半圓外圍的強雨帶影響，下午本港普遍吹強風至烈風程度的東至東北風。韋帕在當日下午5時左右最接近香港，在香港之西南偏南約310公里掠過。隨著當晚韋帕逐漸遠離香港，本港風力有所減弱，天文台在晚上11時40分改發三號強風信號。八月一日初時韋帕仍然在海南島東北部沿岸徘徊，與其相關的外圍雨帶繼續影響香港。當日早上本港仍普遍吹強風程度的東至東南風，離岸及高地間中吹烈風。下午韋帕移向雷州半島，本港風力逐漸緩和，天文台在晚上7時20分改發一號戒備信號，到八月二月上午8時40分取消所有熱帶氣旋警告信號。

在韋帕的影響下，大帽山、長洲及橫瀾島錄得的最高每小時平均風速分別為每小時88、72及70公里，而最高陣風則分別為每小時131、108及117公里。尖鼻咀錄得最高潮位3.47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) 0.64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	998.1	1/8	上午 4 時 49 分
香港國際機場	997.4	1/8	上午 4 時 30 分
長洲	997.3	1/8	上午 4 時 38 分
京士柏	998.1	1/8	上午 4 時 54 分
流浮山	997.8	1/8	上午 4 時 31 分
坪洲	997.6	1/8	上午 4 時 43 分
沙田	998.7	1/8	上午 4 時 49 分
上水	998.5	1/8	上午 4 時 20 分
打鼓嶺	998.2	1/8	上午 4 時 50 分
大埔	998.9	1/8	上午 4 時 54 分
橫瀾島	998.3	1/8	上午 4 時 21 分

韋帕的外圍雨帶在七月三十日至八月二日為香港帶來連場狂風大雨，期間本港普遍錄得超過250毫米雨量，而新界部分地區及大嶼山的雨量更超過350毫米。天文台在七月三十一日、八月一日及八月二日均曾發出黃色暴雨警告。雨勢在七月三十一日晚上最大，當晚天文台曾發出紅色暴雨警告、新界北部水浸特別報告及山泥傾瀉警告。

韋帕吹襲香港期間，最少有20人受傷，另有超過850宗塌樹報告，3宗水浸報告及3宗山泥傾瀉報告。深水埗有天秤被強風吹塌，一人被雜物擊中受傷。西貢、東涌及香港仔分別有棚架倒塌。風暴期間，一人在石澳游泳時受傷，需要救生員協助。錦田有村民被洪水圍困，需要消防員協助離開。中環街市有假天花在大雨下倒塌。大棠亦有護土牆倒塌，壓倒一間鐵皮屋。約300公頃的新界農地受影響。香港國際機場有693班航班延誤、25班航班取消、14班航班需要轉飛其他地方。

根據報章報導，韋帕在澳門造成六人受傷。韋帕亦為越南北部帶來暴雨，引致廣泛地區水浸，共造成最少10人死亡，11人失蹤。

表3.2.1 - 3.2.4分別是韋帕影響香港期間各站錄得的最高風速、持續風力達到強風程度及烈風程度的時段、香港的日雨量及最高潮位資料。圖3.2.1 - 3.2.2分別為韋帕的路徑圖和本港的雨量分佈圖。圖3.2.3是香港各站錄得的風向和風速。圖3.2.4顯示橫瀾島、長洲及大美督錄得的風速。圖3.2.5 - 3.2.6分別為韋帕的衛星及

雷達圖像。圖3.2.7顯示有天秤被強風吹塌。

3.2 Tropical Storm Wipha (1907): 30 July – 3 August 2019

Wipha was the second tropical cyclone affecting Hong Kong in 2019. Although tropical storm Wipha skirted past at about 310 km of the territory, its extensive circulation and asymmetric wind structure necessitated the issuance of the only No.8 Gale or Storm Signal this year. Wipha is also the farthest tropical storm necessitating the issuance of No.8 Gale or Storm Signal in Hong Kong since 1961.

Wipha formed as a tropical depression over the northern part of the South China Sea about 510 km south of Hong Kong on the afternoon of 30 July. It drifted northwards slowly during that night and next morning. Wipha intensified into a tropical storm on the morning of 31 July, later reaching its peak intensity with an estimated maximum sustained wind of 85 km/h near its centre. It started to pick up speed to move west-northwest towards Hainan Island in the afternoon. Wipha slowed down on the early morning of 1 August, making an anti-clockwise loop around the northeastern coast of Hainan Island. It picked up its speed to move northward again in the morning and then moved westward across the Leizhou Peninsula that night. Wipha moved across the coast of Guangxi and the vicinity of Beibu Wan on 2 August and weakened gradually. It degenerated into an area of low pressure over the northern part of Vietnam the next night.

After Wipha developed into a tropical depression over the northern part of the South China Sea on the afternoon of 30 July, the Hong Kong Observatory issued the Standby Signal No. 1 at 3:40 p.m. when Wipha was about 500 km south of Hong Kong. Local winds were fresh easterlies, reaching strong force offshore and on high ground in the afternoon. With Wipha intensifying gradually, the No. 3 Strong Wind Signal was issued at 9:15 p.m. that night when Wipha was about 500 km south of Hong Kong. Local winds became fresh to strong east to northeasterly during the night. As Wipha adopted a more northerly track and edged closer to the coast of Guangdong and intensified further on the morning of 31 July, the No. 8 Northeast Gale or Storm Signal was issued at 1:40 p.m. when Wipha was about 340 km south of Hong Kong. Under the influence of the intense outer rainbands in the right semicircle of Wipha, strong to gale force east to northeasterly winds generally affected the territory in the afternoon. Wipha came closest to Hong Kong at around 5 p.m. that day, skirting past about 310 km south-southwest of the territory. With Wipha departing gradually from Hong Kong and local wind moderating, the No. 3 Strong Wind Signal was issued at 11:40 p.m. that night. Wipha lingered around the northeastern coast of Hainan Island at first on 1 August and the rainbands associated with Wipha continued to affect Hong Kong. Strong east to southeasterly winds persisted over Hong Kong that morning, occasionally reaching gale force offshore and on high ground. Wipha moved towards Leizhou Peninsula in the afternoon and local winds abated gradually. The Standby Signal No.1 was issued at 7:20 p.m. on 1 August, before all tropical cyclone warning signals were cancelled at 8:40 a.m. on 2 August.

Under the influence of Wipha, maximum hourly mean winds of 88, 72 and 70 km/h and maximum gusts of 131, 108 and 117 km/h were recorded at Tai Mo Shan, Cheung Chau and Waglan Island respectively. A maximum sea level (above chart datum) of 3.47 m was recorded at Tsim Bei Tsui, and a maximum storm surge (above astronomical tide) of 0.64 m 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	998.1	1/8	4:49 a.m.
Hong Kong International Airport	997.4	1/8	4:30 a.m.
Cheung Chau	997.3	1/8	4:38 a.m.
King's Park	998.1	1/8	4:54 a.m.
Lau Fau Shan	997.8	1/8	4:31 a.m.
Peng Chau	997.6	1/8	4:43 a.m.
Shatin	998.7	1/8	4:49 a.m.
Sheung Shui	998.5	1/8	4:20 a.m.
Ta Kwu Ling	998.2	1/8	4:50 a.m.
Tai Po	998.9	1/8	4:54 a.m.
Waglan Island	998.3	1/8	4:21 a.m.

The heavy rain and squalls associated with the outer rainbands of Wipha lashed the territory during 30 July to 2 August. Overall, more than 250 millimetres of rainfall were generally recorded over the territory, with rainfall exceeding 350 millimetres over the Lantau Island and parts of the New Territories. Amber Rainstorm Warning was issued on 31 July, 1 August and 2 August. The rain was particularly heavy on the night of 31 July, necessitating the issuance of the Red Rainstorm Warning, Landslip Warning and Special Announcement on Flooding in Northern New Territories by the Observatory.

In Hong Kong, at least 20 people were injured during the passage of Wipha. There were more than 850 reports of fallen trees, 3 reports of flooding and 3 reports of landslides. Under high winds, a tower crane in Sham Shui Po was blown down and one person was injured by falling objects. Scaffoldings at Sai Kung, Tung Chung and Aberdeen were blown down. During the stormy weather, one person was injured while swimming in Shek O and required the assistance of lifeguards. Villagers in Kam Tin were trapped by flood waters in and were taken to safety by firemen. Part of the false ceiling in Central Market collapsed under heavy rain. A retaining wall at Tai Tong also collapsed, damaging a metal hut. About 300 hectares of farmland in the New Territories were affected. 693 flights were cancelled, 25 flights were delayed and 14 flights diverted at the Hong Kong International Airport.

According to press reports, at least six people were injured in Macao during the passage of Wipha. Wipha also brought torrential rain to the northern part of Vietnam, which triggered extensive flooding. At least 10 people were killed and 11 were reported missing.

Information on the maximum wind, periods of strong and gale force winds, daily rainfall and maximum sea level reached in Hong Kong during the passage of Wipha is given in Tables 3.2.1 - 3.2.4 respectively. Figures 3.2.1 - 3.2.2 show respectively the track of Wipha and the rainfall distribution for Hong Kong. Figure 3.2.3 shows the winds recorded at various stations in Hong Kong. Figure 3.2.4 shows traces of the wind speed recorded at Waglan Island, Cheung Chau and Tai Mei Tuk. Figures 3.2.5 - 3.2.6 show respectively a satellite imagery and radar imageries of Wipha. Figure 3.2.7 shows that a tower crane was blown down under high winds.

表 3.2.1　在韋帕影響下，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 Wipha 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
黃麻角(赤柱)	Bluff Head (Stanley)	東	E	90	31/7	13:59	東南	SE	51	1/8	08:00
中環碼頭	Central Pier	東	E	94	31/7	13:44	東	E	43	31/7	16:00
長洲	Cheung Chau	東南偏東	ESE	108	1/8	07:18	東	E	72	1/8	08:00
長洲泳灘	Cheung Chau Beach	東北偏東	ENE	115	31/7	16:30	東	E	68	1/8	07:00
青洲	Green Island	東北偏東	ENE	112	31/7	13:46	東北偏東	ENE	59	31/7	16:00
香港國際機場	Hong Kong International Airport	東南偏東	ESE	79	1/8	07:32	東南偏東	ESE	47	1/8	08:00
啟德	Kai Tak	東	E	79	31/7	14:01	東	E	34	31/7	19:00
京士柏	King's Park	東	E	75	31/7	15:43	東	E	31	1/8	07:00
南丫島	Lamma Island	東南偏東	ESE	77	1/8	07:15	東	E	43	1/8	05:00
流浮山	Lau Fau Shan	東南	SE	90	1/8	07:49	東	E	31	30/7	17:00
北角	North Point	東	E	83	31/7	18:29	東	E	47	31/7	16:00
坪洲	Peng Chau	東	E	104	31/7	16:33	東	E	54	31/7	16:00
平洲	Ping Chau	東	E	49	31/7	18:25	東	E	22	31/7	20:00
西貢	Sai Kung	東北	NE	92	31/7	17:50	東北偏東	ENE	40	31/7	16:00
							東北偏東	ENE	40	31/7	20:00
沙洲	Sha Chau	東南	SE	85	1/8	07:32	東南偏東	ESE	49	1/8	08:00
沙螺灣	Sha Lo Wan	東	E	99	1/8	07:34	東	E	41	31/7	22:00
沙田	Sha Tin	東北偏東	ENE	62	31/7	22:02	東南	SE	23	1/8	20:00
石崗	Shek Kong	東	E	75	31/7	14:19	東	E	31	1/8	05:00
							東	E	31	1/8	11:00
九龍天星碼頭	Star Ferry (Kowloon)	東南	SE	90	1/8	07:27	東	E	45	1/8	08:00
打鼓嶺	Ta Kwu Ling	東北偏東	ENE	58	31/7	14:16	東	E	23	1/8	00:00
大美督	Tai Mei Tuk	東	E	94	31/7	22:55	東	E	59	1/8	07:00
大帽山	Tai Mo Shan	東南偏東	ESE	131	1/8	06:22	東南偏東	ESE	88	1/8	07:00
大埔滘	Tai Po Kau	東南偏東	ESE	76	1/8	07:40	東	E	43	31/7	15:00
塔門東*	Tap Mun East*	東南偏東	ESE	94	31/7	13:53	東	E	63	31/7	19:00
大老山	Tate's Cairn	東南偏東	ESE	121	31/7	20:08	東	E	76	31/7	21:00
將軍澳	Tseung Kwan O	東南偏東	ESE	63	31/7	19:27	東南偏東	ESE	20	1/8	20:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東南偏南	SSE	77	1/8	07:30	東南偏東	ESE	31	1/8	08:00
屯門政府合署	Tuen Mun Government Offices	東南偏東	ESE	90	1/8	07:50	東南	SE	23	1/8	08:00
							東南	SE	23	1/8	21:00
橫瀾島	Waglan Island	東	E	117	31/7	13:48	東	E	70	31/7	19:00
濕地公園	Wetland Park	東	E	62	31/7	14:13	東	E	20	30/7	18:00
黃竹坑	Wong Chuk Hang	東南偏東	ESE	96	1/8	07:15	東北	NE	31	31/7	16:00

昂坪 - 沒有資料　Ngong Ping - data not available

*基於不完整的數據　*based on incomplete data

表 3.2.2　在韋帕影響下，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 3.2.2　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 Wipha were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最初達到強風* 時間 Start time when strong wind speed* was attained		最後達到強風* 時間 End time when strong wind speed* was attained		最初達到烈風# 時間 Start time when gale force wind speed# was attained		最後達到烈風# 時間 End time when gale force wind speed# was attained	
		日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time
長洲	Cheung Chau	30/7	15:40	2/8	06:22	31/7	14:17	1/8	22:08
香港國際機場	Hong Kong International Airport	30/7	23:59	1/8	09:52	-			
啟德	Kai Tak	31/7	14:02	1/8	10:46	-			
流浮山	Lau Fau Shan	31/7	14:21	1/8	08:04	-			
西貢	Sai Kung	31/7	12:24	1/8	08:05	-			
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	1/8	07:36	1/8	07:39	-			

沙田及打鼓嶺的持續風力未達到強風程度。
The sustained wind speed did not attain strong force at Sha Tin and Ta Kwu Ling.
- 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 3.2.3　　韋帕掠過期間，香港天文台總部及其他各站所錄得的日雨量
Table 3.2.3　Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Wipha

站 (參閱圖 2.2.2) Station (See Fig. 2.2.2)			七月三十日 30 Jul	七月三十一日 31 Jul	八月一日 1 Aug	八月二日 2 Aug	總雨量(毫米) Total rainfall (mm)
香港天文台 Hong Kong Observatory			12.8	121.1	98.3	8.2	240.4
香港國際機場 Hong Kong International Airport (HKA)			8.8	99.2	104.8	45.7	258.5
長洲 Cheung Chau (CCH)			7.0	[100.5]	47.0	[16.5]	[171.0]
H23	香港仔	Aberdeen	14.5	130.0	90.5	6.5	241.5
N05	粉嶺	Fanling	6.0	120.5	99.0	20.0	245.5
N13	糧船灣	High Island	5.0	168.5	107.0	3.0	283.5
K04	佐敦谷	Jordan Valley	17.0	224.5	76.5	13.0	331.0
N06	葵涌	Kwai Chung	12.0	211.0	84.5	7.5	315.0
H12	半山區	Mid Levels	16.0	117.5	100.5	9.5	243.5
N09	沙田	Sha Tin	7.5	183.0	107.5	13.5	311.5
H19	筲箕灣	Shau Kei Wan	23.0	121.0	71.5	9.5	225.0
SEK	石崗	Shek Kong	5.0	[162.0]	65.5	[3.0]	[235.5]
K06	蘇屋邨	So Uk Estate	17.5	229.0	82.5	12.5	341.5
R31	大美督	Tai Mei Tuk	5.0	108.5	99.0	8.0	220.5
N17	東涌	Tung Chung	10.0	147.5	134.0	73.0	364.5
TMR	屯門水庫	Tuen Mun Reservoir	2.2	107.8	90.1	51.8	251.9

R21 踏石角 – 沒有資料 Tap Shek Kok - data not available
註 :[ ] 基於不完整的每小時雨量數據。Note : [ ] based on incomplete hourly data.

表 3.2.4　　韋帕掠過期間，香港各潮汐站所錄得的最高潮位及最大風暴潮
Table 3.2.4　Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Wipha

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	2.97	1/8	07:38	0.53	1/8	07:36
石壁	Shek Pik	3.20	1/8	09:30	0.64	1/8	09:29
大廟灣	Tai Miu Wan	2.93	1/8	07:26	0.59	1/8	07:25
大埔滘	Tai Po Kau	2.93	1/8	07:26	0.63	1/8	00:44
尖鼻咀	Tsim Bei Tsui	3.47	1/8	09:11	0.60	1/8	18:04

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

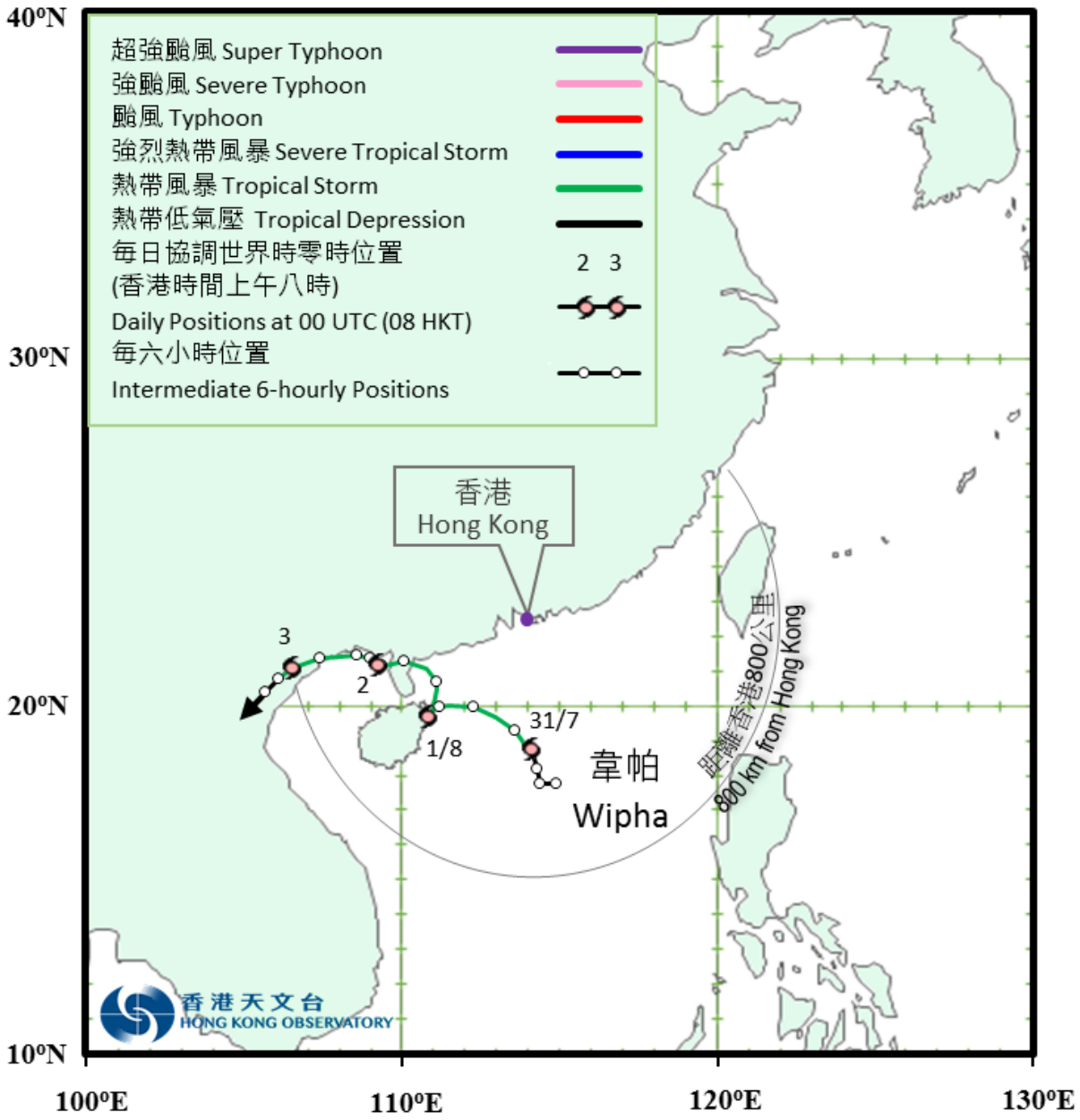


圖 3.2.1a　　二零一九年七月三十日至八月三日韋帕的路徑圖。

Figure 3.2.1a　　Track of Wipha: 30 July – 3 August 2019.

圖 3.2.1b　　韋帕接近香港時的路徑圖。

Figure 3.2.1b　Track of Wipha near Hong Kong.

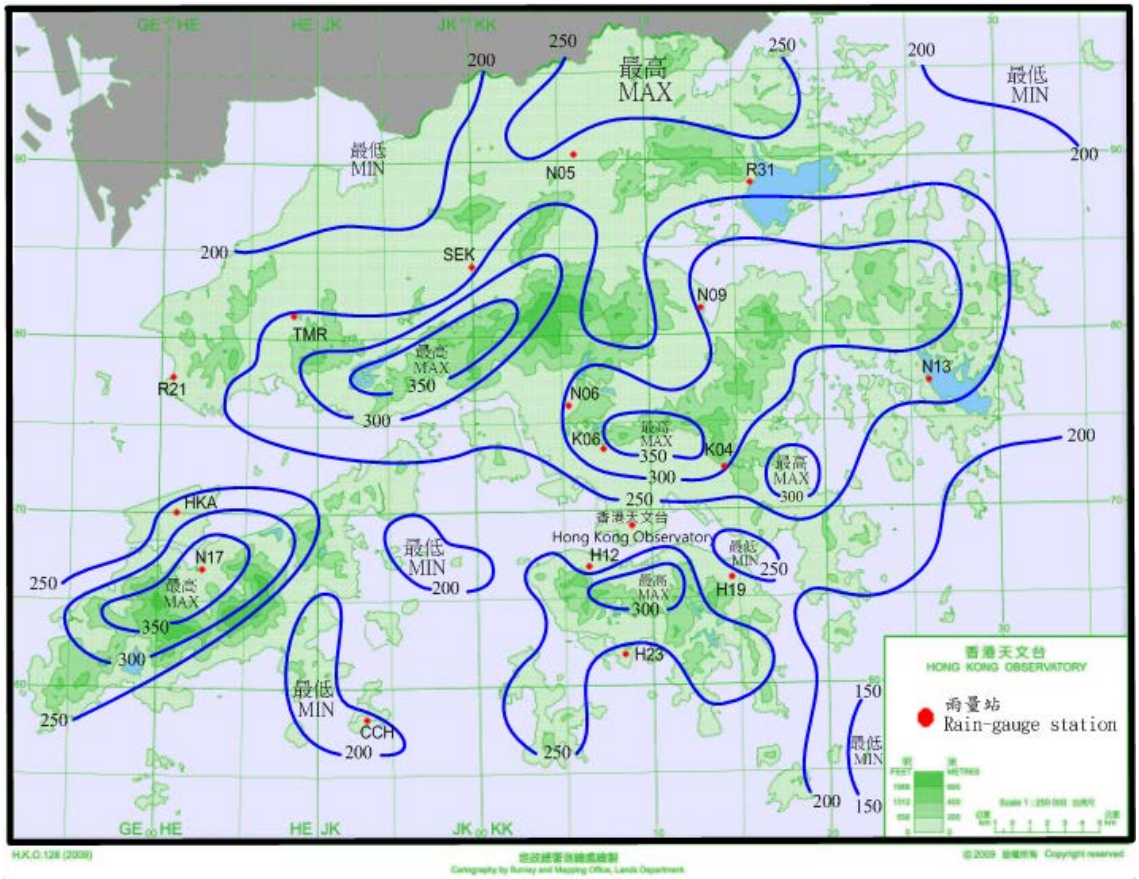


圖 3.2.2　　二零一九年七月三十日至八月二日的雨量分佈(等雨量線單位為毫米)。

Figure 3.2.2　Rainfall distribution on 30 July - 2 August 2019 (isohyets in millimetres).

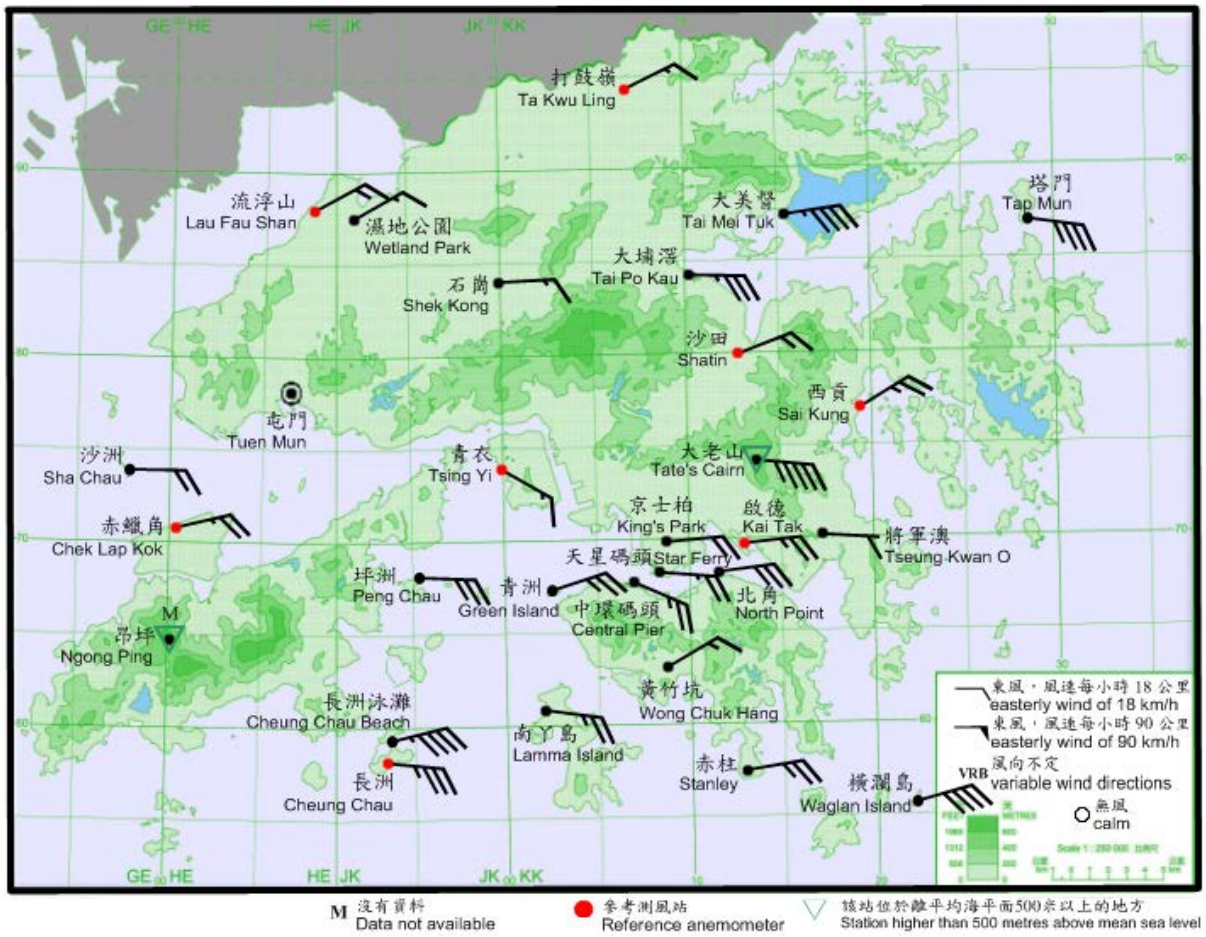


圖 3.2.3　二零一九年七月三十一日下午 2 時 10 分香港各站錄得的十分鐘平均風向和風速。當時大老山、橫瀾島、長洲泳灘、塔門及大美督的風力達到烈風程度。

Figure 3.2.3　10-minute mean wind direction and speed recorded at various stations in Hong Kong at 2:10 p.m. on 31 July 2019. Winds at Tate's Cairn, Waglan Island, Cheung Chau Beach, Tap Mun and Tai Mei Tuk reached gale force at the time.

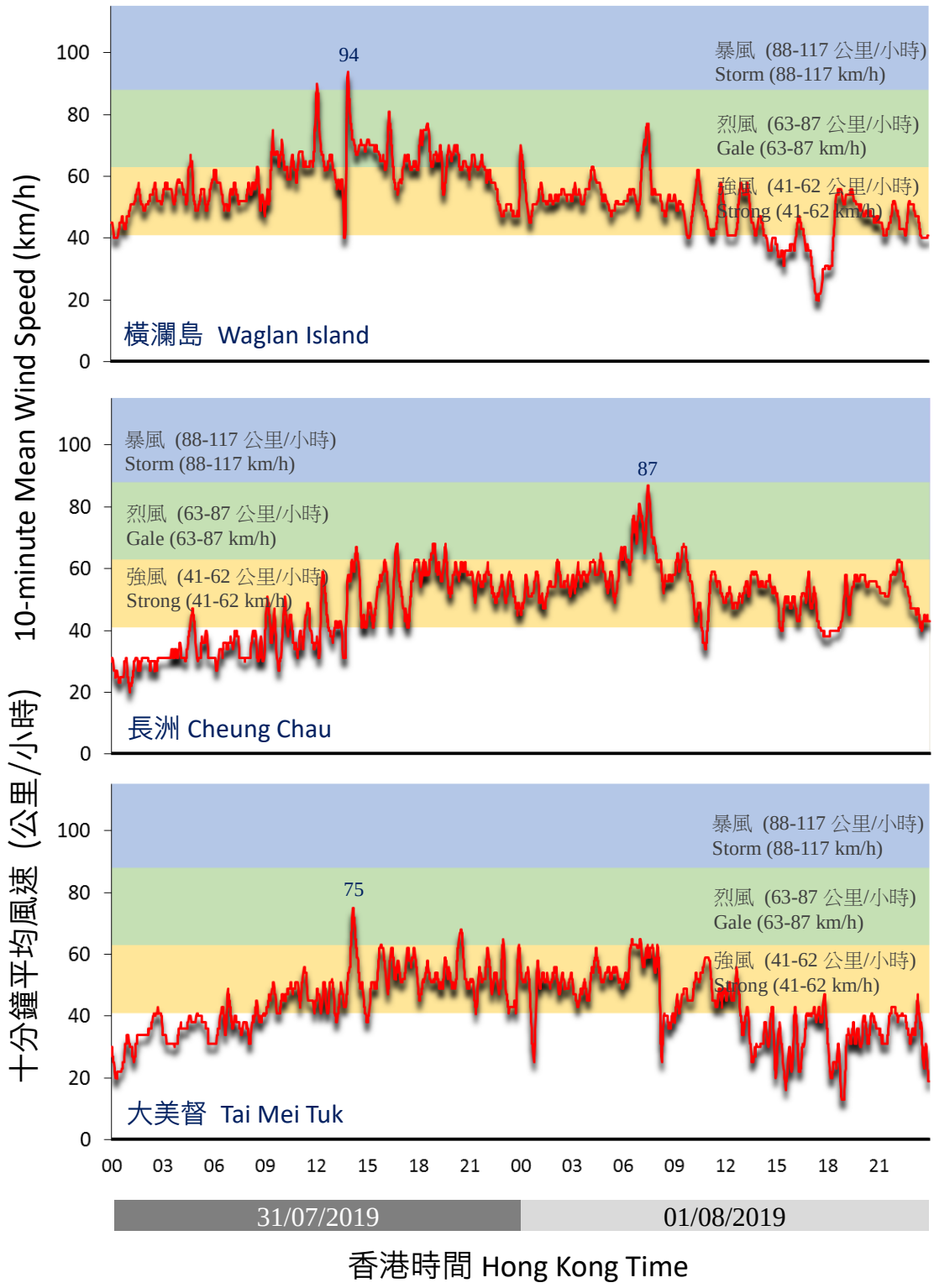


圖 3.2.4 二零一九年七月三十一日至八月一日在橫瀾島、長洲及大美督錄得的十分鐘平均風速。

Figure 3.2.4 Traces of 10-minute mean wind speed recorded at Waglan Island, Cheung Chau and Tai Mei Tuk on 31 July and 1 August 2019.

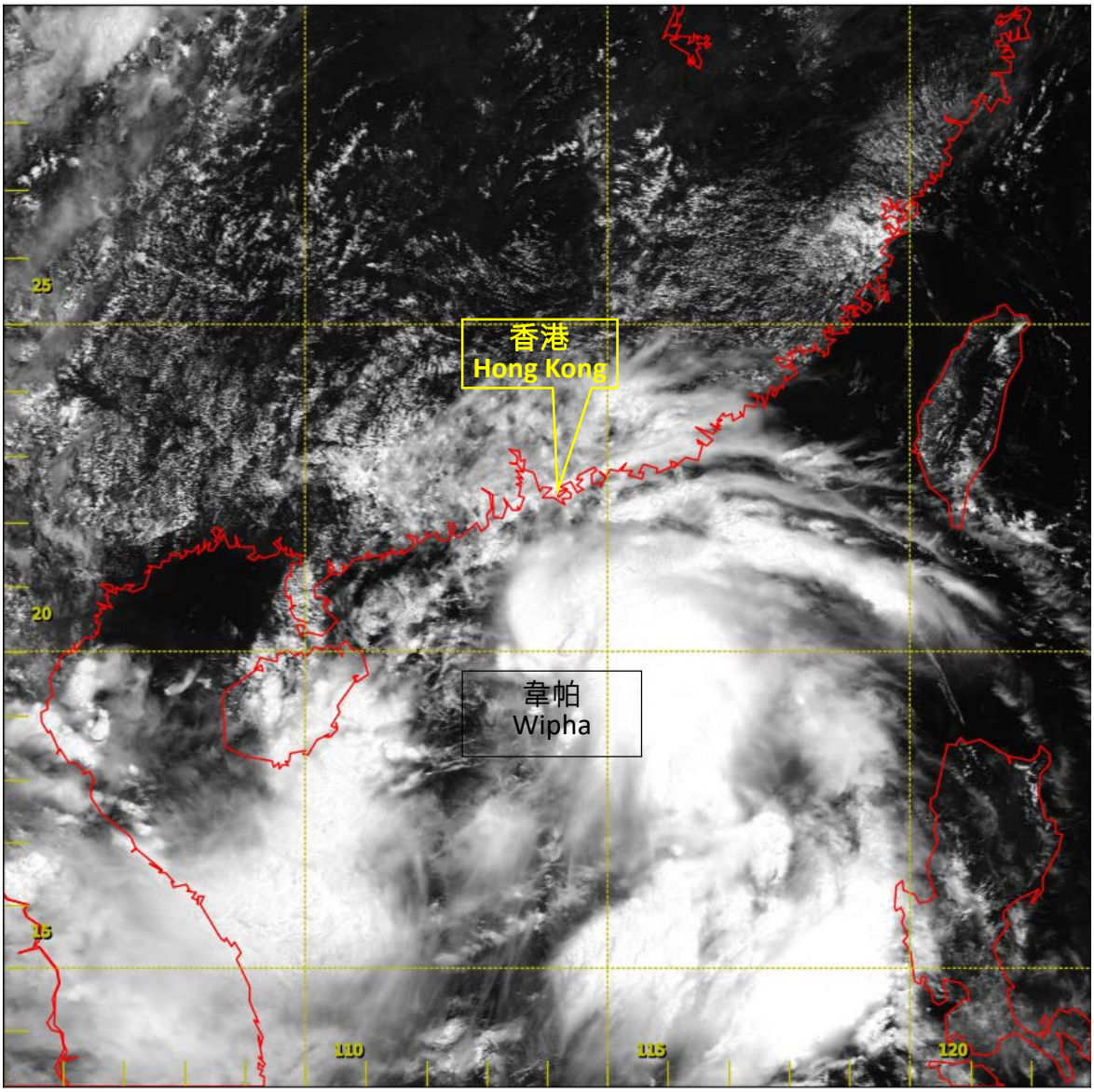


圖 3.2.5　二零一九年七月三十一日上午 11 時的可見光衛星圖片，當時韋帕達到其最高強度，中心附近最高持續風速估計為每小時 85 公里。韋帕的對流分佈相當不對稱，其右半圓發展較旺盛。

Figure 3.2.5　Visible satellite imagery around 11 a.m. on 31 July 2019, when Wipha was at peak intensity with estimated maximum sustained winds of 85 km/h near its centre. The convection of Wipha was highly asymmetric with more intense development on its right semicircle.

〔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 the Himawari-8 (H-8) of Japan Meteorological Agency (JMA).]

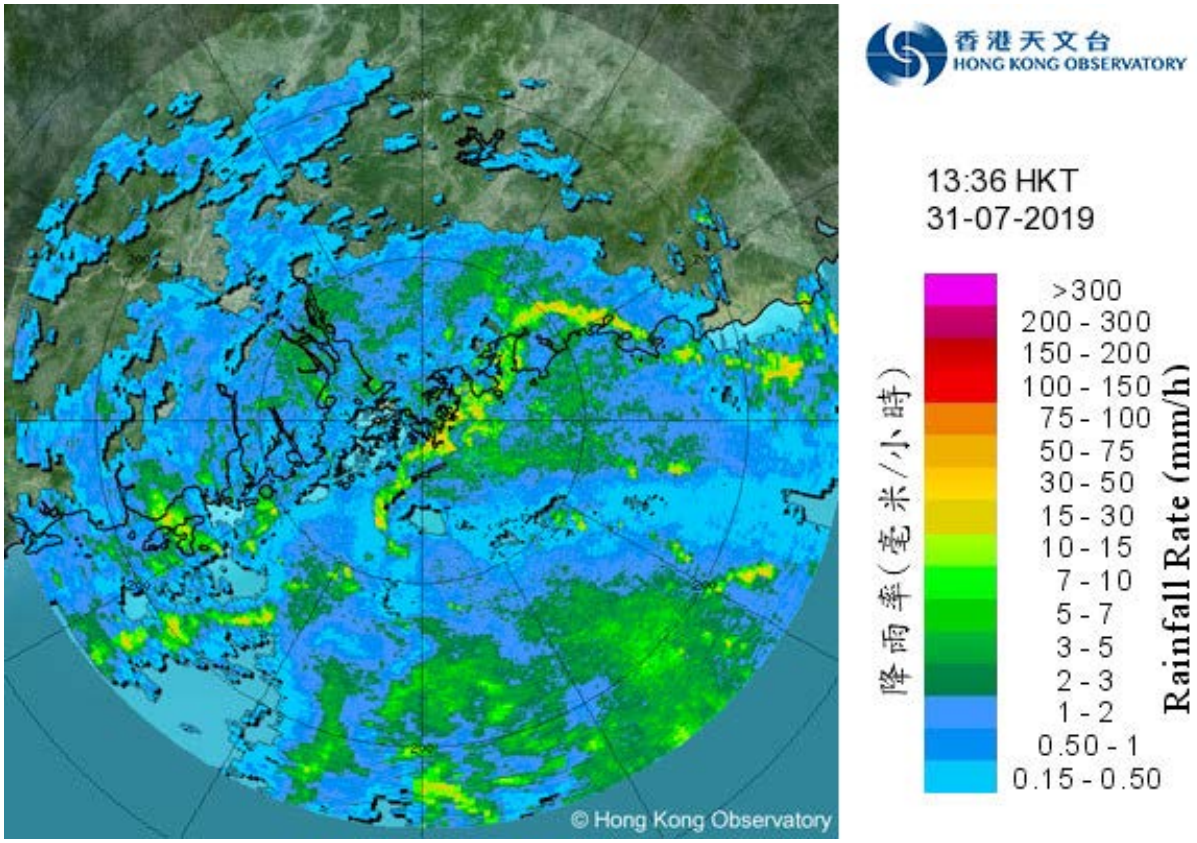


圖 3.2.6a　二零一九年七月三十一日下午 1 時 36 分的雷達回波圖像，與韋帕相關的雨帶正影響廣東沿岸及南海北部。

Figure 3.2.6a　Image of radar echoes at 1:36 p.m. on 31 July 2019. The rainbands associated with Wipha were affecting the coast of Guangdong and the northern part of the South China Sea.

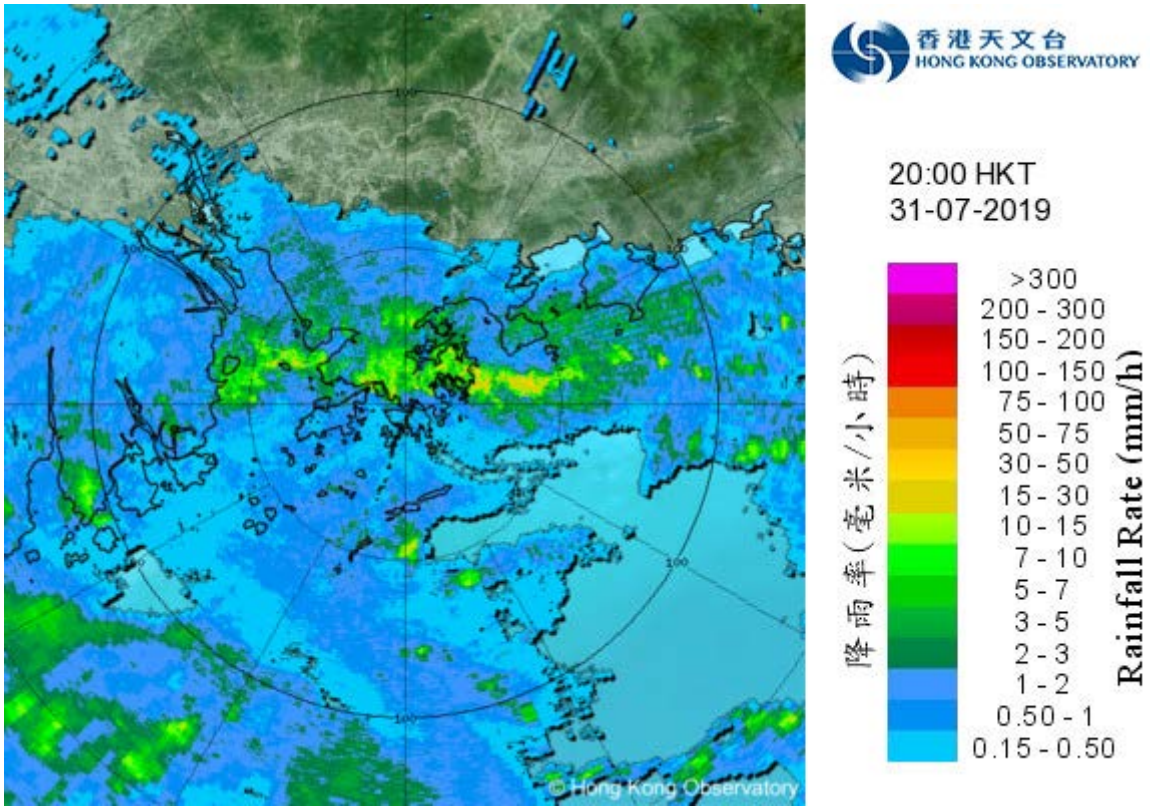


圖 3.2.6b　二零一九年七月三十一日晚上 8 時正的雷達回波圖像，與韋帕相關的強雨帶正影響香港，當時紅色暴雨警告正在生效。

Figure 3.2.6b　Image of radar echoes at 8 p.m. on 31 July 2019. The intense rainbands associated with Wipha were affecting Hong Kong at that time and the Red Rainstorm Warning was in force.

圖 3.2.7　深水埗有天秤被強風吹塌。(圖片鳴謝: 譚曉暉)。

Figure 3.2.7　A tower crane in Sham Shui Po was blown down under high winds (photo courtesy of Tam Hiu Fai).

3.3 強烈熱帶風暴白鹿 (1911)：二零一九年八月二十一日至二十六日

白鹿是二零一九年第三個影響香港的熱帶氣旋。

熱帶低氣壓白鹿於八月二十一日下午在高雄之東南偏東約1 460公里的北太平洋西部上形成，初時向西移動。翌日白鹿增強為熱帶風暴，下午開始採取西北路徑移向台灣南部。當晚白鹿進一步增強為強烈熱帶風暴，八月二十三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105公里。白鹿於八月二十四日橫過台灣南部，其後採取西北偏西路徑橫過台灣海峽。翌日早上白鹿在福建登陸並減弱為熱帶風暴，日間繼續移入內陸，八月二十六日凌晨在廣東內陸減弱為低壓區。

八月二十四日白鹿橫過台灣南部後，香港天文台在當日下午2時40分發出一號戒備信號，當時白鹿集結在香港以東約650公里。下午本港吹和緩至清勁的偏西風。受白鹿的外圍下沉氣流影響，本港下午天氣酷熱及有煙霞。與白鹿相關的強雷雨帶於八月二十五日凌晨為本港帶來頻密的雷暴及狂風，長洲泳灘及大埔滘曾分別錄得每小時104及85公里的陣風。在八月二十五日午夜至上午二時，本港境內錄得接近4 000次雲對地閃電。天文台需要發出黃色暴雨警告。雖然八月二十五日日間白鹿移入內陸及減弱，但仍繼續靠近本港。日間本港吹和緩至清勁西南風，離岸及高地間中吹強風。隨著白鹿進一步減弱及本地風勢緩和，天文台在八月二十五日晚上7時20分取消所有熱帶氣旋警告信號。白鹿於八月二十五日晚上8時最接近香港，其中心在本港以北約280公里掠過。與白鹿相關的雨帶於八月二十六日凌晨為本港帶來大雨及狂風雷暴，天文台曾發出紅色暴雨警告。總括來說，八月二十五日至二十六日本港大部分地區錄得超過150毫米雨量，市區的雨量更超過250毫米。

白鹿影響香港期間，尖鼻咀錄得最高潮位(海圖基準面以上) 2.27米及最大風暴潮(天文潮高度以上) 0.22米。天文台總部於八月二十五日上午3時07分錄得最低瞬時海平面氣壓999.0百帕斯卡。

八月二十五日凌晨香港受頻密狂風雷暴影響期間，港鐵東鐵線有塌樹壓毀架空電纜，引致服務受阻。本港多區亦出現電壓驟降，電力供應受影響。

根據報章報導，白鹿吹襲台灣期間造成至少一人死亡和九人受傷，逾10萬戶停電。福建亦有至少44萬戶停電，陸空交通受影響。

表3.3.1 - 3.3.3 分別是白鹿影響香港期間各站錄得的最高風速、香港的日雨量及最高潮位資料。圖3.3.1 - 3.3.2 分別為白鹿的路徑圖及本港的雨量分佈圖。圖3.3.3 為白鹿的衛星圖像。圖3.3.4 - 3.3.5 分別為白鹿影響香港期間各站錄得的最高陣風及雲對地閃電分佈圖。圖3.3.6 為在元朗拍攝的閃電圖像。圖3.3.7 為白鹿的雷達圖像。

3.3 Severe Tropical Storm Bailu (1911): 21 – 26 August 2019

Bailu was the third tropical cyclone affecting Hong Kong in 2019.

Bailu formed as a tropical depression over the western North Pacific about 1 460 km east-southeast of Gaoxiong on the afternoon of 21 August and drifted westwards at first. Bailu intensified into a tropical storm on 22 August and started to take on a northwesterly course towards the southern part of Taiwan in the afternoon. Bailu further intensified into a severe tropical storm that night. It reached its peak intensity on the night of 23 August with an estimated maximum sustained wind of 105 km/h near its centre. After sweeping across the southern part of Taiwan on 24 August, Bailu moved across the Taiwan Strait. It made landfall over Fujian the next morning and weakened into a tropical storm. Bailu moved further inland during the day and weakened into an area of low pressure over inland Guangdong on the small hours of 26 August.

After Bailu sweeping across the southern part of Taiwan on 24 August, the Hong Kong Observatory issued the Standby Signal No. 1 at 2:40 p.m. when Bailu was about 650 km east of Hong Kong. Local winds were moderate to fresh westerly. Affected by the outer subsiding air of Bailu, the weather was very hot with haze in Hong Kong in the afternoon. Bands of intense thundery showers associated with Bailu brought frequent thunderstorms and squalls to Hong Kong on the small hours of 25 August. Gusts of 104 and 85 km/h were once recorded at Cheung Chau Beach and Tai Po Kau respectively. Nearly 4000 cloud-to-ground lightning strokes were also recorded in Hong Kong between midnight and 2 a.m. on 25 August. The Amber Rainstorm Warning Signal was issued by the Observatory. Although Bailu moved inland and weakened during the day on 25 August, it still edged closer to Hong Kong. Local winds were moderate to fresh southwesterly during the day, occasionally reaching strong force offshore and on high ground. With Baliu weakening further and local winds moderating, all tropical cyclone warning signals were cancelled at 7:20 p.m. on 25 August. Bailu came closest to Hong Kong at around 8 p.m. on 25 August when it was around 280 km north of the territory. The rainbands associated with Bailu brought heavy downpour and squally thunderstorms to Hong Kong in the small hours on 26 August, necessitating the issuance of the Red Rainstorm Warning. Overall, more than 150 millimetres of rainfall were generally recorded over most parts of the territory on 25 and 26 August, with rainfall exceeding 250 millimetres over the urban areas.

Under the influence of Bailu, a maximum sea level (above chart datum) of 2.27 m and a maximum storm surge (above astronomical tide) of 0.22 m were recorded at Tsim Bei Tsui. The lowest instantaneous mean sea-level pressure of 999.0 hPa was recorded at the Observatory headquarters at 3:07 a.m. on 25 August.

When Hong Kong was hammered by frequent squally thunderstorms on the small hours of 25 August, the overhead cables of the East Rail of MTR were damaged by fallen trees, causing disruption to the train services. The power supply over many places was also affected because of the voltage dip.

According to press reports, Bailu caused at least one death and nine injuries to Taiwan during its passage. Over 100 000 households were without electricity supply. In Fujian, electricity supply to over 440 000 households was also interrupted. Air and land

transportations were affected.

Information on the maximum wind, daily rainfall and maximum sea level reached in Hong Kong during the passage of Bailu is given in Tables 3.3.1 - 3.3.3 respectively. Figures 3.3.1 - 3.3.2 show respectively the track of Bailu and the rainfall distribution for Hong Kong. Figure 3.3.3 shows a satellite image of Bailu. Figures 3.3.4 – 3.3.5 show respectively the maximum gust recorded at various stations in Hong Kong and the cloud-to-ground lightning distribution during the passage of Bailu. Figure 3.3.6 shows the lightning strokes captured in Yuen Long. Figure 3.3.7 shows radar imageries of Bailu.

表 3.3.1　在白鹿影響下，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 Bailu 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
黃麻角(赤柱)	Bluff Head (Stanley)	西北偏北	NNW	43	25/8	00:51	西北偏西	WNW	22	25/8	12:00
中環碼頭	Central Pier	北	N	77	25/8	00:38	西	W	25	24/8	16:00
長洲	Cheung Chau	東北	NE	96	25/8	01:25	西	W	31	25/8	00:00
長洲泳灘	Cheung Chau Beach	北	N	104	25/8	01:22	北	N	40	25/8	02:00
青洲	Green Island	東北	NE	96	25/8	00:40	西北偏北	NNW	34	25/8	01:00
香港國際機場	Hong Kong International Airport	東北	NE	75	25/8	01:30	西南偏西	WSW	36	25/8	14:00
啟德	Kai Tak	北	N	65	25/8	00:37	西	W	20	24/8	16:00
京士柏	King's Park	西北偏北	NNW	79	25/8	00:37	西	W	16	25/8	01:00
南丫島	Lamma Island	北	N	58	25/8	01:10	西南偏西	WSW	36	25/8	12:00
流浮山	Lau Fau Shan	西北偏西	WNW	68	25/8	11:14	西南	SW	31	25/8	14:00
北角	North Point	北	N	62	25/8	00:38	西	W	27	25/8	13:00
坪洲	Peng Chau	東北	NE	68	25/8	01:15	東北偏東	ENE	27	25/8	02:00
平洲	Ping Chau	東北	NE	51	25/8	00:17	西南偏西	WSW	22	25/8	15:00
西貢	Sai Kung	西北	NW	58	25/8	00:29	西北	NW	23	25/8	01:00
沙洲	Sha Chau	東北偏東	ENE	77	25/8	01:27	西南偏南	SSW	31	25/8	18:00
沙螺灣	Sha Lo Wan	東	E	54	25/8	01:39	西南	SW	22	25/8	14:00
沙田	Sha Tin	東北偏北	NNE	62	25/8	00:23	西南偏南	SSW	20	25/8	15:00
		北	N	62	25/8	00:24					
石崗	Shek Kong	東	E	49	25/8	00:54	東	E	12	25/8	01:00
九龍天星碼頭	Star Ferry (Kowloon)	西北偏西	WNW	56	25/8	11:58	西	W	25	25/8	12:00
打鼓嶺	Ta Kwu Ling	東北偏北	NNE	59	25/8	00:53	東北	NE	14	25/8	01:00
大美督	Tai Mei Tuk	西北	NW	76	25/8	00:17	東北	NE	34	25/8	01:00
大帽山	Tai Mo Shan	東北偏北	NNE	113	25/8	01:07	西南偏西	WSW	77	25/8	16:00
大埔滘	Tai Po Kau	東北	NE	85	25/8	00:22	西北偏西	WNW	14	25/8	01:00
塔門東	Tap Mun East	西北	NW	52	25/8	00:20	西	W	27	25/8	15:00
將軍澳	Tseung Kwan O	西北偏北	NNW	41	25/8	00:30	西北偏北	NNW	9	25/8	01:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	西北偏北	NNW	51	25/8	01:26	西北偏西	WNW	20	25/8	12:00
屯門政府合署	Tuen Mun Government Offices	東北偏北	NNE	63	25/8	01:16	西南偏西	WSW	16	25/8	15:00
橫瀾島	Waglan Island	西北偏西	WNW	72	25/8	11:54	西	W	47	25/8	14:00
濕地公園	Wetland Park	東北偏東	ENE	47	25/8	01:02	東北偏東	ENE	13	25/8	02:00
黃竹坑	Wong Chuk Hang	西南偏西	WSW	38	25/8	00:38	西	W	16	25/8	01:00

大老山、昂坪- 沒有資料　Tate's Cairn, Ngong Ping - data not available

表 3.3.2　白鹿影響香港期間，香港天文台總部及其他各站所錄得的日雨量

Table 3.3.2　Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Bailu

站 (參閱圖 3.3.2) Station (See Fig. 3.3.2)			八月二十四日 24 Aug	八月二十五日 25 Aug	八月二十六日 26 Aug	總雨量(毫米) Total rainfall (mm)
香港天文台 Hong Kong Observatory (HKO)			0.0	88.4	178.3	266.7
香港國際機場 Hong Kong International Airport (HKA)			0.0	41.5	89.9	131.4
H23	香港仔	Aberdeen	0.0	100.5	160.5	261.0
N05	粉嶺	Fanling	0.0	49.5	76.0	125.5
N13	糧船灣	High Island	0.0	61.5	159.0	220.5
K04	佐敦谷	Jordan Valley	0.0	113.0	161.5	274.5
N06	葵涌	Kwai Chung	0.0	104.0	159.5	263.5
H12	半山區	Mid Levels	0.0	117.5	190.5	308.0
N09	沙田	Sha Tin	0.0	78.5	150.5	229.0
H19	筲箕灣	Shau Kei Wan	0.0	87.5	125.5	213.0
SEK	石崗	Shek Kong	0.0	68.5	61.0	129.5
K06	蘇屋邨	So Uk Estate	0.0	95.0	148.5	243.5
R31	大美督	Tai Mei Tuk	0.0	[61.5]	111.0	[172.5]
R21	踏石角	Tap Shek Kok	0.0	66.0	57.0	123.0
N17	東涌	Tung Chung	0.0	69.0	120.5	189.5
TMR	屯門水庫	Tuen Mun Reservoir	0.0	112.2	54.2	166.4

長洲 - 沒有資料　Cheung Chau - data not available

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

表 3.3.3　白鹿掠過期間，香港各潮汐站所錄得的最高潮位及最大風暴潮

Table 3.3.3　Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Bailu

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	2.11	25/8	03:49	0.14	25/8	03:39
石壁	Shek Pik	2.10	25/8	03:55	0.12	25/8	09:36
大廟灣	Tai Miu Wan	2.04	25/8	04:19	0.20	25/8	10:04
大埔滘	Tai Po Kau	2.06	25/8	03:59	0.20	25/8	10:41
尖鼻咀	Tsim Bei Tsui	2.27	25/8	04:49	0.22	25/8	10:05

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

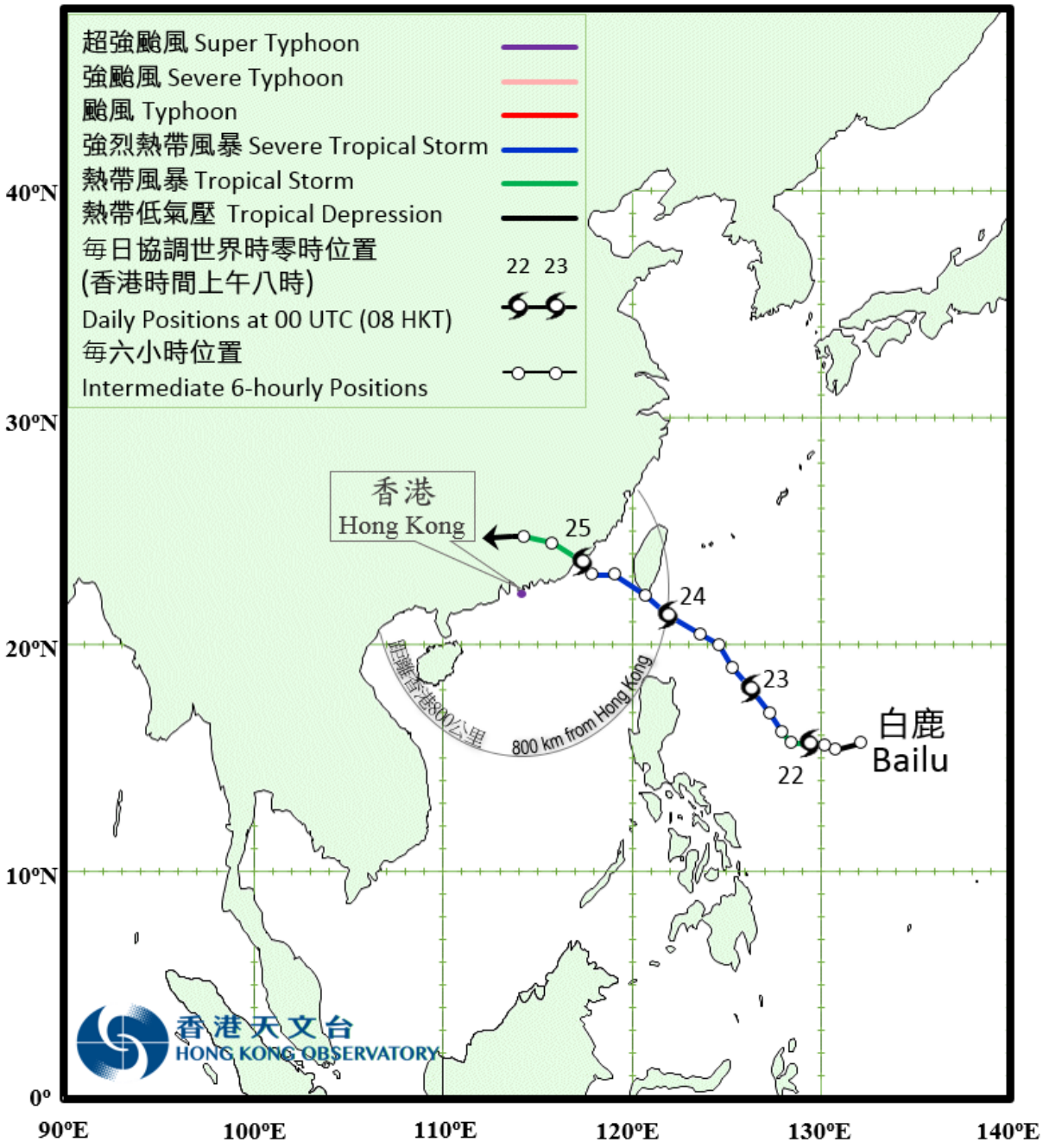


圖 3.3.1　　二零一九年八月二十一日至二十六日白鹿的路徑圖。

Figure 3.3.1　Track of Bailu on 21 - 26 August 2019.

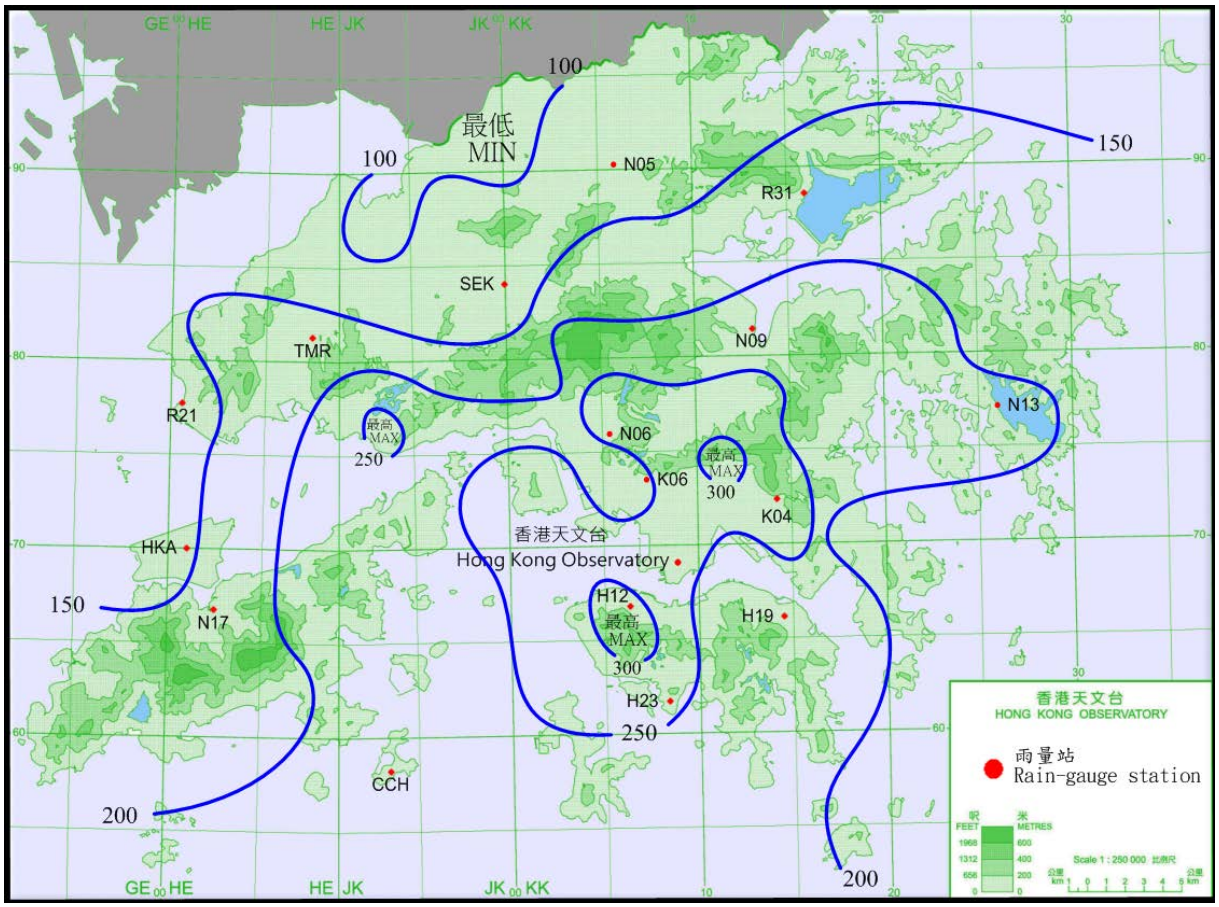


圖 3.3.2　　二零一九年八月二十四日至二十六日的雨量分佈(等雨量線單位為毫米)。

Figure 3.3.2　　Rainfall distribution on 24 - 26 August 2019 (isohyets in millimetres).

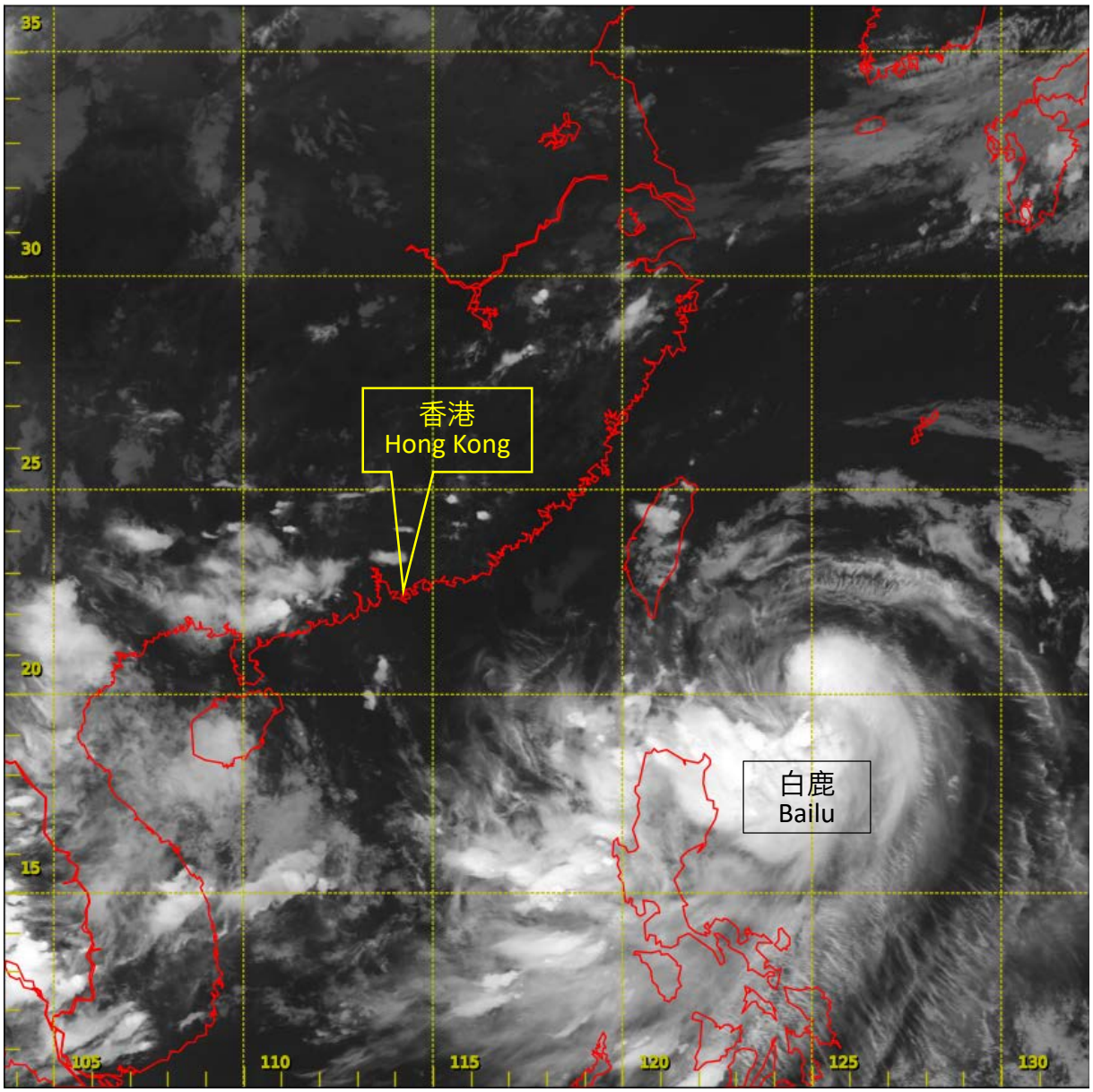


圖 3.3.3a　二零一九年八月二十三日下午 8 時左右的紅外線衛星圖片，當時白鹿達到其最高強度，中心附近最高持續風速估計為每小時 105 公里。

Figure 3.3.3a　Infra-red satellite imagery at around 8 p.m. on 23 August 2019, when Bailu was at peak intensity with estimated maximum sustained winds of 105 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).]

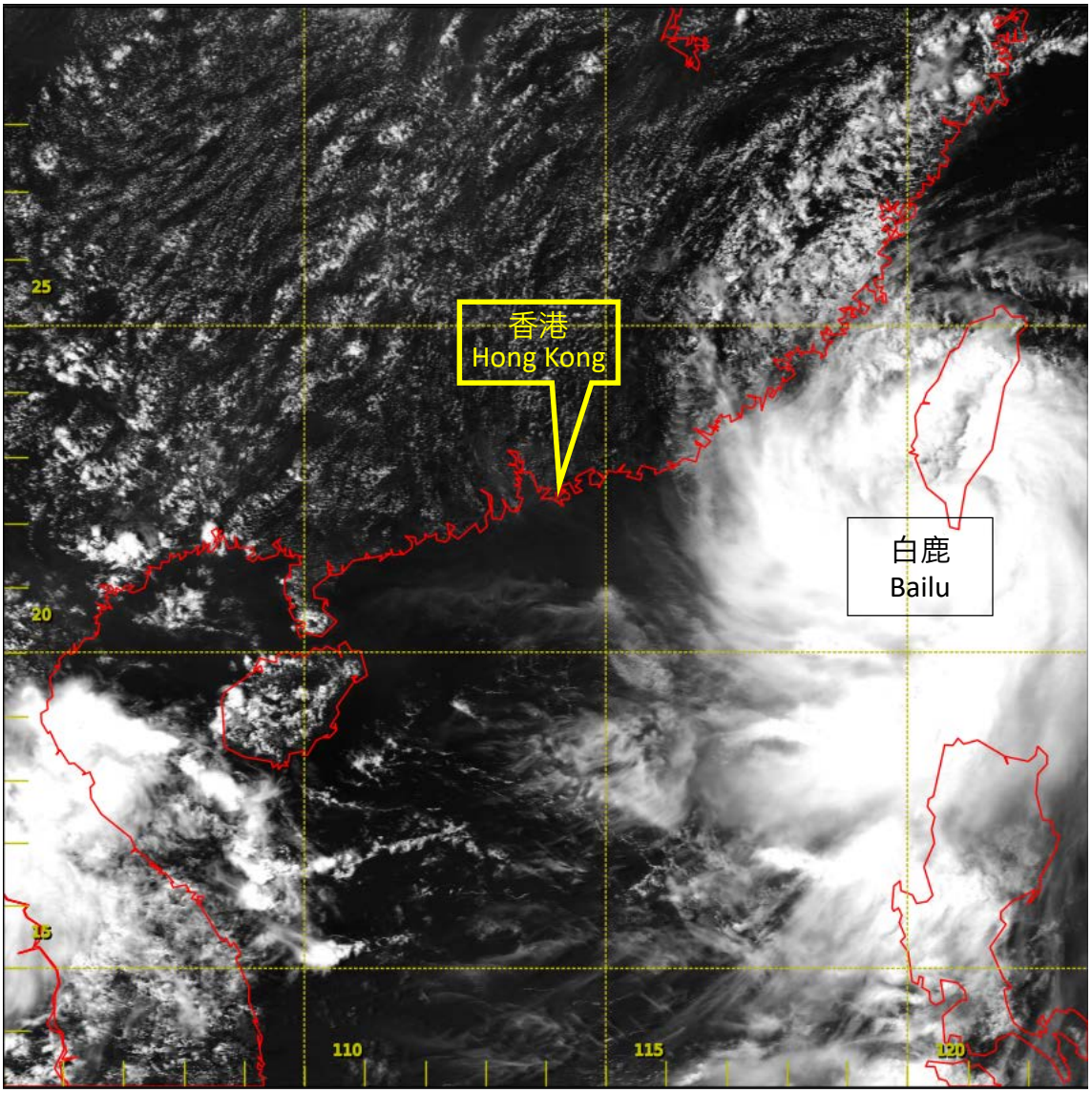


圖 3.3.3b　二零一九年八月二十四日下午 2 時左右的可見光衛星圖片。受白鹿的外圍下沉氣流影響，廣東沿岸普遍晴朗。

Figure 3.3.3b　Visible satellite imagery at around 2 p.m. on 24 August 2019. Affected by the outer subsiding air of Bailu, it was generally fine over the coast 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 (JMA).]

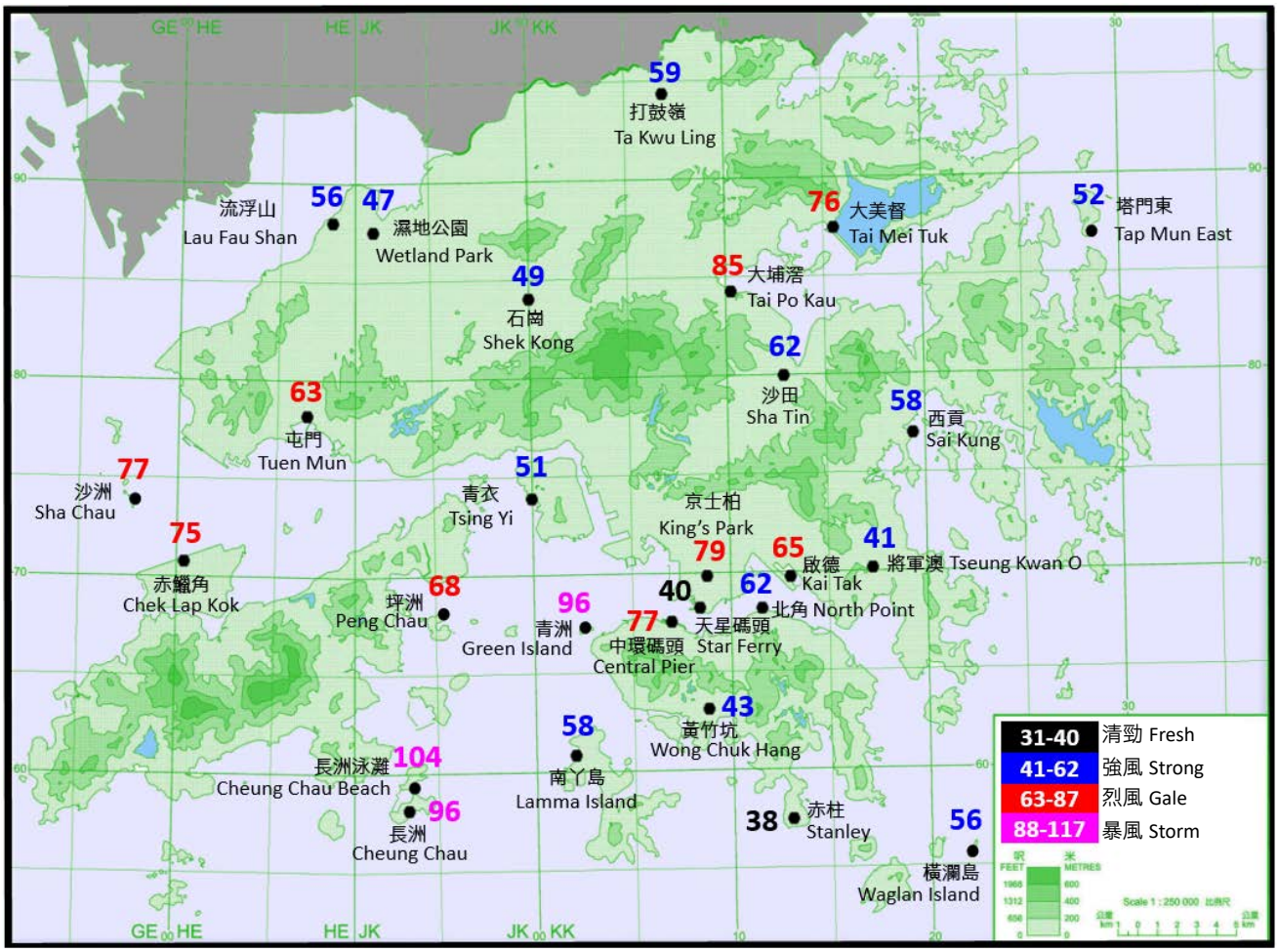


圖 3.3.4　二零一九年八月二十五日午夜至上午 2 時期間香港各站錄得的最高陣風(公里/小時)，當時與白鹿相關的強雷雨帶正為本港帶來頻密的雷暴及狂風。

Figure 3.3.4　Maximum gust recorded (in km/h) at various stations in Hong Kong during the period between midnight and 2 a.m. on 25 August 2019. Bands of intense thundery showers associated with Bailu brought frequent thunderstorms and squalls to Hong Kong at that time.

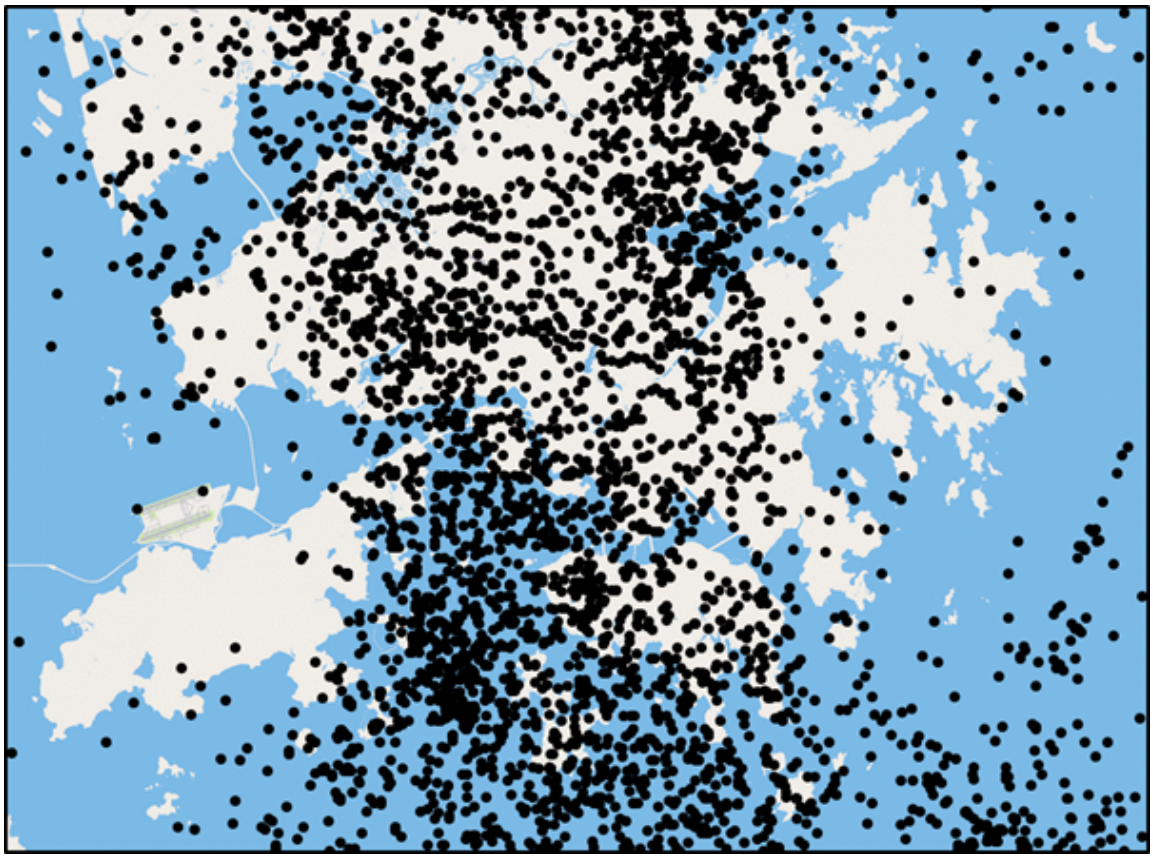


圖 3.3.5　二零一九年八月二十五日午夜至上午 2 時期間錄得的雲對地閃電。在這兩小時內香港境內共錄得接近 4000 次雲對地閃電。

Figure 3.3.5　The cloud-to-ground lightning recorded between midnight and 2:00 a.m. on 25 August 2019. Nearly 4 000 cloud-to-ground lightning strokes were recorded in Hong Kong during these two hours.

圖 3.3.6　二零一九年八月二十五日上午 1 時 30 分左右在元朗拍攝的閃電 (圖片鳴謝: Kenneth Wong) 。

Figure 3.3.6　Lightning strokes captured in Yuen Long at around 1:30 a.m. on 25 August 2019 (photo courtesy of Kenneth Wong).

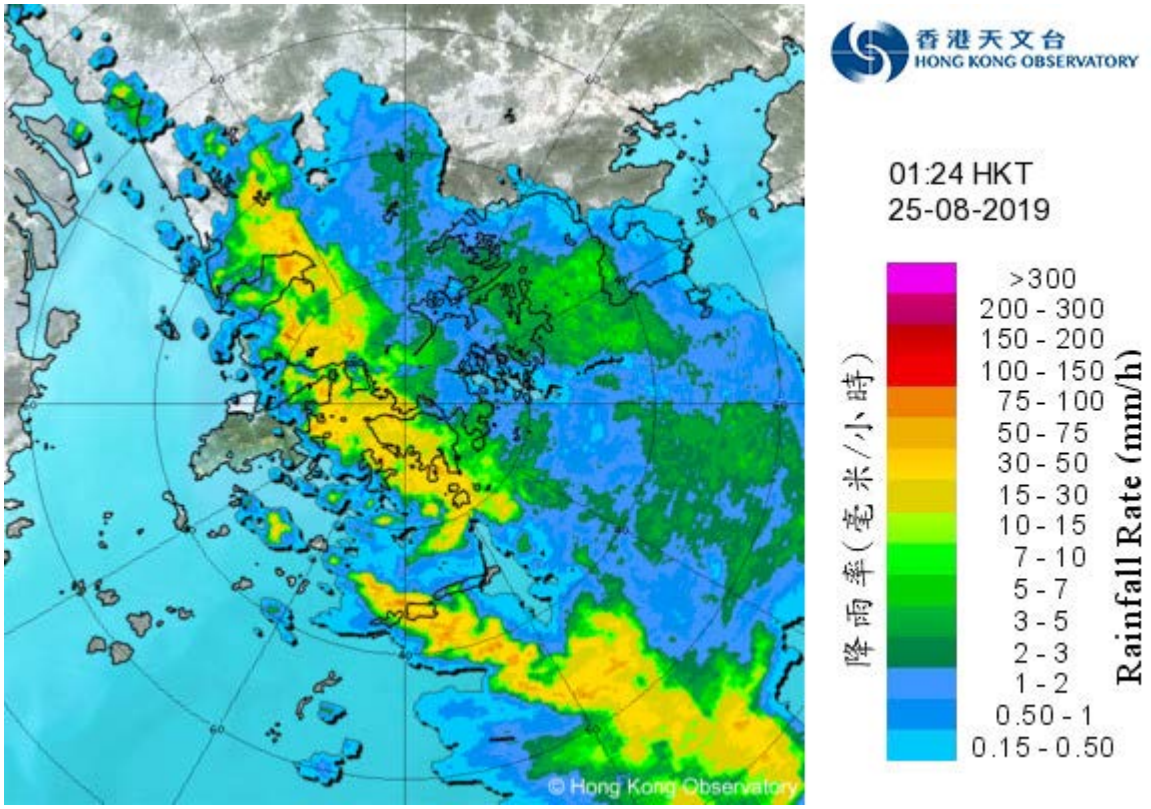


圖 3.3.7a　二零一九年八月二十五日上午 1 時 24 分的雷達回波圖像。當時與白鹿相關的強雷雨帶正影響本港，黃色暴雨警告正在生效。

Figure 3.3.7a　Image of radar echoes at 1:24 a.m. on 25 August 2019. The bands of intense thundery showers associated with Bailu were affecting Hong Kong at the time and the Amber Rainstorm Warning was in force.

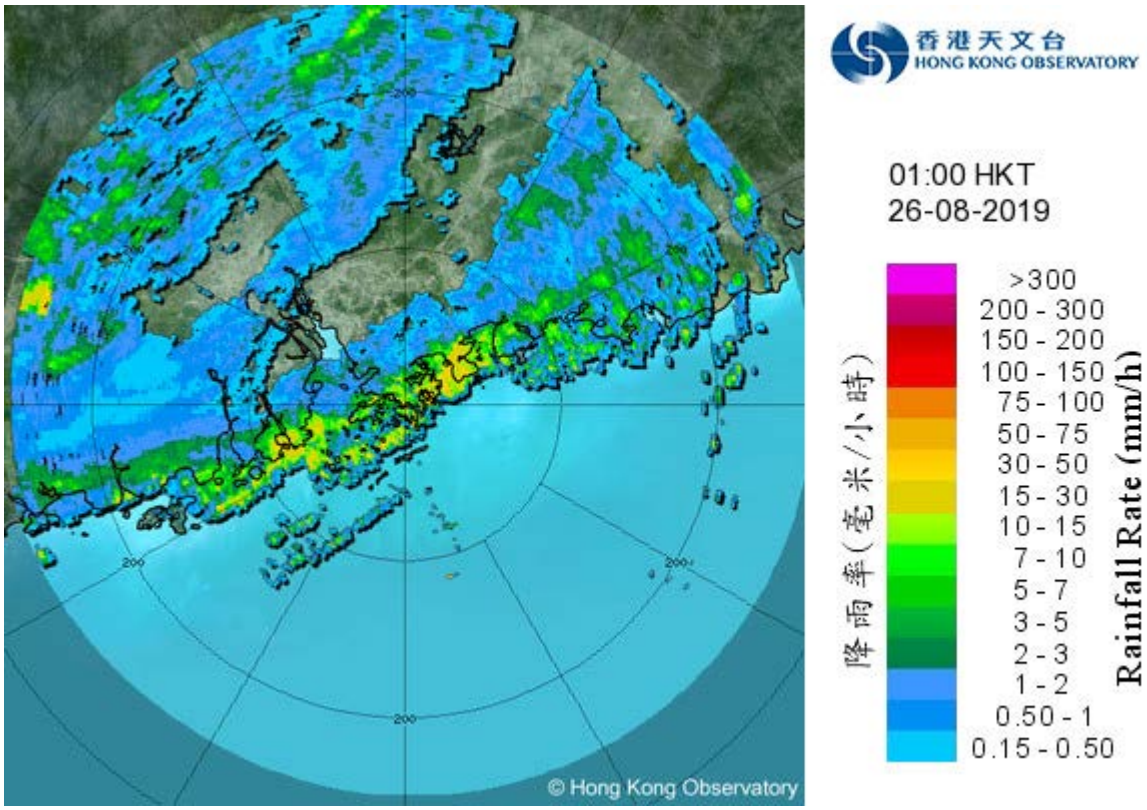


圖 3.3.7b　二零一九年八月二十六日上午 1 時正的雷達回波圖像。當時一道與白鹿相關的強雨帶正影響廣東沿岸，紅色暴雨警告正在生效。

Figure 3.3.7b　Image of radar echoes at 1:00 a.m. on 26 August 2019. An intense rainband associated with Bailu was affecting the coast of Guangdong and the Red Rainstorm Warning was in force in Hong Kong at that time.

3.4 熱帶風暴楊柳 (1912)：二零一九年八月二十七日至三十日

楊柳是二零一九年第四個影響香港的熱帶氣旋。

熱帶低氣壓楊柳於八月二十七日早上在馬尼拉以東約590公里的北太平洋西部上形成，向西北偏西迅速移動，當晚橫過呂宋。翌日楊柳繼續迅速向西橫過南海中部並增強為熱帶風暴，並在八月二十九日凌晨達其最高強度，中心附近最高持續風速估計為每小時85公里。八月三十日凌晨楊柳在越南北部登陸，日間在中南半島減弱為低壓區。

香港天文台在八月二十八日下午2時40分發出一號戒備信號，當時楊柳集結在香港之東南偏南約640公里。當晚及翌日清晨本港吹和緩至清勁的偏東風，離岸間中吹強風。受楊柳相關的外圍雨帶影響，本港在八月二十九日有幾陣驟雨及雷暴。楊柳於八月二十九日上午2時左右最接近本港，其中心在香港以南約560公里左右掠過。隨著楊柳遠離香港，本港風力有所減弱，天文台在八月二十九日下午12時20分取消所有熱帶氣旋警告信號。

楊柳影響香港期間，尖鼻咀錄得最高潮位(海圖基準面以上) 2.99米，而大埔滘錄得最大風暴潮(天文潮高度以上) 0.24米。天文台總部於八月二十八日下午5時28分錄得最低瞬時海平面氣壓1003.7百帕斯卡。

楊柳並沒有對香港造成嚴重破壞。根據報章報導，楊柳吹襲菲律賓期間，一人被巨浪捲走而死亡。楊柳在海南島誘發龍捲風，造成至少八人死亡和兩人受傷。楊柳在越南亦造成至少六人死亡和兩人失蹤。

表3.4.1 - 3.4.3 分別是楊柳影響香港期間各站錄得的最高風速、香港的日雨量及最高潮位資料。圖3.4.1 - 3.4.2分別為楊柳的路徑圖及本港的雨量分佈圖。圖3.4.3 - 3.4.4 分別為楊柳的衛星及雷達圖像。

3.4 Tropical Storm Podul (1912): 27 – 30 August 2019

Podul was the fourth tropical cyclone affecting Hong Kong in 2019.

Podul formed as a tropical depression over the western North Pacific about 590 km east of Manila on the morning of 27 August. Travelling west-northwestwards quickly, it moved across Luzon that night. Podul continued to move westwards quickly across the central part of the South China Sea and intensified into a tropical storm on 28 August. Podul reached its peak intensity on the small hours of 29 August with an estimated maximum sustained wind of 85 km/h near its centre. Podul made landfall over the northern part of Vietnam on the small hours of 30 August and finally weakened into an area of low pressure over the Indo-China during the day.

The Standby Signal No. 1 was issued by the Observatory at 2:40 p.m. on 28 August when Podul was about 640 km south-southeast of Hong Kong. Local winds were moderate to fresh easterly and occasionally reached strong force offshore that night and early next morning. Affected by the outer rainbands associated with Podul, there were a few showers and thunderstorms in Hong Kong on 29 August. Podul came closest to the territory at around 2 a.m. on 29 August with its centre skirting past about 560 km south of Hong Kong. With Podul departing from Hong Kong and local winds weakening, all tropical cyclone warning signals were cancelled at 12:20 p.m. on 29 August.

Under the influence of Podul, a maximum sea level (above chart datum) of 2.99 m was recorded at Tsim Bei Tsui and a maximum storm surge (above astronomical tide) of 0.24 m was recorded at Tai Po Kau. The lowest instantaneous mean sea-level pressure of 1003.7 hPa was recorded at the Observatory headquarters at 5:28 p.m. on 28 August.

Podul did not cause significant damage in Hong Kong. According to press reports, one person was killed by strong waves during the passage of Podul in the Philippines. Podul triggered a tornado in Hainan, killing at least eight people and leaving two others injured. Podul also left at least six deaths and two missing in Vietnam.

Information on the maximum wind, daily rainfall and maximum sea level reached in Hong Kong during the passage of Podul is given in Tables 3.4.1 - 3.4.3 respectively. Figures 3.4.1 - 3.4.2 show respectively the track of Podul and the rainfall distribution for Hong Kong. Figures 3.4.3 - 3.4.4 show respectively a satellite imagery and a radar imagery of Podul.

表 3.4.1　在楊柳影響下，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 Podul 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
黃麻角(赤柱)	Bluff Head (Stanley)	東北偏東	ENE	65	29/8	04:42	東	E	30	29/8	02:00
							東北偏東	ENE	30	29/8	05:00
中環碼頭	Central Pier	東	E	56	29/8	04:40	東	E	34	29/8	05:00
長洲	Cheung Chau	東南偏東	ESE	63	29/8	04:22	東	E	40	29/8	05:00
長洲泳灘	Cheung Chau Beach	-	-	68	29/8	03:06	-	-	47	29/8	04:00
青洲	Green Island	東北偏東	ENE	67	29/8	04:26	東北偏東	ENE	45	29/8	05:00
香港國際機場	Hong Kong International Airport	東	E	47	29/8	00:38	東	E	34	29/8	01:00
啟德	Kai Tak	東	E	59	29/8	04:43	東	E	25	29/8	05:00
南丫島	Lamma Island	東	E	58	29/8	03:50	東	E	25	29/8	04:00
京士柏	King's Park	東	E	56	29/8	01:52	東	E	22	29/8	03:00
流浮山	Lau Fau Shan	東北偏東	ENE	52	29/8	09:59	東北偏東	ENE	30	29/8	12:00
北角	North Point	東	E	59	29/8	03:05	東	E	36	29/8	05:00
坪洲	Peng Chau	東	E	52	29/8	04:36	東	E	40	29/8	05:00
平洲	Ping Chau	東	E	31	28/8	23:54	東	E	14	29/8	02:00
西貢	Sai Kung	東北偏東	ENE	49	29/8	03:47	東北偏東	ENE	31	29/8	09:00
沙洲	Sha Chau	東南偏東	ESE	43	29/8	04:41	東南	SE	31	28/8	22:00
		東南偏東	ESE	43	29/8	04:50					
沙螺灣	Sha Lo Wan	東南偏東	ESE	54	28/8	23:27	東	E	27	29/8	03:00
		東南偏東	ESE	54	28/8	23:31					
沙田	Sha Tin	東北	NE	47	29/8	04:28	東	E	16	29/8	05:00
石崗	Shek Kong	東	E	58	29/8	04:41	東	E	23	29/8	09:00
九龍天星碼頭	Star Ferry (Kowloon)	東	E	49	29/8	04:31	東	E	25	29/8	03:00
打鼓嶺	Ta Kwu Ling	東	E	38	28/8	22:05	東	E	16	28/8	23:00
大帽山	Tai Mo Shan	東	E	83	29/8	02:07	東	E	54	29/8	02:00
大埔滘	Tai Po Kau	東	E	45	29/8	04:21	東	E	34	29/8	05:00
塔門東	Tap Mun East	東	E	62	29/ 8	01:34	東	E	45	29/8	01:00
							東	E	45	29/8	02:00
大老山	Tate's Cairn	-	-	72	29/8	04:30	-	-	45	29/8	05:00
將軍澳	Tseung Kwan O	東	E	45	29/8	04:43	東北偏東	ENE	12	29/8	11:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東南偏東	ESE	45	29/8	03:57	東南偏東	ESE	19	29/8	04:00
屯門政府合署	Tuen Mun Government Offices	東南偏東	ESE	52	29/8	12:11	東南偏東	ESE	14	28/8	22:00
橫瀾島	Waglan Island	東北偏東	ENE	67	29/8	04:26	東北偏東	ENE	51	29/8	08:00
濕地公園	Wetland Park	東南偏東	ESE	38	29/8	10:19	東	E	16	29/8	11:00
		東北偏東	ENE	38	29/8	12:09					
黃竹坑	Wong Chuk Hang	東北偏東	ENE	58	29/8	02:27	東北偏東	ENE	22	29/8	04:00
							東北偏東	ENE	22	29/8	05:00

大美督、昂坪 - 沒有資料　Tai Mei Tuk, Ngong Ping - data not available

長洲泳灘、大老山 - 沒有風向資料　Cheung Chau Beach, Tate's Cairn - wind direction not available

表 3.4.2　楊柳掠過期間，香港天文台總部及其他各站所錄得的日雨量

Table 3.4.2　Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Podul

站 (參閱圖 3.4.2) Station (See Fig. 3.4.2)			八月二十八日 28 Aug	八月二十九日 29 Aug	總雨量(毫米) Total rainfall (mm)
香港天文台 Hong Kong Observatory (HKO)			0.0	5.9	5.9
香港國際機場 Hong Kong International Airport (HKA)			0.0	13.2	13.2
長洲 Cheung Chau (CCH)			0.0	8.5	8.5
H23	香港仔	Aberdeen	0.0	23.5	23.5
N05	粉嶺	Fanling	0.0	5.5	5.5
N13	糧船灣	High Island	0.0	7.5	7.5
K04	佐敦谷	Jordan Valley	0.0	14.0	14.0
N06	葵涌	Kwai Chung	0.0	11.5	11.5
H12	半山區	Mid Levels	0.0	12.5	12.5
N09	沙田	Sha Tin	0.0	10.0	10.0
H19	筲箕灣	Shau Kei Wan	0.0	7.0	7.0
SEK	石崗	Shek Kong	0.0	3.0	3.0
K06	蘇屋邨	So Uk Estate	0.0	16.5	16.5
R31	大美督	Tai Mei Tuk	0.0	4.5	4.5
R21	踏石角	Tap Shek Kok	0.0	6.0	6.0
N17	東涌	Tung Chung	0.0	11.5	11.5
TMR	屯門水庫	Tuen Mun Reservoir	0.0	10.5	10.5

表 3.4.3　楊柳掠過期間，香港各潮汐站所錄得的最高潮位及最大風暴潮

Table 3.4.3　Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Podul

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	2.55	29/8	08:03	0.10	29/8	08:03
石壁	Shek Pik	2.71	29/8	07:32	0.16	29/8	07:31
大廟灣	Tai Miu Wan	2.53	29/8	08:12	0.19	29/8	08:17
大埔滘	Tai Po Kau	2.54	29/8	08:56	0.24	29/8	04:57
尖鼻咀	Tsim Bei Tsui	2.99	29/8	08:22	0.14	29/8	08:11

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

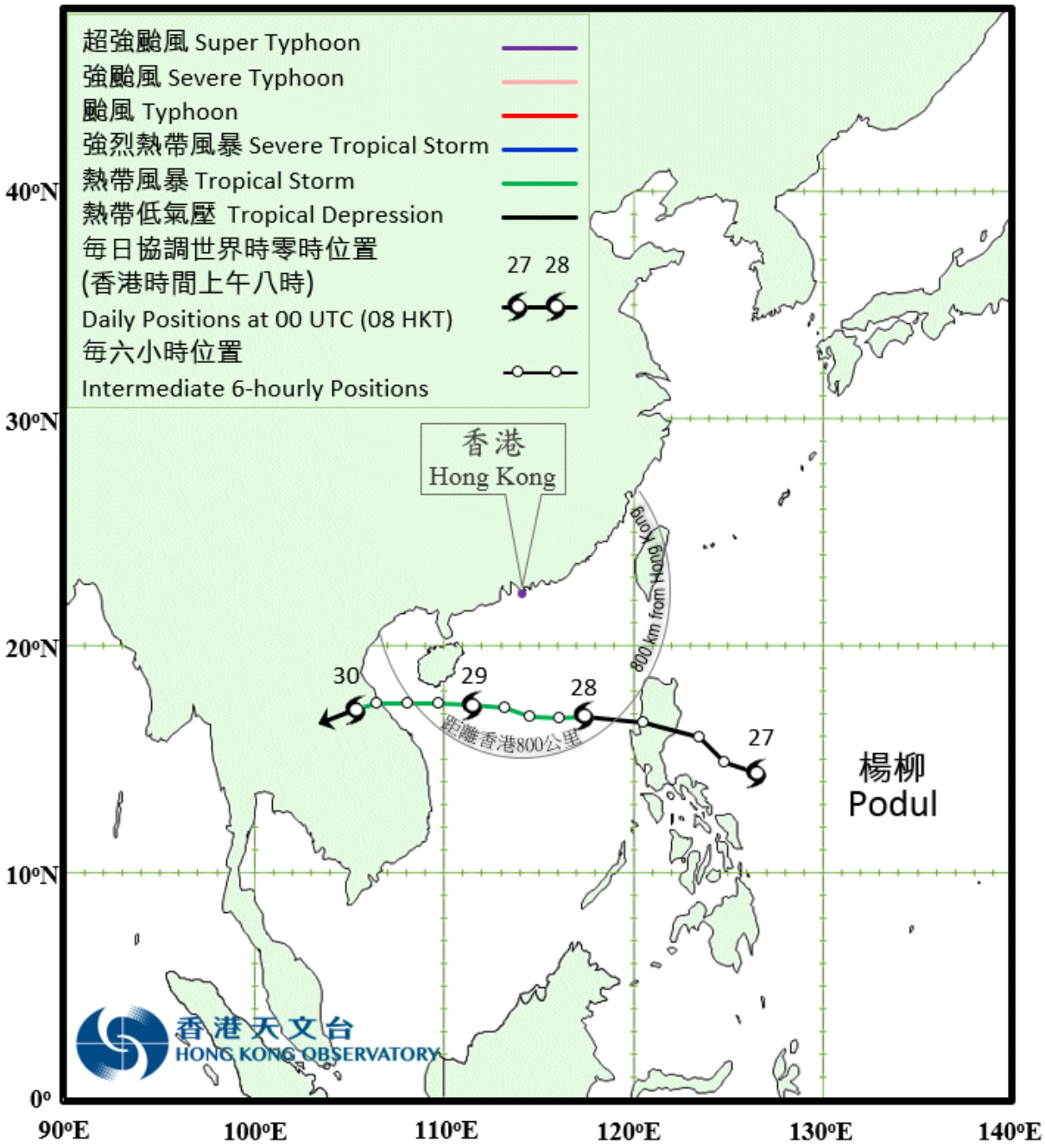


圖 3.4.1　　二零一九年八月二十七日至三十日楊柳的路徑圖。

Figure 3.4.1　　Track of Podul on 27 - 30 August 2019

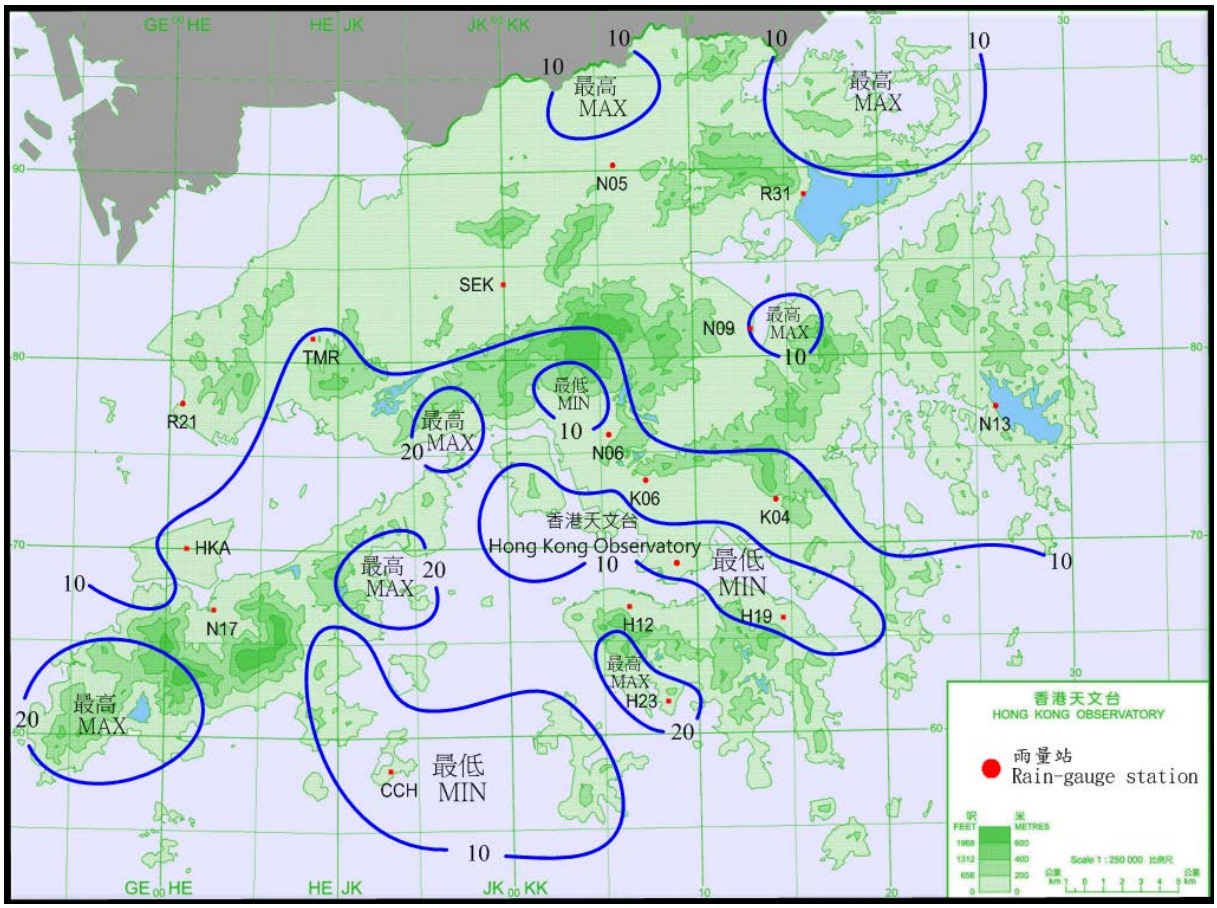


圖 3.4.2　　二零一九年八月二十八日至二十九日的雨量分佈(等雨量線單位為毫米)。

Figure 3.4.2　Rainfall distribution on 28 - 29 August 2019 (isohyets in millimetres).

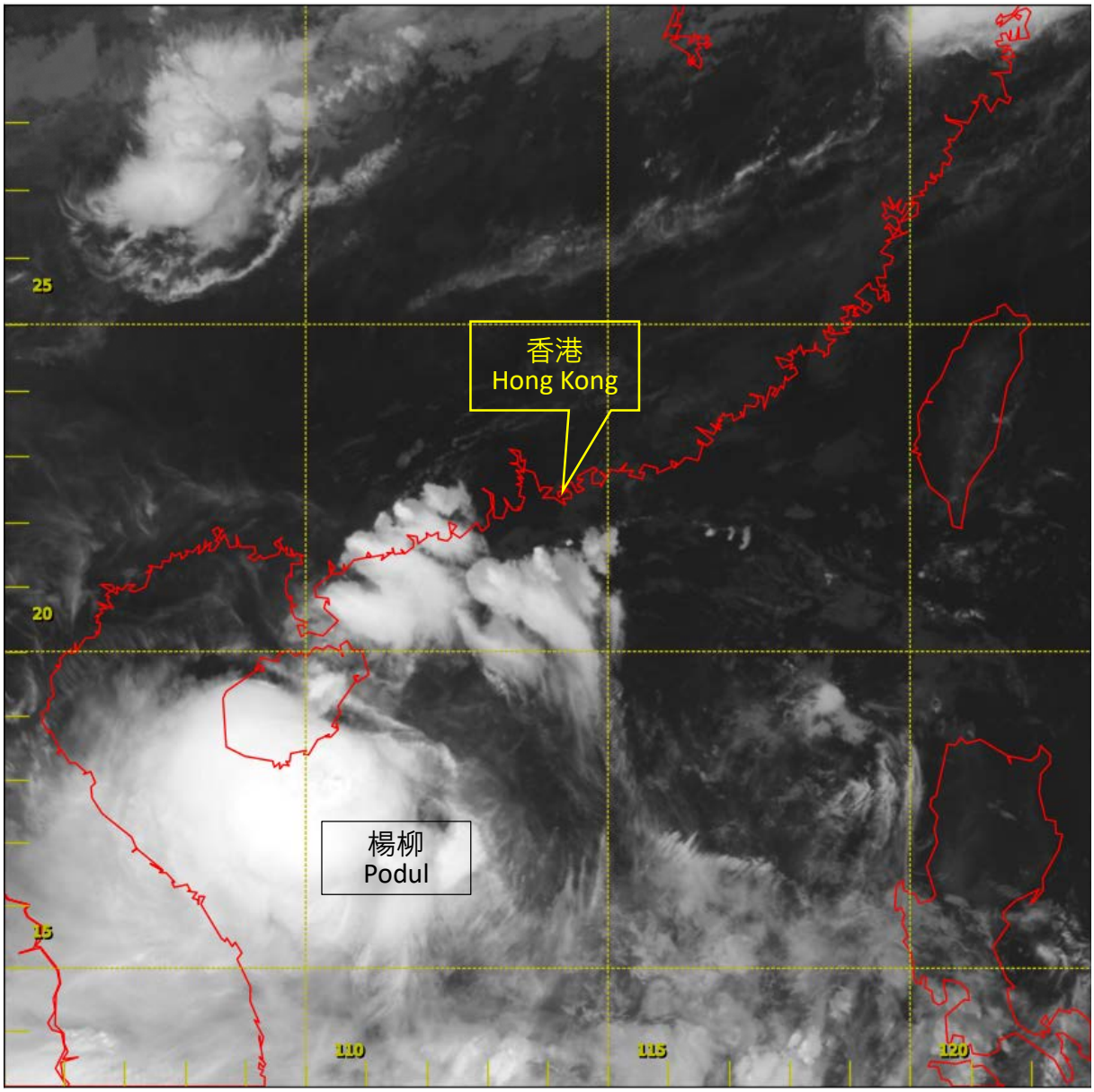


圖 3.4.3　二零一九年八月二十九日上午 2 時的紅外線衛星圖片，當時楊柳達到其最高強度，中心附近最高持續風速估計為每小時 85 公里。

Figure 3.4.3　Infra-red satellite imagery around 2 a.m. on 29 August 2019, when Podul was at peak intensity with estimated maximum sustained winds 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).]

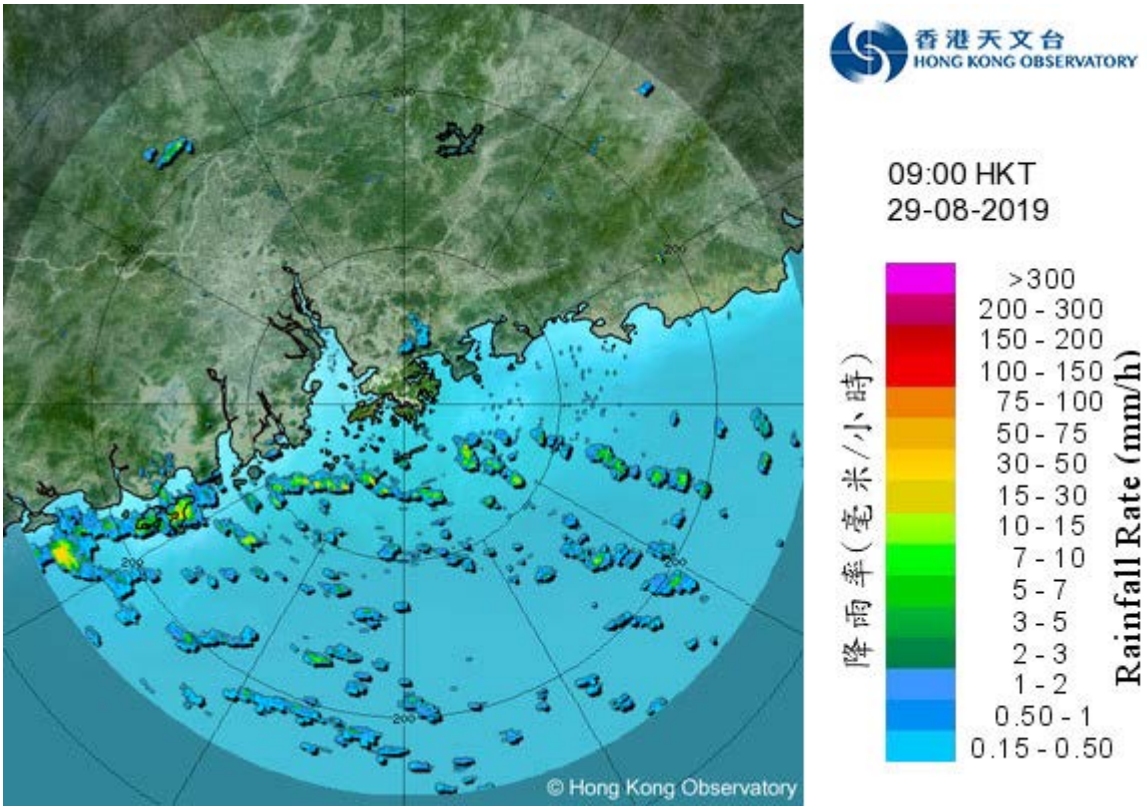


圖 3.4.4　二零一九年八月二十九日上午 9 時的雷達回波圖像，當時楊柳的外圍雨帶正影響南海北部及廣東沿岸地區。

Figure 3.4.4　Image of radar echoes at 9:00 a.m. on 29 August 2019. The outer rainbands of Podul were affecting the northern part of the South China Sea and the coastal areas of Guangdong at that time.

3.5 熱帶低氣壓劍魚 (1914)：二零一九年九月一日至四日

劍魚是香港天文台在二零一九年第五個需要發出熱帶氣旋警告信號的熱帶氣旋。

熱帶低氣壓劍魚於九月一日早上在香港之東南約 480 公里的南海北部上形成，向西橫過南海北部。日間劍魚稍為增強，其中心附近最高持續風速估計達每小時 55 公里。劍魚於九月二日早上橫過海南島東南部後轉向西南方向移動。劍魚於九月三日在越南中部沿岸登陸並在附近一帶徘徊打轉，翌日在越南中部沿岸海域減弱為一個低壓區。

九月一日上午劍魚形成後，天文台於上午 8 時 40 分發出一號戒備信號，當時劍魚集結在香港之東南約 470 公里。日間本港吹和緩至清勁的東北風，離岸及高地間中吹強風。隨著劍魚靠近本港，天文台在當日下午 4 時 20 分改發三號強風信號，當時劍魚集結在香港之東南偏南約 340 公里。晚上本港普遍吹清勁至強風程度的偏東風。劍魚在晚上 9 時左右最接近香港，在本港以南約 330 公里掠過。劍魚於九月二日早上登陸海南島東南沿岸並遠離香港，天文台於當日上午 10 時 40 分以一號戒備信號取代三號強風信號。但在劍魚與大陸反氣旋的共同影響下，本港離岸及高地仍間中吹強風。隨著本港風力減弱，天文台於九月三日上午 9 時 20 分取消所有熱帶氣旋警告信號。

在劍魚的影響下，尖鼻咀錄得最高潮位(海圖基準面以上) 3.0 米，而大廟灣錄得最大風暴潮(天文潮高度以上) 0.39 米。天文台總部於九月一日下午 3 時 23 分錄得最低瞬時海平面氣壓 1004.5 百帕斯卡。

在劍魚相關的雨帶影響下，九月一日至三日本港間中有狂風大驟雨及雷暴，九月二日中午雨勢較大，天文台需要發出黃色暴雨警告信號。這三天本港大部分地區錄得超過 50 毫米雨量，西貢、沙田及大埔的雨量更超過 150 毫米。

劍魚並沒有對香港造成嚴重破壞。根據報章報導，劍魚吹襲越南期間造成至少六人死亡和十人失蹤。

表 3.5.1 - 3.5.4 分別是劍魚影響香港期間各站錄得的最高風速、持續風力達到強風程度的時段、香港的日雨量及最高潮位資料。圖 3.5.1 - 3.5.2 分別為劍魚的路徑圖和本港的雨量分佈圖。圖 3.5.3 - 3.5.4 分別為劍魚的衛星及雷達圖像。

3.5 Tropical Depression Kajiki (1914): 1 – 4 September 2019

Kajiki was the fifth tropical cyclone necessitating the issuance of tropical cyclone warning signal by the Hong Kong Observatory in 2019.

Kajiki formed as a tropical depression over the northern part of the South China Sea at about 480 km southeast of Hong Kong on the morning of 1 September and moved westwards across the northern part of the South China Sea. Kajiki intensified slightly during the day with an estimated maximum sustained wind reaching 55 km/h near its centre. It turned to track southwestwards after moving across the southeastern part of Hainan Island on the morning of 2 September. Kajiki made landfall over the coast of central Vietnam and lingered over the region on 3 September. It finally degenerated into an area of low pressure over the coastal waters of central Vietnam the next day.

After the formation of Kajiki on the morning of 1 September, the Hong Kong Observatory issued the Standby Signal No. 1 at 8:40 a.m. when Kajiki was centred about 470 km southeast of the territory. Local winds during the day were moderate to fresh northeasterlies and occasionally reached strong force offshore and on high ground. With Kajiki edging closer to the territory, the Strong Wind Signal No. 3 was issued at 4:20 p.m. that afternoon when it was about 340 km south-southeast of Hong Kong. Local winds were in general fresh to strong easterlies at night. Kajiki was closest to Hong Kong at around 9 p.m. that night, skirting past about 330 km south of the territory. As Kajiki made landfall over the southeastern coast of Hainan Island and moved away from Hong Kong, the Standby Signal No. 1 was issued to replace the Strong Wind Signal No. 3 at 10:40 a.m. on 2 September. Under the combined effect of Kajiki and continental anticyclone, local winds remained occasionally strong offshore and on high ground. As winds over Hong Kong weakened, all tropical cyclone warning signals were cancelled at 9:20 a.m. on 3 September.

Under the influence of Kajiki, a maximum sea level (above chart datum) of 3.0 m was recorded at Tsim Bei Tsui and a maximum storm surge of 0.39 m (above astronomical tide) was recorded at Tai Miu Wan. At the Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 1004.5 hPa was recorded at 3:23 p.m. on 1 September.

Affected by the rainbands associated with Kajiki, there were occasional heavy squally showers and thunderstorms on 1-3 September. The showers were particularly heavy around noon on 2 September, which necessitated the issuance of the Amber Rainstorm Warning Signal. More than 50 millimetres of rainfall were generally recorded over the territory during these three days, and rainfall even exceeded 150 millimetres in Sai Kung, Sha Tin and Tai Po.

Kajiki did not cause any significant damage in Hong Kong. According to press reports, Kajiki left at least six deaths and ten missing in Vietnam during its passage.

Information on the maximum wind, periods of strong force winds, daily rainfall and maximum sea level reached in Hong Kong during the passage of Kajiki is given in Tables 3.5.1 - 3.5.4 respectively. Figures 3.5.1 - 3.5.2 show respectively the track of Kajiki and the rainfall distribution for Hong Kong. Figures 3.5.3 - 3.5.4 show respectively a satellite imagery and a radar imagery of Kajiki.

表 3.5.1　在劍魚影響下，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 Kajiki 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
黃麻角(赤柱)	Bluff Head (Stanley)	東北偏東	ENE	68	1/9	22:54	東	E	31	2/9	05:00
中環碼頭	Central Pier	東南偏東	ESE	72	2/9	01:27	東	E	34	1/9	16:00
長洲	Cheung Chau	東	E	92	2/9	01:35	東	E	43	2/9	09:00
長洲泳灘	Cheung Chau Beach	-	-	83	1/9	14:09	-	-	51	1/9	16:00
青洲	Green Island	東北偏東	ENE	72	2/9	09:38	東北偏東	ENE	51	1/9	16:00
香港國際機場	Hong Kong International Airport	東	E	58	1/9	14:25	東	E	34	1/9	15:00
							東	E	34	1/9	16:00
							東	E	34	1/9	17:00
啟德	Kai Tak	東	E	54	2/9	07:38	東	E	25	1/9	15:00
京士柏	King's Park	東	E	54	1/9	14:37	東	E	22	1/9	15:00
		東	E	54	2/9	09:56	東	E	22	1/9	16:00
南丫島	Lamma Island	東	E	70	2/9	07:18	東	E	30	2/9	09:00
流浮山	Lau Fau Shan	東北偏東	ENE	54	2/9	12:17	東北偏東	ENE	25	1/9	17:00
		東北偏東	ENE	54	2/9	12:18					
北角	North Point	東北偏東	ENE	65	1/9	15:49	東	E	36	1/9	20:00
坪洲	Peng Chau	東	E	75	2/9	01:41	東	E	40	1/9	16:00
平洲	Ping Chau	東	E	40	2/9	13:23	東	E	16	2/9	14:00
西貢	Sai Kung	東北	NE	72	2/9	03:05	東北偏東	ENE	34	2/9	12:00
沙洲	Sha Chau	東南偏東	ESE	47	1/9	15:12	東	E	27	1/9	16:00
沙螺灣	Sha Lo Wan	東	E	56	1/9	14:33	東	E	27	1/9	16:00
		東	E	56	1/9	15:07					
沙田	Sha Tin	東北	NE	56	2/9	08:56	東	E	19	1/9	16:00
石崗	Shek Kong	東北偏東	ENE	62	2/9	12:06	東	E	20	2/9	16:00
九龍天星碼頭	Star Ferry (Kowloon)	東	E	59	2/9	07:15	東	E	27	2/9	08:00
打鼓嶺	Ta Kwu Ling	東北偏東	ENE	41	2/9	07:43	東北偏東	ENE	16	1/9	16:00
大帽山	Tai Mo Shan	東南偏東	ESE	104	2/9	04:30	東南偏東	ESE	67	2/9	05:00
大埔滘	Tai Po Kau	東北偏東	ENE	76	2/9	07:45	東	E	34	1/9	15:00
塔門東	Tap Mun East	東	E	77	2/9	07:52	東	E	45	1/9	15:00
							東	E	45	1/9	16:00
大老山	Tate's Cairn	-	-	85	1/9	18:56	-	-	54	2/9	05:00
將軍澳	Tseung Kwan O	東北偏東	ENE	52	2/9	05:55	東北偏北	NNE	14	1/9	12:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東南	SE	51	1/9	14:13	東南偏東	ESE	20	1/9	15:00
屯門政府合署	Tuen Mun Government Offices	東北偏北	NNE	38	1/9	12:20	東北偏北	NNE	12	3/9	02:00
							東北偏北	NNE	12	3/9	03:00
橫瀾島	Waglan Island	東	E	96	2/9	04:29	東北偏東	ENE	56	1/9	16:00
濕地公園	Wetland Park	東北偏東	ENE	41	2/9	08:02	東	E	13	1/9	16:00
黃竹坑	Wong Chuk Hang	東北偏東	ENE	58	1/9	15:29	東北偏東	ENE	22	1/9	20:00
							東北偏東	ENE	22	2/9	11:00

大美督、昂坪 - 沒有資料　Tai Mei Tuk , Ngong Ping - data not available

長洲泳灘、大老山 - 沒有風向資料　Cheung Chau Beach, Tate's Cairn - wind direction not available

表 3.5.2　在劍魚影響下，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 3.5.2　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 Kajiki were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最初達到強風*時間 Start time when strong wind speed* was attained		最後達到強風*時間 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	1/9	14:09	2/9	09:15
西貢	Sai Kung	2/9	11:27	2/9	11:27

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 3.5.3　　劍魚影響香港期間，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 Kajiki

站 (參閱圖 3.5.2) Station (See Fig. 3.5.2)			九月一日 1 Sep	九月二日 2 Sep	九月三日 3 Sep	總雨量(毫米) Total rainfall (mm)
香港天文台 Hong Kong Observatory (HKO)			8.5	38.4	12.9	59.8
香港國際機場 Hong Kong International Airport (HKA)			6.1	38.1	0.1	44.3
長洲 Cheung Chau (CCH)			3.5	34.0	5.0	42.5
H23	香港仔	Aberdeen	3.5	27.0	1.0	31.5
N05	粉嶺	Fanling	13.0	88.5	11.5	113.0
N13	糧船灣	High Island	23.0	73.0	9.5	105.5
K04	佐敦谷	Jordan Valley	38.5	73.5	12.5	124.5
N06	葵涌	Kwai Chung	26.0	68.0	15.0	109.0
H12	半山區	Mid Levels	8.5	44.0	25.0	77.5
N09	沙田	Sha Tin	23.0	110.0	17.5	150.5
H19	筲箕灣	Shau Kei Wan	9.5	35.0	14.5	59.0
SEK	石崗	Shek Kong	24.0	88.5	[6.0]	[118.5]
K06	蘇屋邨	So Uk Estate	34.5	75.0	14.0	123.5
R31	大美督	Tai Mei Tuk	19.5	80.5	5.5	105.5
R21	踏石角	Tap Shek Kok	3.0	40.5	2.5	46.0
N17	東涌	Tung Chung	7.5	31.5	13.0	52.0
TMR	屯門水庫	Tuen Mun Reservoir	[2.9]	59.9	4.6	[67.4]

表 3.5.4　　劍魚影響香港期間，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 Kajiki

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	2.62	1/9	10:29	0.31	1/9	23:58
石壁	Shek Pik	2.69	1/9	10:52	0.30	1/9	23:27
大廟灣	Tai Miu Wan	2.56	1/9	10:28	0.39	1/9	23:40
大埔滘	Tai Po Kau	2.70	1/9	11:35	0.38	1/9	23:12
尖鼻咀	Tsim Bei Tsui	3.00	1/9	10:51	0.38	2/9	00:42

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

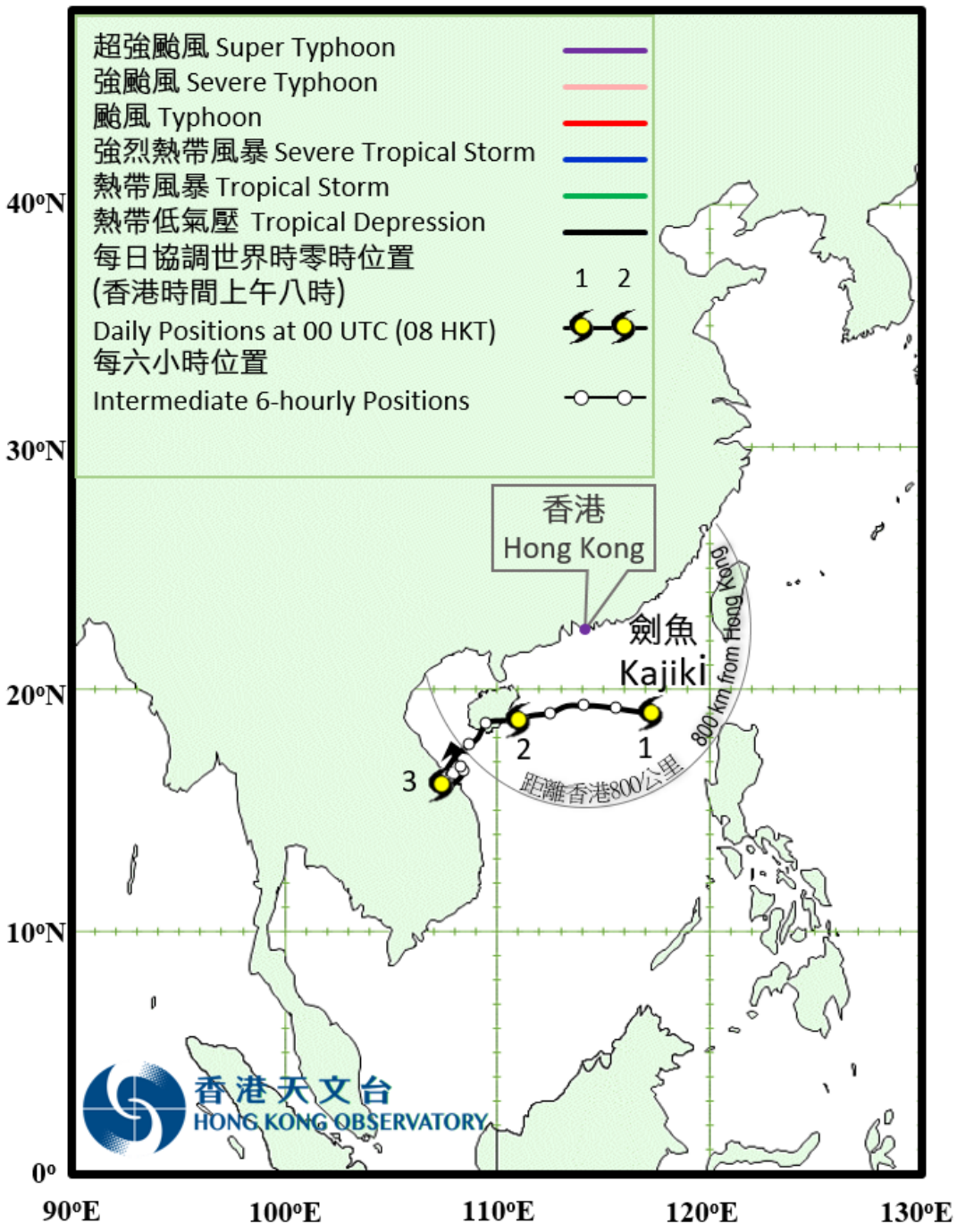


圖 3.5.1　　二零一九年九月一日至四日劍魚的路徑圖。

Figure 3.5.1　　Track of Kajiki on 1 – 4 September 2019.

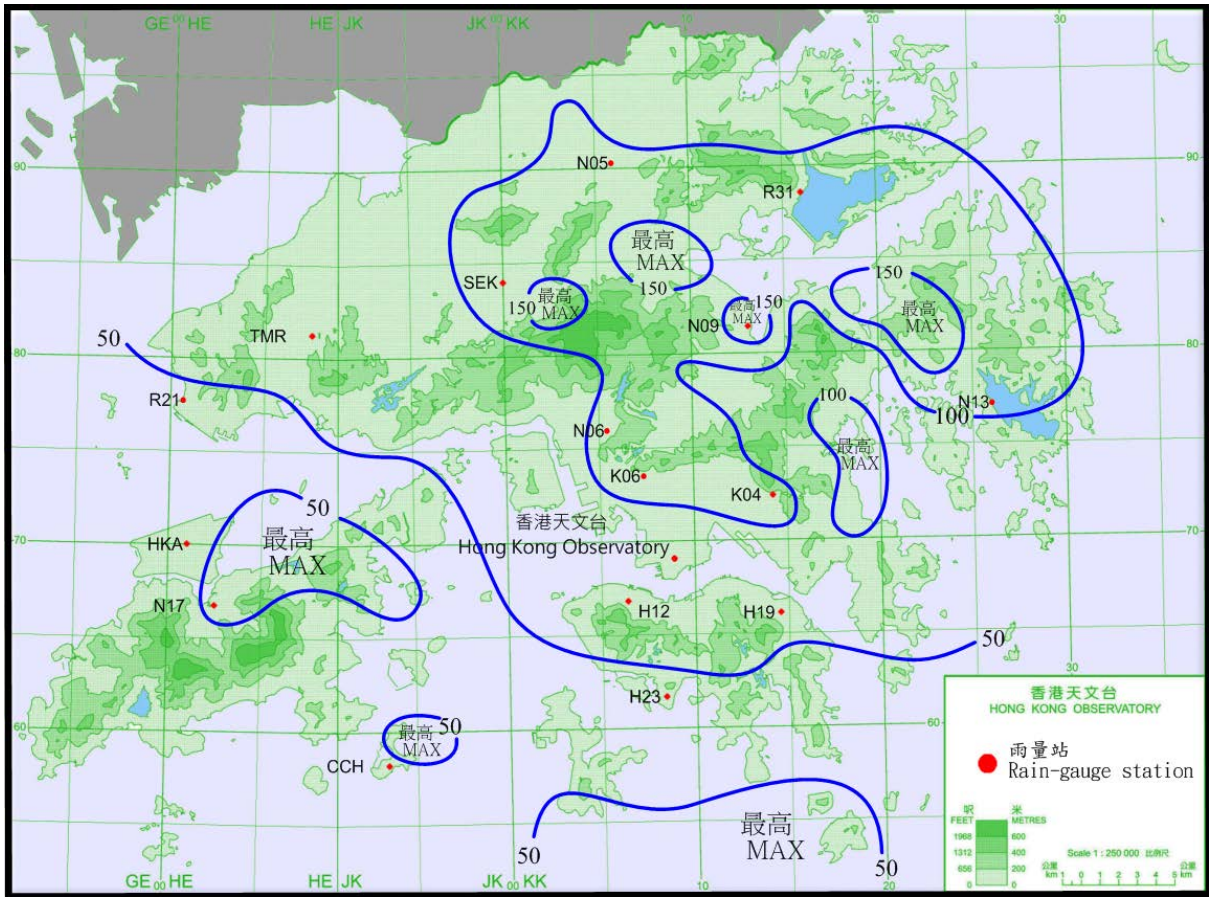


圖 3.5.2　　二零一九年九月一日至三日的雨量分佈(等雨量線單位為毫米)。

Figure 3.5.2　Rainfall distribution on 1 - 3 September 2019 (isohyets in millimetres).

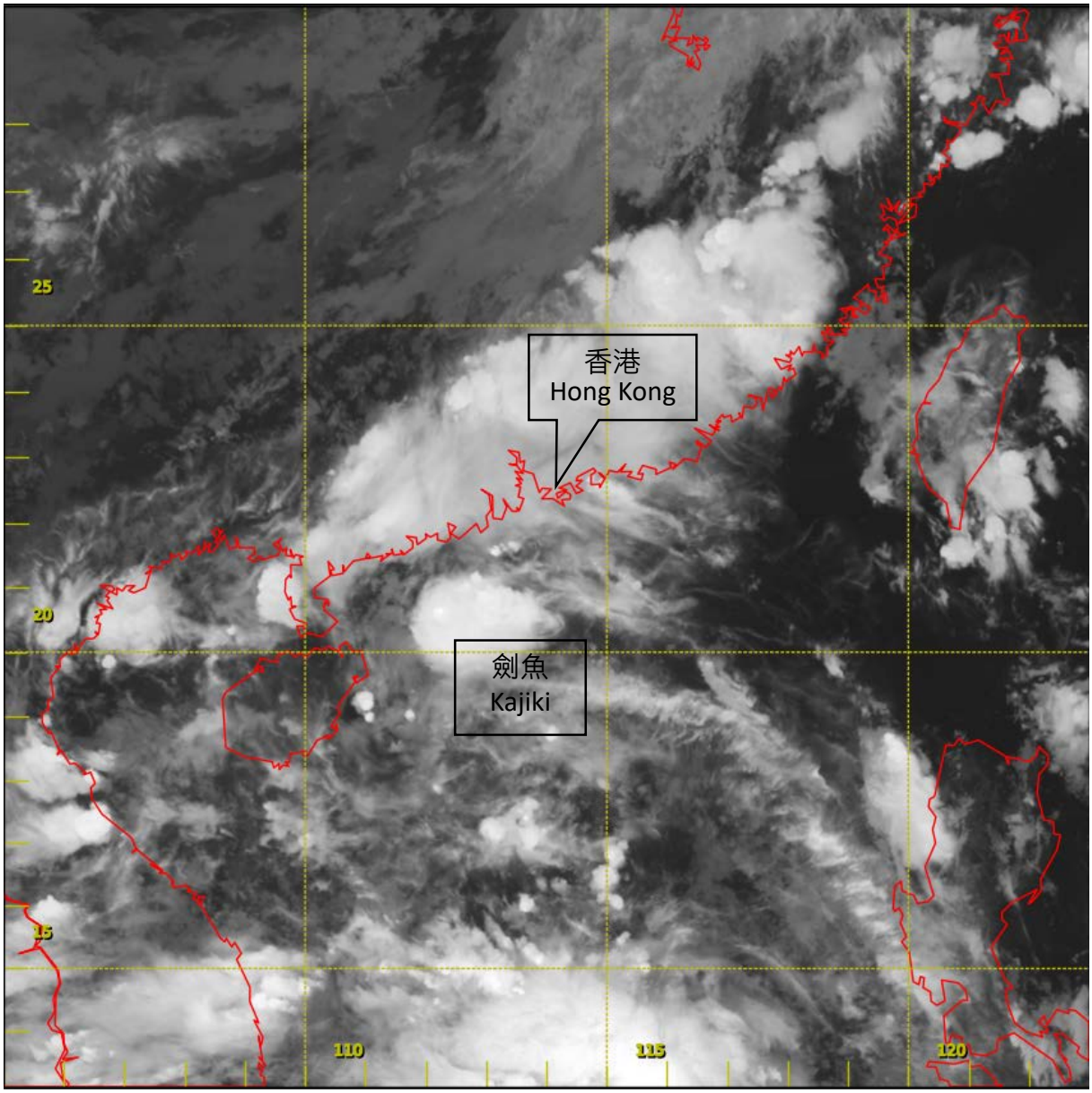


圖 3.5.3　二零一九年九月一日下午 9 時左右的紅外線衛星圖片，當時劍魚最接近本港，其中心在香港以南約 330 公里。

Figure 3.5.3　Infa-red satellite imagery around 9 p.m. on 1 September 2019, when Kajiki was closest to Hong Kong with its centre about 330 km south of Hong Kong.

〔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).]

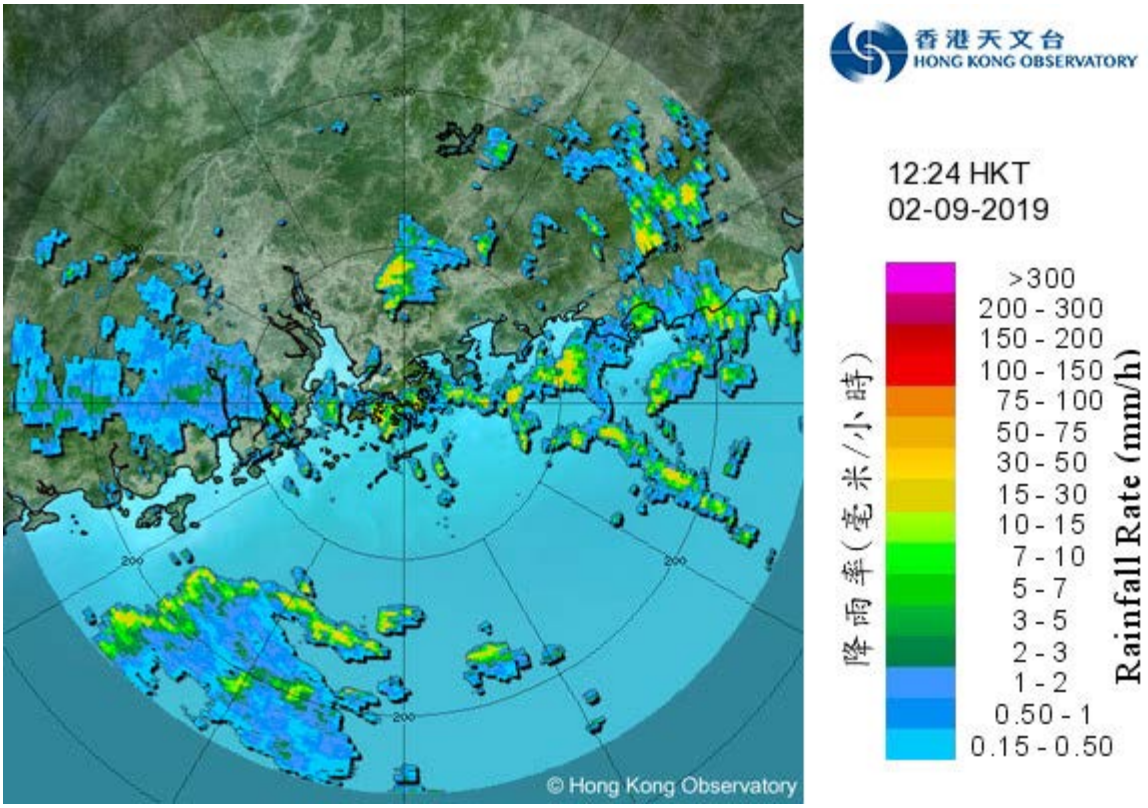


圖 3.5.4　二零一九年九月二日下午 12 時 24 分的雷達回波圖像，當時與劍魚相關的雨帶正影響廣東沿岸及南海北部。

Figure 3.5.4　Image of radar echoes at 12:24 p.m. on 2 September 2019. The rainbands associated with Kajiki were affecting the coast of Guangdong and the northern part of the South China Sea at that time.

第四節　熱帶氣旋統計表

表4.1是二零一九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是天文台在二零一九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是二零一九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是一九五六至二零一九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是一九五六至二零一九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是一九五六至二零一九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是二零一九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是二零一九年位於香港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二零一九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是自一九四六年至二零一九年間，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是二零一九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是一九六零至二零一九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是二零一九年天文台發出的熱帶氣旋路徑預測驗証。

Section 4 TROPICAL CYCLONE STATISTICS AND TABLES

TABLE 4.1 is a list of tropical cyclones in 2019 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 2019, 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 2019. 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 2019 inclusive.

TABLE 4.5 gives the annual number of tropical cyclones in Hong Kong's area of responsibility between 1956 and 2019 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 1956-2019.

TABLE 4.7 is a summary of meteorological information for each tropical cyclone affecting Hong Kong in 2019, 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 2019.

TABLE 4.8.2 highlights the 10 wettest tropical cyclones in Hong Kong for the period 1884-1939 and 1947-2019.

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 2019. 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 2019. 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: 1960-2019. 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 2019.

表 4.1　　二零一九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 2019

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 北緯 °N 東經 °E	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	
超強颱風蝴蝶	Super Typhoon Wutip	1902	19 / 02	0600	4.7 158.7	210	925	28 / 02	0000	17.2 136.7	DISP
熱帶低氣壓聖帕	Tropical Depression Sepat	1903	27 / 06	0900	31.5 133.5	55	996	28 / 06	0000	34.9 141.5	XT
熱帶低氣壓木恩	Tropical Depression Mun	1904	02 / 07	0800	18.8 112.2	55	990	04 / 07	0000	20.5 106.0	DISP
熱帶風暴丹娜絲	Tropical Storm Danas	1905	15 / 07	1200	16.9 131.2	85	986	21 / 07	0000	38.1 128.6	XT
熱帶風暴百合	Tropical Storm Nari	1906	24 / 07	0300	23.3 137.4	65	996	27 / 07	0000	34.7 136.3	DISP
熱帶風暴韋帕	Tropical Storm Wipha	1907	30 / 07	0600	17.8 114.9	85	985	03 / 08	1200	20.4 105.7	DISP
颱風范斯高	Typhoon Francisco	1908	01 / 08	1800	19.5 153.4	130	965	07 / 08	0600	39.0 128.4	XT
超強颱風利奇馬	Super Typhoon Lekima	1909	03 / 08	1800	15.2 132.0	205	925	13 / 08	0000	37.7 119.7	XT
強颱風羅莎	Severe Typhoon Krosa	1910	06 / 08	0000	17.9 143.5	155	950	16 / 08	0600	40.9 135.6	XT
強烈熱帶風暴白鹿	Severe Tropical Storm Bailu	1911	21 / 08	0600	15.7 132.1	105	980	25 / 08	1500	24.8 113.7	DISP
熱帶風暴楊柳	Tropical Storm Podul	1912	27 / 08	0000	14.4 126.5	85	988	30 / 08	0000	17.2 105.4	DISP
熱帶低氣壓劍魚	Tropical Depression Kajiki	1914	01 / 09	0000	19.0 117.2	55	996	03 / 09	2100	16.9 108.2	DISP
超強颱風玲玲	Super Typhoon Lingling	1913	02 / 09	0000	15.4 125.9	205	935	07 / 09	2100	45.6 129.4	XT
強颱風法茜	Severe Typhoon Faxai	1915	03 / 09	1800	17.0 160.0	175	945	10 / 09	0600	40.5 151.0	XT
熱帶風暴琵琶	Tropical Storm Peipah	1916	15 / 09	0000	15.5 149.7	65	998	16 / 09	0600	23.2 144.0	DISP
颱風塔巴	Typhoon Tapah	1917	18 / 09	0000	21.7 128.9	120	970	22 / 09	2100	36.7 133.0	XT
颱風米娜	Typhoon Mitag	1918	27 / 09	0600	13.8 137.2	145	960	03 / 10	0300	37.7 130.6	XT
超強颱風海貝思	Super Typhoon Hagibis	1919	05 / 10	0000	15.0 162.7	230	910	13 / 10	0000	40.0 144.0	XT
強颱風浣熊	Severe Typhoon Neoguri	1920	17 / 10	1800	19.6 129.9	165	945	21 / 10	0900	31.5 134.7	XT
超強颱風博羅依	Super Typhoon Bualoi	1921	19 / 10	0000	10.1 156.7	205	930	25 / 10	0600	34.1 148.1	XT
強烈熱帶風暴麥德姆	Severe Tropical Storm Matmo	1922	29 / 10	0000	11.4 116.0	90	985	31 / 10	0900	13.7 105.5	DISP
超強颱風夏浪	Super Typhoon Halong	1923	02 / 11	1200	13.2 157.7	250	905	08 / 11	1800	30.6 160.1	XT
強烈熱帶風暴娜基莉	Severe Tropical Storm Nakri	1924	05 / 11	0000	13.8 114.9	110	975	11 / 11	0000	12.8 108.4	DISP
強颱風風神	Severe Typhoon Fengshen	1925	11 / 11	1200	14.1 165.4	165	950	17 / 11	1200	26.1 156.7	DISP
颱風海鷗	Typhoon Kalmaegi	1926	13 / 11	0000	12.7 129.0	120	975	20 / 11	0600	16.5 120.7	DISP
強烈熱帶風暴鳳凰	Severe Tropical Storm Fung-wong	1927	19 / 11	1800	15.7 128.4	110	975	22 / 11	1500	24.8 125.5	DISP
超強颱風北冕	Super Typhoon Kammuri	1928	25 / 11	1800	9.7 151.4	185	925	05 / 12	0900	13.5 113.7	DISP
颱風巴蓬	Typhoon Phanfone	1929	21 / 12	1800	6.4 140.2	145	960	28 / 12	0600	14.5 113.9	DISP

+時間為協調世界時。

+Times are given in UTC.

表 4.2　　二零一九年為船舶發出的熱帶氣旋警告

TABLE 4.2　TROPICAL CYCLONE WARNINGS FOR SHIPPING ISSUED IN 2019

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 Date/Month	時間+ Time+	日期/月份 Date/Month	時間+ Time+	
* 熱帶低氣壓木恩	* Tropical Depression Mun	14	2 / 7	0900	4 / 7	0000	39
熱帶風暴丹娜絲	Tropical Storm Danas	25	16 / 7	0900	19 / 7	0900	72
* 熱帶風暴韋帕	* Tropical Storm Wipha	34	30 / 7	0600	3 / 8	0300	93
超強颱風利奇馬	Super Typhoon Lekima	15	8 / 8	1200	10 / 8	0600	42
* 熱帶風暴白鹿	* Tropical Storm Bailu	19	23 / 8	1200	25 / 8	1200	48
* 熱帶風暴楊柳	* Tropical Storm Podul	22	27 / 8	0600	29 / 8	2100	63
* 熱帶低氣壓劍魚	* Tropical Depression Kajiki	28	1 / 9	0000	4 / 9	0000	72
超強颱風玲玲	Super Typhoon Lingling	16	2 / 9	0900	4 / 9	0600	45
颱風米娜	Typhoon Mitag	19	29 / 9	1200	1 /10	1500	51
強烈熱帶風暴麥德姆	Severe Tropical Storm Matmo	18	29 /10	0000	31 /10	0300	51
強烈熱帶風暴娜基莉	Severe Tropical Storm Nakri	46	5 /11	0600	10 /11	2100	135
強烈熱帶風暴海鷗	Severe Tropical Storm Kalmaegi	25	17 /11	0600	20 /11	0300	69
強烈熱帶風暴鳳凰	Severe Tropical Storm Fung-wong	11	20 /11	2100	22 /11	0300	30
超強颱風北冕	Super Typhoon Kammuri	25	2 /12	1200	5 /12	1200	72
颱風巴蓬	Typhoon Phanfone	32	24 /12	1200	28 /12	0900	87
	共 Total	349					969

* 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　　二零一九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 2019

摘要 SUMMARY

信號 Signal	次數 No. of occasions	總時段 Total duration	
		時 h	分 min
1	7	113	0
3	3	54	25
8 西北 NW	0	0	0
8 西南 SW	0	0	0
8 東北 NE	1	10	0
8 東南 SE	0	0	0
9	0	0	0
10	0	0	0
共 Total	11	177	25

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*
熱帶低氣壓木恩 Tropical Depression Mun	15	1	02/07	16:15	03/07	05:40
熱帶風暴韋帕 Tropical Storm Wipha	72	1 3 8 東北 NE 3 1	30/07 30/07 31/07 31/07 01/08	15:40 21:15 13:40 23:40 19:20	30/07 31/07 31/07 01/08 02/08	21:15 13:40 23:40 19:20 08:40
強烈熱帶風暴白鹿 Severe Tropical Storm Bailu	30	1	24/08	14:40	25/08	19:20
熱帶風暴楊柳 Tropical Storm Podul	23	1	28/08	14:40	29/08	12:20
熱帶低氣壓劍魚 Tropical Depression Kajiki	53	1 3 1	01/09 01/09 02/09	08:40 16:20 10:40	01/09 02/09 03/09	16:20 10:40 09:20

* 香港時間（協調世界時加八小時)　　* Hong Kong Time （UTC + 8 hours）

表 4.4　　一九五六至二零一九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 : 1956-2019

信號 Signals / 年份 Year	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 h	分 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
共 Total	437	358	29	35	65	53	22	15	16849	9
平均 Mean	6.8	5.6	0.5	0.5	1.0	0.8	0.3	0.2	263	16

表 4.5　一九五六至二零一九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 : 1956-2019

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
平均 Mean	15.6	5.9

表 4.6　一九五六至二零一九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 : 1956-2019

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	394	42 46	161 0 (桃麗達 Tilda, 1964)	4 30 (熱帶低氣壓 T.D., 2000)	263 16	570 15 (1964)	36 35 (1959)
三號或以上 3 or higher	263	28 57	124 15 (瑪麗 Mary, 1960)	4 5 (熱帶低氣壓 T.D., 2006)	118 59	306 35 (1974)	15 5 (2004)
八號或以上 8 or higher	97	14 24	66 50 (瑪麗 Mary, 1960)	2 40 (雲茵 Wynne, 1984)	21 49	100 55 (1964)	0 0
8 西北 NW	29	5 48	15 45	1 30	2 38	18 0	0 0
8 西南 SW	35	4 58	10 45	2 0	2 43	16 10	0 0
8 東北 NE	65	7 36	35 35	1 35	7 43	40 20	0 0
8 東南 SE	53	7 30	21 45	0 20	6 13	31 15	0 0
九號或以上 9 or higher	23	7 5	12 25 (約克 York, 1999)	2 0 (杜鵑 Dujuan, 2003)	2 33	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 31	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　　二零一九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 2019

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. / 每小時 Hourly	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
熱帶低氣壓木恩 Tropical Depression Mun	7	2	16:00	西南偏南 SSW	440	西 W	24	994	7	2	16:39 - 17:09 #	1000.3	0.22	0.30	0.28	0.35	0.38	-
											16:00 - 18:00	1000.5						
熱帶風暴韋帕 Tropical Storm Wipha	7	31	17:00	西南偏南 SSW	310	西北偏西 WNW	26	985	8	1	04:49 - 04:54	998.1	0.53	0.64	0.59	0.63	0.60	-
											05:00	998.2						
強烈熱帶風暴白鹿 Severe Tropical Storm Bailu	8	25	20:00	北 N	280	西 W	24	998	8	25	03:07 - 04:11 #	999.0	0.14	0.12	0.20	0.20	0.22	-
											03:00 - 04:00	999.2						
熱帶風暴楊柳 Tropical Storm Podul	8	29	02:00	南 S	560	西 W	28	988	8	28	17:28 - 17:44 #	1003.7	0.10	0.16	0.19	0.24	0.14	-
											18:00	1004.0						
熱帶低氣壓劍魚 Tropical Depression Kajiki	9	1	21:00	南 S	330	西 W	24	996	9	1	15:23 - 17:01 #	1004.5	0.31	0.30	0.39	0.38	0.38	-
											17:00	1004.6						

* 香港時間（協調世界時加八小時）
\# 最初及最後錄得的時間
\- 沒有資料

* Hong Kong Time （UTC + 8 hours）
\# First and last time recorded
\- 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	
熱帶低氣壓木恩 Tropical Depression Mun	7	東 E	16	東 E	31	東 E	47	東 E	23	東 E	34	南 S	62	東 E	41	東南偏東 ESE	43	南 S	72
熱帶風暴韋帕 Tropical Storm Wipha	7 - 8	東 E	34	東, 東南偏東 E, ESE	47	東 E	76	東 E	41	東南偏東 ESE	59	東 E	94	東 E	75	東南偏東 ESE	79	東 E	117
強烈熱帶風暴白鹿 Severe Tropical Storm Bailu	8	北 N	20	西南偏西 WSW	36	西 W	49	北 N	31	東北 NE	54	西南偏西 WSW	56	西北偏北 NNW	79	東北 NE	75	西北偏西 WNW	72
熱帶風暴楊柳 Tropical Storm Podul	8	東 E	23	東 E	34	東北偏東 ENE	51	東北偏東 ENE	25	東, 東南偏東 E, ESE	38	東北偏東 ENE	56	東 E	56	東 E	47	東北偏東 ENE	67
熱帶低氣壓劍魚 Tropical Depression Kajiki	9	東 E	23	東 E	36	東北偏東 ENE	56	東北偏東, 東 ENE, E	30	東北偏東 ENE	40	東, 東北偏東, E, ENE	68	東 E	54	東 E	58	東 E	96

- 沒有資料
- data not available

表 4.8.1　　二零一九年位於香港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 2019

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 Date/Month　時間* 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)
熱帶低氣壓木恩 Tropical Depression Mun	(T_1) 2 / 7 1700 - (T_2) 3 / 7 0400	43.5	55.9	64.3	64.8	108.3
熱帶風暴韋帕 Tropical Storm Wipha	(T_1) 30 / 7 1400 - (T_2) 2 / 8 2100	238.6	28.6	28.6	28.6	267.2
強烈熱帶風暴白鹿 Severe Tropical Storm Bailu	(T_1) 24 / 8 1700 - (T_2) 25 / 8 2300	86.5	180.2	183.1	183.1	269.6
熱帶風暴楊柳 Tropical Storm Podul	(T_1) 28 / 8 2000 - (T_2) 29 / 8 0600	微量 Trace	7.6	43.3	58.1	58.1
熱帶低氣壓劍魚 Tropical Depression Kajiki	(T_1) 1 / 9 0800 - (T_2) 2 / 9 1200	28.1	19.0	93.0	125.6	153.7
					共 Total	856.9

* 香港時間（協調世界時加八小時）。

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。

* Hong Kong Time （UTC + 8 hours）.

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.

表 4.8.2　一八八四至一九三九年及一九四七至二零一九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, 1947-2019)

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　　一九四六至二零一九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 1946-2019

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鱲角，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　　二零一九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 2019

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	共 Total **(a)**		
熱帶低氣壓木恩 Tropical Depression Mun	7		道路 Road: 1 人行道/小徑 Pavement/Footpath: 1 棚架 Scaffolding: 1				2								
熱帶風暴韋帕 Tropical Storm Wipha	7 - 8	農地 Farmland: 305 公頃 hectares 農作物 Crops: 2216 噸 tons	道路 Road: 3 通道 Access road: 2 小徑Footpath: 2 空曠地區 Open area:: 2		10	3	8	851	34.5742	0.0220		0.8150	35.4112	22.4011	57.8123
強烈熱帶風暴白鹿 Severe Tropical Storm Bailu	8		道路 Road: 2 建築工地 Construction site: 1	鐵路 Railway: 1			2				0.0600	0.1485	0.2085		
熱帶低氣壓劍魚 Tropical Depression Kajiki	9		空曠地區 Open area: 2												

#保險索償數據由香港保險業聯會提供（截至2019年9月30日），有關數據已經按參與調查的機構的所佔的市場份額(68%)作調整。請注意2019年的保險索償數據只涵蓋熱帶風暴韋帕。

The insurance claim figure is provided by the Hong Kong Federation of Insurers (up to 30 September 2019). The data have been adjusted by the market shares (68%) of the companies participating in the survey. Note that the insurance claim figure is only available for Tropical Storm Wipha in 2019.

*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2020年5月31日)。

* The data is provided by relevant government departments and public utility companies (up to 31 May 2020). 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　　一九六零至二零一九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 - 2019

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

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
1984	27 / 8 - 7 / 9	T. Ike	艾克	0	0	1	0	0	0
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

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
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
2004	14 / 7 - 16 / 7	T.S. Kompasu	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. Cimaron	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	S.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

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　二零一九年天文台發出的熱帶氣旋路徑預測驗証 (誤差單位為公里)

TABLE 4.12　VERIFICATION OF THE TROPICAL CYCLONE TRACK FORECASTS ISSUED BY THE HONG KONG OBSERVATORY IN 2019 (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
蝴蝶	Wutip	1902	SuperT.	136	7	224	3	-	-	-	-	-	-
木恩	Mun	1904	T.D.	93	3	-	-	-	-	-	-	-	-
丹娜絲	Danas	1905	T.S.	102	17	311	13	619	8	864	7	-	-
百合	Nari	1906	T.S.	79	8	109	4	-	-	-	-	-	-
韋帕	Wipha	1907	T.S.	59	14	76	10	99	6	158	1	-	-
范斯高	Francisco	1908	T.	51	8	115	4	-	-	-	-	-	-
利奇馬	Lekima	1909	SuperT.	82	32	140	30	200	26	261	22	333	18
羅莎	Krosa	1910	S.T.	47	17	64	12	67	9	91	5	43	1
白鹿	Bailu	1911	S.T.S.	74	14	77	10	130	6	229	2	-	-
楊柳	Podul	1912	T.S.	134	9	310	5	616	1	-	-	-	-
玲玲	Lingling	1913	SuperT.	66	19	137	16	165	11	203	8	314	2
劍魚	Kajiki	1914	T.D.	99	8	124	4	-	-	-	-	-	-
法茜	Faxai	1915	S.T.	43	4	-	-	-	-	-	-	-	-
塔巴	Tapah	1917	T.	54	15	52	10	81	6	74	2	-	-
米娜	Mitag	1918	T.	75	19	119	15	204	11	247	7	346	3
海貝思	Hagibis	1919	SuperT.	83	12	151	8	143	4	-	-	-	-
浣熊	Neoguri	1920	S.T.	253	11	551	7	1173	3	-	-	-	-
麥德姆	Matmo	1922	S.T.S.	38	6	77	2	-	-	-	-	-	-
娜基莉	Nakri	1924	S.T.S.	45	20	71	16	96	12	126	8	161	4
海鷗	Kalmaegi	1926	T.	138	26	188	22	292	18	396	14	469	10
鳳凰	Fung-wong	1927	S.T.S.	164	7	453	3	-	-	-	-	-	-
北冕	Kammuri	1928	SuperT.	58	28	97	24	136	20	182	16	245	12
巴蓬	Phanfone	1929	T.	50	22	60	18	89	14	126	10	221	6
平均誤差 Average Error				84		144		205		265		309	
預測總數 Total number of forecasts				326		236		155		102		56	

註：

1. 驗証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。
2. 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:

1. 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.
2. 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　二零一九年熱帶氣旋的位置及強度數據

以下是二零一九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。

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, 2019

Six-hourly position and intensity data are tabulated in this section for the following tropical cyclones in 2019 over the western North Pacific and the South China Sea (i.e. the area bounded by the Equator, 45°N, 100°E and 180°).

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

超強颱風蝴蝶(1902)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON WUTIP (1902)

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
二月 FEB	19	0600	T.D.	1004	13	4.7	158.7
		1200	T.D.	1002	16	5.3	156.1
		1800	T.S.	1000	18	5.1	155.1
	20	0000	T.S.	994	23	4.9	154.6
		0600	T.S.	994	23	4.9	153.9
		1200	S.T.S.	985	28	5.0	152.6
		1800	S.T.S.	980	31	5.7	151.6
	21	0000	T.	975	33	6.1	150.5
		0600	T.	970	36	6.4	149.6
		1200	T.	970	36	6.9	148.7
		1800	T.	970	36	7.4	148.1
	22	0000	T.	965	39	8.2	146.8
		0600	T.	965	39	9.2	146.2
		1200	T.	960	41	9.9	145.0
		1800	S.T.	955	43	10.1	144.0
	23	0000	S.T.	955	43	10.6	143.7
		0600	S.T.	945	49	11.4	143.3
		1200	SuperT.	935	54	12.0	142.8
		1800	SuperT.	935	54	12.4	142.4
	24	0000	SuperT.	940	52	12.7	142.1
		0600	SuperT.	940	52	12.9	141.7
		1200	S.T.	945	49	13.1	141.3
		1800	S.T.	945	49	13.1	140.7
	25	0000	SuperT.	935	54	13.4	140.5
		0600	SuperT.	925	59	13.8	140.2
		1200	SuperT.	930	57	14.3	140.0
		1800	SuperT.	930	57	14.6	139.9
	26	0000	SuperT.	940	52	14.9	139.9
		0600	SuperT.	940	52	15.2	139.9
		1200	S.T.	950	46	15.4	140.0
		1800	S.T.	955	43	15.7	140.0
	27	0000	T.	965	39	15.9	139.9
		0600	T.	975	33	16.3	139.9
		1200	S.T.S.	985	28	16.5	139.5
		1800	T.S.	994	23	16.6	137.9
	28	0000	T.D.	1004	16	17.2	136.7
			消散 Dissipated				

熱帶低氣壓聖帕(1903)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION SEPAT (1903)

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
六月 JUN	27	0900	T.D.	996	16	31.5	133.5
		1200	T.D.	996	16	32.6	134.6
		1800	T.D.	996	16	33.8	138.0
	28	0000	T.D.	996	16	34.9	141.5
			變為溫帶氣旋 Became Extratropical				

熱帶低氣壓木恩(1904)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION MUN (1904)

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
七月 JUL	2	0800	T.D.	994	13	18.8	112.2
		1200	T.D.	994	13	18.8	111.3
		1800	T.D.	994	13	18.8	110.2
	3	0000	T.D.	994	13	18.9	109.1
		0600	T.D.	990	16	19.1	108.2
		1200	T.D.	990	16	19.4	107.5
		1800	T.D.	990	16	19.9	106.8
	4	0000	T.D.	994	13	20.5	106.0
			消散 Dissipated				

熱帶風暴丹娜絲(1905)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM DANAS (1905)

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
七月 JUL	15	1200	T.D.	1000	13	16.9	131.2
		1800	T.D.	998	16	17.0	127.5
	16	0000	T.D.	998	16	17.0	126.7
		0600	T.D.	998	16	17.2	124.6
		1200	T.D.	996	16	17.4	123.8
		1800	T.D.	996	16	17.4	123.3
	17	0000	T.D.	996	16	18.2	123.4
		0600	T.D.	994	16	19.0	123.7
		1200	T.D.	994	16	20.6	124.1
		1800	T.S.	990	18	21.7	124.3
	18	0000	T.S.	990	18	23.8	124.1
		0600	T.S.	990	18	25.6	124.0
		1200	T.S.	988	21	26.5	123.9
		1800	T.S.	986	23	27.8	123.9
	19	0000	T.S.	986	23	28.9	124.0
		0600	T.S.	986	23	29.9	124.3
		1200	T.S.	986	23	31.6	124.8
		1800	T.S.	986	23	33.0	125.2
	20	0000	T.S.	986	23	34.1	125.6
		0600	T.S.	988	21	35.1	125.8
		1200	T.D.	994	16	35.5	126.2
		1800	T.D.	996	16	36.6	127.2
	21	0000	T.D.	998	13	38.1	128.6
			變為溫帶氣旋 Became Extratropical				

熱帶風暴百合(1906)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM NARI (1906)

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
七月 JUL	24	0300	T.D.	1002	13	23.3	137.4
		0600	T.D.	1002	13	23.6	137.5
		1200	T.D.	1002	13	24.2	137.7
		1800	T.D.	1002	13	25.2	137.7
	25	0000	T.D.	1002	13	26.3	137.7
		0600	T.D.	1002	13	26.5	137.5
		1200	T.D.	1002	13	27.4	137.6
		1800	T.D.	1000	16	28.5	137.1
	26	0000	T.S.	996	18	29.6	137.1
		0600	T.S.	996	18	30.8	136.1
		1200	T.S.	996	18	31.9	135.9
		1800	T.D.	1000	16	33.2	136.0
	27	0000	T.D.	1000	16	34.7	136.3
			消散 Dissipated				

熱帶風暴韋帕(1907)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM WIPHA (1907)

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
七月 JUL	30	0600	T.D.	998	13	17.8	114.9
		1200	T.D.	994	16	17.8	114.4
		1800	T.D.	994	16	18.2	114.3
	31	0000	T.S.	988	21	18.8	114.1
		0600	T.S.	985	23	19.3	113.6
		1200	T.S.	985	23	20.0	112.3
		1800	T.S.	985	23	20.0	111.2
八月 AUG	1	0000	T.S.	985	23	19.7	110.8
		0600	T.S.	985	23	20.7	111.1
		1200	T.S.	985	23	21.3	110.1
		1800	T.S.	985	23	21.2	109.4
	2	0000	T.S.	985	23	21.2	109.2
		0600	T.S.	985	23	21.4	109.0
		1200	T.S.	985	23	21.5	108.6
		1800	T.S.	986	21	21.4	107.4
	3	0000	T.S.	988	18	21.1	106.5
		0600	T.D.	992	16	20.8	106.1
		1200	T.D.	994	13	20.4	105.7
			消散 Dissipated				

颱風范斯高(1908)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TYPHOON FRANCISCO (1908)

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	1	1800	T.D.	1002	13	19.5	153.4
	2	0000	T.D.	998	16	20.0	153.1
		0600	T.D.	998	16	21.0	152.1
		1200	T.S.	995	18	21.9	151.2
		1800	T.S.	995	18	22.8	150.3
	3	0000	T.S.	990	21	24.0	148.5
		0600	T.S.	990	21	25.3	147.5
		1200	T.S.	988	23	26.3	145.9
		1800	S.T.S.	984	25	27.0	144.3
	4	0000	S.T.S.	984	25	27.6	143.4
		0600	S.T.S.	984	25	28.6	141.6
		1200	S.T.S.	984	25	29.4	140.0
		1800	S.T.S.	984	25	29.7	138.1
	5	0000	S.T.S.	980	28	30.4	136.1
		0600	S.T.S.	975	31	30.8	134.5
		1200	T.	970	33	31.2	133.1
		1800	T.	965	36	31.8	131.8
	6	0000	S.T.S.	980	28	32.7	130.7
		0600	T.S.	988	23	33.6	129.7
		1200	T.S.	995	18	35.2	129.4
		1800	T.S.	995	18	36.6	128.8
	7	0000	T.D.	998	16	37.8	128.8
		0600	T.D.	998	16	39.0	128.4
			變為溫帶氣旋 Became Extratropical				

超強颱風利奇馬(1909)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON LEKIMA (1909)

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	3	1800	T.D.	998	13	15.2	132.0
	4	0000	T.D.	998	13	15.9	131.9
		0600	T.D.	996	16	16.7	131.5
		1200	T.S.	994	18	17.4	131.2
		1800	T.S.	990	21	17.9	130.6
	5	0000	T.S.	990	21	18.8	130.1
		0600	T.S.	990	21	19.0	129.7
		1200	T.S.	990	21	18.8	129.6
		1800	T.S.	988	23	18.7	129.2
	6	0000	S.T.S.	984	25	18.6	129.3
		0600	S.T.S.	984	25	19.0	129.1
		1200	S.T.S.	975	31	19.5	128.5
		1800	T.	970	33	19.5	128.2
	7	0000	T.	960	39	20.7	128.0
		0600	T.	955	41	20.9	127.7
		1200	S.T.	945	46	21.6	127.0
		1800	S.T.	940	49	22.1	126.4
	8	0000	SuperT.	935	52	22.7	126.0
		0600	SuperT.	930	54	23.7	125.4
		1200	SuperT.	925	57	24.4	124.9
		1800	SuperT.	930	54	25.5	124.5
	9	0000	SuperT.	935	52	26.4	123.4
		0600	SuperT.	935	52	27.1	122.5
		1200	S.T.	945	46	27.5	122.0
		1800	S.T.	950	43	28.4	121.4
	10	0000	T.	965	36	29.1	120.9
		0600	S.T.S.	978	28	30.1	120.3
		1200	T.S.	982	23	30.7	120.4
		1800	T.S.	982	23	32.0	120.3
	11	0000	T.S.	982	23	33.5	120.3
		0600	T.S.	982	23	35.0	119.8
		1200	T.S.	982	23	35.9	119.9
		1800	T.S.	982	23	36.9	119.7
	12	0000	T.S.	985	21	37.5	119.5
		0600	T.S.	990	18	37.4	119.4
		1200	T.D.	992	16	37.5	119.5
		1800	T.D.	992	16	37.6	119.6
	13	0000	T.D.	994	13	37.7	119.7
			變為溫帶氣旋 Became Extratropical				

強颱風羅莎(1910)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TYPHOON KROSA (1910)

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	6	0000	T.D.	1000	13	17.9	143.5
		0600	T.D.	996	16	18.2	143.1
		1200	T.S.	990	21	18.9	142.2
		1800	T.S.	990	21	19.6	142.3
	7	0000	S.T.S.	984	25	20.6	141.6
		0600	S.T.S.	980	28	21.2	141.3
		1200	S.T.S.	975	31	21.4	141.0
		1800	T.	970	33	21.7	140.8
	8	0000	T.	970	33	21.9	140.5
		0600	T.	955	41	22.1	140.5
		1200	T.	955	41	22.1	140.6
		1800	T.	955	41	22.1	141.0
	9	0000	S.T.	950	43	22.1	141.1
		0600	S.T.	950	43	22.1	141.3
		1200	T.	955	41	22.2	141.5
		1800	T.	960	39	22.3	141.4
	10	0000	T.	960	36	22.6	141.3
		0600	T.	965	33	22.9	141.0
		1200	T.	965	33	22.8	140.7
		1800	T.	965	33	22.9	140.5
	11	0000	T.	965	33	23.1	140.2
		0600	T.	965	33	23.6	139.7
		1200	T.	965	33	23.7	138.9
		1800	T.	965	33	24.2	138.4
	12	0000	S.T.S.	970	31	24.5	137.7
		0600	S.T.S.	970	31	25.0	137.7
		1200	S.T.S.	975	28	25.9	137.3
		1800	S.T.S.	975	28	26.8	136.4
	13	0000	S.T.S.	975	28	27.4	135.2
		0600	S.T.S.	975	28	27.7	134.9
		1200	S.T.S.	975	28	28.2	134.6
		1800	S.T.S.	975	28	28.4	133.7
	14	0000	S.T.S.	975	28	28.7	133.4
		0600	S.T.S.	975	28	29.5	133.0
		1200	S.T.S.	975	28	30.4	132.8
		1800	S.T.S.	975	28	31.3	132.7
	15	0000	S.T.S.	975	28	32.7	132.4
		0600	S.T.S.	978	25	34.1	132.5
		1200	S.T.S.	978	25	36.2	133.1
		1800	T.S.	984	23	38.0	133.5
	16	0000	T.S.	984	23	39.9	134.3
		0600	T.S.	984	23	40.9	135.6
			變為溫帶氣旋 Became Extratropical				

強烈熱帶風暴白鹿(1911)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF
SEVERE TROPICAL STORM BAILU (1911)

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	21	0600	T.D.	998	13	15.7	132.1
		1200	T.D.	996	16	15.4	130.7
		1800	T.S.	994	18	15.6	130.2
	22	0000	T.S.	990	21	15.7	129.4
		0600	T.S.	988	23	15.7	128.4
		1200	S.T.S.	984	25	16.2	127.9
		1800	S.T.S.	984	25	17.0	127.3
	23	0000	S.T.S.	984	25	18.1	126.3
		0600	S.T.S.	984	25	19.0	125.3
		1200	S.T.S.	980	28	20.0	124.6
		1800	S.T.S.	980	28	20.5	123.6
	24	0000	S.T.S.	980	28	21.3	121.9
		0600	S.T.S.	980	28	22.2	120.7
		1200	S.T.S.	980	28	23.1	119.1
		1800	S.T.S.	980	28	23.1	117.9
	25	0000	T.S.	984	23	23.7	117.4
		0600	T.S.	994	18	24.5	115.8
		1200	T.D.	998	13	24.8	114.3
		1500	T.D.	998	13	24.8	113.7
			消散 Dissipated				

熱帶風暴楊柳(1912)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM PODUL (1912)

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	27	0000	T.D.	1000	13	14.4	126.5
		0600	T.D.	998	16	14.9	124.8
		1200	T.D.	998	16	16.0	123.5
		1800	T.D.	998	16	16.6	120.6
	28	0000	T.S.	994	18	16.9	117.4
		0600	T.S.	990	21	16.8	116.1
		1200	T.S.	990	21	16.9	114.6
		1800	T.S.	988	23	17.3	113.3
	29	0000	T.S.	988	23	17.4	111.5
		0600	T.S.	988	23	17.5	109.8
		1200	T.S.	990	21	17.5	108.1
		1800	T.S.	992	18	17.5	106.5
	30	0000	T.D.	994	13	17.2	105.4
			消散 Dissipated				

熱帶低氣壓劍魚(1914)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION KAJIKI (1914)

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
九月 SEP	1	0000	T.D.	1000	13	19.0	117.2
		0600	T.D.	996	16	19.2	115.6
		1200	T.D.	996	16	19.3	114.1
		1800	T.D.	996	16	19.0	112.5
	2	0000	T.D.	996	16	18.7	111.0
		0600	T.D.	996	16	18.6	109.5
		1200	T.D.	996	16	17.7	108.7
		1800	T.D.	996	16	16.4	107.4
	3	0000	T.D.	996	16	16.1	107.4
		0600	T.D.	996	16	16.0	107.7
		1200	T.D.	996	16	16.6	108.4
		1800	T.D.	996	16	16.8	108.3
		2100	T.D.	998	13	16.9	108.2
			消散 Dissipated				

超強颱風玲玲(1913)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON LINGLING (1913)

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
九月 SEP	2	0000	T.D.	1002	13	15.4	125.9
		0600	T.D.	998	16	16.7	125.2
		1200	T.S.	995	18	17.9	124.7
		1800	T.S.	990	23	19.4	124.0
	3	0000	S.T.S.	986	25	20.1	123.9
		0600	S.T.S.	978	31	20.7	124.0
		1200	T.	974	33	21.3	124.2
		1800	T.	970	36	21.8	124.2
	4	0000	T.	970	36	22.1	124.5
		0600	T.	970	36	22.4	125.1
		1200	T.	965	39	23.0	125.4
		1800	S.T.	955	43	23.6	125.4
	5	0000	S.T.	945	49	24.2	125.3
		0600	SuperT.	940	54	24.9	125.3
		1200	SuperT.	935	57	25.7	125.2
		1800	SuperT.	935	57	26.8	125.2
	6	0000	SuperT.	935	57	28.0	125.0
		0600	SuperT.	940	52	29.6	125.2
		1200	S.T.	945	49	31.3	125.1
		1800	T.	960	41	33.6	125.0
	7	0000	T.	960	41	35.7	124.6
		0600	T.	970	36	37.9	125.3
		1200	S.T.S.	982	28	40.5	126.1
		1800	T.S.	990	23	44.2	127.8
		2100	T.S.	990	23	45.6	129.4
			變為溫帶氣旋 Became Extratropical				

強颱風法茜(1915)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TYPHOON FAXAI (1915)

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
九月 SEP	3	1800	T.D.	1002	13	17.0	160.0
	4	0000	T.D.	1002	13	17.9	159.3
		0600	T.D.	1000	16	18.2	158.5
		1200	T.D.	1000	16	18.3	157.5
		1800	T.D.	1000	16	18.3	156.6
	5	0000	T.D.	1000	16	19.0	156.2
		0600	T.S.	998	18	19.6	155.5
		1200	T.S.	998	18	20.6	154.6
		1800	T.S.	994	21	21.6	153.2
	6	0000	T.S.	994	21	22.6	151.5
		0600	T.S.	990	23	23.8	150.1
		1200	S.T.S.	988	25	24.6	148.1
		1800	S.T.S.	980	31	25.4	146.6
	7	0000	T.	970	36	26.6	145.0
		0600	T.	970	36	27.9	143.2
		1200	T.	960	41	28.9	141.8
		1800	S.T.	955	43	30.1	140.4
	8	0000	S.T.	945	49	31.4	139.5
		0600	S.T.	945	49	33.0	139.0
		1200	S.T.	950	46	34.1	139.0
		1800	S.T.	955	43	35.3	139.8
	9	0000	T.	965	39	36.3	141.0
		0600	T.	975	33	37.3	142.5
		1200	S.T.S.	980	31	38.4	144.2
		1800	S.T.S.	984	28	39.1	146.4
	10	0000	T.S.	990	23	39.9	148.3
		0600	T.S. 變為溫帶氣旋 Became Extratropical	994	21	40.5	151.0

熱帶風暴琵琶(1916)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM PEIPAH (1916)

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
九月 SEP	15	0000	T.D.	1002	13	15.5	149.7
		0600	T.D.	1000	16	16.6	149.0
		1200	T.S.	998	18	17.7	148.0
		1800	T.S.	998	18	19.4	146.8
	16	0000	T.D.	1000	16	21.4	145.3
		0600	T.D.	1000	16	23.2	144.0
			消散 Dissipated				

颱風塔巴(1917)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TYPHOON TAPAH (1917)

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
九月 SEP	18	0000	T.D.	1000	13	21.7	128.9
		0600	T.D.	998	16	21.9	129.4
		1200	T.D.	998	16	22.0	129.4
		1800	T.D.	998	16	22.2	129.1
	19	0000	T.D.	998	16	22.5	128.9
		0600	T.D.	998	16	22.5	128.8
		1200	T.S.	994	18	22.8	128.3
		1800	T.S.	990	21	22.9	127.5
	20	0000	T.S.	990	21	23.0	127.0
		0600	S.T.S.	984	25	23.4	126.9
		1200	S.T.S.	984	25	23.7	126.7
		1800	S.T.S.	975	31	24.9	126.3
	21	0000	T.	970	33	26.0	125.8
		0600	T.	970	33	27.4	125.6
		1200	T.	970	33	28.4	125.7
		1800	T.	970	33	29.6	126.1
	22	0000	T.	970	33	31.0	126.7
		0600	S.T.S.	975	31	32.5	127.7
		1200	S.T.S.	975	31	33.8	129.7
		1800	S.T.S.	980	28	35.6	131.9
		2100	S.T.S.	984	25	36.7	133.0
			變為溫帶氣旋 Became Extratropical				

颱風米娜(1918)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TYPHOON MITAG (1918)

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
九月 SEP	27	0600	T.D.	1004	13	13.8	137.2
		1200	T.D.	1004	13	14.2	135.9
		1800	T.D.	1002	16	15.4	134.7
	28	0000	T.S.	1000	18	16.1	133.1
		0600	T.S.	1000	18	17.0	130.7
		1200	T.S.	995	23	17.6	129.4
		1800	S.T.S.	990	25	17.9	128.0
	29	0000	S.T.S.	982	28	18.5	126.8
		0600	S.T.S.	982	28	19.2	125.9
		1200	T.	975	33	20.1	124.9
		1800	T.	970	36	20.9	123.9
	30	0000	T.	970	36	21.6	123.1
		0600	T.	965	39	22.8	122.9
		1200	T.	960	41	24.6	122.9
		1800	T.	960	41	26.1	122.6
十月 OCT	1	0000	T.	970	36	27.4	122.0
		0600	T.	970	36	28.7	122.2
		1200	S.T.S.	980	31	30.0	122.3
		1800	S.T.S.	985	25	30.6	122.7
	2	0000	S.T.S.	985	25	32.0	123.8
		0600	T.S.	988	23	33.3	124.7
		1200	T.S.	988	23	34.5	126.3
		1800	T.S.	990	21	35.8	128.3
	3	0000	T.S.	990	21	37.7	130.3
		0300	T.S. 變為溫帶氣旋 Became Extratropical	990	21	37.7	130.6

超強颱風海貝思(1919)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON HAGIBIS (1919)

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	5	0000	T.D.	1002	13	15.0	162.7
		0600	T.D.	1000	16	15.3	161.1
		1200	T.D.	1000	16	15.3	159.9
		1800	T.S.	995	18	15.1	158.2
	6	0000	T.S.	990	21	15.0	156.2
		0600	T.S.	985	23	14.7	154.2
		1200	S.T.S.	980	25	14.4	152.6
		1800	T.	975	33	14.9	151.1
	7	0000	S.T.	955	43	15.1	149.6
		0600	SuperT.	940	52	15.5	148.1
		1200	SuperT.	910	64	16.1	146.6
		1800	SuperT.	920	59	16.5	144.9
	8	0000	SuperT.	925	57	16.9	143.8
		0600	SuperT.	925	57	17.7	142.7
		1200	SuperT.	925	57	18.4	141.8
		1800	SuperT.	920	59	19.2	140.7
	9	0000	SuperT.	920	59	19.8	140.4
		0600	SuperT.	915	61	20.6	139.9
		1200	SuperT.	915	61	21.3	139.6
		1800	SuperT.	915	61	22.0	139.8
	10	0000	SuperT.	915	61	23.2	139.9
		0600	SuperT.	915	61	24.5	139.4
		1200	SuperT.	915	61	25.3	138.9
		1800	SuperT.	925	57	26.3	138.5
	11	0000	SuperT.	940	52	27.5	138.0
		0600	S.T.	945	49	28.7	137.5
		1200	S.T.	945	49	29.9	137.1
		1800	S.T.	950	46	30.8	137.0
	12	0000	S.T.	950	46	32.1	137.4
		0600	S.T.	955	43	33.7	138.2
		1200	T.	960	41	35.5	139.4
		1800	T.	975	33	38.2	141.8
	13	0000	S.T.S. 變為溫帶氣旋 Became Extratropical	980	31	40.0	144.0

強颱風浣熊(1920)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TYPHOON NEOGURI (1920)

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	17	1800	T.D.	1002	13	19.6	129.9
	18	0000	T.S.	996	18	19.6	129.8
		0600	T.S.	996	18	20.1	129.7
		1200	T.S.	996	18	20.4	129.4
		1800	T.S.	996	18	20.7	128.7
	19	0000	T.S.	992	21	21.1	128.0
		0600	S.T.S.	984	25	21.6	127.3
		1200	T.	970	33	21.9	127.2
		1800	S.T.	945	46	22.6	127.5
	20	0000	S.T.	950	43	23.4	127.9
		0600	T.	970	33	24.6	128.9
		1200	S.T.S.	980	28	25.6	130.0
		1800	S.T.S.	980	28	27.2	131.4
	21	0000	S.T.S.	984	25	28.9	132.9
		0600	S.T.S.	984	25	30.7	134.4
		0900	S.T.S.	984	25	31.5	134.7
			變為溫帶氣旋 Became Extratropical				

超強颱風博羅依(1921)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON BUALOI (1921)

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	19	0000	T.D.	1006	13	10.1	156.7
		0600	T.D.	1004	16	10.6	155.2
		1200	T.S.	1000	18	10.7	153.9
		1800	T.S.	998	21	11.0	152.6
	20	0000	S.T.S.	990	25	11.5	151.4
		0600	S.T.S.	985	28	11.9	150.6
		1200	S.T.S.	980	31	12.7	149.9
		1800	T.	975	33	13.1	149.1
	21	0000	T.	970	36	14.1	148.1
		0600	S.T.	955	43	14.7	147.6
		1200	S.T.	950	46	15.4	146.8
		1800	SuperT.	940	52	16.2	146.0
	22	0000	SuperT.	940	52	17.1	145.0
		0600	SuperT.	930	57	18.1	144.4
		1200	SuperT.	935	54	19.2	143.5
		1800	SuperT.	935	54	20.3	143.1
	23	0000	SuperT.	935	54	21.7	142.3
		0600	SuperT.	940	52	22.8	142.0
		1200	S.T.	945	49	24.0	142.0
		1800	S.T.	945	49	25.5	142.0
	24	0000	S.T.	950	46	26.8	142.1
		0600	S.T.	955	43	28.3	142.3
		1200	S.T.	955	43	29.6	143.7
		1800	T.	960	41	30.9	144.9
	25	0000	T.	970	36	32.3	146.1
		0600	T.	975	33	34.1	148.1
			變為溫帶氣旋 Became Extratropical				

強烈熱帶風暴麥德姆(1922)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TROPICAL STORM MATMO (1922)

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	29	0000	T.D.	1002	13	11.4	116.0
		0600	T.D.	1002	13	11.8	115.1
		1200	T.D.	1002	13	12.8	114.0
		1800	T.D.	998	16	12.8	112.7
	30	0000	T.S.	995	18	13.0	111.5
		0600	T.S.	988	23	13.1	110.7
		1200	S.T.S.	985	25	13.2	110.1
		1800	S.T.S.	985	25	13.4	108.8
	31	0000	T.S.	992	21	13.6	107.1
		0600	T.D.	998	16	13.6	105.9
		0900	T.D.	1002	13	13.7	105.5
			消散 Dissipated				

超強颱風夏浪(1923)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON HALONG (1923)

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
十一月 NOV	2	1200	T.D.	1004	13	13.2	157.7
		1800	T.S.	998	18	13.7	156.5
	3	0000	T.S.	998	18	14.8	155.4
		0600	T.S.	995	21	15.4	154.6
		1200	T.S.	992	23	15.9	154.2
		1800	S.T.S.	985	28	16.6	153.8
	4	0000	S.T.S.	980	31	17.0	153.6
		0600	T.	975	33	17.6	153.3
		1200	T.	965	39	18.2	152.8
		1800	S.T.	950	46	18.8	152.3
	5	0000	SuperT.	930	57	19.1	151.9
		0600	SuperT.	915	64	19.6	151.4
		1200	SuperT.	905	69	19.9	150.8
		1800	SuperT.	905	69	20.3	150.5
	6	0000	SuperT.	910	67	20.8	150.5
		0600	SuperT.	920	61	21.2	150.5
		1200	SuperT.	930	57	21.6	150.8
		1800	SuperT.	940	52	22.4	151.0
	7	0000	S.T.	945	49	23.0	151.2
		0600	S.T.	950	46	23.7	151.2
		1200	T.	960	41	24.5	151.3
		1800	T.	970	36	25.5	152.2
	8	0000	T.	975	33	26.7	153.8
		0600	S.T.S.	985	28	28.1	155.8
		1200	S.T.S.	988	25	29.3	158.4
		1800	T.S.	998	21	30.6	160.1
			變為溫帶氣旋 Became Extratropical				

強烈熱帶風暴娜基莉(1924)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TROPICAL STORM NAKRI (1924)

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
十一月 NOV	5	0000	T.D.	1000	13	13.8	114.9
		0600	T.D.	998	16	13.6	115.2
		1200	T.D.	998	16	13.6	115.4
		1800	T.S.	995	18	13.6	116.2
	6	0000	T.S.	995	18	13.5	116.4
		0600	T.S.	992	21	13.7	116.4
		1200	T.S.	992	21	13.7	116.5
		1800	T.S.	988	23	13.6	117.0
	7	0000	S.T.S.	984	25	13.6	117.3
		0600	S.T.S.	984	25	13.5	117.2
		1200	S.T.S.	984	25	13.5	117.2
		1800	S.T.S.	980	28	13.4	117.0
	8	0000	S.T.S.	980	28	12.9	116.5
		0600	S.T.S.	975	31	12.5	116.4
		1200	S.T.S.	975	31	12.5	116.1
		1800	S.T.S.	975	31	12.5	115.2
	9	0000	S.T.S.	975	31	12.5	114.6
		0600	S.T.S.	975	31	12.5	114.0
		1200	S.T.S.	975	31	12.5	113.3
		1800	S.T.S.	980	28	12.5	112.7
	10	0000	S.T.S.	984	25	12.6	111.7
		0600	T.S.	988	23	12.6	110.9
		1200	T.S.	988	23	12.6	109.8
		1800	T.S.	995	18	12.7	109.2
	11	0000	T.D.	1000	13	12.8	108.4
			消散 Dissipated				

強颱風風神(1925)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TYPHOON FENGSHEN (1925)

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
十一月 NOV	11	1200	T.D.	1006	13	14.1	165.4
		1800	T.D.	1004	16	14.7	163.8
	12	0000	T.D.	1004	16	14.8	162.4
		0600	T.S.	1000	18	15.5	160.3
		1200	T.S.	996	21	16.0	159.3
		1800	T.S.	996	21	16.8	158.0
	13	0000	T.S.	992	23	17.2	156.0
		0600	T.S.	992	23	16.9	154.5
		1200	T.S.	992	23	16.9	153.0
		1800	T.S.	992	23	16.5	151.5
	14	0000	T.S.	992	23	16.6	149.8
		0600	T.S.	992	23	17.1	148.2
		1200	S.T.S.	988	25	17.7	146.8
		1800	S.T.S.	980	31	18.2	145.0
	15	0000	T.	965	39	19.1	143.6
		0600	S.T.	955	43	20.1	142.7
		1200	S.T.	950	46	21.2	142.2
		1800	S.T.	950	46	22.4	142.5
	16	0000	S.T.	950	46	23.7	143.2
		0600	S.T.	950	46	24.9	144.7
		1200	S.T.	955	43	25.9	146.8
		1800	T.	960	41	26.6	149.2
	17	0000	T.	970	36	27.2	152.0
		0600	S.T.S.	985	28	26.9	155.2
		1200	T.D.	1004	16	26.1	156.7
			消散 Dissipated				

颱風海鷗(1926)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TYPHOON KALMAEGI (1926)

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
十一月 NOV	13	0000	T.D.	1002	13	12.7	129.0
		0600	T.D.	1000	16	13.1	128.4
		1200	T.D.	1000	16	13.0	128.2
		1800	T.D.	1000	16	13.2	127.4
	14	0000	T.D.	1000	16	14.1	127.0
		0600	T.D.	1000	16	15.3	126.8
		1200	T.D.	1000	16	15.9	126.4
		1800	T.D.	1000	16	16.4	126.2
	15	0000	T.D.	1000	16	16.9	126.0
		0600	T.D.	1000	16	16.9	125.7
		1200	T.D.	1000	16	16.7	125.8
		1800	T.D.	1000	16	16.7	125.8
	16	0000	T.D.	1000	16	16.6	126.1
		0600	T.D.	1000	16	16.2	126.1
		1200	T.D.	1000	16	16.0	126.2
		1800	T.S.	998	18	15.8	126.1
	17	0000	T.S.	998	18	16.0	125.4
		0600	T.S.	998	18	16.5	124.9
		1200	T.S.	995	21	16.8	124.0
		1800	T.S.	995	21	17.3	123.9
	18	0000	T.S.	992	23	17.6	123.5
		0600	S.T.S.	988	25	18.1	123.1
		1200	S.T.S.	985	28	18.8	122.9
		1800	S.T.S.	980	31	19.1	122.5
	19	0000	T.	975	33	19.1	122.2
		0600	T.	975	33	19.1	122.1
		1200	T.	975	33	19.3	122.3
		1800	S.T.S.	988	25	18.5	122.1
	20	0000	T.S.	998	18	17.5	121.6
		0600	T.D.	1002	13	16.5	120.7
			消散 Dissipated				

強烈熱帶風暴鳳凰(1927)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TROPICAL STORM FUNG-WONG (1927)

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
十一月 NOV	19	1800	T.D.	1002	13	15.7	128.4
	20	0000	T.D.	998	16	16.1	128.0
		0600	T.S.	995	18	17.2	127.0
		1200	T.S.	995	18	18.6	126.0
		1800	T.S.	988	23	19.5	125.3
	21	0000	S.T.S.	980	28	20.1	124.8
		0600	S.T.S.	975	31	20.7	124.3
		1200	S.T.S.	975	31	21.3	124.3
		1800	S.T.S.	980	28	22.1	124.4
	22	0000	S.T.S.	985	25	23.2	125.0
		0600	T.S.	988	23	24.0	125.1
		1200	T.D.	1000	16	24.6	125.5
		1500	T.D.	1004	13	24.8	125.5
			消散 Dissipated				

超強颱風北冕(1928)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON KAMMURI (1928)

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
十一月 NOV	25	1800	T.D.	1002	13	9.7	151.4
	26	0000	T.D.	998	16	10.3	149.9
		0600	T.S.	994	18	10.9	147.4
		1200	T.S.	994	18	11.6	145.5
		1800	T.S.	990	21	11.8	143.8
	27	0000	T.S.	988	23	11.3	142.3
		0600	S.T.S.	984	25	11.4	141.1
		1200	S.T.S.	980	28	11.5	140.0
		1800	S.T.S.	975	31	12.3	139.7
	28	0000	S.T.S.	975	31	12.3	139.0
		0600	S.T.S.	975	31	12.7	138.7
		1200	S.T.S.	975	31	13.5	138.4
		1800	T.	970	33	13.9	138.1
	29	0000	T.	965	36	14.0	137.7
		0600	T.	960	39	14.3	137.6
		1200	T.	955	41	14.3	137.3
		1800	T.	955	41	14.0	136.6
	30	0000	T.	955	41	13.7	135.8
		0600	T.	955	41	13.6	135.1
		1200	S.T.	950	43	13.4	133.5
		1800	S.T.	950	43	13.4	132.3
十二月 DEC	1	0000	S.T.	950	43	13.4	131.0
		0600	S.T.	950	43	13.3	130.0
		1200	S.T.	950	43	13.1	129.0
		1800	S.T.	950	43	13.1	127.8
	2	0000	S.T.	950	43	13.0	126.6
		0600	S.T.	940	46	13.0	125.7
		1200	SuperT.	925	52	13.0	124.7
		1800	SuperT.	925	52	13.1	123.4
	3	0000	S.T.	940	46	13.2	122.2
		0600	T.	955	41	13.4	120.9
		1200	T.	965	36	13.5	119.9
		1800	T.	970	33	13.8	118.8
	4	0000	S.T.S.	980	28	14.0	117.9
		0600	S.T.S.	984	25	14.3	117.2
		1200	T.S.	988	23	14.6	116.4
		1800	T.S.	994	18	14.7	115.5
	5	0000	T.S.	994	18	14.6	114.6
		0600	T.D.	998	16	13.8	113.8
		0900	T.D.	1002	13	13.5	113.7
			消散 Dissipated				

颱風巴蓬(1929)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TYPHOON PHANFONE (1929)

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
十二月 DEC	21	1800	T.D.	1002	13	6.4	140.2
	22	0000	T.D.	998	16	7.0	139.1
		0600	T.S.	994	18	7.7	138.0
		1200	T.S.	994	18	8.5	136.6
		1800	T.S.	990	21	8.8	135.0
	23	0000	T.S.	990	21	9.3	133.7
		0600	T.S.	990	21	10.2	131.8
		1200	T.S.	990	21	10.5	130.9
		1800	S.T.S.	984	25	10.7	129.6
	24	0000	S.T.S.	980	28	10.8	128.0
		0600	S.T.S.	975	31	11.0	126.3
		1200	T.	968	36	11.3	124.9
		1800	T.	965	39	11.7	123.4
	25	0000	T.	960	41	11.8	122.4
		0600	T.	960	41	12.1	121.4
		1200	T.	965	39	12.6	120.0
		1800	T.	965	39	12.8	119.3
	26	0000	T.	965	39	13.1	118.5
		0600	T.	965	39	13.5	117.9
		1200	T.	965	39	13.9	117.7
		1800	T.	968	36	14.2	117.2
	27	0000	T.	972	33	14.6	117.0
		0600	S.T.S.	980	28	15.0	116.7
		1200	T.S.	986	23	14.9	116.2
		1800	T.S.	990	21	14.6	115.6
	28	0000	T.D.	998	16	14.5	115.1
		0600	T.D.	1002	13	14.5	113.9
			消散 Dissipated				

附件一
熱帶風暴韋帕(1907)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 2020 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，收集熱帶風暴韋帕所造成的破壞及經濟損失的數據：

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、食物環境衞生署、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。

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、新世界第一渡輪服務有限公司、珀麗灣客運有限公司、信德中旅船務管理有限公司及天星小輪有限公司。

截至2020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共35,411,200港元。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

因熱帶風暴韋帕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。調查共收集了本港 46 間保險公司的數據，根據保險業監管局發佈的 2018 年度一般保險業務的統計數字，這 46 間公司共佔市場份額約 68%。截至 2019 年 9 月 30 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	12,805,982
(ii) 僱員補償、汽車及旅遊	2,426,797

按參與調查的機構所佔的市場份額(68%)作調整，韋帕保險索償數字估計為(12,805,982 港元+ 2,426,797 港元) / 68% =22,401,146 港元

2. 熱帶風暴韋帕引致直接經濟損失的估算

熱帶風暴韋帕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 (B)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。

= 35,411,200 港元 + 22,401,146 港元

= 57,812,346 港元 (約 0.58 億港元)

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 Wipha (1907)

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 Wipha from the following government departments, public utilities and other organizations between January and May 2020:

Agriculture, Fisheries and Conservation Department, Architectural Services Department, Building Services 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 Administrator, Highways Department, Home Affairs Department, Housing Department, Lands Department, Leisure and Cultural Services Department, Marine Department, Social Welfare Department, Water Supplies Department.

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, New World First Ferry Services Limited, Park Island Transport Company Limited, Shun Tak China Travel Shipping Management Limited and the “Star” Ferry Company, Limited.

As of 31 May 2020, the losses reported from government departments, public utilities and other organizations amount to HK$35,411,200. 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 Wipha in Hong Kong are provided by the Hong Kong Federation of Insurers (HKFI) based on its member surveys. The statistics were collected from 46 insurance companies in Hong Kong, accounting for around 68% of the market share according to the Annual Statistics for General Business 2018 issued by the Insurance Authority. The insurance claims incurred as of 30 September 2019 are as follows :

	Total claims incurred (HK$)
(i) Property Damage, Business Interruption and Contractors' All Risks (CAR)	12,805,982
(ii) Employees' Compensation (EC), Motor and Travel	2,426,797

Adjusted by market share of the participating companies (68%), the insurance claims incurred by Wipha is estimated to be (HK$ 12,805,982 + HK$ 2,426,797) / 68% = HK$ 22,401,146

2. Estimation of direct economic losses caused by Tropical Storm Wipha

The estimated direct economic losses due to Wipha 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 **(B)** insurance claims (adjusted by market share of companies participating in the survey):
= HK$ 35,411,200 + HK$ 22,401,146
= HK$ 57,812,346 (around HK$ 58 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.